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The development of an intervention to support midwives in
addressing multiple health behaviours with pregnant women

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ABSTRACT

Background

Midwives are expected to perform multiple health promotion practice behaviours (HePPBes) such as informing pregnant women about the benefits of physical activity during pregnancy and asking women about their alcohol consumption. However, no formal support appears to be available to midwives in carrying out these tasks. This thesis describes the systematic development of an evidence-based, theory-informed intervention to support midwives in addressing health behaviours with pregnant women.

Methods

This thesis consisted of four phases.

Phase 1: review of the evidence including key documentation and a narrative review to identify interventions to support midwives' HePPBes.

Phase 2: semi-structured interviews with midwives (N= 11) based on the theoretical domains framework and an online questionnaire assessing midwives' views on HePPBes (N= 505).

Phase 3: systematic development of the HePPBe toolkit, integrating:
i) target population, ii) target behaviours, iii) theory, iv) behaviour change techniques and v) format of delivery. User, patient and public involvement was carried out throughout phase 3.

Phase 4: online questionnaire to assess midwives' preliminary views (N= 108) on the acceptability of the newly developed HePPBe toolkit.

Results and conclusions

A review of existing evidence identified multiple policies and guidelines implicating midwives in performing HePPBes. However, no peer-reviewed literature reported interventions to support midwives in carrying out their HePPBes. New evidence found midwives perceived barriers to carrying out HePPBes, such as a requirement to perform an increasing amount of HePPBes on top of existing clinical workload. Facilitators, including strategies used by midwives to perform HePPBes, were also identified. Performance of HePPBes was

predicted by psychological factors, including confidence, intrinsic drive, and feelings of being supported. These findings informed the development of a handheld HePPBe toolkit with evidence of preliminary acceptability. This thesis provides a practical example of how to systematically develop a multiple behaviour change intervention for, and in consultation with, healthcare professionals.

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DISSEMINATION

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LIST OF ACRONYMS AND ABBREVIATIONS

ABI: Alcohol brief intervention
BCT: Behaviour change techniques
COREQ: Consolidated criteria for reporting qualitative research
FoD: Format of delivery
GIRFEC: Getting it right for every child
GRIPP2: Guidance for Reporting Involvement of Patients and the Public
HC: Helen Cheyne
HCP: Healthcare professionals
HePPBes: Health promotion practice behaviours
IDEA: Improving diabetes care through examining, advising and prescribing
JM: Julie McLellan
KCND: Keeping Childbirth Natural and Dynamic
MRC: Medical Research Council
NES: NHS Education for Scotland
NHS: National Health Service
NHGG&C: NHS Greater Glasgow and Clyde
NMPA: National Maternity and Perinatal Audit
PCA: Principal components analysis
RCM: Royal College of Midwives
RO'C: Ronan O' Carroll
SC: Sinéad Currie
SD: Stephan Dombrowski
SD: Standard deviation
SUTPH: Stepping Up to Public Health
SWHMR: Scottish Woman Held Maternity Record
TACT: Target, Action, Context and Time
TDF: Theoretical Domains Framework
UK: United Kingdom
UPPI: user, patient and public involvement
PPI: patient and public involvement
V1: Version 1

V2: Version 2

WHO: World Health Organisation

CHAPTER 1
INTRODUCTION TO THE DEVELOPMENT OF AN INTERVENTION TO
SUPPORT MIDWIVES IN ADDRESSING HEALTH BEHAVIOURS WITH
PREGNANT WOMEN

This chapter presents the background to the thesis, which describes the systematic development of an intervention to support midwives in addressing health behaviours with pregnant women. The overall aim of the chapter is to provide an overview of the thesis and a rationale for the research undertaken. The chapter begins by introducing the structure of the thesis and defining the meaning of “addressing health behaviours with pregnant women”. A general overview of the thesis is reported, including an outline of the main aim of this research and other key objectives, along with a description of the content of each Chapter.

1.1 Background to the Thesis

This PhD thesis describes the systematic development of an evidence-based intervention to support midwives in addressing health behaviours with pregnant women. The rationale for the thesis is briefly described below (more detailed evidence of the need for such an intervention to be developed is given in Chapters 2 & 3). An overview of the thesis structure is also provided.

A Brief Rationale for an Intervention to Support Midwives in Addressing Health Behaviours with Pregnant Women

Midwifery is defined as: “*skilled, knowledgeable, and compassionate care for childbearing women, newborn infants, and families across the continuum throughout pre-pregnancy, pregnancy, birth, post partum, and the early weeks of life*” (Renfrew et al., 2014, p.10). Due to the impact of the prenatal environment on short-term health outcomes, such as the risk of complications during pregnancy (e.g. Baeten, Bukusi & Lambe, 2001; Patra et al., 2011; Jaddoe et al., 2008), and long-term outcomes, such as the health and development of the child throughout the lifespan (e.g. Makin, Fried & Watkinson, 1991; Streissguth et al., 1994; Catalano & Ehrenberg, 2006), pregnancy is regarded as an important time to engage women in multiple health behaviour changes (November, 2016). Midwives are now expected to provide care that extends further than their traditional clinical responsibilities. In addition to clinical tasks such as monitoring the growth of the baby and preparing women for labour and birth, midwives are also required to promote the health of the woman and the baby throughout their lifespans.

In the United Kingdom (UK), various policies, strategies and guidelines published by governments and public sector bodies either directly or indirectly implicate midwives as public health professionals responsible for addressing health behaviours with pregnant women. For example, the National Institute of Clinical Excellence’s (NICE, 2010b) guidelines on stopping smoking in pregnancy and after childbirth outline that midwives participate in up to 12 different tasks related to smoking cessation during pregnancy, such as measuring carbon monoxide levels, asking the woman if they or anyone in their household smokes, and referring to NHS stop smoking services. In addition, the guidelines on weight

management describe various tasks midwives are required to undertake before, during and after pregnancy, including measuring weight and height, asking questions about diet and physical activity, and giving dietary and physical activity advice. For pregnant women with a BMI ≥ 30 , midwives are expected to carry out additional tasks, such as offering referral to a dietitian (NICE, 2010c).

Midwives are expected to address a variety of health promotion topics during pregnancy, whilst simultaneously providing all other aspects of antenatal care, meaning that a high health promotion workload must be performed in a limited amount of time (Sanders, Hunter & Warren, 2016; McNeill, Doran, Lynn, Anderson, Alderdice, 2012; McNeill, Lynn & Alderdice, 2012; Lavender, Bennett, Blundell & Malpass, 2001; Biro, 2011).

Currently, limited systematic support or training exists for midwives to help them carry out the recommended practices contained within health promotion guidelines. Therefore, an intervention to support midwives in fully addressing health behaviours with pregnant women in a way that is meaningful to them as healthcare professionals (HCPs) might support professional practice, and help pregnant women and their families.

Overview of the thesis structure. The development process of this evidence-based intervention is outlined (*Chapter 1*) and relevant contextual information described (*Chapter 2*). A review of the existing evidence (*Chapter 3*) informed the gathering of new evidence through interview and survey studies (*Chapters 4 & 5*). Existing and new evidence informed the development of the intervention (*Chapter 6*), which was carried out in collaboration with stakeholders (*Chapter 7*). The acceptability of the resulting intervention was assessed (*Chapter 8*) and the implications of the thesis findings considered (*Chapter 9*). Figure 1.1 below provides a visual representation of the thesis structure.

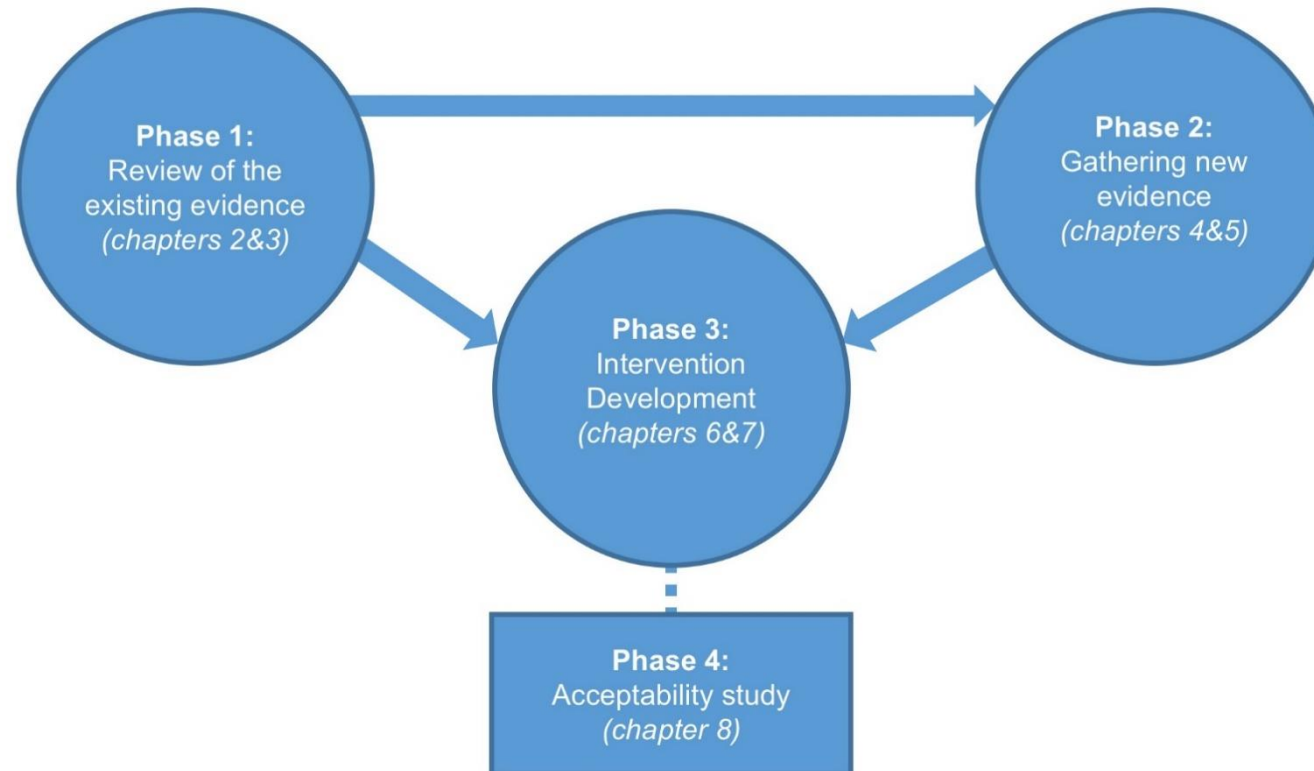


Figure 1.1. Diagram of the four-phase structure of the thesis.

1.2 Thesis Terminology

The section below outlines the terminology used to communicate the meaning of midwives “addressing health behaviours with pregnant women”.

Midwives Addressing Health Behaviours with Pregnant Women

It was necessary to devise a term to describe midwives “addressing health behaviours with pregnant women”. The selected term, “**health promotion practice behaviours**”, was chosen to describe any behaviour that a midwife performs to promote health during pregnancy. It is important to highlight that health promotion practice behaviours will be referred to as **HePPBes** throughout the thesis. Examples of midwives’ HePPBes are shown in Figure 1.2, which was used throughout the development of the intervention. Figure 1.2 also highlights that the primary aim of the intervention would be to support midwives’ HePPBes and it is assumed there would be an indirect secondary effect on women’s health behaviours during pregnancy.

The following definition of midwives’ behaviours was applied: *“Anything an individual does in response to internal or external events. Overt action (motor or verbal) which is directly measurable; behaviours are physical events that occur in the body and are controlled by the brain”* (Michie, West, Campbell, Brown & Gainforth, 2014, p.36).

Throughout the thesis, midwives’ HePPBes target change in pregnant women’s health behaviours which meet the following criteria:

- address the woman’s and baby’s health during pregnancy (excludes infant feeding, personal hygiene and sexual health, as these are health behaviours which address the woman’s postnatal behaviours)
- are repeatable by pregnant women in their own homes
- can be performed by pregnant women without healthcare service provision

Relevant health promotion behaviours addressed in the current intervention that matched the above criteria were:

1. Weight management
2. Smoking
3. Alcohol consumption
4. Substance use
5. Physical activity
6. Diet
7. Oral health

Further information about each of these health promotion topics, along with the specific HePPBes that midwives are tasked to carry out in relation to each of these topics, is provided in Chapter 3.

Midwives' Health Promotion Practice Behaviours = all the behaviours midwives perform to promote health during pregnancy



Figure 1.2. Visual representation of midwives' HePPBes.

1.3 General Overview of the Thesis

This section describes the overall thesis aim and the objectives concerning four key phases of the thesis: i) reviewing the evidence; ii) gathering new research evidence; iii) intervention development; and iv) acceptability of the intervention.

Overall aim of the Thesis

To review the evidence, gather new evidence, and work in partnership with midwives to design an acceptable intervention which aims to support midwives in addressing health behaviours with pregnant women.

Thesis Objectives

The thesis objectives are outlined below in regard to the four phases of the thesis.

Phase 1: Review existing evidence.

1. To summarise relevant contextual information relating to midwifery care, HCP behaviour change, and intervention development.
2. To identify all the relevant HePPBes midwives are required to perform in order to support pregnant women.
3. To systematically review the evidence of interventions delivered to midwives to support them in performing their HePPBes.
4. To review the relevant grey literature of interventions delivered to midwives to support them in performing their HePPBes.

Phase 2: Gathering new research evidence.

5. To carry out individual semi-structured interviews with midwives, using the Theoretical Domains Framework, to examine their beliefs about their HePPBes.
6. To carry out a questionnaire study so as to understand the factors which influence midwives' HePPBes.

Phase 3: Intervention development.

7. To carry out stakeholder consultation, based on the evidence gathered in phases 1 & 2, with midwives, policymakers, pregnant women and women who have given birth in the last 2 years, and relevant others, such as the Director of the Royal College of Midwives in Scotland, with a view to informing the development of an intervention to support midwives in addressing health behaviours with pregnant women.
8. To develop an intervention to support midwives in addressing health behaviours with pregnant women.

Phase 4: Acceptability of the intervention.

9. To test the prospective acceptability of an intervention to support midwives in addressing health behaviours with pregnant women.

Chapter Overview

To achieve the thesis aim and objectives, the research was carried out and reported in the following chapters:

Chapter 1: Introduction to the development of an intervention to support midwives in addressing health behaviours with pregnant women

Chapter 1, the present introduction, provides an overview of the structure of the thesis, including the overall aim and key objectives.

Chapter 2: An overview of the midwifery context and behaviour change. *Chapter 2* provides background information about midwifery care, behaviour change, and the key components underlying intervention development.

Chapter 3: Midwives' health promotion practice behaviours: a review of the evidence. *Chapter 3* reports relevant government and NHS policies/strategies and guidelines, identified through expert consultation, which outline the various HePPBes that midwives are expected to perform. A systematic search of the literature was performed to identify if there are interventions that support midwives in addressing HePPBes. Inclusion criteria were: intervention studies, targeted at changing midwives' HePPBes. A review of "grey literature",

defined as evidence which did not meet the full specification for inclusion in the search for interventions that support midwives in addressing HePPBes, but deemed to be relevant for discussion due to the specificity of the content covered, is also included.

Chapter 4: Investigating midwives' barriers and facilitators to health promotion practice behaviours: a qualitative study using the Theoretical Domains Framework. *Chapter 4* reports the barriers and facilitators perceived by midwives in undertaking their HePPBes. Community midwives (N= 11) took part in one-to-one semi-structured interviews shaped by the Theoretical Domains Framework v1 (Michie et al., 2005).

Chapter 5: Investigating midwives' views of their health promotion practice behaviours: a survey study. *Chapter 5* presents the findings of a survey study informed by the interview study findings described in Chapter 4. The overall aim of the survey was to examine the relationship between differing factors (including demographics, personal health behaviours, and perceived barriers and facilitators) and midwives' HePPBes.

Chapter 6: The development of an intervention to support midwives in addressing health behaviours with pregnant women. *Chapter 6* outlines the development of the intervention in accordance with an appropriate logic model. The evidence produced in Chapters 3, 4 and 5 informed the intervention targets, the theoretical basis of the intervention, the selection of behaviour change techniques, and the format of delivery. The intervention developed is presented at the end of this Chapter.

Chapter 7: User, patient and public involvement in the development of an intervention to support midwives in addressing health behaviours with pregnant women. *Chapter 7* describes the user, patient and public involvement that contributed towards the development of the intervention. This Chapter is reported according to the Guidance for Reporting Involvement of Patients and the Public checklist (Staniszewska et al, 2017).

Chapter 8: The acceptability of an intervention to support midwives in addressing health behaviours with pregnant women: a survey study. *Chapter 8* reports the findings of an online survey study assessing midwives' acceptance of the evidence-based intervention developed to support them in addressing health behaviours with pregnant women.

Chapter 9: Discussion and conclusions. *Chapter 9* discusses the thesis findings in reference to implications for the implementation and sustainability of the intervention. There will also be discussion as to how the effectiveness of the intervention could be measured.

CHAPTER 2

AN OVERVIEW OF THE MIDWIFERY CONTEXT AND BEHAVIOUR CHANGE

The overall aim of the chapter is to present contextual information relevant to the thesis. To do this, firstly, background information about midwifery care is outlined, specifically: (i) the evolution of the public health role of midwives working in a Scottish context; (ii) the current public health behaviours that midwives are expected to address; and (iii) the current context of midwifery care in Scotland.

The chapter then moves on to highlighting research relevant to healthcare professional behaviour change research and provides an example of the support available to HCPs in helping patients achieve behaviour change in the Scottish context.

Finally, the chapter outlines the essential components of intervention development, including the selection of appropriate theory, behaviour change techniques, and format of delivery. The benefits of working in collaboration with HCPs to develop interventions aimed at supporting their behaviour change and the sustainability of such interventions are also discussed.

This chapter was written in 2016 and contains information that was up-to-date at the time of writing and that shaped the background to the intervention development work, which commenced in that year. Information about the public health behaviours that midwives are expected to address and the context of midwifery care in Scotland have been updated in places to reflect recommendations in 2019.

2.1 Midwives as Public Health Practitioners

The current thesis is focused on health promotion topics. However, health promotion is just one aspect of the public health role of the midwife. It is therefore necessary to give a full overview of midwives' public health roles. To do this, the following is outlined:

- (i) the evolution of midwives as public health practitioners, specifically the history of policies concerning the public health role of the midwife in a Scottish context;
- (ii) the current public health topics that midwives are expected to address, including those that do not fall within the scope of the thesis;
- (iii) an overview of recent developments within midwifery care.

Evolution of the Public Health Role of the Midwife in a Scottish Context

Historically, the focus of maternity care was upon the clinical aspects of labour and childbirth, and midwives were the main providers of maternity healthcare. Advancements in obstetric care resulted in a rapid increase in the number of women giving birth in hospital from the 1960s onwards. In 1992, the UK House of Commons Select Committee released the Winterton Report, which highlighted poverty as the major cause of poor birth outcomes. In doing so, it recognised the social and psychological impact of birth which, until then, had been largely ignored in favour of the physical consequences of childbirth (Beech, 2009).

The publication of the Winterton Report was followed around one year later by the publication of the Changing Childbirth report (Department of Health, 1993). The Scottish version of this report, Provision of Maternity Services in Scotland (Scottish Office Home and Health Department, 1993), signalled a significant shift from an "institutionalised and medicalised approach to childbearing" (Garrod & Byrom, 2007, p.12). The findings of this landmark publication emphasised the importance of women's choice, control, and continuity in care. Today, as outlined by the UK-wide collaborative programme Midwifery 2020: Delivering Expectations, midwives are the lead professionals for women with no complications during

pregnancy, and are coordinators of care for all pregnant women (Chief Nursing Officers of England, Northern Ireland, Scotland and Wales, 2010).

Following devolution in 1999, the newly formed Scottish government published a Framework for Maternity Services in Scotland (Scottish Executive, 2001) which emphasised a woman- and family-centred approach to maternity care, summarised as *“a way of providing care for women and their families that integrates pregnancy, childbirth, postpartum, and infant care into the continuum of the family life cycle as normal, healthy life events”* (Phillips, 2003, p.2). Four main themes made up the maternity services framework: (i) safety and evidence-based care for mother and baby; (ii) pregnancy and childbirth are normal physiological processes; (iii) maternity services must deliver a woman- and family-centred approach to care and support, planned in partnership with the woman; (iv) maternity services should be essentially community-based and midwife-managed, wherever possible, with an emphasis on continuity of care.

In February 2002, the Scottish Minister for Health and Community Care set up a short-life working group made up of maternity care professionals and other stakeholders to review the framework: the Expert Group on Acute Maternity Services (EGAMS). The resulting publication, *Implementing a Framework for Maternity Services in Scotland: Overview Report of the Expert Group on Acute Maternity Services* (NHS Scotland, 2003), concluded that the framework was sound and provided an evidence-based approach to professional practice. The report also found that maternity care professionals must work to uphold the notion of pregnancy and childbirth as being normal life events, whilst identifying issues which may put the mother or baby in danger.

In 2011, a Refreshed version of the Maternity Services Framework was published (Scottish government, 2011a) with a clear focus on reducing antenatal health inequalities. This report outlined the need for health professionals to be equipped with skills to assess risks and assets collaboratively with the pregnant woman in their care, which marked a change from the traditional healthcare professional approach of providing information and expert guidance. The

refreshed maternity services framework suggested that working in collaboration with pregnant women would enhance opportunities to support women in making behavioural changes, with a focus on smoking, use of alcohol and drugs, and nutrition.

In 2017, an updated review of maternity care services in Scotland was published. The Best Start: Five-year Plan for Maternity and Neonatal Care (Scottish government, 2017c) extended the recommendations of earlier reviews of maternity care by emphasising the need for a woman- and family-centred approach. Specifically, this latest review recommended that all pregnant women should receive midwifery care via a continuity model. This means that pregnant women would receive care from the same midwife throughout their pregnancy, labour, birth, and in the immediate postnatal timeframe. A multi-disciplinary team provides additional care where appropriate. This new model of maternity care is, as of 2019, being introduced throughout Scotland.

In keeping with the philosophy of childbirth being a normal life event, the Scottish government published the Keeping Childbirth Natural and Dynamic programme (KCND; Scottish government Health Directorates 2007). According to KCND, women should be placed on a pathway of care most suited to their individual need and receive maternity care from the most appropriately skilled professional. Part of the KCND programme, the Pathways for Maternity Care documentation (NHS Quality Improvement Scotland, 2009) outlines a traffic light system. Firstly, a green pathway is proposed for “healthy” women, with uncomplicated pregnancies. Midwives act as the lead professional for these women. An amber pathway would be followed by women with potential medical/obstetric and social risk factors. The lead professional for women on the amber pathway can be either a midwife or a maternity care team. An on-going risk assessment is carried out throughout the antenatal and postnatal period by maternity care staff to establish the healthcare professional most appropriate for the provision of the woman’s maternity care. The red pathway would be followed by women with significant medical or obstetric complications. A consultant obstetrician is the lead professional for women receiving this level of care.

The various policies, strategies and guidelines which have been introduced emphasise effectively tackling health inequalities, ensuring effective multi-agency partnership, and highlighting the importance of early years to future health and equality. In 2008, the Getting It Right for Every Child (GIRFEC) national practice model was published by the Scottish government. The purpose of this “national approach” is to provide those working with children, young people and their families a framework in which to ensure the rights and wellbeing of the child are upheld by providing a consistently supportive approach across a range of professions, including midwifery.

The Early Years Framework (Scottish government, 2008b) was devised around GIRFEC principles. It defined early years as pre-birth to 8 years of age, to highlight the impact of pregnancy in affecting a child’s outcomes. The aim of this framework is to ensure early intervention is made in tackling inequalities by channelling resources into services for those most at risk, and thereby to avoid crisis management. The Early Years Collaborative, launched in 2012, aims to use improvement methodology to enable local practitioners, such as midwives, to test, measure, implement and scale up new ways of working so as to improve outcomes for children and families.

The Reducing Antenatal Health Inequalities guidance (Scottish government, 2011c) built on the GIRFEC approach by emphasising the need for continuity of care and joined-up working between health and social care services. One of the key messages from this publication, which is of particular relevance to this thesis, was the concept of supporting women’s behaviour change, maternity care professionals should use person-centred, asset-based approaches, and such input should happen alongside any collaborative support needed in relation to a woman and her significant other’s social circumstances.

Significant milestones in the evolution of the public health role of midwives working in Scotland are shown in Figure 2.1 below.

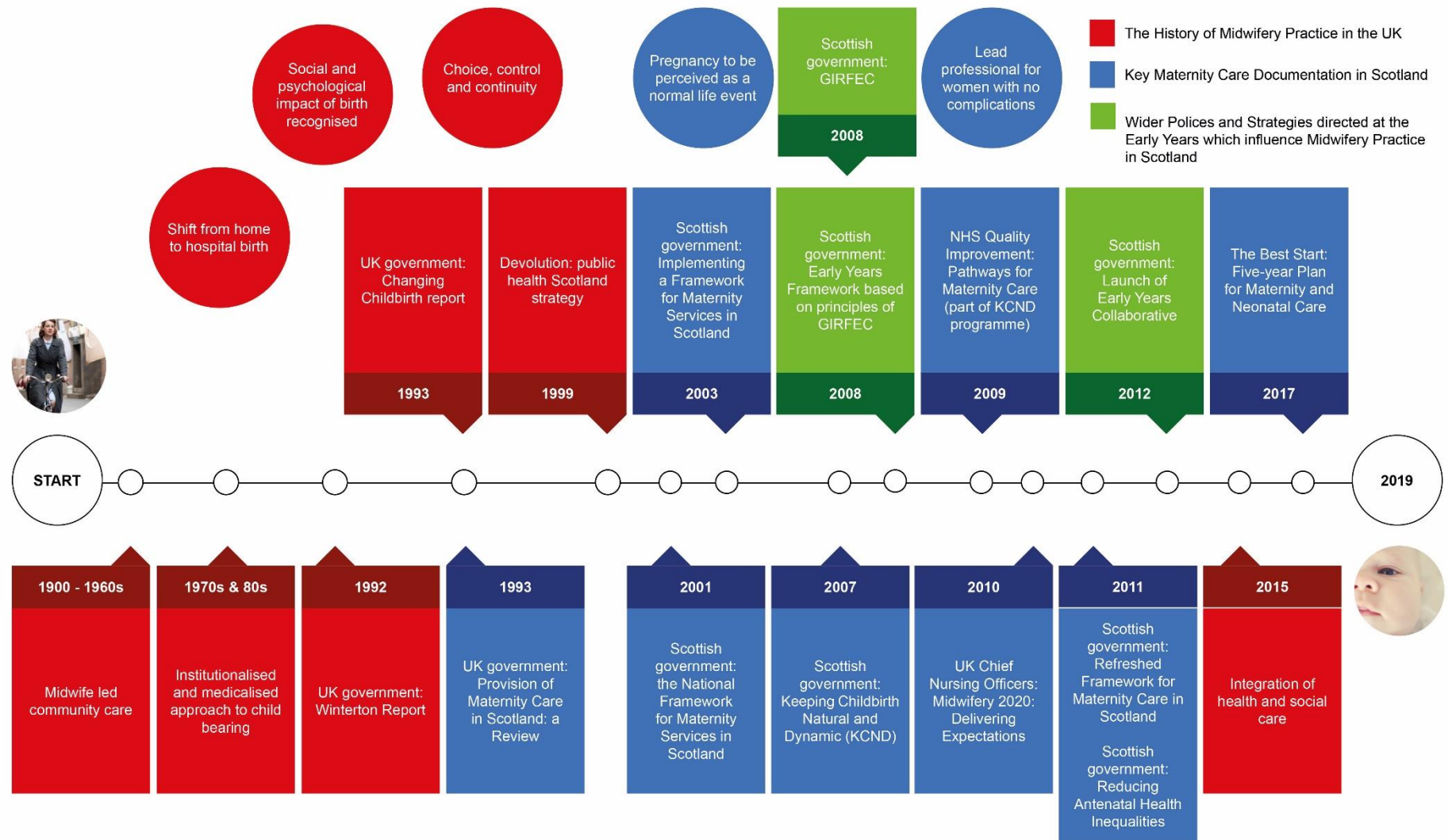


Figure 2.1. Timeline of the evolution of the public health role of midwives working in Scotland.

2.2 The Current Public Health Behaviours of the Midwife

Alongside all the antenatal clinical care that midwives undertake (e.g. measuring blood pressure, checking the position of the baby and preparing women for giving birth), they must now also address a range of health and social topics. From the perspective of the midwife, these topics can be arranged into three main categories of public health behaviours: (i) health promotion, (ii) social issues, and (iii) health protection.

Public Health Behaviour Category 1: Health Promotion

The health promotion category includes midwives' HePPBes, which were defined in Chapter 1 as targeting change in pregnant women's health behaviours that meet the following criteria:

- address the woman's and baby's health during pregnancy;
- are repeatable by pregnant women in their own homes;
- can be performed by pregnant women without healthcare service provision.

Midwives' HePPBes will be reported in detail in Chapter 3.

Two important health promotion topics (i.e. mental wellbeing and infant feeding) which midwives address during pregnancy were not included in the HePPBes list of the current thesis. Mental wellbeing was considered a state as opposed to a behaviour and is therefore not repeatable by pregnant women in their own homes and infant feeding is a behaviour which women perform post-pregnancy. The behaviours that midwives are expected to carry out to address mental wellbeing and infant nutrition are outlined below.

Mental wellbeing. The 1997-1999 Confidential Enquiry into Maternal Deaths Why Mothers Die report (Lewis & Drife, 2001) highlighted a rise in the number of maternal deaths from suicide. The 2000-2002 version of this report revealed psychiatric illness to be the leading cause of maternal deaths in the UK (Lewis & Drife, 2004). Between 2011 and 2013, almost a quarter of all maternal deaths between six weeks and a year after birth were related to mental health problems (Manktelow et al., 2016). Between 2014 and 2016, maternal suicide was

the third most common cause of death during pregnancy and was the lead cause of death in the year immediately following pregnancy (Knight et al., 2018).

The Pathways for Maternity Care guidance (NHS Quality Improvement Scotland, 2009), which outlines the different levels of care pregnant women can receive, specifies that midwives enquire about the maternal emotional and mental wellbeing of all pregnant women at the first antenatal appointment. A mental health section within the Scottish Woman Held Maternity Record (SWHMR; Healthcare Improvement Scotland, 2011) document requires midwives to discuss this issue and refer to a relevant service if necessary. At the end of pregnancy, midwives are also required to discuss a leaflet entitled “Talking about postnatal depression” (NHS Health Scotland, 2014). The Perinatal Mental Health Curricular Framework (NHS Education for Scotland, 2019) does not change the role of midwives in addressing mental wellbeing during pregnancy, but emphasises the need for maternity HCPs to perform the following actions: (i) support women in managing factors which may influence their mental wellbeing during pregnancy; (ii) have an understanding of mental wellbeing problems that can present both generally and during pregnancy; (iv) obtain women’s mental health history in a sensitive and systematic manner; (iv) detect signs and symptoms of mental wellbeing disorders during pregnancy and (v) identify biological, psychological, social and environmental risk factors which influence the development and/or maintenance of mental distress and disorder during pregnancy.

Infant nutrition. The World Health Organisation (WHO) recommends all infants are exclusively breastfed for the first six months of life (WHO, n.d.). From this point onwards, solids should be introduced, and breastfeeding should continue until the infant is two years of age (or for however long the mother chooses). The UNICEF Baby Friendly initiative, a programme designed to promote the physical and emotional benefits of breastfeeding by equipping maternity staff with the appropriate skills and knowledge, was introduced in the UK in 1995 (UNICEF, n.d.). However, in Scotland, breastfeeding rates have remained static, with younger women from more deprived backgrounds the least likely of all new mothers to breastfeed (Information Services Division Scotland [ISD], 2015).

Despite the benefits of breastfeeding for both mother and child, breastfeeding initiation and continuation rates in Scotland are low; in 2017/2018, 64% of babies in Scotland were breastfed for at least some period of time after their birth, but only 36% were exclusively breastfed at 10-14 days old, and this figure dropped to 31% at 6 weeks old (ISD Scotland, 2018b).

The Pathways for Maternity Care document advises midwives to discuss feeding preferences during the antenatal period. The SWHMR document references materials to be given out, including the leaflets *Off to a good start: All you need to know about breastfeeding* (NHS Health Scotland, 2019b), *Breastfeeding and returning to work* (NHS Health Scotland, 2019a), as well as the *Bump to Breastfeeding DVD* (Best beginnings, n.d.).

Public Health Behaviour Category 2: Social Issues

The social issues category includes any behaviours midwives carry out to reduce the possibility of a pregnant woman and/or her unborn baby being physically, emotionally or psychologically harmed. Social issues also include the behaviours midwives carry out to address maternal and child poverty.

The National Institute for Clinical Excellence guidelines for Pregnancy and Complex Social Factors identified risk factors linked with an increase in maternal death (NICE, 2010a), including contact with child protection services or social services, domestic abuse, being unemployed, having a partner who is unemployed or employment unclassifiable, being a recent migrant to the UK, and speaking no English. Women living in poverty are more likely to have poorer pregnancy outcomes, such as premature birth and low birth weight (Haggarty et al., 2009), and children living in poverty are more likely to have poorer health outcomes, such as becoming overweight and having tooth decay (Roberts, 2012).

Maternity care professionals have a responsibility to ensure the safety and wellbeing of women who may be at risk (Knight et al., 2018). For midwives, this requires them to ensure that private time is offered (O'Hagan, Anderson, Gillespie, Ross & Thomson, 2013). Private time involves midwives seeing women on their own at least once during pregnancy to enquire if there are any issues they wish to

discuss one-to-one and usually takes place during the booking appointment. However, if it does not then midwives have a responsibility to ensure it is offered before birth (NHS Quality Improvement Scotland, 2009). Depending on the outcome of private time, midwives may be required to make a referral to an appropriate service, such as social work. The SWHMR document contains a section about home circumstances and support needs that recommends midwives discuss financial support with pregnant women who may be entitled to it. Midwives are required to refer pregnant women to income maximization services and to advise and support pregnant women on a low income in accessing the Best Start maternity grant, which is a one-off payment to assist with the cost of having a baby, and the Healthy Start scheme, which provides free vitamin supplements and vouchers for buying milk, fruit and vegetables (see Chapter 3 for further details).

Public Health Behaviour Category 3: Health Protection

In developed countries there is less focus on health protection issues such as infectious diseases or environmental threats (Finlay, 2016) and so the main health protection behaviour which midwives in Scotland are expected to perform is screening.

Screening varies between different women based on factors such as age, health status or preference. There are two main types of screening test: (i) universal screening tests which are offered to all pregnant women and show whether there is a chance of a woman and/or her baby having a condition, and (ii) diagnostic tests which clarify what (if any) problem(s) there may be. In Scotland, there is a national pregnancy screening programme consisting of blood tests and ultrasound scans. Midwives are required to give information about these tests, discuss any questions a woman may have, and obtain consent from any woman who wishes to have the tests carried out (NHS National Services Scotland, 2018). The SWHMR contains a consent form for blood group, full blood count and infectious diseases, scans, and Down syndrome screening that should be completed at the booking appointment. Midwives perform the blood tests at the booking appointment. The standard scans at 11-13 weeks (Nuchal Translucency), and 18-21 weeks (detailed scan) are carried out by a sonographer or a specialist

midwife. The results of all tests are discussed and documented in the Tests during Pregnancy section of the SWHMR by the midwife at the 22-25 week antenatal appointment. At the end of pregnancy, community midwives provide information and answer questions about newborn screening.

The key public health behaviours that are performed by midwives which do not fall within the definition of HePPBes are displayed in Table 2.1 below.

Table 2.1

Overview of the Public Health Behaviours Performed by Midwives During Pregnancy

Time point during pregnancy	Gestational weeks	Public health topic or behaviour	Description of midwives' public health behaviours	Source of midwives' recommended behaviours
1 st appointment with midwife	0-8	Mental wellbeing	Enquire about maternal emotional and mental wellbeing.	Pathways for Maternity care document
Booking appointment	8-12	Social issues	Ensure private time is offered and refer pregnant woman to appropriate services if necessary, discuss potential financial implications of pregnancy and provide pregnant woman with a Healthy Start application form if eligible.	Pathways for Maternity care document
		Screening	Obtain consent for screening and take bloods if consent given.	National Screening Programme
		Weight management	Weigh pregnant woman and potentially refer to specialist weight management service.	SWHMR
		Smoking	Measure carbon monoxide levels, ask smoking-related questions and refer on to a smoking cessation service if necessary.	SWHMR and Maternity Care Quality Improvement Collaborative

Time point during pregnancy	Gestational weeks	Public health topic or behaviour	Description of midwives' public health behaviours	Source of midwives' recommended behaviours
		Alcohol consumption	Discuss alcohol consumption and deliver brief intervention if necessary.	SWHMR and Delivering an ABI: Process, screening tools and guidance
		Substance use	Discuss substance use and refer to appropriate service if necessary.	SWHMR
		Physical activity	Discuss the benefits of physical activity during pregnancy.	SWHMR
		Diet	Discuss healthy eating and taking vitamins during pregnancy.	SWHMR
		Oral health	Discuss going to the dentist.	SWHMR
Dating and nuchal translucency scan	11-14	Screening	Carried out by a specialist midwife to assess the stage of pregnancy, check development and take a nuchal translucency measurement to screen for the risk of Down syndrome.	National Screening Programme
Detailed scan	18-21	Screening	Carried out by a specialist midwife to screen for foetal abnormalities.	National Screening Programme

Time point during pregnancy	Gestational weeks	Public health topic or behaviour	Description of midwives' public health behaviours	Source of midwives' recommended behaviours
Antenatal appointments	22-25	Screening	Ensure all results from screening tests are discussed and documented.	Pathways for Maternity care document
	28	Social issues	Provide pregnant woman with the Sure Start maternity grant application form.	
	34-36	Infant nutrition	Ensure infant feeding antenatal checklist has been discussed: (i) getting your baby off to a good start, (ii) why breastfeeding is important & (iii) making breastfeeding work.	Pathways for Maternity care document and SWHMR
			Give out breastfeeding support materials and signpost to further breastfeeding information and support.	SWHMR
			Mental wellbeing	Give out and discuss: Talking about postnatal depression leaflet (NHS Health Scotland, 2014).
	Weight management	Weigh pregnant woman.	SWHMR	

2.3 Current Context of Midwifery Care

In Scotland, community midwives are currently the primary antenatal caregivers for pregnant women without complications, as described above using the traffic light system within the KCND programme (Scottish government Health Directorates, 2007), seeing them on at least eight occasions during pregnancy. Midwives therefore assume the role of antenatal public health practitioner. The majority of HePPBes appear to take place in early pregnancy, at the first appointment or the “booking” appointment, which occurs between eight- and 12-weeks’ gestation and is usually the lengthiest of all the antenatal appointments (lasting approximately 1-2 hours). In later pregnancy, topics are re-visited if necessary, and as birth approaches there is more of a focus on discussing infant feeding. Figure 2.2 below summarises when these antenatal appointments take place and highlights the key contact points in which midwives’ public health behaviours (health promotion, health protection and social issues) occur.

There have been several key developments within Scottish midwifery care in recent years, including the introduction of a new model of clinical supervision (Scottish government, 2017b) and mandatory training in relation to foetal heart monitoring, obstetric emergencies and neonatal resuscitation (Scottish government, 2018a). However, the largest and potentially the most relevant for the development of an intervention to support midwives in addressing health behaviours with pregnant women is the ongoing transformation of the model of maternity care which is described below.

All Scottish health boards work under the same national guidance and therefore there is little room for variation in service delivery; however, each health board designs their own services, meaning that there is currently no single model of maternity care in Scotland. To standardise care further and address changes in maternal health, such as the increase in older mothers and the number of pregnant women who experience complications from long-term health conditions (RCM, 2018) a continuity-based model of care is, as described earlier in the chapter, currently being introduced in Scotland (Scottish government, 2017c). This means that some midwives will be expected to widen their practice. For example,

a midwife who previously worked purely on a labour ward may now be expected to carry out booking appointments and will therefore perform a greater proportion of HePPBes than they would have in their previous role. Training will be provided to support midwives during this transition.

Another recent development in how maternity care is provided is the ongoing transition from paper to digital maternity notes, as part of Scotland's digital health and care strategy (Scottish government, 2018b). Previously the SWHMR was a handheld (paper) resource which women kept during their pregnancies and took to each maternity appointment. Increasingly, however, health boards are using online systems such as Badgernet (Clevermed, n.d.) to store maternity notes electronically. This means that HCPs have real-time access to maternity notes and pregnant women can access them using an app or online browser. Digital maternity notes also prevent pregnant women from having to store a paper copy of the SWHMR or having to remember to bring it to appointments.

The role of the midwife in relation to their relationships and tasks during their period of contact with pregnant women and their families.

Midwives have a broad public health role which, as outlined in section 2.2 above, includes carrying out a wide range of tasks in relation to health promotion (i.e. HePPBes), social issues (e.g. discussing money worries) and health protection (e.g. carrying out screening tests). However, it is important to recognise that midwives role as public health practitioners takes place alongside their more traditional clinical role which incorporates an even wider range of tasks and discussions with pregnant women.

Examples of midwives clinical tasks include testing urine samples, taking blood tests, monitoring blood pressure, providing information about issues such as which medications are safe to take during pregnancy, asking women to sign maternity leave application forms, monitoring the baby's heartbeat or discussing birth plans. When it is considered that at each antenatal appointment midwives must undertake a wide variety of clinical tasks such as these, whilst also carrying out their public health tasks and all necessary paperwork, the demanding nature of

their antenatal practice become apparent and it is clear that it may not be realistic for midwives to perform every HePPBe with each pregnant woman they care for.

For some women it may be entirely appropriate and possible for midwives to carry out every HePPBe. However, for other women, particularly those who experience complications such as a health condition during pregnancy (e.g. Hyperemesis Gravidarum or perinatal anxiety) or who are experience social issues, such as homelessness or domestic abuse, it may not be appropriate for midwives to systematically cover each HePPBe. Midwives autonomy and clinical decision making in deciding which HePPBes to prioritise is important in providing woman and family centered care. It is also crucial in forging midwives' successful relationships with pregnant women, particularly with those who may require the greatest level of support.

The current context of midwifery care such as the transformation of maternity care in Scotland to a continuity-based model (outlined above) means that midwives are attempting to perform a multitude of HePPBes whilst also adapting to their changing professional role.

Midwives Performance of HePPBes within a Scottish context. In Scotland during 2017/18, 46% of births occurred among women living in the most deprived areas in Scotland compared to 35% in the least deprived areas (ISD Scotland, 2018a). Pregnant women living in poorer areas are more likely to be overweight or obese, smoke, book late for antenatal care and give birth early (ISD Scotland, 2018a). Midwives caring for pregnant women who are overweight or smoke may be required to carry out additional HePPBes to mitigate the risks that arise from their health status or behaviour. Midwives working in deprived areas may care for a higher proportion of women who fall into these categories, than a midwife working in a more affluent area.

The geographical context in Scotland also means that where midwives work may greatly influence their HePPBes. Midwives working in densely populated areas

such as Glasgow may have to focus on a higher number of social issues. For example, child poverty rates are highest in urban, industrial areas (NHS Health Scotland, 2019). Midwives providing care in rural health boards may have a smaller case load of women and therefore be able to spend more time performing HePPBes.

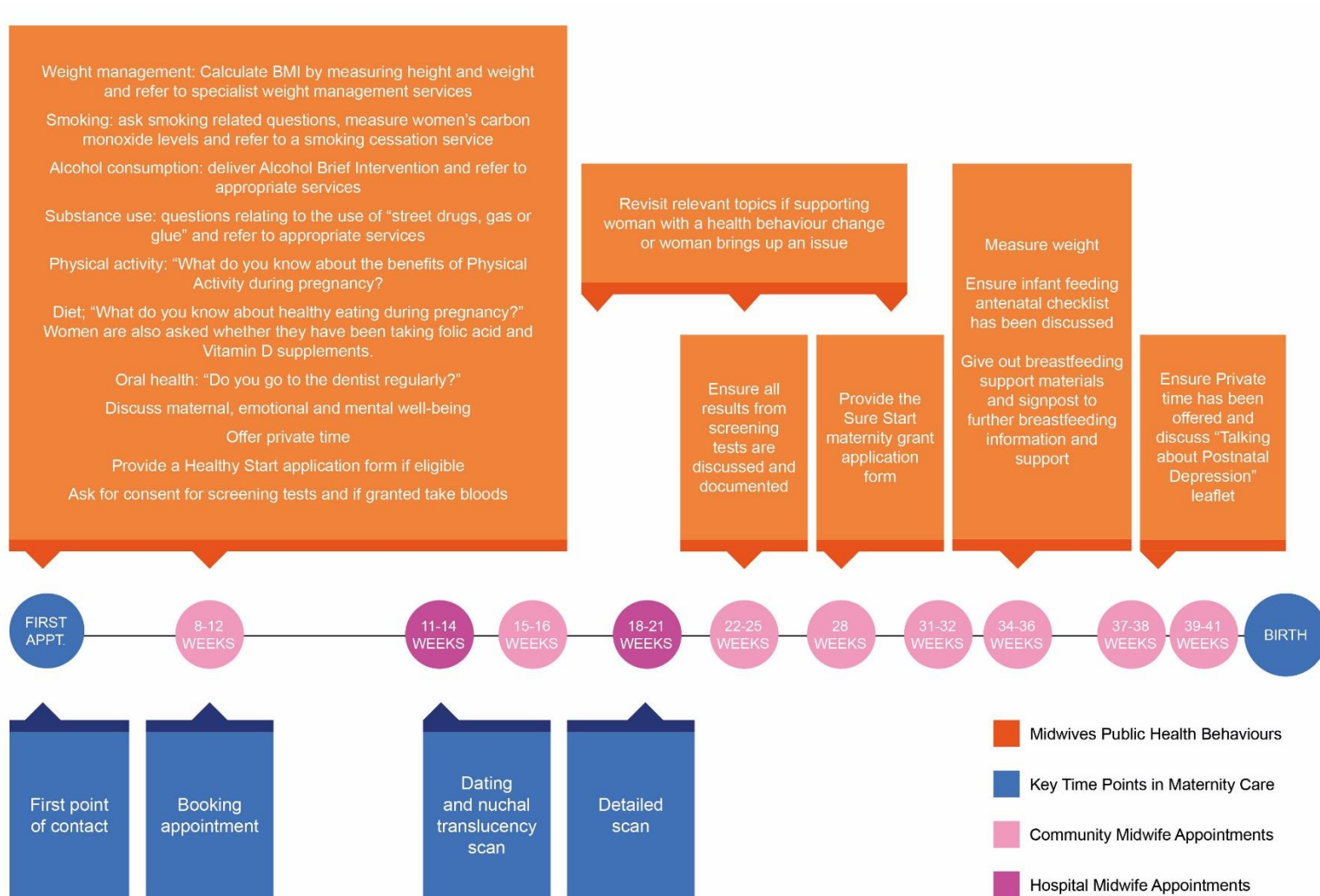


Figure 2.2. Key public health behaviours midwives are required to perform during the antenatal period.

2.4 Behaviour Change

This section provides a brief overview of research related to behaviour change, including (i) HCPs' behaviour change, (ii) multiple health behaviour change and (iii) maintenance of behaviour change.

HCPs' Behaviour Change

The nature of this thesis means that midwives, as opposed to pregnant women, are the main target population for the intervention (this will be explained in more detail in Chapter 6). Therefore, it is necessary to consider HCP behaviour change that is part of implementation research, defined as: *“the scientific enquiry into questions concerning implementation - the act of carrying an intention into effect, which in health research can be policies, programmes, or individual practices (collectively called interventions)”* (Peters, Adam, Alonge, Agyepong & Tran, 2013, p.1).

Systematic reviews have shown that interventions can be effective in changing healthcare professional practice (Ivers et al., 2012; O'Brien et al., 2007). A systematic review of systematic reviews (Johnson & May, 2015) examined the most effective characteristics of interventions designed to influence healthcare professionals' behaviours. Interventions fell into three main categories: those which attempt to be persuasive, such as local consensus processes and opinion leaders; those which are educational or informational; and those which focus on action and monitoring, such as audits, feedback and reminders. Reviews reporting educational and action-based interventions were more likely to report more positive outcomes in changing HCPs' behaviour than those based on persuasion. These findings suggest that interventions which attempt to strengthen revised practice norms by linking them to peer or reference group behaviours (e.g. educational outreach or audit) were more effective in changing healthcare professionals' behaviour compared to those which attempted to influence health professionals' attitudes towards behaviour change (e.g. mass media campaigns).

A recent qualitative study carried out interviews with a range of HCPs, including midwives, to identify the barriers and facilitators influencing performance

of opportunistic behaviour change interventions within routine consultations (Keyworth, Epton, Goldthorpe, Calam & Armitage, 2019). Four main influences were found to have a negative impact on HCPs carrying out behaviour change interventions, including the work environment (specifically time and workload); a perception by HCPs that opportunistic behaviour change interventions were unsuitable for delivery within routine appointments; HCPs' self-efficacy about delivering behaviour change interventions; and HCPs' own "unhealthy" behaviours. To support healthcare professionals in overcoming these challenges, the following four recommendations were made:

- Recommendation 1: enhancement of HCPs' environment – specifically better access to resources and signposting e.g. hand-held materials or on-screen pop-up reminders.
- Recommendation 2: HCPs should focus on patient need as opposed to how they might respond to a behaviour change intervention. HCPs should consider that the risks posed to the patient's health are greater than the risk of unintentionally causing offence by delivering an opportunistic behaviour change intervention.
- Recommendation 3: HCPs should consider the patient's wider context to help them manage not only the presenting problem but also factors which may help prevent future health issues.
- Recommendation 4: HCPs should be supported to develop their capability to deliver opportunistic behaviour change interventions, identify opportunities to deliver opportunistic behaviour change interventions and enhance their motivation to deliver opportunistic behaviour change interventions.

Theories (e.g. Normalisation Process Theory (May & Finch, 2009)) and frameworks (e.g. the TDF (Michie et al., 2005)) have been designed to support behaviour change for HCPs. However, there is no evidence to suggest that these models have been translated into interventions which are effective and sustainable over the long term (Dombrowski, Campbell et al., 2016). To address this, the concept of sustainability will also be explored later in this chapter.

2.5 Behaviour Change Maintenance

There are few models of maintenance; however, a systematic review of behaviour change theories has presented a theoretical explanation for maintenance of behaviour change (Kwasnicka, Dombrowski, White & Sniehotka, 2016). Five theoretical themes were identified as being key components in the initiation and maintenance of health-related behaviours: maintenance motives, self-regulation, resources, habits, and contextual influences. According to this model, an individual requires at least a single sustained motivator (e.g. enjoyment) to maintain a behaviour. Behaviour change is also most likely to occur when motivation is high and opportunity costs are low, so that as time goes on and resources deplete, the need for self-regulatory effort increases to guarantee that the behaviour is sustained. However, self-regulatory resources are limited and their ongoing use can result in ego depletion, meaning that self-control is impaired. Depending on how accessible cognitive resources are, how high motivation is, and the level of ego depletion, then behaviour change maintenance may differentiate between being actively self-regulated, or automatic, context-driven and effortless. If a behaviour is repeated enough, then the need for conscious self-regulation reduces and a habit is formed, increasing the likelihood of the behaviour being maintained. The role of the environment and social context are emphasised as either enabling or hampering the likelihood of a behaviour, whether it occurs consciously or is carried out automatically. It is also suggested that stable environments make the maintenance of a behaviour more likely to occur.

Multiple Health Behaviour Change

Midwives are required to carry out multiple HePPBes (see Chapter 3). It is therefore necessary to consider the theoretical evidence and key concepts that relate to multiple health behaviour change.

There are currently few theoretical models that relate to understanding the mechanisms of multiple health behaviour change (Geller, Lippke, & Nigg, 2017). The purpose of this section of the review is to highlight the key cognitions, presented in Table 2.2, that exist within multiple health behaviour change research, and to provide a brief overview of the emerging theoretical models. The

cognitions and models described were identified through expert consultation and a basic literature search.

Table 2.2

Cross-Behaviour Cognitions Identified as Being Important in Multiple Health Behaviour Change

Cross-behaviour Cognition	Definition	Author(s)
Carry-over mechanisms (COM)	<i>“One can measure COM as a mechanism carrying over resources from one domain to another, or in terms of one behaviour serving as a gateway for another” (Pg.3)</i>	(Lippke, 2014)
Compensatory cognitions	<i>“Compensatory cognitions emerge if individuals perceive a discrepancy between their intentions (e.g. perform physical activity three times a week) and their actual behaviour performance (e.g. performing physical activities only one time per week)” (Pg.2)</i>	(Lippke, 2014)
Higher-level goals	<i>“The Compensatory Carry-over Action Model includes life goals or higher-level goals (e.g. “Currently, my main goal in life is...” “.... changing my weight,” “... being successful in my career,” or “.... Preventing having to take medication to regulate my diabetes”). (Pg. 3)</i>	(Lippke, 2014)
Transfer Cognitions	<i>“Cognitions that the engagement in one behaviour domain supports an increase of behaviour in a different domain by activating self-regulatory strategies (e.g. planning and goal setting)” (Pg.1363)</i>	(Fleig et al., 2015)
Compensatory Health Beliefs	<i>“Compensatory Health Beliefs (CHBs) are beliefs that the negative effects of an unhealthy behaviour can be compensated for, or “neutralised,” by engaging in a</i>	(Knäuper, Rabiau, Cohen, & Patriciu, 2004)

Cross-behaviour Cognition	Definition	Author(s)
Goal conflict	<p><i>healthy behaviour. "I can eat this piece of cake now because I will exercise this evening" is an example of such beliefs."(Pg. 607)</i></p> <p><i>"Goals often compete for limited time, energy, and money, sometimes leading to goal conflict" (Pg. 227)</i></p>	(Presseau, Boyd, Francis, & Sniehotta, 2015)
Goal facilitation	<p><i>"Intergoal facilitation occurs when the pursuit of one goal simultaneously increases the likelihood of success in reaching another goal." (Pg. 1511)</i></p>	(Riediger & Freund, 2004)
Irrational Health Beliefs	<p><i>"Health behaviour is influenced by a more general tendency toward distorted appraisals of health-related situations or information. For example, individuals prone to making overgeneralizations about health-related experiences might be more likely to appraise their physician's advice as unnecessary given an objectively irrelevant past experience (e.g., "This advice was not useful when I had disease X, therefore it is not useful for any other condition"). Similarly, patients prone to making irrational inferences about common but unpleasant treatment-related effects might be more likely to discount the use of a prescribed regimen (e.g., "A medication that makes me feel tired can't be good for me")" (Pg. 169-170)</i></p>	(Christensen, Moran, & Wiebe, 1999)

Cross-behaviour Cognition	Definition	Author(s)
Concurrent self- regulatory efficacy	<i>“confidence in one’s ability to self-regulate the management of multiple goals”</i> (Pg. 601)	(Jung & Brawley, 2013)

The Compensatory Carry-over Action Model (CCAM). The CCAM (Lippke, 2014) suggests that it is a combination of social-cognitive factors – intentions, self-efficacy and planning – that result in the performance of a behaviour. Specifically, the CCAM suggests that single behaviour change occurs when an intention is formed; this intention is then converted into plan which, if defined highly enough, such that self-efficacy is high enough to deal with tempting situations, results in behaviour change taking place. The CCAM suggests that higher-level goals drive multiple health behaviour change. For instance, the goal to reduce body weight leads to intentions concerning increasing physical activity and improving nutrition. However, the main contribution of the CCAM is that it extends the concept of multiple behaviour change by introducing the role of interrelated behavioural aspects: carry-over mechanisms and compensatory cognitions. According to the CCAM, these act as behaviour-specific processes for multiple behaviours to interrelate. Carry-over mechanisms essentially act as a gateway for transferring resources that exist between one behaviour and another (e.g. “I have learned how to ensure I get 10,000 steps a day, even if I’m sedentary for most of the day and so I can maintain eating healthily, even if I go out for a meal with friends and they order junk food”). Compensatory cognitions occur when individuals observe inconsistency between their intentions and actual performance. To reduce dissonance, individuals either facilitate (e.g. “I have not exercised today so I will not eat dessert”) or hinder behaviour change (e.g. “I have walked an extra 2 miles today so I can eat as much as I want later”) by forming compensatory cognitions. Finally, the CCAM recognises that stress may be increased and wellbeing affected if higher-level goals are not met, but also highlights how the adoption of healthy behaviours may reduce stress and increase wellbeing.

Model of transfer cognitions and compensatory health beliefs. The model of transfer cognitions and compensatory health beliefs (Fleig et al., 2015) highlights the usefulness of the integration of cross-behaviour cognitions (i.e. transfer cognitions and compensatory health beliefs) within a model focused on a single health behaviour (the Health Action in Process Model (Schwarzer, Lippke, & Luszczynska, 2011)). Compared to behaviour-specific cognitions, transfer

cognitions were found to be more strongly positively associated with intentions, action planning and action control components of the model, whilst compensatory health beliefs were negatively associated with intentions.

The All-Intentions Method (AIM) in a multiple behaviour paradigm. The AIM approach to multiple health behaviour change suggests that the intention-behaviour gap may be more clearly understood by taking into consideration the numerous intentions and behaviours that an individual may be attempting to alter at any one time (Sniehotta, Preece, Allan & Araújo-Soares, 2016). It enables researchers to determine how many intentions a person may possess, and the number of intentions they are successful and unsuccessful at implementing. The evidence the paradigm is founded on suggests that the number of intentions formed is not related to the number of successful implementations. The authors state that this is a non-intuitive finding, as it would be expected that forming a high number of intentions would increase the likelihood of failure to implement behaviours. Further evidence reveals that instead of general speed/efficiency and failures, it is inhibition control tasks and error rates which are highly associated with the intention-behaviour. Furthermore, cognitive flexibility was shown to have a significant relationship to individuals' ability to behave in sync with their intentions. The multiple intention approach is concluded as being a more effective model in understanding the intention-behaviour relationship than single behaviour models.

Goal conflict and goal facilitation. Health behaviour theories focus on single behaviours and do not account for the multiple goals individuals pursue. Two key concepts – goal conflict and goal facilitation – have been demonstrated as being predictive of behaviour when an individual is attempting to address multiple goals (e.g. Preece, Tait, Johnston, Francis, & Sniehotta, 2013). Goal conflict occurs when limited resources, such as time, energy and finances, result in competing demands. The lesser-known concept of goal facilitation suggests that multiple goals can provide a crossover benefit by providing extra incentives and making them easier to achieve. For example, if an individual is attempting to lose weight, then they may have a goal of eating more healthily. This may give them more energy, which helps to keep them more active, therefore making their other

goal of increasing their physical activity levels more achievable (Presseau et al., 2015).

Overall, there are various theories that implicate crossover cognitions which may influence multiple behaviour change. Many of these theories appear to overlap or complement each other with regard to the theoretical constructs of goals and compensatory beliefs.

2.6 Behaviour Change Support Available to HCPs

In Scotland the main body responsible for the education and ongoing development of HCPs is NHS Education for Scotland (NES). To support HCPs, the Health Psychology directorate within NES has developed The MAP of Behaviour Change (NES, n.d.-b), which is a blended learning programme designed to equip HCPs with the skills needed to help patients make and maintain behaviour change. It is delivered through an online module, skills-based workshops, and ongoing skills development support from a coaching network. MAP is based on the Health Behaviour Change Competency Framework (Dixon & Johnston, 2010) which summarises the many overlapping models of behaviour change into three key routes: Motivation, Action and Prompts. HCPs undertaking MAP training are taught to identify the most appropriate route to behaviour change and are trained to use Behaviour Change Techniques (BCTs) identified as being relevant to each route to support the behaviour change. MAP differs from other training as it considers the importance of behaviour change at the HCP level when supporting patient behaviour change. It does this by helping HCPs to reflect on how undertaking behaviour change training and putting it into practice is in itself behaviour change. HCPs who undertake MAP are therefore encouraged to use the MAP model to form their own action plan of how they will change their behaviour to incorporate MAP as part of their practice.

2.7 Evidence-based Intervention Development

Interventions aimed at changing HCPs' behaviour have been based on a variety of intervention development frameworks such as the Medical Research Council's Framework (Craig et al., 2008), the Behaviour Change Wheel (Michie, van Stralen & West, 2011) and Intervention Mapping (Bartholomew, Parcel & Kok, 1998). These frameworks contain guidelines to develop an evidence-based intervention and stress the importance of basing intervention development on evidence by considering three critical components: theory (how the intervention is supposed to work), behaviour change techniques (what the intervention includes), and format of delivery (i.e. the way in which the intervention is being delivered) (Dombrowski, O'Carroll & Williams, 2016). This section describes each of these three components of intervention development. The benefits of working in collaboration with HCPs to develop interventions aimed at changing their behaviour and the lack of focus on sustainability of healthcare professional behaviour change interventions are also considered as they are both important intervention development issues.

Theory: how the Intervention is Supposed to Work

A theoretical framework based on existing and new evidence, is important in developing evidenced-based behaviour change interventions, although consistent evidence for theory associated with increased effectiveness is currently lacking (Prestwich et al., 2014; Dalgetty, Miller & Dombrowski, 2019). A theoretical framework can support the development of a logic model, and it can help to developers to choose appropriate intervention methods, as well as convey the active ingredient(s) (Bartholomew & Mullen, 2011). Despite the benefits of a theoretical approach, there is little evidence of psychological theories being used to inform interventions aimed at achieving behavioural change amongst HCPs generally (Davies, Walker, & Grimshaw, 2010); this includes any that focus specifically on changing maternity healthcare professional behaviour (Russell & Walsh, 2009).

In this thesis the TDF v1 (Michie et al., 2005) is being used to identify the theoretical constructs that are relevant to midwives' HePPBes through the

collection of new evidence (Chapters 3&4, interview and questionnaire studies). The TDF provides the foundation for exploring a variety of theoretical explanations for any specified behaviour. It was developed to provide a collective understanding of the many overlapping theories which attempt to explain HCPs' behaviour and summarises the main characteristics of these theories into 12 distinct groupings (domains). The TDF provides a clear overview of the different theoretical constructs which may influence healthcare professional behaviour, along with interview questions which help identify which of these constructs are important for the population being studied. This ensures the most relevant theoretical constructs are targeted by the intervention, which is why it is being used in this thesis.

Behaviour Change Techniques: What the Intervention Includes

Behaviour Change Techniques (BCTs) are described as the “*active components of behaviour change interventions*” (Michie et al., 2013, p.4). Behaviour Change Taxonomies provide a list of available tools to change behaviour. There are various examples of behaviour change taxonomies within health psychology research. Examples include the Behaviour Change Technique Taxonomy version 1 (Michie et al., 2013), which provides a hierarchically structured taxonomy which can identify the BCTs used in intervention descriptions. Alternatively, Intervention Mapping (Bartholomew et al., 1998) provides a taxonomy which specifies the parameters in which BCTs are effective.

Once the important constructs are identified from the TDF, and the relevant theories related to multiple health behaviour change and sustainability are selected, it will be necessary to identify the relevant behaviour change techniques (BCTs) to inform the intervention. Similar to studies using a consensus-based approach (Michie et al., 2013 & Michie et al., 2018), BCTs will be selected by considering the evidence reviewed, the new evidence gathered, and expert-based consultation.

Format of Delivery: how the Intervention is Being Delivered

The format of delivery – the way in which an intervention is delivered – is an often overlooked but essential component of intervention development. Careful

consideration of the format of delivery is important for several key reasons. Format of delivery (FoD) may influence the translation of theoretical constructs into intervention components as well as the effectiveness of the BCTs used. FoD can impact the feasibility of the intervention and how participants understand the content. Aspects of FoD, such as intensity and duration of delivery, may affect the effectiveness, implementation and sustainability of the intervention. A preliminary framework (Dombrowski, O'Carroll, & Williams, 2016) suggests the following delivery elements be detailed in the development of an intervention: the provider, format, materials, setting, intensity, tailoring, and style.

The provider is the person or the organization who is responsible for the delivery or facilitation of the intervention. Specifically, provider characteristics must be reported, including gender, professional background and experience for individuals, or the type of organisation (e.g. government or professional body) where the provider is an organisation. The number of providers, and information on whether they underwent training to deliver or facilitate the intervention, should be made explicit, along with the details of any intervention-relevant competence. Information about the continuity of the provider should also be made clear. The delivery format considers the mode of delivery (whether it is carried out in person, or remotely, or in the environment), the delivery method (the level at which the intervention is delivered, i.e. individual, group, community or population), the delivery channel (how the intervention is delivered, e.g. text message, email or telephone call) and the delivery route (how the intervention is received, e.g. via audio recordings, written text, pictures or photographs). The question of materials relates to all physical and virtual resources used by the participants (e.g. money given as an incentive), the provider (e.g. manual), or those created for the intervention (e.g. consent forms). Information about the setting should be recorded, including the location and venue. Details regarding intensity are necessary, including the duration of the intervention, the number and length of contacts, and the spacing between sessions. Details of BCT sequencing (e.g. whether they are delivered in a fixed order) and contact form (scheduled, random, proactive and reactive) are required. The nature of any tailoring, including intervention variation, tailoring source and standardization, should be made plain.

Finally, it is necessary to provide details of the style of the intervention, giving consideration to the delivery style, communication style, communication techniques, visual style and complexity.

User, Patient and Public Involvement in Implementation Research

Patient and Public Involvement is typically described in reference to clinical research which aims to change patient behaviours; however, this thesis reports implementation research which usually aims to change HCP behaviour, and therefore it is HCPs as opposed to patients that are the targeted research users (Gray-Burrows et al., 2018). For the purpose of this thesis, activities involving the input of key stakeholders (including midwives, health promotion workers, pregnant women and new mothers) will be referred to as user, patient and public involvement (UPPI) which is described in more detail Chapter 7.

The importance of involving stakeholders in implementation research and the effect they can have in maximising research impact is becoming increasingly well-recognised (Brett et al., 2014; South et al., 2016). There are several advantages of UPPI, as outlined by Byrne (2019), which can account for its positive influence on research, including: (i) the identification of areas of research that require urgent attention; (ii) the identification of intervention outcomes that are key to stakeholders; (iii) the design of interventions and research materials which are suitable for stakeholders' needs; (iv) the positive knock-on impact on recruitment and dissemination of research findings and (v) the reduction of research waste by ensuring trials containing interventions which are unacceptable to users do not occur.

Despite the benefits of UPPI, there are also costs, including the requirement of additional time, effort and resources, first to secure stakeholder participation, and then to maintain contact with them as research progresses (Concannon et al., 2014). It can be difficult to obtain a representative group of stakeholders and if individuals do not truly represent a group then they will ultimately cause bias to research. UPPI can also be tokenistic if stakeholders are expected to contribute to areas of implementation research in which they have

little experience (Gray-Burrows et al., 2018). Uniting different groups of stakeholders who may encompass a wide variety of contrasting backgrounds and knowledge can be challenging (Byrne, 2019). Finally, there may be a tendency within UPPI to confuse opinion with evidence-based research. Many of these issues are not unique to implementation research and apply to stakeholder involvement carried out within patient behaviour change research. At present, there is only emerging evidence of the benefits of UPPI in enhancing the impact of behaviour change research (Byrne, 2019).

2.8 Sustainability of HCP Behaviour Change Interventions

Health professional behaviour needs to change long-term if evidence-based interventions and treatments are to be implemented, but failure to successfully implement and sustain change over the long term continues to be a major problem in health and social care. Various systematic reviews have synthesised the evidence for health professional behaviour change interventions. However, an overview of reviews (Dombrowski, Campbell et al, 2016) suggests that the issue of sustainability has been somewhat neglected, with little evidence of sustainability being considered at individual, trial or review level.

The concept of sustainability is somewhat ambiguous, with few authors presenting a working definition or guidance for a model of sustainability. A systematic review that examined sustainability of new programmes and innovation reported 'long-term/follow-up implementation', 'institutionalization', 'durability', 'discontinuation', 'de-adoption', 'maintenance', 'sustained/continued implementation' and 'routinization' as the most commonly cited alternative terms to describe 'sustainability', which was used in 62% of the articles examined (Stirman et al., 2012).

Sustainability can also be considered applicable at different levels. Scheirer (2005) describes it in terms of definitional measures at three levels of analysis: (i) the individual level of analysis- continuing to deliver beneficial services to individuals; (ii) organisational level of analysis- maintaining the programme and/or its activities in an identifiable form and (iii) community level of analysis-

maintaining the capacity of a community to deliver programme activities after an initial programme created a community coalition. Finally, sustainability can also be defined in terms of the length of time it takes to occur. Whether this is after a certain period or once certain conditions are met, e.g. habituation of a behaviour occurs, is unclear.

Conclusion

This chapter has provided a summary of three contextual topics: midwives' role as public health practitioners, behaviour change, and evidence-based intervention development. The background to the thesis has been detailed and the potential influence of midwives on the health and wellbeing of pregnant women and their families has been outlined. This chapter has also identified key gaps within behaviour change and intervention development literature, specifically limited theoretical evidence and a lack of key concepts relating to multiple health behaviour change, the maintenance of behaviour change, and the sustainability of health professional behaviour change interventions. These behavioural science issues require careful consideration as part of any intervention developed to support midwives' HePPBes.

CHAPTER 3

MIDWIVES' HEALTH PROMOTION PRACTICE BEHAVIOURS: A REVIEW OF THE EVIDENCE

This chapter reports the findings of a narrative literature review. The overall aims of the chapter were to identify a) various HePPBes that midwives working in a Scottish context are expected to address during pregnancy, b) peer-reviewed reports of interventions to support midwives' HePPBes, and c) relevant grey literature describing interventions designed to support midwives' HePPBes.

As with Chapter 2, the original draft of this chapter was written in 2016, and thus contains information which was up-to-date at the time that shaped the intervention development work, which commenced in that year. Background information about the prevalence of pregnant women's health status or behaviour in a Scottish context has been updated, so the most current (as of 2019) data is reported to reflect the ongoing need for an intervention to support midwives in addressing health behaviours with pregnant women.

3.1 Background

The analysis of the documentation relating to the evolution of the public health role of the midwife in a Scottish context, described in Chapter 2, highlighted the increasing focus on holistic, woman-centred care, with midwives assuming a lead professional role in uncomplicated pregnancies. Simultaneously, multiple policies relating to the early years have increased the focus on the midwife's role in improving health inequalities. The public health role of the Scottish midwife has therefore come to be founded on various overlapping philosophies and approaches to maternity care.

Chapter 2 reported that midwives' public health behaviours can be broken down into three distinct categories: (i) health promotion (described throughout this thesis as HePPBes, e.g. discussing antenatal weight management – see Chapter 1 for further details), (ii) social issues (e.g. ensuring 1:1 time with the woman to ask, for instance, whether she is experiencing domestic abuse), and (iii) health protection (e.g. asking for consent for Down syndrome screening). This thesis aims to develop an intervention to support midwives in performing their HePPBes. The current chapter will extend the findings from Chapter 2 by reviewing the specific HePPBes that midwives working in a Scottish context are required to carry out during pregnancy.

Considering the focus on the public health role of the midwife, as reported in Chapter 2, support for midwives in fulfilling this role might be beneficial.

Considering the focus on the public health role of the midwife, as reported in Chapter 2, support for midwives in fulfilling this role might be beneficial particularly when it is considered that pregnant women's characteristics and context may influence the degree to which midwives can perform their HePPBes. For instance, some women will have planned their pregnancy and be very motivated to engage in health behaviours. Other women may not wish to be pregnant or may be unwell and therefore it may not be appropriate for midwives to perform all their HePPBes. The number of children a pregnant woman already has may also have an effect. For instance, primiparous mothers may have more

flexibility and greater resources to address their health behaviours than pregnant women who already have children. Pregnant women's socio-economic status and/or the area in which they live in could potentially impact on how they respond to midwives HePPBes. For instance, if a midwife refers a woman to a smoking cessation or a weight management support service, although pregnant women are entitled to time off work to attend these appointments, those who live rurally or who are in lower paid jobs may face barriers such as the distance and/or cost required to travel to attend.

Interventions aimed at supporting midwives in the performance of their HePPBes appear to be non-existent at present. For instance, a previous systematic review of interventions aimed at changing maternity healthcare professionals' behaviours with regard to weight-related support for obese pregnant women found no published peer-reviewed studies meeting inclusion criteria (Heslehurst, Crowe et al., 2014). Only through systematic research can the breadth of this literature be ascertained. With this in mind, a detailed search to identify interventions designed to support midwives' HePPBes was carried out. Given that there may be limited availability of peer-reviewed literature on interventions that support midwives in performing HePPBes, searching for grey literature describing interventions might add value.

Aims

The aims of this narrative literature review are as follows:

- a) to identify the various HePPBes midwives working in a Scottish context are expected to perform during pregnancy
- b) to identify peer-reviewed literature reporting interventions that support midwives in carrying out their HePPBes
- c) to search the grey literature on interventions that support midwives in their the public health role

3.2 Methods

Design

A narrative literature review was carried out in line with the guidelines recommended by Green, Johnson and Adams (2006).

Sources of Information

In order to identify the various HePPBes, HC (a professor of midwifery) signposted for JM key government and NHS policies, strategies and guidelines related to the health promotion role of the midwife in Scotland. JM analysed these by identifying the specific HePPBes contained within these publications. Midwifery and maternal health experts (a lecturer in midwifery, an NHS Education for Scotland educational projects manager, an NHS Scotland planning and development manager, and an NHS Health Scotland organisational lead) provided additional expert consultation by providing contextual information about the development of these key documents.

The systematic search for interventions specifically designed to support midwives' HePPBes took place in October 2016. Relevant literature published between 1990 and 2016 was accessed using the following electronic databases: MEDLINE (OVID), PsycINFO (EBSCO) and CINAHL (EBSCO). The search terms used were based upon those used by Heslehurst, Crowe et al. (2014) and are included in Appendix A. The Cochrane Database and the journal "Implementation Science" were also searched using the keywords "midwife OR midwives OR midwifery".

"Grey literature" is defined for the purposes of this review as literature describing interventions to support midwives in performing their HePPBes not published in peer-reviewed outlets. Grey literature was identified via the expert consultation provided by HC.

Selection Criteria Employed

The inclusion criteria for government and NHS policies, strategies and guidelines, included any guidance containing HePPBes applicable to midwives

working in a Scottish context. Specific inclusion and exclusion criteria for the identification of literature concerning interventions to support midwives in delivering HePPBes is presented in Table 3.1 below. Additional limits included studies only published after 1990, as the early 1990s were deemed a key time point in the public health role of the midwife, due to the formal recognition of the social and psychological impact of childbirth (Beech, 2009). It was also decided that, given the vast differences in healthcare systems between developed and developing countries, only trials taking place in developed countries would be included. Due to the specificity of the topic reviewed, the selection criteria for grey literature was any piece of literature which referred to an intervention to support the public health role of the midwife.

Table 3.1

Inclusion Criteria for Literature Search Aimed at Identifying Interventions Designed to Support Midwives' HePPBes

Study element	Inclusion criteria	Exclusion criteria
Population	Midwives involved in care of pregnant women	Maternity care support workers or other maternity healthcare professionals
Intervention	Behaviour (clinical practice) change interventions	Interventions not targeted at behaviour change
Outcome	Health behaviour change practice	Trials only measuring maternal health outcomes or trials in which midwifery health promotion practice was not the primary outcome

3.3 Results

Aim (a) – to Identify the HePPBes Midwives Working in a Scottish Context are Expected to Address During Pregnancy

Fifteen government, NHS and organisational policies/strategies and guidelines were identified through expert consultation. These documents were considered either as being responsible for implicating midwives working in a Scottish context as having a health promotion role (as opposed to a public health role, as discussed in Chapter 2), or as containing specific recommendations for midwives' HePPBes in a Scottish context. These documents are summarised in Figure 3.1. Documents that are considered key in denoting midwives as having a health promotion role are presented in orange. These documents refer to various health behaviours. The documents that contain recommendations relating to a specific health behaviour are differentiated by colour: weight management (purple), smoking (red), alcohol consumption (blue), substance use (black), physical activity (turquoise) and diet (green). No documents specific to oral health were identified. For more information as to why these are the health behaviours which were defined as the targets of HePPBes see Chapter 1.

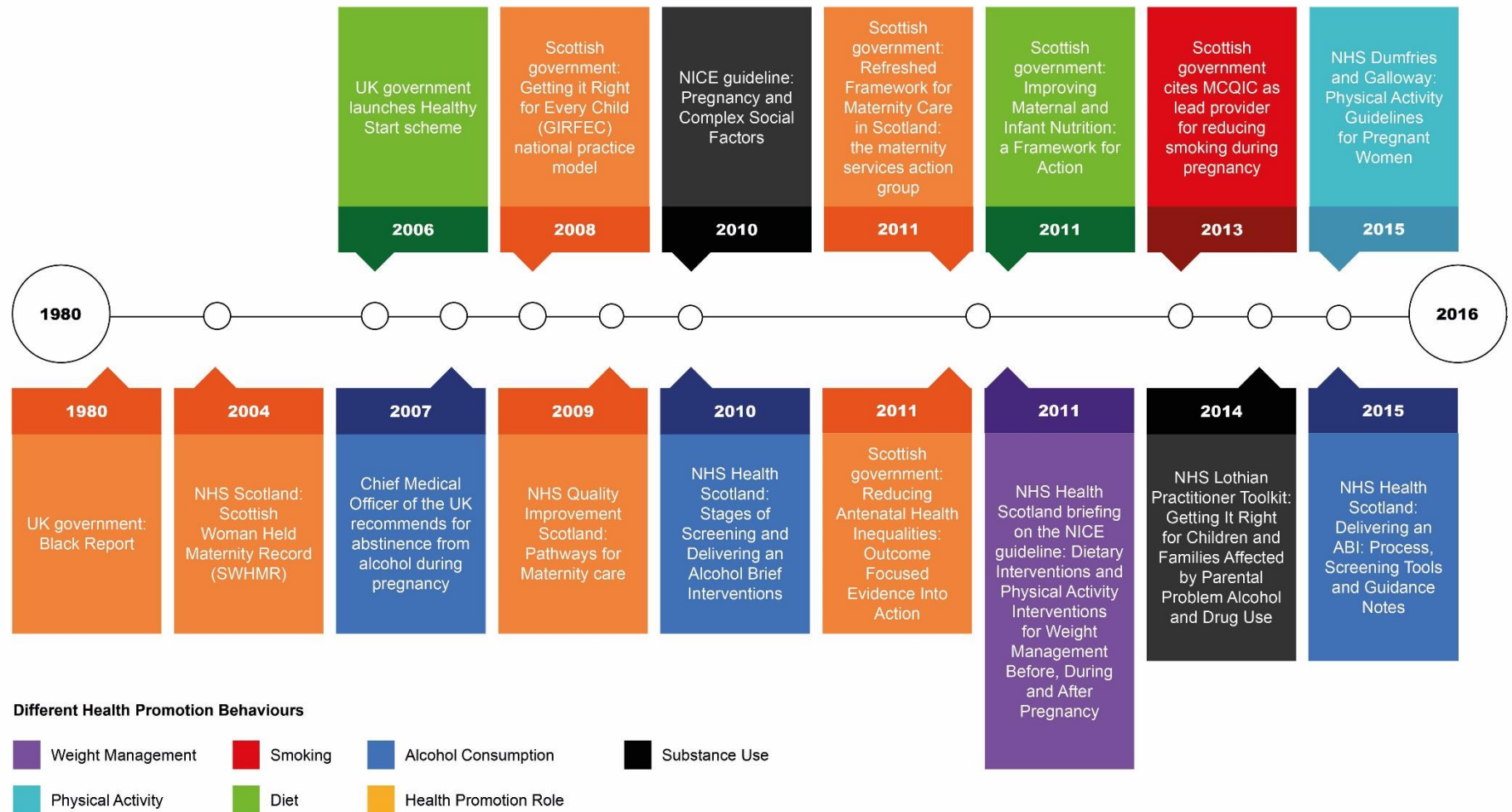


Figure 3.1. Key documentation and events implicating midwives in Scotland in the performance of HePPBes.

The documentation reported in Figure 3.1 is discussed below.

Documentation Implicating Midwives as Having a Health Promotion Role

This section refers to the documents shown in orange on Figure 3.1.

The awareness of health inequalities came to prominence through the publication of the landmark Black Report (Black, Morris, Smith & Townsend, 1980), which suggested that the gap between the health of the richest and poorest in society had widened, not narrowed, since the introduction of the National Health Service in 1948. It concluded that, rather than being attributable to failings in the NHS, this was the result of social inequalities, including inequalities in income, education, housing, diet, employment, and conditions of work (Gray, 1982).

The Getting it Right for Every Child national practice model (GIRFEC; Scottish government, 2008a), the Pathways for Maternity Care guidance (NHS Quality Improvement Scotland, 2009), the Reducing Antenatal Health Inequalities report (Scottish government, 2011c), and the Refreshed Framework for Maternity Care in Scotland (Scottish government, 2011a) were described in Chapter 2. These documents all clearly support midwives having a strong health promotion role.

The Pathways for Maternity Care guidance (NHS Quality Improvement Scotland, 2009) describes midwives' HePPBes and is aligned with the Scottish Woman Held Maternity Record (SWHMR; Healthcare Improvement Scotland, 2011). The SWHMR was referred to several times in Chapter 2 as containing descriptions of the different public health behaviours that midwives are expected to perform. All public health issues addressed by midwives, including HePPBes, are included within the SWHMR, and it contains information about GIRFEC which midwives are expected to discuss with pregnant women at the start of their booking appointment. The purpose of including information about GIRFEC is to highlight to women why midwives focus on a range of health inequality issues during the antenatal period and not just the physical implications of pregnancy. For the purposes of this thesis, the SWHMR can be regarded as the most

important document referenced here, as it contains descriptions of the HePPBes that midwives must perform rather than recommendations or guidelines. Consequently, the SWHMR is referenced regarding each health behaviour discussed below. Originally the SWHMR was provided to women in paper format; however, many women in Scotland now use an electronic app version (see Chapter 2 for more information).

Documentation Containing Recommendations Specific to Health Behaviours for Midwives' HePPBes

The section refers to the documents shown in colour on Figure 3.1.

Information is provided about each health behaviour in terms of:

- i) why it is important for midwives to address the health behaviour during pregnancy
- ii) the current (as of 2019) prevalence of pregnant women's health status or behaviour in a Scottish context
- iii) a description of the key documents implicating midwives in performing HePPBes
- iv) HePPBes as described in the SWHMR (the exact questions contained within the SWHMR are provided in Appendix B).

Weight management during pregnancy. Maternal obesity is defined as a body mass index (BMI) of 30 or more during pregnancy (Denison et al., 2014). Maternal obesity is associated with an increased risk of miscarriage, gestational diabetes, pre-eclampsia, venous thromboembolism, induced labour, Caesarean section, anaesthetic complications and wound infections for pregnant women, whilst their babies face an increased risk of stillbirth, congenital anomalies, prematurity, macrosomia, neonatal death, childhood obesity and metabolic disorders (Fitzsimons & Modder, 2010). Between 2017 and 2018 23% of all women pregnant in Scotland were obese at their booking appointment (ISD Scotland, 2018b).

In Scotland, guidance from the Scottish briefing on the NICE (2010c) guideline Dietary Interventions and Physical Activity Interventions for Weight Management Before, During and After Pregnancy (NHS Health Scotland, 2011)

recommends that midwives discuss BMI status specifically with women who have a BMI of 30 or more. It is advised that midwives dispel any myths over the need to “eat for two” by ensuring women are aware that daily energy requirements do not change until the final trimester, when an additional 200 calories are required.

The SWHMR recommends midwives weigh women twice throughout their pregnancy: firstly at their booking appointment, in order to measure BMI, and again at 36 weeks’ gestation. Some health boards in Scotland have specialist weight management services and therefore midwives’ HePPBes may include referral to and liaison with such services.

Smoking during pregnancy. The effects of smoking during pregnancy on foetal and infant mortality were first conclusively documented by Kleinman, Pierre, Madans, Land and Schramm (1988) – smoking is now the single largest preventable cause of foetal and infant morbidity in the UK (Eastham & Gosakan, 2010). Between 2017 and 2018 14% of pregnant women in Scotland are smokers at their booking appointment (ISD Scotland, 2018b). Smoking cessation is therefore a key target within UK maternity care.

The maternity care strand of the Scottish Executive’s patient safety programme is known as the Maternity Care Quality Improvement Collaborative (MCQIC; Healthcare Improvement Scotland, n.d.-a). In 2013, MCQIC was cited as the lead provider in helping Scottish maternity services to increase the number of pregnant women referred to smoking cessation services and improve the clinical management of women who continue to smoke during pregnancy (Scottish government, 2013). Specifically, MCQIC aimed to: (i) reduce avoidable harm by offering all women carbon monoxide (CO) monitoring at their booking appointment; (ii) refer 90% of women who have raised CO levels, or who are smokers, to smoking cessation services; (iii) offer a tailored package of antenatal care to all women who continue to smoke during pregnancy (Healthcare Improvement Scotland, n.d.-b). Midwives, as lead professionals for women without complications and coordinators of care for all women, were therefore implicated in all three of these objectives.

The SWHMR specifies that midwives are required to ask smoking-related questions at the booking appointment. They are also required to measure women's carbon monoxide levels and to refer them on to a smoking cessation service if necessary. Some health boards have specialist antenatal smoking cessation services.

Alcohol consumption during pregnancy. Alcohol consumption during pregnancy can increase the likelihood of adverse pregnancy outcomes, such as stillbirth (Kesmodel et al., 2002), premature birth and low birth weight (Patra et al., 2011; O'Callaghan et al., 2003), and have severe life-long consequences for the health of the unborn baby. Foetal alcohol spectrum disorder is the most severe outcome that can occur following heavy maternal alcohol consumption and includes effects such as brain damage, characteristic dysmorphic facial features, and behavioural problems (Popova et al., 2017). In 2007, a recommendation for abstinence from alcohol during pregnancy was given by the Chief Medical Officer of the UK (Department of Health, 2007). The following year, it was reported that 25% of women in Scotland drink alcohol whilst pregnant (Ford, 2008). Since then, there has been a concentrated effort to reduce the number of women drinking during pregnancy through an antenatal care pathway. Between 2017 and 2018 it is reported that 7% of pregnant women in Scotland report alcohol consumption during pregnancy (ISD Scotland, 2018a); however, estimating the prevalence of this health behaviour is difficult, due to the potential averseness of HCPs to raise the issue and/or reluctance of pregnant women to divulge alcohol consumption (Wilson, Peters & Lingford-Hughes, 2018).

The pathway for managing alcohol consumption during pregnancy is outlined within Stages of Screening and Delivering an Alcohol Brief Intervention (ABI; NHS Health Scotland, 2010) and the follow-up document Delivering an ABI: Process, Screening Tools and Guidance Notes (NHS Health Scotland, 2015). These documents are aimed at HCPs caring for pregnant women and offer advice on how to screen for alcohol use using conversational techniques, based on the principles of motivational interviewing (Miller & Rollnick, 2012) to highlight the risks of alcohol consumption during pregnancy. Women who continue to drink

throughout pregnancy may be pointed towards or referred to an appropriate service. Research evaluating the use of ABIs in Scottish maternity care has highlighted the difficulties of their implementation, with contextual issues around the midwife-pregnant woman relationship, and the challenges of negotiating the timings of screening and alcohol brief interventions delivery (Doi, Cheyne & Jepson, 2014).

The SWHMR gives a list of open questions to be asked by the midwife at the first antenatal appointment. It also advises midwives to deliver ABIs and refer women to appropriate services accordingly.

Substance use during pregnancy. Substance use during pregnancy is defined for the purposes of this thesis as the use of substances other than alcohol and tobacco, e.g. cannabis, stimulants and opioids. The use of such substances during pregnancy is associated with a variety of adverse outcomes (Forray, 2016). For instance, neonatal abstinence syndrome (NAS) is a condition where, following birth, the baby experiences withdrawal symptoms caused by sudden discontinuation of exposure to a substance (Kocherlakota, 2014). NAS is associated with multiple adverse effects, such as problems with feeding, irritability, seizures and prolonged hospitalisation (Behnke & Smith, 2013). Between 2017 and 2018 it is reported that 2% of women in Scotland use substances during pregnancy (ISD Scotland, 2018c). However, like alcohol consumption, prevalence is difficult to measure and the actual number of pregnant women using substances may be higher than reported (Wilson et al., 2018).

The NICE (2010a) guideline Pregnancy and Complex Social Factors provides healthcare professionals guidance about how to care for pregnant women affected by substance use, including alcohol and tobacco. National good practice guidance exists for health professionals working with families affected by substance use in the form of Getting it Right for Every Child, which was outlined in the previous chapter (Scottish government, 2008a). Some health boards also have their own guidance concerning substance use during pregnancy. For instance, NHS Lothian has developed a resource pack for healthcare professionals

containing recommendations on how pregnant women using substances should be supported (Whittaker, 2014).

The SWHMR document outlines several questions relating to the use of “street drugs, gas or glue” to be asked by midwives at the booking appointment. For women who use substances whilst pregnant, referral to an appropriate service is a necessary HePPBe.

Physical activity during pregnancy. Physical activity during pregnancy can lead to a variety of benefits for women in terms of weight management, physical health and mental wellbeing (DiPietro et al., 2019). Physical activity during pregnancy can also reduce the risk of adverse outcomes, such as premature birth (Juhl et al., 2008) and the risk of obesity in later life (Prather et al., 2012). No information is available as far as the Scottish context is concerned regarding pregnant women’s physical activity levels. However, findings from the 2017 Scottish health survey (Scottish government, 2018c) show that of women who are of childbearing age, 67% aged 16-24, 70% aged 25-34, 74% aged 35-44 and 65% aged 45-54 meet the recommended guidelines for moderate or physical activity.

Guidance from the Scottish briefing on the NICE (2010c) guideline Dietary Interventions and Physical Activity (PA) Interventions for Weight Management Before, During and After Pregnancy (NHS Health Scotland, 2011) advises health professionals to make women aware that that moderate physical activity will not harm her or her unborn child, and that at least 30 minutes per day of moderate-intensity activity is recommended. NHS Dumfries and Galloway published Physical Activity Guidelines for Pregnant women (2015), which is the first set of official antenatal PA guidelines released in Scotland, although similar guidelines have been produced by the UK Chief Medical Officers (2017). These recommendations were developed to support healthcare professionals, including midwives, in managing enquires about PA from women with uncomplicated pregnancies.

The SWHMR advises midwives to ask the open question, “What do you know about the benefits of physical activity during pregnancy?”

Diet during pregnancy. The importance of good nourishment during pregnancy for both the short- and long-term health of the pregnant woman and the unborn baby is well established (Danielewicz et al., 2017). For instance, the theory of foetal programming has demonstrated a clear link between low birth weight and cardiovascular disease in later life (Godfrey & Barker, 2000). Data about pregnant women's dietary status is not routinely collected. Findings from the Scottish Maternal and Infant Nutrition survey (Scottish government, 2017a) suggested that just 26% of pregnant women reported eating at least five portions of fruit and vegetables each day. However, this survey had a 10% response rate; as such, results should be treated with caution.

The Healthy Start scheme, launched in the UK in 2006, aims to provide families on low incomes with shopping vouchers they can exchange for food containing various sources of nutrition, such as fresh milk, fruit and vegetables (Healthy Start Alliance, n.d.). Improving Maternal and Infant Nutrition: a Framework for Action was launched in 2011 (Scottish government, 2011b). The vision of this framework was that organisations with a role in improving maternal and infant nutrition, such as the Healthy Start scheme, would work together to ensure that women are in good nutritional health before, during and after pregnancy, that parents can make an informed choice about how to feed their baby, that women receive the necessary support to initiate and continue breastfeeding, and that infants are given timely, appropriate and complementary foods.

The SWHMR contains the following open question for midwives to ask women at the booking appointment: "What do you know about healthy eating during pregnancy?" Women are also asked whether they have been taking folic acid and Vitamin D supplements. The SWHMR also prompts midwives to assess women's eligibility for Healthy Start at the booking appointment.

Oral health during pregnancy. Women's oral health during pregnancy can be negatively affected due to hormonal changes, changes to diet, and the effects of vomiting wearing away tooth enamel (Kessler, 2017). There is also evidence to suggest that poor oral health is associated with adverse outcomes for both the

woman and the unborn baby (e.g. Clothier, Stringer, Jeffcoat, 2007; Dasanayake, Gennaro, Hendricks-Munoz & Chhun, 2008). Like diet and physical activity, information about pregnant women's oral health is not routinely collected and there is no published information available. At present, there do not appear to be any documents published which specifically provide midwives with guidance about addressing oral health during pregnancy. The SWHMR advises midwives to ask, "Do you go to the dentist regularly?"

Aim b) to Identify Peer-Reviewed Literature Describing Interventions to Support Midwives in Addressing HePPBes

A total of 10,446 potentially relevant citations were identified. Following title selection, 10,422 studies were excluded. 24 abstracts were assessed and then excluded (due to the experimental design and/or the primary outcome measure not being a direct measure of midwives' HePPBes). No studies were identified as being eligible for full paper assessment. The details of the search process are presented according to the Preferred Reporting Items for Systematic Reviews and Meta- Analyses (PRISMA; Moher et al., 2009) in Figure 3.2 below:

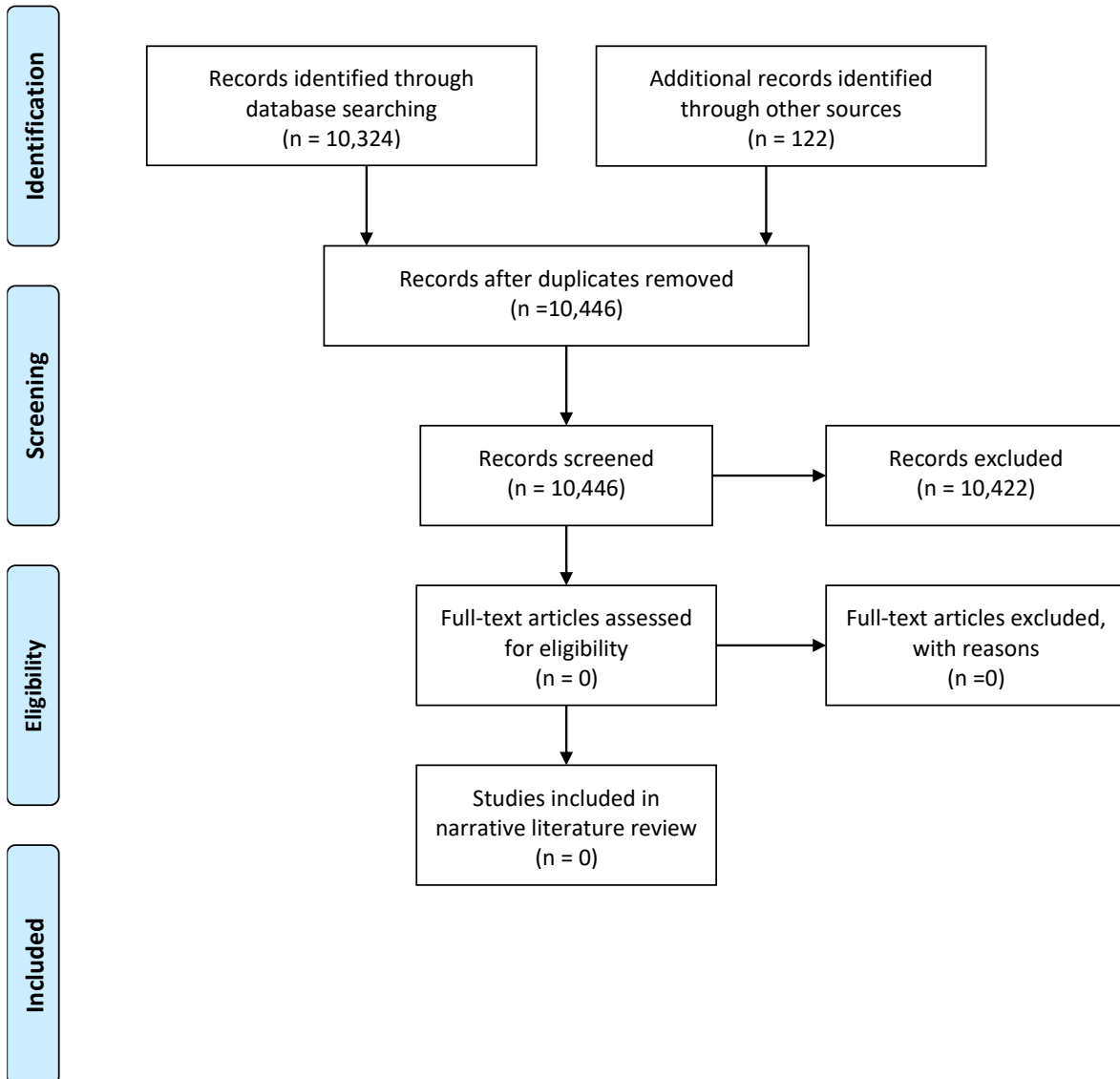


Figure 3.2. Search strategy for interventions designed to support midwives in addressing HePPBes.

Aim c) to Identify if There is any Grey Literature Describing Interventions Supporting the Public Health Role of the Midwife.

One project was deemed suitable for inclusion as grey literature and is discussed below.

Stepping up to Public Health Project

The Royal College of Midwives' Stepping up to public health project (SUTPH; RCM, 2017) was launched as a response to NHS England's Compassion in Practice implementation plans, which highlight the need for HCPs to support individuals in being independent, maximising their well-being and improving their health (NHS England, 2014). The aim of the SUTPH project was to aid the development of a new role for midwives in helping women to achieve these objectives (RCM, 2017).

The first stage of the SUTPH project was to carry out research into the views of maternity HCPs (Sanders, Hunter, & Warren, 2016) and women using maternity services (November, 2016) on the following issues: the scope of the midwife's public health role; training and support for public health role; the barriers and facilitators that midwives experience in assuming their public health roles; specific client groups; and the role of specialist referral services (RCM, 2017). There was considerable overlap between the findings, with both groups identifying time constraints and a lack of continuity of care as being the most significant barriers to midwives fulfilling their public health roles effectively. The results of both studies fed into the development of an online questionnaire, which aimed to explore midwives' knowledge and involvement in the public health agenda. Findings from the questionnaire study highlighted seven major themes regarding the public health role of the midwife: (i) time constraints, (ii) timing (correct time allocated for information giving to women and families), (iii) communication of sensitive information and asking difficult questions (iv) continuity of carer, (v) education for midwives, (vi) method of conveying information and (vii) importance of specialist services (RCM, 2017).

The outcome of SUTPH is the publication of a new public health model for midwifery services in England. One version is for women and their families, and another for midwives and midwifery support workers (MSWs). Innovative elements of the SUTPH model include the provision of a “menu” of public health topics which is given to women prior to their first midwife appointment. This allows tailoring by the woman herself of the PH information given, so that individual needs can be catered for more effectively. The Stepping up to public health model also includes the provision of reliable online PH information for women, to address concerns voiced by women that they were unsure which information was correct or safe. Finally, online training for midwives was also embedded as a component of the model to address lack of training, which was identified as a barrier to approaching certain public health issues (RCM, 2017).

3.4 Discussion

This literature review presents an overview of the various government, NHS and organisational policies/strategies and guidelines which specify the HePPBes that midwives are required to perform during antenatal appointments. There is now a high number of HePPBes, particularly at the booking appointment, that midwives are expected to perform. These take up a considerable amount of time and must be performed by midwives alongside all their other public health and clinical behaviours.

The search for interventions supporting midwives in performing their HePPBes identified 10,324 studies. Remarkably, none were identified as being eligible for inclusion. In light of this lack of evidence, it was not possible to carry out a full systematic review. The search for grey literature revealed a single project of relevance. Collectively, this chapter highlights the lack of focus and/or evidence currently available to support midwives in their role as a public health practitioner. This evidence vacuum thus justifies the aim of this PhD project which is to develop an intervention to support midwives in addressing health behaviours with pregnant women.

Strengths and Limitations

The main strength of this narrative literature review is that it presents a thorough assessment of the literature, including policy, guideline, peer-reviewed and grey literature. The search for peer-reviewed interventions used search terms from a previous systematic review (Heslehurst, Crowe et al., 2014) to ensure that a detailed and systematic examination of the literature was performed.

Despite the detailed search for literature that was performed, the current chapter is not a systematic review and therefore the results must be interpreted accordingly. For instance, implementation science researchers working in the area of maternal health were not contacted to check for unpublished interventions. The search has also not been updated due to time constraints within the thesis; consequently, there is a possibility that an intervention could have been developed since October 2016.

There are two major weaknesses in relation to the identification of HePPBes. One limitation is that, although some of the documents identified are applicable to UK midwives, the focus here was on identifying the HePPBes midwives are required to perform in a Scottish context. Considering that the aim of this thesis is to develop an intervention that can be used within many models of care, it would have been useful to have identified midwives' HePPBes on a wider scale. For instance, WHO have guidelines on health behaviours in pregnancy, such as those for the identification and management of substance use and substance use disorders in pregnancy (WHO, 2014) but documents such as this were not considered. Secondly, the HePPBes that midwives carry out during the postnatal period were not reported. Given that there is considerable overlap between these and the HePPBes carried out during the antenatal period, this omission should be considered a limitation of the review.

Relation to Other Studies

The identification of midwives' multiple HePPBes supports existing literature that suggests midwives' resources are overstretched (e.g. McNeil, Doran et al., 2012; Macleod et al., 2013).

No interventions that support midwives in addressing health behaviours with pregnant women were identified; therefore, this finding can be likened to an "empty review", where no studies meet inclusion criteria (Cochrane Effective Practice and Organisation, 2017). Empty reviews have an important role to play in identifying those interested in a specific research area, identifying gaps in the existing literature, and highlighting the current evidence at a particular time point (Lang, Edwards & Fleiszer, 2007).

The RCM's SUTPH model (RCM, 2017), identified during the search for grey literature, was evidence-based (Sanders et al., 2016; November, 2016) and could potentially be used to inform the development of an intervention to support midwives' HePPBes. However, it is yet to be tested in terms of its effectiveness, acceptability and feasibility amongst midwives and pregnant women.

Implications

The current chapter has identified various government and NHS policies and agendas specifying midwives' multiple HePPBes. These documents are informed by different philosophies. The number of HePPBes and the varying approaches taken within the documents implicating midwives in the performance of HePPBes could mean that pregnant women's health behaviours are not being addressed as fully or as systematically as they could be. A lack of pre-existing interventions supporting midwives in performing their HePPBes suggests this is an unfulfilled niche.

Future Areas of Research

The review of the existing evidence (Chapters 2 and 3) suggests that it is appropriate to develop an intervention that supports midwives in addressing health behaviours with pregnant women. However, it is first necessary to understand the barriers and facilitators perceived by midwives themselves to the performance of HePPBes, and examine the relationship between factors (including demographics, personal health behaviours and perceived barriers and facilitators) and midwives' HePPBes. Once this new evidence is gathered, it will be considered alongside the findings of the existing evidence to shape intervention development.

Conclusion

Midwives are now being asked to perform multiple HePPBes alongside all their other public health and clinical behaviours. However, there are currently no interventions to support them in performing their HePPBes. Consequently, there is a pressing need for a sustainable intervention aimed at supporting midwives in addressing health behaviours with pregnant women.

CHAPTER 4

INVESTIGATING MIDWIVES' BARRIERS AND FACILITATORS TO MULTIPLE HEALTH PROMOTION PRACTICE BEHAVIOURS: A QUALITATIVE STUDY USING THE THEORETICAL DOMAINS FRAMEWORK

This chapter gives the findings of an interview study with community midwives. This study undertaken was based on results from the review of evidence (Chapter 3) which showed that, whilst multiple policies and guidelines implicate midwives in the performance of HePPBes, no formal support to help them in this aspect of their practice has been developed and disseminated. The overall aim of the interviews was to understand the barriers and facilitators midwives perceive in carrying out their HePPBes.

Community midwives were chosen as participants as they are the primary antenatal care givers for pregnant women in the UK (see Chapter 2) and therefore could provide the most detailed perspective on performing HePPBes.

NHS Greater Glasgow and Clyde (NHGG&C) was identified as the health board from which to recruit survey participants, as it is the largest health board in Scotland and one of the largest health boards in the UK: as a result, NHGG&C midwives care for a highly diverse population of pregnant women. JM presented the proposed study at a meeting with the NHGG&C Head of Midwifery, who agreed to support the study.

The findings of this study, along with the qualitative data gathered in the survey study described in Chapter 5, were published in the journal *Implementation Science* in June 2019 (see Appendix C).

4.1 Background

The factors behind midwives performing multiple HePPBes are poorly understood. Previous studies have examined maternal health care professionals' behaviour using the Theoretical Domains Framework, or TDF (Michie et al., 2005). However, these studies examined single health-risk topics. For example, a survey study examining midwives' perceptions of performing HePPBes related to smoking cessation identified barriers such as a lack of certainty about the consequences of, and the environmental context and resources available for, performing smoking cessation HePPBes. Facilitators included positive views about providing smoking-cessation advice, motivation, and a perception that engaging with pregnant women about stopping smoking was part of the role of the midwife (Beenstock et al., 2012). Another survey study investigating midwives' perceptions of performing HePPBes related to physical activity identified barriers such as a perception by midwives that they lack the skills to carry out physical activity HePPBes, as well as a lack of planning and prioritisation where physical activity HePPBes were concerned. Enablers included midwives' knowledge about the need for physical activity and a perception that physical activity HePPBes were part of the role of the midwife (McParlin et al., 2017).

The TDF provides a comprehensive grouping of the overlapping constructs within several behavioural theories. The original version (TDF v1) categorises the main factors of relevant behaviour change theories into 12 independent domains (Michie et al., 2005). The TDF v1 has been validated through the development of a refined version, TDF v2 (Cane, O'Connor & Michie, 2012).

Midwives experience several challenges in executing multiple HePPBes, such as a shortage of resources, lack of clarity about their public health role, and lack of self-efficacy.

Resources were a key barrier reported in an online qualitative study investigating the public health knowledge and involvement of midwives. The findings suggested a shortage of time (specifically during antenatal appointments) and resources available to address public health topics, whilst available training

varied in quality (Sanders et al., 2016). The many overlapping public health policies and strategies may influence midwives' HePPBes by introducing a lack of clarity about their public health roles. A mixed methods study examining midwives' and midwifery students' perspectives of public health (n= 59) illustrated that it was consistently difficult for midwives and student midwives to clearly express a definition of public health in relation to midwifery (McNeil, Doran et al., 2012). A systematic review of 36 systematic reviews examining public health interventions in midwifery called for clarification of the relationship between midwifery and public health (McNeil, Lynn & Alerdice, 2012). The authors also made a request for further exploration into what might help midwives in recognising the valuable input they can have in the improvement of public health outcomes, as it has been suggested that midwives tend to focus on the individual care of women and babies rather than having a broader public health perspective (Biro, 2011).

Finally, midwives' self-efficacy may influence their HePPBes, as indicated by focus group data from midwives and student midwives which suggested concern about a general lack of confidence in discussing public health topics (McNeil, Doran et al., 2012). A questionnaire study aimed at assessing midwives' views of their role in health promotion (n= 468) found that midwives had lower levels of confidence in relation to HePPBes concerning exercise, obesity and alcohol consumption, as compared to topics such as postnatal depression and contraception, which could be perceived as being more closely associated with the traditional role of the midwife (Lavender et al., 2001).

There is some evidence available about the barriers and facilitators midwives perceive in relation to a single health-risk topic. However, limited evidence exists with regards to the barriers and facilitators midwives perceive in undertaking multiple HePPBes. This study applies a theoretical approach so as to investigate a comprehensive theory-based list of potentially relevant factors at a multiple-behaviour level.

Aim

To investigate barriers and facilitators experienced by midwives' in performing multiple HePPBes across various health promotion topics, using the Theoretical Domains Framework in qualitative interviews.

4.2 Methods

Study Design

Qualitative semi-structured interview study.

Participants

Midwives working in a community setting were eligible to participate if they were qualified, practising midwives employed by an NHS health board in central Scotland. Recruitment involved JM, a researcher previously unknown to participants, visiting an outpatient maternity clinic and providing 12 midwives with information about the study. The information provided to midwives included the reason for carrying out the research: to inform JM's PhD aimed at developing an intervention that supports midwives in addressing health behaviours with pregnant women. Eleven midwives agreed to take part. One midwife opted not to take part in the study.

Interview Topic Guide

The interview topic guide (Appendix D) contained demographic questions (number of years of experience and job title) and questions based on each of the 12 TDF (v1) domains (Michie et al., 2005). The behavioural category of interest within the topic guide was specified as *“supporting pregnant women to change their health behaviour”*, and the questions were designed to elicit beliefs about the behaviour in relation to each domain.

To remind midwives of the target behaviour of interest, an A4 prompt card outlining typical examples of women's health behaviours to be addressed (see Appendix E) was placed in front of them. The behaviour was specified using terms Target, Action, Context and Time, known as the TACT principle (Fishbein, 1967). TACT summarises the behaviour in terms of doing what, to whom, in a given context and at a specific time (Foy et al., 2007). The behaviour was specified as *“all the things you do in a routine antenatal care consultation, including asking questions, to support pregnant woman change their health behaviours”*. The TACT specification complements the general TDF definition used within the topic guide

by breaking down what was meant by “*supporting pregnant women to change their health behaviour*”.

Procedure

Face-to-face semi-structured interviews conducted by JM (a female PhD researcher and Health Psychologist with previous experience of supporting midwives’ behaviour change practice) on two separate occasions in October 2016. Interviews took place within consultation rooms at an outpatient maternity clinic in central Scotland. Information about the study was provided verbally and in written format. Interviews lasted between 27 and 76 minutes (mean \pm SD, 43 \pm 14). All interviews were audio-recorded and anonymously transcribed verbatim. The demographic data was entered into a Microsoft Excel spreadsheet. The consolidated criteria for reporting qualitative research (COREQ; Tong, Sainsbury & Craig, 2007) was used to ensure all aspects of the qualitative research had been reported (a copy of the checklist is provided in Appendix F).

Analysis

Transcripts were stored as Microsoft Word documents. Qualitative data analysis was based on recommendations for conducting TDF-based qualitative research (Atkins et al., 2017) and involved the following ten steps:

- 1) Interviews were read several times by JM to ensure familiarity with the data.
- 2) One interview was jointly coded by JM and SD to develop a coding strategy.
- 3) Two interviews were coded by JM using a directed content analysis approach (Hsieh & Shannon, 2005) in which interview content was placed in the most relevant TDF domain(s). Responses which could be attributed to more than one domain were coded into multiple domains.
- 4) The coding of the two interviews was checked by SD. Where discrepancies in coding occurred, discussion took place to reach a consensus.
- 5) The remaining interviews were coded by JM.
- 6) Data saturation was reached as the final three transcripts did not introduce any additional barriers and facilitators than those already identified.
- 7) Summaries of domain codings were produced by JM and checked by SD.

- 8) Identification of relevant theoretical domains was identified by consensus discussion between JM and SD. Relevance of a domain was based on the following criteria: (i) high frequency of specific beliefs and/or (ii) existence of conflicting beliefs and/or (iii) indication of clear beliefs that may influence the behaviour of interest (Cahir, Guinan, Dombrowski, Sharp & Bennett, 2015).
- 9) Views were generated for relevant domains by JM and coded as being either generic (views which are made in reference to HePPBes in general) or behaviour-specific (views which are in reference to a specific health promotion behaviour).
- 10) The views generated were checked by HC (a professor of midwifery) to ensure they made sense from a midwifery perspective.

Ethical Approval

The University of Stirling Psychology Ethics Committee approved the study (Appendix G). NHS Research and Development approval was granted by Greater Glasgow and Clyde Health Board (Appendix H).

4.3 Results

Participants

All 11 participants were female: ten were employed as community midwives, while one worked as a senior charge midwife. The mean average number of years' experience as a qualified midwife was 22 (range from 3 to 31).

Reviewing of Coding

The percentages of coding agreement between the two coders are shown in table 4.1 below. Agreement between coders for two interviews was 76% and 88% for the first and second interview respectively, and disagreement for the same interviews was 17% and 5% respectively. The mean agreement was 82% and mean disagreement was 11%. An additional 7% of codes were suggested by the second coder for each interview.

Table 4.1

Percentages of Coding Agreement Between the two Coders

Interview	% agreement	% additional codes suggested by 2 nd coder	% disagreement
Interview 10	76	7	17
Interview 11	88	7	5
Overall	82	7	11

Relevant Theoretical Domains

All barriers and facilitators could be identified within the TDF. Nine of the 12 TDF domains were classified as important in understanding the barriers and facilitators in carrying out HePPBes. Table 4.2 lists these domains alongside a domain descriptor.

Table 4.2

Criteria for why TDF Domains were Identified as key in Understanding the Barriers and Facilitators Midwives Experience in Undertaking Multiple HePPBes

TDF Domain	Domain Description	(i) high frequency of specific beliefs	(ii) existence of conflicting beliefs	(iii) indication of clear beliefs
Professional role and identity	Views of how HePPBes relate to the professional role of being a midwife	✓	✓	
Beliefs about consequences	Expectations about what would occur if midwives perform HePPBes		✓	✓
Motivation and goals	Reasons for carrying out or not carrying out HePPBes	✓		
Memory/Attention and decision processes	The ability to remember, observe and select in relation to HePPBes	✓		✓
Environmental context and resources	The effects of the healthcare setting on HePPBes and the impact of what is available to midwives (in terms of physical and psychological			✓

TDF Domain	Domain Description	(i) high frequency of specific beliefs	(ii) existence of conflicting beliefs	(iii) indication of clear beliefs
	resources) on HePPBes			
Social influences	The interpersonal processes which influence midwives' cognitions, emotions and HePPBes	✓	✓	
Emotion	Feelings about performing HePPBes			✓
Behavioural regulation	Midwives' attempts to influence HePPBes	✓		
Nature of the behaviour	Midwives' descriptions of how they have carried out HePPBes in the past and how HePPBes operate within the NHS	✓		

Description of Relevant Domains

The identified domains describing midwives' barriers (b= barrier) and facilitators (f= facilitator) to performing multiple HePPBes are outlined below. Table 4.3 contains the associated belief statements.

Professional role and identity. Midwives mostly saw HePPBes as part of their professional role (f): *“I just see it as my job”* (M10); *“I think public health is an essential part our role”* (M7). However, some thought that several HePPBes could be addressed prior to conception, especially around weight management (b): *“She's thirty-five and she's pregnant, so why is it suddenly the midwife that has to look into that?”* (M3). Midwives frequently mentioned that the role of the midwife had evolved from providing traditional midwifery care (e.g. measuring the growth of the baby) to having a strong focus on carrying out HePPBes (b): *“They seem to keep adding to the list of things we're expected to do”* (M11). Some midwives also expressed a feeling that their traditional professional role was being eroded (b): *“Our role now, as community midwives, seems to be for referring on ... it feels as if your role's been kind of eroded at”* (M10).

Beliefs about consequences. Midwives mentioned several consequences that potentially impact their HePPBes. Contrasting beliefs about how HePPBes impacted on the relationship with the woman were voiced. If performed well, midwives believed it could be useful in gathering information about aspects of the women's wellbeing (f). However, some stated that performing HePPBes could potentially damage the relationship if they were not carried out carefully, particularly for HePPBes related to weight management (b): *“Women get quite offended at that one”* (M10).

Similarly, there emerged contrasting beliefs about women's receptiveness to HePPBes. Some midwives reported that women expect them to carry out HePPBes (f): *“Most women are quite receptive to that because they know they're pregnant and know it's not just about their health anymore”* (M11). Other midwives said that women were not receptive to HePPBes (b): *“It seems to be that everything is piled onto this booking visit and I don't think it's fair on the women either”* (M3).

The time it takes to perform HePPBes was seen as a clear barrier, with appointments running over the allotted time potentially impacting other women (b): *“You run over and then people are kept waiting.”* (M11). Furthermore, midwives held a clear belief that HePPBes had the potential to have positive health benefits

for the women and their child (f): *“Absolutely, there’s a huge knock-on effect”* (M5). Clear views on the short-term impact of HePPBes depended on the behavioural topic. For instance, smoking was perceived as an issue that could be dealt with during pregnancy (f): *“This is probably a time, particularly for the smokers, they’ve got that motivation for the baby to change”* (M5). On the other hand, the impact of diet-related HePPBes was considered as unobservable (b): *“I’m never going to know whether she’s changed her diet, or even if she did change her diet, whether that’s going to last”* (M6). Some midwives expressed a clear belief that it was rewarding for them to observe the benefits of women engaging in health behaviour change attributed to their HePPBes (f): *“That is rewarding, if you feel like you’ve helped someone make a change in their life.”* (M11). Benefits in the reduction of future workload when HePPBes were carried out effectively were noted (f): *“If we do our job well at the booking clinic and women take that on board then we don’t have as much to do”* (M2).

Motivation and goals. Midwives frequently reported being highly motivated to carry out HePPBes that benefit the long-term health of the woman and the baby (f): *“I think it’s a huge window of opportunity for midwives”* (M5). However, HePPBes were not a priority if there were conflicting clinical risks to the woman and/or baby, such as patient safety or adult/child protection issues (b): *“I’d say it’s definitely secondary though, obviously check the woman’s blood pressure, making sure she’s well, doing urine analysis, making sure there’s no infections, ruling out pre-eclampsia, listening to baby. That comes first and everything else, I think, would come second to that.”* (M11).

Memory/attention and decision processes. Midwives described being prompted by the woman’s maternity notes to cover HePPBes (f): *“My booking visit would be just going through that book with them because everything I need to tell them is in there, it’s a good thing for me cause it saves me forgetting to stop to talk about things”* (M3). These also acted as a prompt for HePPBes at follow-up appointments (f): *“I usually always have a wee flick through the notes at the beginning just to check if there’s any kind of outstanding issues to be aware of”* (M11).

If the woman wanted to discuss a particular behaviour, midwives prioritised this (f): *“If the woman is worried about her weight, I’m happy to talk about it at every appointment, but if she’s not then I’m not gonna bring it up,”* (M6). Some midwives covered a topic in depth if they felt it was of particular relevance (f): *“Say I did three bookings yesterday, one of them would have had none of these problems, one of them had a BMI was over 35, so that’s the one I concentrated on.”* (M5). Intuition was frequently reported as guiding decision-making in relation to HePPBes (f): *“If I get vibes from them, that actually they do know”* (M5); *“I just have to go with my gut at the time”* (M6). Midwives also based performing HePPBes on the physical health of the woman during the appointment (b): *“If they are very sick or they’ve had bleeding, then I’ll just say, “We’ll talk about this another time”, because it’s not appropriate to get ahead of ourselves”* (M2).

Environmental context and resources. Changes in healthcare service provision (e.g. changes in timing of booking appointments) were perceived as making it more difficult to carry out HePPBes (b): *“... with continuity of care being removed from us we’re not getting the same chance to see the same women again, so I find it a bit harder to address things.”* (M10).

Some midwives held a belief that accessibility to resources, such as training related to HePPBes, could be improved (b): *“It’s quite haphazard how you can get onto these things”* (M4). Materials related to HePPBes were generally perceived as high quality (f): *“‘Ready Steady Baby’ is, I think, a fantastic book”* (M10). However, some felt the wording of questions within maternity notes made them difficult to ask (b): *“That’s a barrier to me asking, because I actually don’t ask the way it’s worded on that because it doesn’t make sense.”* (M4). A belief that there were too many HePPBes to address in too little time was apparent (b): *“We’ve also got to try and work within the time constraints”* (M9). Some midwives believed that the woman’s health status at the booking appointment affected the degree to which they could carry out HePPBes (b): *“The booking appointment is really difficult for some women to sit there and actually not vomit”* (M7). Physical cues were mentioned as prompts to undertake HePPBes (f): *“If you pick up a book and it stinks of smoke, you know, you might well say, ‘How you getting on?’”* (M2).

Social influences. Pregnant women themselves were seen as being a strong influence on midwives' HePPBes, with many increasingly seeking to inform themselves by means of online sources. This was perceived, on one hand, as a helpful way to recommend high-quality information (f): *"Get them to use websites because most of them are on computer all the time anyway"* (M3). However, others viewed this as unhelpful due to the potential to increase stress (b): *"A lot of the women have got health anxieties and that's fuelled by the internet"* (M2). Mixed views emerged about how accurately women reported certain health behaviours, such as alcohol consumption, which impacted on health promotion efforts, with some midwives believing they received accurate accounts (f) and others reporting the opposite (b): *"Alcohol, I think, is probably one that's probably hidden, getting women to be honest is probably very difficult"* (M10).

Team working and social support was seen as helpful in resolving issues regarding HePPBes (f): *"My kind of closest colleagues, we'd probably have a wee chat and we'll probably complain about how we're meant to put this in amongst everything else that people want out of us."* (M10). Intergroup conflict was perceived by some in relation to performing HePPBes (b): *"It's come up in the tearoom and there will be conversations with people saying, 'Oh, public health, that's a load of nonsense', and I'll sit there quite openly and say, 'I think it's one of the best things that's ever occurred'"* (M7).

Midwives described shifting social and group norms useful to normalise addressing health behaviours (f): *"There's very few people that are not happy to answer these questions nowadays, because we've been doing this for so long, they expect it, and they do all talk amongst each other"* (M7). However, social norms appeared to be unhelpful in normalising obesity (b): *"If a lady's got a BMI of not over 30, I still sort of don't see it as a huge issue with them"* (M7). Some saw a midwife's own BMI (Body Mass Index) potentially making it harder to perform weight management HePPBes (b): *"I think midwives find it really difficult because if you're big yourself, they're looking at you thinking, "Well, she's got a cheek", if you're small, they're looking at you thinking, "You've never had a problem in your life"* (M10).

Emotion. Carrying out HePPBes was associated with a range of positive emotions if these were seen as resulting in positive outcomes (f): *“You feel dead pleased they actually brought it up again”* (M9). Some reported concerns about performing specific HePPBes (b): *“I do find it causes me anxiety if I know I’m going to tell her today that we’re doing a social work referral.”* (M10). Carrying out HePPBes was potentially stressful (b) and draining (b): *“Sometimes I’m thinking you just want to do the right thing, which is hard sometimes”* (M5); *“I’m exhausted after a clinic because you feel as if you want to have your senses hyper alert”* (M9).

Behavioural regulation. Midwives described using behavioural regulation strategies, such as using maternity notes as a prompt to cover all HePPBes, writing notes in the Scottish Woman Held Maternity Record (Healthcare Improvement Scotland, 2011) as a prompt for carrying out HePPBes follow-up appointments, carrying out HePPBes whilst performing clinical tasks e.g. asking questions about physical activity while taking bloods (f): *“I have to say I do it as a multi-task. I’ll be testing the urine while I’m asking about how they feel in pregnancy and have they had any sickness and how they’re getting on with eating and things like that. I’ll be multi-tasking the whole way.”* (M7). For a list of strategies reported see table 4.4 below.

Nature of the behaviour. The majority of HePPBes took place at the booking appointment, when there is usually the most time to address HePPBes (f). Midwives reported HePPBes as being routine practice (f): *“We’ve got to tick boxes, we’ve got to tick that we’ve discussed alcohol, we’ve discussed smoking”* (M10). The habitual nature of performing HePPBes included the strategies used to regulate health promotion practice as well as the behaviours themselves.

Table 4.3

Key TDF Domains With Reason for Domain Being Considered key and Midwives' Views and Type of View for Each Domain

Key TDF domains	Reason for domain being considered key	Midwives' views (b = barrier and f = facilitator)	Generic or behaviour-specific view
Professional role and identity	Existence of conflicting beliefs	Carrying out HePPBes is part of my professional role (f) Many of the HePPBes, expected of me, particularly those concerning weight management and/or obesity, could be undertaken by other health professionals prior to conception (b)	Generic and behavior-specific
	High frequency of specific beliefs	Midwife's role has evolved from providing traditional midwifery care (e.g. measuring the growth of the baby) to carrying out HePPBes (b)	Generic
Beliefs about consequences	Existence of conflicting beliefs	HePPBes can develop my relationship with the woman in my care (f)	Generic and behaviour-specific

Key TDF domains	Reason for domain being considered key	Midwives' views (b = barrier and f = facilitator)	Generic or behaviour-specific view
		HePPBes, particularly those concerning weight management and/or obesity, can potentially damage my relationship with the woman in my care (b)	
		Women are receptive to HePPBes at booking (f)	Generic
		Women are not receptive to HePPBes at booking (b)	
	Indication of clear beliefs	Carrying out HePPBes can take up time and make me late for the next appointment (b)	Generic
		HePPBes have the potential to have positive long-term benefits for the health of women and their baby (f)	Generic
		I will feel rewarded if I see HePPBes improving the health of a woman and her baby (f)	Generic
		If I carry out HePPBes effectively at the booking appointment, and the woman takes the information on board, it will make the rest of the pregnancy easier to manage (f)	Generic

Key TDF domains	Reason for domain being considered key	Midwives' views (b = barrier and f = facilitator)	Generic or behaviour-specific view
		The degree to which HePPBes can make a difference to a woman's health in the short term is specific to the individual behaviour (b)	Behaviour-specific
Motivation and goals	High frequency of specific beliefs	I am motivated to carry out HePPBes to benefit the health of the woman and the baby (f) HePPBes are important but are less of a priority than ensuring patient safety (b)	Generic Generic
Memory, attention and decision processes	Indication of clear beliefs	The woman's maternity notes prompt me to ensure I have carried out all my HePPBes (f) If the woman specifically wanted to discuss a health topic related to HePPBes then this will cause me to focus on related HePPBes (f)	Generic Generic
	High frequency of specific beliefs	I focus on the HePPBes that concern the health topics that are most relevant to the woman (f) My intuition helps me to make decisions about HePPBes (f) The health of the woman at the antenatal appointment influences my decisions about HePPBes (b)	Generic Generic Generic

Key TDF domains	Reason for domain being considered key	Midwives' views (b = barrier and f = facilitator)	Generic or behaviour-specific view
Environmental context and resources	Indication of clear beliefs	The current model of maternity care makes it more difficult to carry out HePPBes as there is less continuity of care (b)	Generic
		The quality of HePPBe-related training is variable and sometimes difficult to access (b)	Generic
		There are too many HePPBes to carry out in too little time (b)	Generic
		There are few dietary services to which I can refer women (b)	Behaviour-specific
		The written materials I use with women relating to HePPBes are of high quality (f)	Generic
		The questions in the woman's hand-held maternity notes make some HePPBes difficult to perform (b)	Generic
		If a woman is unwell at the booking appointment, it is harder to carry out HePPBes (b)	Generic
		Physical cues e.g. smell of smoke or teeth visibly in poor condition prompt me to carry out HePPBes (f)	Behaviour-specific
Social influences	Existence of conflicting beliefs	The internet is a helpful influence on HePPBes (f)	Generic
		The internet is an unhelpful influence on HePPBes (b)	

Key TDF domains	Reason for domain being considered key	Midwives' views (b = barrier and f = facilitator)	Generic or behaviour-specific view
		Women are very honest when reporting their alcohol consumption (f)	Behaviour-specific
		Women are not honest when reporting their alcohol consumption (b)	
		My colleagues support me in carrying out HePPBes (f)	Generic
		My colleagues do not support me in carrying out HePPBes (b)	
		Social and group norms can be helpful in normalising both my HePPBes and healthy behaviours (related to HePPBes) (f)	Generic and behaviour-specific
		Social and group norms can be unhelpful in normalising obesity (b)	behaviour-specific
Emotion	High frequency of specific beliefs	A midwife's own BMI can make HePPBes relating to weight management and/or obesity harder to carry out (b)	Behaviour-specific
	Indication of clear beliefs	HePPBes can result in feeling positive feelings such as satisfaction (f)	Generic
		Referring women to social work can be anxiety-provoking (b)	Behaviour-specific
		It can be exhausting carrying out HePPBes amongst everything else I am required to do when providing antenatal care (b)	Generic

Key TDF domains	Reason for domain being considered key	Midwives' views (b = barrier and f = facilitator)	Generic or behaviour-specific view
Behavioural regulation	High frequency of specific beliefs	I have specific strategies that I use to help me carry out HePPBes (f)	Generic
Nature of the behaviour	High frequency of specific beliefs	Undertaking HePPBes is a routine part of antenatal care (f)	Generic

Note. b= barrier; f= facilitator.

Midwives' generic views were those which were not specific to a single health behaviour.

Table 4.4

Types and Examples of Midwives' HePPBe Strategies

Strategy	Quotation example	TDF domain coded in
Prioritisation	<i>"Say I did three bookings yesterday, one of them would have had none of these problems, one of them had a BMI was over 35, so that's the one I concentrated on. Another one, yesterday, okay she was drinking, so that's the one I concentrated on. Very rarely we focus on all of them with every person, so I would concentrate on the one that is relevant to that person."</i> (M5)	Behavioural regulation
Woman's choice	<i>"If the woman is worried about her weight, I'm happy to talk about it at every appointment, but if she's not then I'm not gonna bring it up, same with alcohol."</i> (M6)	
Brief interventions	<i>"I feel you can use a brief intervention and I know it is brought up around alcohol, but I use it for most things now."</i> (M5)	
Making HePPBes into a conversation	<i>"We're saying time is an issue, but sometimes revisiting doesn't take a whole lot of time, it's just a conversation: 'How you getting on with that?' 'I know that was a wee bit of an issue for you last time and that you were struggling with that, but has it got any better?'"</i> (M7)	

Strategy	Quotation example	TDF domain coded in
Multi-task	<p><i>“You can be talking about their diet while you’re doing their blood pressure. You could be talking about their diet while you’re dipping their urine, while you’re feeling their tummy. You can do it in a conversation.” (M5)</i></p> <p><i>“I have to say I do it as a multi-task. I’ll be testing the urine while I’m asking about how they feel in pregnancy and have they had any sickness and how they’re getting on with eating and things like that. I’ll be multi-tasking the whole way.” (M7)</i></p>	
Frame information as a positive	<p><i>“If you can just frame it in such a way that makes it sound like a positive – “this is what you can do” rather than “this is what you’ve been doing wrong” – then you can maybe get round that.” (M11)</i></p>	
Dipping	<p><i>“I think it's about dipping into different things, not just the first appointment but about mentioning later on: “Tell me about your husband's alcohol intake, how is that impacting?”” (M9)</i></p>	

Strategy	Quotation example	TDF domain coded in
Chipping (M7)	<i>“So what bit for you do we need to look at?”, because there’s very few people that need absolutely...well, some of them do need absolutely everything, but if they do it’s about chipping away at it. I think you have to think, ‘Let’s look at this wee bit by bit’. Next appointment we might have to chip away at something else.” (M7)</i>	
Information provision &	<i>“I’m kind of the opinion I give people the information and make sure they know that if they have any questions they can ask.” (M5)</i>	
Prompting from maternity notes	<i>“I try and identify areas that they may need more information about.” (M11)</i>	Behavioural regulation and Nature of the behaviour
	<i>“It’s there in front of you and you know you’re to discuss these things.” (M10)</i>	
	<i>“I usually always have a wee flick through the notes at the beginning just to check if there’s any kind of outstanding issues or anything to be aware of.” (M11)</i>	
Use of materials	<i>“It would just be generally going through the “Ready, Steady, Baby” book that they’re given.” (M3)</i>	
Referral (M10)	<i>“A lot of this time you’re referring on to other services like smoking cessation. If there’s any history of domestic abuse you’re referring on to other services. If the woman is overweight, you are referring on to services related to that, like exercise classes.”</i>	

4.4 Discussion

Midwives perceived a multitude of barriers and facilitators to carrying out HePPBes. Key barriers were requirements to perform an increasing amount of HePPBes on top of existing clinical workload, which impacted on midwives' time, their cognitive resources, and the quality of relationships with pregnant women. Organisational issues, such as a lack of continuity of care and difficulty accessing appropriate training, were also identified. Key facilitators included midwives' motivation to support pregnant women with addressing their health. This study also highlighted strategies that midwives use to overcome the barriers they face in carrying out their HePPBes. Some findings were considered both barriers and facilitators as mixed views were expressed about issues such as whether certain health promotion topics should be addressed by other health professionals prior to pregnancy, women's receptiveness to HePPBes during pregnancy, and the social influence of midwives' own health status.

Strengths and Limitations

It was challenging to specify target behaviours when simultaneously investigating multiple HePPBes for a variety of health promotion topics at the same time. The use of the TACT principle (Fishbein, 1967) and the image within the A4 prompt card provided midwives with a visual aid to remind them of the study focus during the interview.

The sample size was based on evidence-based guidelines (Guest, Bunce & Johnson, 2006) but is smaller than other qualitative TDF-based studies (Patey, Islam, Francis, Bryson & Grimshaw, 2012; Lawton et al, 2016). In addition, the midwives who took part were recruited from a single outpatient maternity clinic in Scotland; different and/or additional barriers and facilitators might have emerged within other, different contexts.

Relation to Other Studies

There is limited evidence on the psychological factors associated with midwives' HePPBes targeting women's multiple health behaviours. Previously

identified barriers to midwives carrying out HePPBes, including a lack of time, resources and variability in training quality (Sanders et al., 2016), were confirmed as relevant to the current study and therefore highlight a continued need for midwives to be provided with support. Uncertainty amongst midwives about their public health role (McNeil, Doran et al., 2012; McNeil, Lynn & Alerdice, 2012) was also evidenced through the mixed views midwives expressed regarding whether all HePPBes should fall under the remit of the midwife. Midwives' use of strategies to overcome the barriers they face in carrying out HePPBes has not been previously reported.

Examining multiple HePPBes increases the complexity of the behavioural influences identified and provides greater understanding of the influences on midwives' HePPBes. The complexity of investigating multiple HePPBes is demonstrated by the higher number of barriers identified within the current study compared with studies which have used the TDF to explore midwives' behaviours in relation to single health-risk topics (e.g. Beenstock et al., 2012; McParlin et al., 2017).

Possible Mechanisms and Implications

Barriers, such as difficulties in accessing HePPBe-related training, suggests a specific public health component during midwife training or after qualification may be useful. The finding that carrying out HePPBes can be taxing suggests that more support for midwives may be required. Policymakers and key stakeholders commissioning midwives' continuous professional development opportunities could provide HePPBe support in multiple formats (e.g. through training, handheld materials or peer support).

Given the variations in the type of care that midwives provide, the pressure that would be placed on maternity services by midwives attending training, and the limited time that midwives would have to access support, developing handheld (or digital) materials may be the most feasible option. For example, a leaflet containing examples of the strategies midwives use to carry out their HePPBes,

that midwives could refer to during or outside of antenatal consultations, could capitalise on some of the HePPBe facilitators identified within this study.

Unanswered Questions and Future Research

The current findings are based on the perspectives of a small group of midwives working within the same context. More research is needed to ascertain whether these findings about midwives' HePPBe cognitions exist in other groups and contexts. Additional evidence should be gathered about the influence of midwives' personal health behaviours on their HePPBes; the strategies midwives use to perform their HePPBes; and the HePPBe support midwives require.

Once this evidence has been gathered, it will be possible to develop an intervention to support midwives in helping pregnant women address multiple health behaviours. This intervention should have the potential to maximise the effectiveness of public health interventions aimed at behaviour change during pregnancy.

Conclusion

The findings suggest that, despite high levels of motivation to carry out HePPBes, midwives perceive numerous barriers to carrying out these tasks in a timely and effective manner. Interventions that support midwives by addressing key barriers and facilitators to helping pregnant women address their health behaviours are urgently needed. However, before this intervention can be developed, more evidence needs to be gathered about midwives' HePPBe cognitions, personal health behaviours, HePPBe strategies and HePPBe support needs. The findings of this chapter informed the survey study described in Chapter 5.

CHAPTER 5

INVESTIGATING MIDWIVES' VIEWS OF THEIR HEALTH PROMOTION PRACTICE BEHAVIOURS: A SURVEY STUDY

This chapter reports the findings of a survey study informed by the interview study findings described in Chapter 4. The overall aim of the survey was to examine the relationship between factors, including demographics, personal health behaviours, perceived barriers and facilitators, and midwives' HePPBes. The survey also aimed to bring to light the strategies midwives use to carry out their HePPBes, and to elicit from midwives themselves the support needs they perceive with regards to carrying out their HePPBes.

Originally, it was planned that this survey study would be conducted as a follow-up to the Royal College of Midwives' (RCM) Stepping up to Public Health (SUTPH) questionnaire (Chapter 3) and an email would be sent to all RCM members (who were registered as qualified midwives) inviting them to take part in the study. However, following ethical approval from the University of Stirling, the RCM decided not to use its membership database to invite midwives to complete the questionnaire, for reasons unrelated to the study. Consequently, an ethical amendment was made to invite midwives worldwide to take part in the study through social media advertisement. The RCM supported recruitment through advertisement of the study on their social media pages.

It was recognised that the complexity of the "HePPBe" term made it difficult to convey its meaning within an online survey study. Therefore, to clearly communicate what was meant by HePPBes, the phrase "addressing public health topics" was used, similar to the terminology used within RCM's SUTPH project. So as to be consistent with the language used in the SUTPH project, the items which concerned health promotion topics were referred to as "public health topics".

5.1 Background

The factors investigated in this survey study included midwives' personal health behaviours, HePPBe cognitions, HePPBe strategies, and HePPBe support needs. The background section outlines how these factors were selected based on relevant literature and/or the findings from Chapter 4.

HePPBe Cognitions

Chapter 4 reported the use of the TDF (outlined in Chapter 1 and 3; Michie et al., 2005) to develop an interview schedule and to code qualitative data. However, the TDF can also be used to develop measures to identify influences on behaviour (Atkins et al., 2017). For instance, validated TDF questionnaires exist to understand the factors influencing healthcare professionals' behaviours (Huijg, Gebhardt, Crone, Dusseldorp & Pesseau, 2014; Huijg, Gebhardt & Dusseldorp, et al., 2014; Taylor, Lawton & Conner, 2013) and three studies have used the TDF to design self-completion questionnaires aimed at understanding midwives' perceptions about their HePPBes in relation to a single health-risk topic (Beenstock et al., 2012; Holly & Swanson 2019; McParlin et al., 2017). Two of these studies attempted to understand the barriers and facilitators midwives experience in implementing guidance related to smoking cessation (Beenstock et al., 2012) and physical activity for pregnant women with a BMI \geq 30 (McParlin et al., 2017). The remaining study (Holly & Swanson, 2019) used the TDF to understand the barriers and facilitators midwives perceive in engaging in physical activity and examined midwives' own health behaviours as part of this.

The interview study described in Chapter 4 determined the barriers and facilitators midwives perceive in performing multiple HePPBes. Key barriers were: requirements to perform an increasing amount of HePPBes on top of existing clinical workload; midwives' cognitive resources; the quality of relationships with pregnant women; a lack of continuity of care; and difficulties in accessing appropriate training. Key facilitators included midwives' motivation to help pregnant women address their health, and strategies that midwives use to overcome the barriers faced in carrying out their HePPBes. These findings were used to inform the development of the questionnaire items relating to each of the

12 TDF v1 domains which assessed midwives' HePPBe cognitions (Michie et al., 2005).

Personal Health Behaviours

Research on the health behaviours and/or health status of healthcare professionals is limited. However, there is some evidence to suggest that midwives' health behaviours and/or health status, in particular their BMI, may have a significant impact their HePPBes. For example, an interview study found that midwives' uncertainty of their own position to offer advice to pregnant women with a BMI ≥ 30 was based on insight of their own body image (Foster & Hirst, 2014). A systematic review summarised that whilst some antenatal healthcare professionals with a high BMI felt hypocritical about communicating with pregnant women with a BMI ≥ 30 about their weight, others found having a high BMI empowering as they perceived themselves as demonstrating empathy and understanding (Heslehurst, Crowe et al., 2014).

The interviews described in Chapter 4 indicated that some midwives perceive their own BMI as a barrier to discussing weight management. Therefore items about midwives' own health behaviours were included within the questionnaire described in the current chapter, so as to investigate whether there was a relationship between midwives' own health behaviours and their HePPBes.

HePPBe Strategies

The interview findings described in Chapter 4 reported the identification of several strategies used by midwives to successfully perform their HePPBes. A lack of time to carry out HePPBes was a commonly cited barrier within the interviews, and previous literature (RCM, 2017; Sanders et al., 2016) has also suggested a lack of time as a hindrance to midwives' HePPBes. Therefore the questionnaire reported in the current chapter included items about the use of strategies within the context of not having enough time to cover all health promotion topics.

HePPBe Support Needs

The interview findings described in Chapter 4 outlined barriers that midwives experience in undertaking their HePPBes. To understand what support is needed by midwives to overcome these issues, items about perceived support needs were included within the questionnaire. These items were based on key elements from the format of delivery of intervention framework (Dombrowski, O'Carroll & Williams 2016), which is described in more detail in Chapter 6.

Aims

The aims of this chapter were:

- a) to test if there is a relationship between factors (including demographics, personal health behaviours and midwives' cognitions about their HePPBes) and midwives' self-reported HePPBe performance;
- b) to understand what strategies midwives use to carry out their HePPBes;
- c) to understand what type of support midwives require in carrying out their HePPBes.

5.2 Methods

Study design

Online survey study.

Participants and Recruitment

The Inclusion criterion was being registered as a qualified midwife or training to be a midwife. Recruitment took place online between February and May 2018. Advertisements (Appendix I) were placed on discussion forums, email lists and social media pages. Advertisements contained a URL link to the online study platform Qualtrics, on which the questionnaire was hosted. Overall, 719 attempts were made to complete the questionnaire, of which 214 were deemed incomplete (less than 95% of the questionnaire was completed). Complete responses were obtained from 505 participants.

Questionnaire

The questionnaire (Appendix J) was piloted with three midwives and was found to take between 15-20 minutes to complete. The information provided below describes the measures used to assess midwives' demographics, level of HePPBe performance, HePPBe cognitions, personal health behaviours, HePPBe strategies and HePPBe support needs.

Demographics. The following questions were used to measure the demographics of the sample of midwives who completed the questionnaire. Country of workplace was measured using the item "*Please identify the county in which you are currently working in*". Potential responses were "*England*", "*Wales*", "*Scotland*", "*Northern Ireland*" or "*other*". The country of workplace item came from the RCM's Stepping up to Public Health (SUTPH) questionnaire (RCM, 2017). Job type was measured using the item "*What is your primary role?*". Potential responses included, for example, "*midwife*", "*consultant midwife*", and "*student midwife*" (other potential responses are provided in Appendix J). The job type item came from the RCM's SUTPH questionnaire (RCM, 2017). Booking appointment status was measured using the item "*Please state whether you carry out booking appointments in your current role*". Potential responses included "*my current role*

involves carrying out booking appointments”, *“my current role does not involve carrying out booking appointments, but I have done in a previous role*”, or *“I have never carried out booking appointments*”. Number of years as a registered midwife, or year of study for student midwives, was measured using the item *“Please state the number of years and/or months you have been a registered midwife (student midwives please state what year you are in)”*. The number of years as a registered midwife item was based on a similar item in the RCM’s SUTPH questionnaire (RCM, 2017). The type of health promotion training midwives had undertaken was measured using the item *“Please select which, if any, of the following training you have received: behaviour change.”* Potential responses included *“behaviour change (generic)”*, *“RCM iLearn modules”*, *“motivational interviewing”* and *“topic-specific e.g. smoking cessation training”*. Midwives’ ages were measured using the item *“What is your age (please state in years)?”*.

Midwives’ HePPBe performance. Self-reported HePPBe performance was measured via a Likert scale item: *“When I have the opportunity, I address these public health topics at a booking appointment”*. Potential responses were on a scale of 1-5 where 1 = never and 5 = always. The level of HePPBe performance item was asked in relation to the following health promotion topics: alcohol consumption; diet; physical activity; weight management; personal hygiene; oral health; smoking; substance use; and sexual health.

Midwives’ HePPBe cognitions. The perceived importance of addressing HePPBes was measured via a Likert scale item: *“How important is it to address this public health topic at a booking appointment?”*. Potential responses were on a scale of 1-5 where 1 = never and 5 = always. The importance of health promotion topic item was asked in relation to the following health promotion topics: alcohol consumption; diet; physical activity; weight management; personal hygiene; oral health; smoking; substance use; and sexual health. Midwives’ main concerns with regard to addressing health promotion topics were sought using the item *“Who is your main concern when making decisions about addressing public health topics?”*. Potential responses included the woman, the unborn baby, both the

woman and the baby, or other. The barriers and facilitators perceived by midwives with regard to performing HePPBes were ascertained using the 28 Likert scale items displayed in Table 5.1 below. Potential responses were on a scale of 1-5 where 1 = strongly disagree and 5 = strongly agree. The items assessing midwives' perceived barriers and facilitators to performing their HePPBes were asked in relation to the psychological domains described by the TDF v1 (Michie et al., 2005). At least two items related to each TDF domain, except for *"nature of behaviour"*, which was assessed by a single item as a separate group of items investigating the strategies midwives use to perform their HePPBes was included in the questionnaire (discussed below). Items assessing barriers and facilitators to performing HePPBes were randomly ordered. Other cognitions midwives held about their HePPBes were measured using the qualitative open-ended item: *"Finally, if you have any other comments on your public health role then please include them below"*.

HePPBe strategies. The strategies midwives use to perform their HePPBes were measured using the following Likert scale items: *"When there is not enough time to cover all public health topics I focus on the topic(s) that I am most comfortable speaking about"*, *"When there is not enough time to cover all public health topics I focus on the topic(s) that I think are the most important"*, *"When there is not enough time to cover all public health topics I focus on the topic(s) that I am the most appropriate professional to advise on"*, *"When there is not enough time to cover all public health topics I focus on the topic(s) that the woman wants me to focus on"*, *"When there is not enough time to cover all public health topics I focus on the topic(s) that are least likely to need follow-up options"*, *"When there is not enough time to cover all public health topics I focus on the topic(s) that I can cover in the available time, but not in any detail"*, *"When there is not enough time to cover all public health topics I focus on the topic(s) that I know have a reliable and high-quality service to refer to"* and *"When there is not enough time to cover all public health topics I focus on the topic(s) that I know there is a good referral pathway for."* Potential responses were on a scale of 1-5 where 1 = strongly disagree and 5 = strongly agree. Other strategies midwives used to perform their HePPBes were measured using the qualitative open-ended item

“Please state any other strategies that you use when there is not enough time to address all public health topics”.

Table 5.1

*28 Likert Scale TDF Items Assessing Midwives' Perceived Barriers and Facilitators to Performing HePPBes***TDF domains**

(Likert scale items)

Knowledge

I sometimes draw on my own personal experience when addressing public health topics.

I have enough knowledge to address public health topics.

It is necessary for public health providers (such as smoking cessation services) to provide me with information to update my knowledge.

Skills

I have the appropriate skills to address public health topics.

I have been adequately trained to address public health topics.

When addressing public health topics I use skills that I have developed from training I have attended.

Social/professional role and identity

Addressing public health topics is a key part of my role as a midwife.

There is conflict between my role and addressing public health topics.

There is conflict between me addressing public health topics and my own health-related behaviours.

Beliefs about capabilities

I am confident in my ability to address public health topics.

I am confident in my ability to refer women on to the appropriate public health service(s).

I have sufficient computer literacy skills to address public health topics.

TDF domains

(Likert scale items)

Beliefs about consequences

Addressing public health topics can impact on the relationship I have with the woman in my care.

Addressing public health topics can be rewarding for me.

Motivation and goals

Addressing public health topics is important.

I am motivated to help women by addressing public health topics.

Memory, attention and decision processes

I use my instinct and/or “gut feeling” to help me address public health topics.

I only address public health topics in detail if the woman raises them with me.

I use prompts (e.g. checklists) when addressing public health topics.

Environmental context and resources

There are too many public health topics to address them all in depth.

I have high-quality materials (e.g. leaflets, booklets) to address public health topics with women.

Social influences

My midwifery colleagues support me in addressing public health topics.

My midwifery colleagues and I work together as a team to solve issues related to public health topics.

Emotion

I sometimes have a feeling that addressing public health topics is pointless.

I feel uncomfortable when addressing some public health topics.

TDF domains

(Likert scale items)

Behavioural Regulation

I have a pre-formed strategy of how to address public health topics.

I aim for “small changes in the right direction” when addressing public health topics.

Nature of behaviour

I feel women aren't always honest with me when I am addressing public health topics.

Midwives' personal health behaviours. BMI was measured using the items *"What is your height? (please include units of measurement, e.g. metres and cm, or feet and inches)"* and *"What is your weight? (Please include units of measurement e.g. kilos, pounds, or stones and pounds)"*. Physical activity was measured using the items: *"During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast cycling?"*, *"During the last 7 days, on how many days did you do moderate physical activities like carrying light loads, bicycling at a regular pace, or walking?"*, *"During the last 7 days, how much time did you spend sitting on a work day? (Please answer in hours and/or minutes.)"*, *"During the last 7 days, how much time did you spend sitting on a non-work day? (Please answer in hours and/or minutes.)"*. The physical activity items were based on the International Physical Activity (IPAQ) survey short form (IPAQ, 2002). Smoking status was measured using the item *"Do you currently smoke or have you ever smoked?"*. Potential responses included *"Yes, I currently smoke tobacco every day"*, *"Yes, I currently smoke tobacco, but not every day"*, and *"No, I have never smoked tobacco"*. The smoking status item was from a questionnaire designed to measure the general public's acceptance of smoking cessation incentives during pregnancy (Morgan et al., 2015). Alcohol intake was measured using the item *"During the last month, how many days did you usually have any kind of drink containing alcohol?"*. Example responses included *"every day"*, *"once a month"* or *"never"*. The alcohol intake item was based on the United States National Institute on Alcohol Abuse and Alcoholism (NIAAA) recommended alcohol intake questions (NIAAA, n.d.). Daily fruit and vegetable consumption was measured using the item *"How many portions of fruit and vegetables (including pulses, salad, vegetables, fruit juices, and fresh, dried and canned fruit) did you eat yesterday?"*. The daily fruit and vegetable item was an adapted version of a similar question used in an intervention study aimed at increasing physical activity amongst men in Ireland (Canavan, 2013).

Midwives' support needs for HePPBes. Preference for the format of delivery for an intervention to support midwives in performing HePPBes was assessed using the following Likert scale items: *"To support me in addressing public health topics I would prefer to receive updates on public health services I*

am referring women to”, “To support me in addressing public health topics I would prefer to receive peer support”, “To support me in addressing public health topics I would prefer to receive a resource with information and content to support me in addressing public health topics”, “To support me in addressing public health topics I would prefer to receive training”, “To support me in addressing public health topics I would prefer to receive no further support”. Potential responses were on a scale of 1-5 where 1 = strongly disagree and 5 = strongly agree. Midwives’ preferences regarding the delivery channel for an intervention supporting them in the performance of their HePPBes were assessed using the item “I would prefer to receive this support via the following delivery channels (please tick all that apply)”. Potential responses included, for example, “delivered by a person”, “text message” or “email”. Midwives’ preferences as to the delivery method of an intervention that could support them in performing their HePPBes was assessed using the item “I would prefer to receive this support via the following delivery method”. Potential responses included “1:1”, “group”, “both 1:1 and group”. Additional information about the type of support midwives would like to receive in carrying out their HePPBes was measured using the qualitative open-ended item “If you have any other comments on what support you would like to receive in your public health role then please include them below”.

Procedure

Midwives accessed the questionnaire by clicking on the URL contained within the online advertisement. Following the presentation of study information and eligibility criteria, consent was obtained by means of the midwife selecting an electronic check box. A screening question (“Are you a qualified or student midwife?”) was presented to assess eligibility. If the response was “no”, then participants were thanked for their interest in the study and exited from the questionnaire. At the end of the questionnaire, midwives were offered the opportunity to be entered into a prize draw to win one of four £25 shopping vouchers.

Quantitative data analysis

The analysis of the quantitative data involved the following eight steps.

- 1) A Statistical Package for the Social Sciences (SPSS) spreadsheet containing raw questionnaire data was downloaded from Qualtrics and incomplete responses were removed.
- 2) Descriptive statistics, including percentages and means testing, were calculated for all variables.
- 3) Paired sample t-tests were conducted to evaluate the difference in responses between self-reported HePPBe performance and perceived importance of addressing HePPBes for each health promotion behaviour. The effect size of the differences between these responses was calculated using Cohen's *d* in which effects ≥ 0.2 were considered small, ≥ 0.5 medium and ≥ 0.8 large (Cohen, 1988).
- 4) To assess the reliability of the 28 TDF items assessing midwives' perceived barriers and facilitators to performing HePPBes, Cronbach's alpha scores were generated for each of the 12 TDF subscales. The following cut-off scores were used to assess the reliability of each scale (Cronbach, 1951). Scores below 0.60 were considered unacceptable, scores between 0.60 and 0.65 were undesirable, scores between 0.65 and 0.70 were minimally acceptable, scores between 0.70 and 0.80 were respectable, and scores of between 0.80 and 0.90 were very good (DeVellis, 2012).
- 5) To reduce the number of variables measuring midwives' perceived barriers and facilitators to carrying out HePPBes, principal component analysis was carried out on the 28 TDF items using a four-component Varimax rotation. Assessment of the items loading onto the four components with a factor loading ≥ 0.3 took place by considering what HePPBe cognition the items represented. If a single item did not appear to measure the same HePPBe cognition as the other items loading onto the component, then it was removed. Items which negatively loaded onto components were reverse scored.
- 6) To assess the reliability of the four HePPBe cognition scales generated by the principal component analysis, Cronbach's alpha scores were generated

for each scale. Items were removed from a scale if their elimination increased the scale's reliability.

- 7) Correlational analysis was used to assess the relationship between demographics, midwives' personal health behaviours, cognitions about HePPBes, and self-reported HePPBe performance.
- 8) To understand the factors influencing midwives' self-reported HePPBe performance, a hierarchical multiple regression was carried out to assess whether the addition of health behaviours, and then of HePPBe cognitions, improved the predictions regarding level of HePPBe performance over and above demographics.

Qualitative data analysis

The responses to the qualitative open-ended questions which contained examples of strategies used to perform HePPBes and requests for HePPBe support were categorised by JM. No further analysis of this data was made, as the aim of the research was simply to report examples of how midwives currently performed their HePPBes and the type of HePPBe support midwives wanted. The analysis of the qualitative data from the open-ended question asking for any other comments was carried out in more detail and involved the following five steps.

- 1) Responses were read several times by JM to ensure familiarity with the data.
- 2) Responses were coded by JM using a directed content analysis approach (Hsieh & Shannon, 2005) in which responses were placed in the most relevant TDF domain. If a response could be coded into more than one domain, a decision was made by JM as to the most appropriate domain.
- 3) Coding was checked by SD.
- 4) The number of responses coded into each domain was calculated by JM.
- 5) JM checked how much the identified barriers reflected those in chapter 4 and whether there were any additional barriers or facilitators identified.

Ethical Approval

The University of Stirling's General University Ethics Panel approved the study (GUEP316; appendix K) and the amendment to the recruitment strategy mentioned above (GUEP316A; appendix L).

5.3 Results

The results sub-sections that follow present the data gathered from the survey study in the following format:

- (i) descriptive data describing the demographics of the sample;
- (ii) descriptive data describing midwives' personal health behaviours;
- (iii) descriptive data reporting midwives' self-reported HePPBe performance and perceived importance of addressing HePPBes;
- (iv) descriptive data relating to midwives' cognitions about HePPBes, including reliability data about the items assessing midwives' perceived barriers and facilitators with regard to addressing HePPBes;
- (v) principal component analysis of the items assessing midwives' perceived barriers and facilitators with regard to addressing HePPBes and reliability data about the resulting scales.

The remaining sub-sections present the quantitative and qualitative data findings regarding the aims of the study.

Sample Demographics

The sample demographics are provided in Tables 5.2 and 5.3 below. The majority of midwives (71.5%) who completed the questionnaire were fully qualified and had an average 13.9 years of experience (the remainder of the sample were student midwives). The mean age of the midwives who completed the questionnaire was 39.2 years and Table 5.3 highlights that the 45-54 age group was the category with the highest number of midwives (25.1%). Most midwives who completed the questionnaire worked in England (57.4%). In total, 45.9% of the sample identified their primary role as “*midwife*”, and 28.5 % reported being student midwives: 6.5% were in first year, 8.5% in second year and 13.5% in third year. More than half the midwives who completed the questionnaire carried out booking appointments in their current role (56.4%). Health promotion topic-specific training was the most frequently reported training, with 56.2% of midwives reporting that they had undertaken some form of topic-specific training.

Table 5.2

Midwife Characteristics (N= 505)

Variable	N	Minimum	Maximum	Mean	SD
Age (years)	505	18	63	39.2	12.1
Experience as a qualified midwife (years)	361	0.4	40	13.9	11.2

Note. SD = standard deviation

Table 5.3

Midwife Characteristics (N= 505)

Variable	Response categories	%
Age groups	18-24	15.6
	25-34	23.6
	35-44	23.6
	45-54	25.1
	55 and over	12.1
Country	England	57.4
	Scotland	24.8
	Wales	6.5
	Northern Ireland	5.5
	Other	5.7
Primary role	Midwife	45.9
	Student midwife	28.5
	Specialist midwife	8.7
	Midwifery lecturer	4.0
	Midwifery manager	5.7
	Consultant midwife	1.4
	Independent midwife	1.0
	Other	4.8
Student year groups	First year	6.5
	Second year	8.5
	Third year	13.5
Booking appointment	Undertake in current role	56.4
	Do not currently undertake	40.8
	Never have undertaken	2.8
Training	Topic-specific	56.2
	RCM iLearn modules	40.4
	Generic behaviour change training	26.5
	No training	19
	MI training	18.8

Midwives' Personal Health Behaviours

A summary of the descriptive characteristics describing the sample's personal health behaviours is provided in Tables 5.4 and 5.5 below. Midwives had an average BMI of 27.1 and 53.1% of the midwives who took part in the questionnaire had a BMI in the overweight or obese categories. Midwives reported consuming an average of 3.9 (SD=1.5) pieces of fruit and vegetable a day and 60.1% of midwives were eating less than five or more pieces of fruit and vegetables each day. The majority of midwives (67.5%) had never smoked, 47.1% of midwives reporting consuming alcohol less than twice a week and most midwives reported low (38.4%) or medium (43%) levels of moderate activity.

Table 5.4

Midwife Personal Health Behaviour Characteristics (n= 505)

Variable	Mean	SD	Median	Interquartile range
BMI status	27.1	5.9		
Fruit and vegetable intake	3.78	1.5		
Number of hours of sitting in a working day			5	Q1=2 Q3=7
Number of hours sitting in a non-working day			5	Q1=4 Q3=8

Note. SD = standard deviation

Table 5.5

Midwife Personal Health Behaviour Characteristics (n= 505)

Health Behaviour	Response categories	%
Smoking	Never smoked	67.5
	Have quit smoking	23.6
	Smoke every day	4.0
	Smoke but not every day	2.8
	Prefer not to say	1.0
	Did not answer	1.2

Health Behaviour	Response categories	%
Alcohol intake	Once a month	17.2
	2 to 3 times a month	16.2
	Once a week	13.7
	Twice a week	15.7
	3 to 4 times a week	12.9
	5 to 6 times a week	2.4
	Every day	0.2
	Never	20.0
	Did not answer	1.8
BMI status	Underweight	1.2
	Healthy weight	43.4
	Overweight	28.7
	Obese	24.4
	Did not answer	8.3
Fruit and vegetable intake	Eating five portions of fruit and veg a day	37.9
	Not eating five portions of fruit and veg a day	60.1
	Did not answer	2.0
Physical activity levels	Low (0-5 sessions of moderate weekly activity)	38.4
	Medium (6-11 sessions of moderate weekly activity)	43.0
	High (12 or more sessions of moderate weekly activity)	16.4

Note. Totals of percentages are not 100 for every characteristic because of rounding.

Health behaviour outcomes were compared with the general UK adult population, as shown in Table 5.6. Overall, the sample of midwives appeared to be healthier on average compared with the general UK adult population, with fewer

midwives smoking daily, consuming alcohol weekly and having a BMI ≥ 25 than the general population (Organisation for Economic Co-operation and Development, 2017; Office for National Statistics, 2017). A higher proportion of midwives reported eating ≥ 5 portions of fruit and vegetables a day compared to the general population (Food Foundation, 2017). It was not possible to compare physical activity and sedentary behaviour with the general population as the measures were not directly comparable with published statistics.

Table 5.6

Comparison between Health Behaviours of the Sample of Midwives and the General UK Adult Population

Health Behaviour	Midwives Sample ^a	General UK Population
	%	%
Smoke daily	4.0	16.1
Consume alcohol at least once a week	44.9	57
BMI ≥ 25	53.1	63
Eat ≥ 5 portions of fruit and vegetables a day	37.9	27

Note. ^an= 505

Midwives' Self-Reported HePPBe Performance and Perceived Importance of Addressing HePPBes

Table 5.7 shows the mean responses for self-reported HePPBe performance and midwives' perceptions regarding the importance of addressing HePPBes for each health promotion behaviour. Addressing alcohol consumption had the highest level of self-reported HePPBe performance, followed by smoking, diet, substance use, physical activity, weight management, sexual health, oral health and personal hygiene. The ratings regarding the importance of addressing HePPBes were in the same order except that smoking had the highest rating of importance, followed by alcohol consumption.

Table 5.7

Mean Self-Reported HePPBe Performance and Importance of Addressing HePPBes

Health promotion behaviours	Self-reported HePPBe performance		Importance of addressing HePPBe	
	Mean	SD	Mean	SD
Alcohol consumption	4.88	0.41	4.88	0.41
Smoking	4.83	0.56	4.91	0.39
Diet	4.64	0.75	4.80	0.50
Substance use	4.46	0.98	4.75	0.64
Physical activity	4.13	1.11	4.50	0.75
Weight management	3.78	1.20	4.35	0.87
Sexual health	3.35	1.44	4.10	1.04
Oral health	3.18	1.57	3.67	1.18
Personal hygiene	2.56	1.36	3.38	1.21
Total ranking	35.80	5.51	39.30	4.44

Note. N= 505. SD= standard deviation.

The difference between ratings for self-reported HePPBe performance and ratings of the importance of addressing HePPBe responses is reported in Table 5.8. There was no difference between ratings for HePPBe performance and HePPBe importance in relation to alcohol consumption. However, on average, all health promotion behaviours were rated higher for importance, than for self-reported HePPBe performance. The effect size for weight management, sexual health, personal hygiene, and the overall opportunity and importance ratings were found to exceed Cohen's (1988) convention for a small effect ($d=0.20$).

Table 5.8

Difference in Mean Self-Reported HePPBe Performance Ratings and Importance of Addressing HePPBes Ratings with the Associated Effect Size

	Difference in mean self-reported HePPBe performance and importance of addressing HePPBe responses		Effect size of the difference between HePPBe performance and importance of addressing HePPBe responses	
	Mean	SD	Cohen's d	Size
Health Promotion behaviour				
Alcohol consumption	0.00	0.54	No difference	None
Smoking	0.08	0.55	0.02	None
Diet	0.16	0.66	0.05	None
Substance use	0.29	0.86	0.10	None
Physical activity	0.37	0.97	0.12	None
Oral health	0.49	1.07	0.13	None
Weight management	0.57	1.07	0.22	Small
Sexual health	0.75	1.20	0.28	Small
Personal hygiene	0.82	1.10	0.36	Small
Total ranking	3.50	4.49	0.38	Small

Note. SD = standard deviation.

The difference between midwives' ratings for self-reported HePPBe performance and for importance of addressing HePPBes for the different health promotion behaviours are illustrated in Figure 5.1. This figure shows that ratings of importance were greater than or equal to HePPBe performance ratings for all health promotion behaviours.

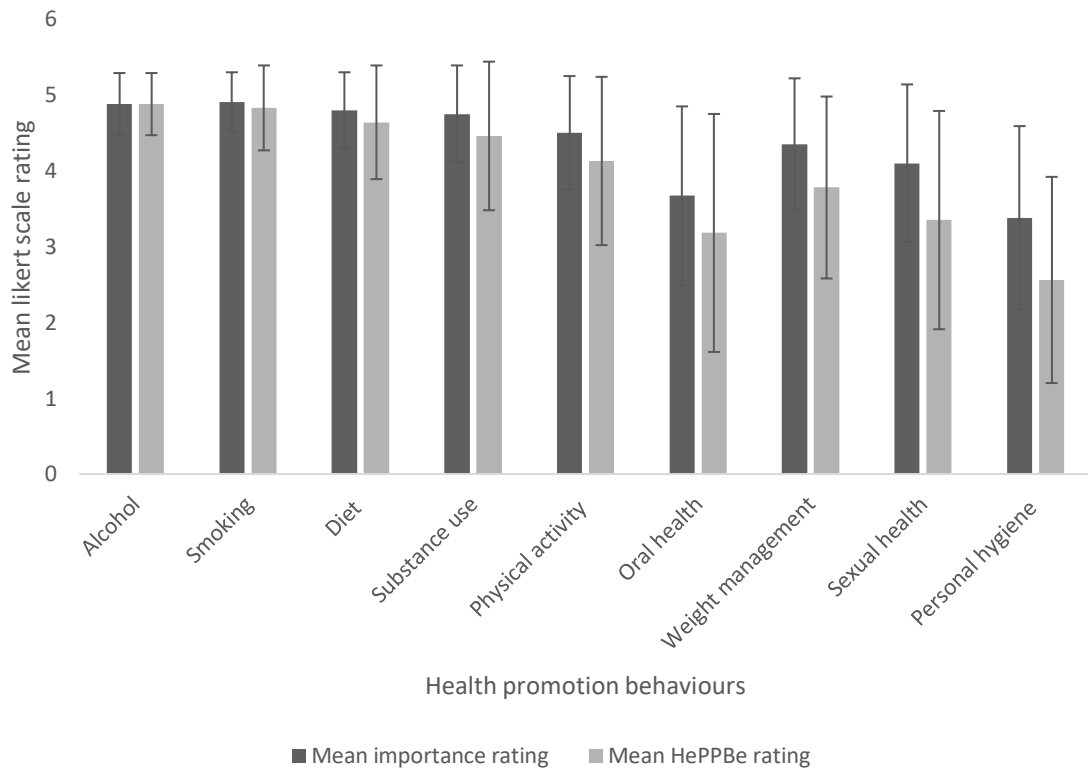


Figure 5.1. Midwives' mean ratings for importance of addressing HePPBes and self-reported HePPBe performance in each health promotion behaviour.

Midwives' HePPBe cognitions

The majority of midwives (90.5%) stated that *“woman and baby”* was their main concern when making decisions about addressing public health topics. A small number (7.1%) reported the unborn baby as their main concern; 6.1% reported that it was the woman herself. The remaining 2.4% stated *“other”*, and for most midwives this was the wider family unit.

Table 5.9 presents the mean ratings for the individual items and scales assessing midwives' perceived barriers and facilitators in the performance of HePPBes. The item with the highest agreement rating was *“Addressing public health topics is important”*. The item with the lowest agreement rating was *“I only address public health topics in detail if the woman raises them with me”*.

Mean ratings and Cronbach's alpha scores were calculated for each of the TDF sub-scales (also shown in table 5.9). Cronbach's alpha scores varied from 0.110 to 0.778, suggesting that the TDF was not a good fit for the data as alpha scores for most subscales were under 0.60 and therefore had unacceptable levels of internal consistency (DeVellis, 2012).

Table 5.9

Mean Likert Scale Responses and Standard Deviations for Perceived Barriers and Facilitators to HePPBes for Midwives: Items and Scales with Cronbach's Alpha Scores

Domain	Item number	Items	Mean	SD	Cronbach's alpha
Knowledge	1	I sometimes draw on my own personal experience when addressing public health topics	3.1	1.2	
	2	I have enough knowledge to address public health topics	3.6	1.0	
	3	It is necessary for public health providers (such as smoking cessation services) to provide me with information to update my knowledge	4.3	1.0	
		Knowledge scale	3.6	0.6	0.139
Skills	4	I have the appropriate skills to address public health topics	3.8	1.0	
	5	I have been adequately trained to address public health topics	3.2	1.1	
	6	When addressing public health topics I use skills that I have developed from training I have attended	3.9	1.1	
		Skills scale	3.6	0.8	0.742
Social/ professional role and identity	7	Addressing public health topics is a key part of my role as a midwife	4.6	0.7	
	8	There is conflict between my role and addressing public health topics	2.1	1.1	

Domain	Item number	Items	Mean	SD	Cronbach's alpha
	9	There is conflict between me addressing public health topics and my own health-related behaviours	2.1	1.2	
		Social/professional role and identity scale	4.1	0.8	0.522
Beliefs about capabilities	10	I am confident in my ability to address public health topics	4.01	0.9	
	11	I am confident in my ability to refer women on to the appropriate public health service(s)	4.1	0.9	
	12	I have sufficient computer literacy skills to address public health topics	4.5	0.8	
		Beliefs about capabilities scale	4.2	0.7	0.590
Beliefs about consequences	13	Addressing public health topics can impact on the relationship I have with the woman in my care	3.4	1.2	
	14	Addressing public health topics can be rewarding for me	4.0	1.0	
		Beliefs about consequences scale	3.3	0.8	0.110
Motivation and goals	15	Addressing public health topics is important	4.7	0.5	
	16	I am motivated to help women by addressing public health topics	4.4	0.7	
		Motivation and goals scale	4.5	0.6	0.685
Memory, attention and decision processes	17	I use my instinct and/or "gut feeling" to help me address public health topics	3.4	1.2	

Domain	Item number	Items	Mean	SD	Cronbach's alpha
	18	I only address public health topics in detail if the woman raises them with me	1.9	1.0	
	19	I use prompts (e.g. checklists) when addressing public health topics	4.0	1.1	
		Memory, attention and decision processes scale	3.7	0.6	0.157
Environmental context and resources	20	There are too many public health topics to address them all in depth	3.7	1.2	
	21	I have high-quality materials (e.g. leaflets, booklets) to address public health topics with women	3.2	1.2	
		Environmental context and resources scale	2.7	0.9	0.368
Social influences	22	My midwifery colleagues support me in addressing public health topics	3.6	1.1	
	23	My midwifery colleagues and I work together as a team to solve issues related to public health topics	3.3	1.2	
		Social influences scale	3.4	1.1	0.778
Emotion	24	I sometimes have a feeling that addressing public health topics is pointless	2.4	1.3	
	25	I feel uncomfortable when addressing some public health topics	2.5	1.4	
		Emotion scale			0.428

Domain	Item number	Items	Mean	SD	Cronbach's alpha
Behavioural Regulation	26	I have a pre-formed strategy of how to address public health topics	3.3	1.0	
	27	I aim for "small changes in the right direction" when addressing public health topics	4.0	0.9	
		Behavioural Regulation scale	3.6	0.7	0.180
Nature of behaviour	28	I feel women aren't always honest with me when I am addressing public health topics	3.79	1.0	

Note. SD = standard deviation, responses on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Principal Component Analysis to Reduce the Number of HePPBe Cognition Variables

A principal component analysis was run on the 28 TDF items assessing midwives' HePPBe cognitions. The suitability of the data was assessed prior to performing principal component analysis. Inspection of the correlation matrix revealed the presence of a reasonable number of coefficients of 0.3 and above. The Kaiser-Meyer-Olkin value was 0.8, exceeding the recommended value of 0.6 (Kaiser, 1970, 1974). Bartlett's test of sphericity (Bartlett, 1954) reached statistical significance, supporting the factorability of the correlation matrix.

Principal component analysis revealed the presence of seven components with eigenvalues exceeding 1, explaining 20.1%, 8.6%, 6.0%, 5.6%, 4.6%, 4.0% and 3.7% of variance respectively. Inspection of the scree plot (Figure 5.2) revealed clear breaks after the second and fourth components. Using Cattell's (1966) scree test, it was decided to retain four components for further investigation. This was further supported by the results of parallel analysis performed using version 2.3 of Monte Carlo PCA for Parallel Analysis software (2011) which showed four components with eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (28 variables x 505 respondents).

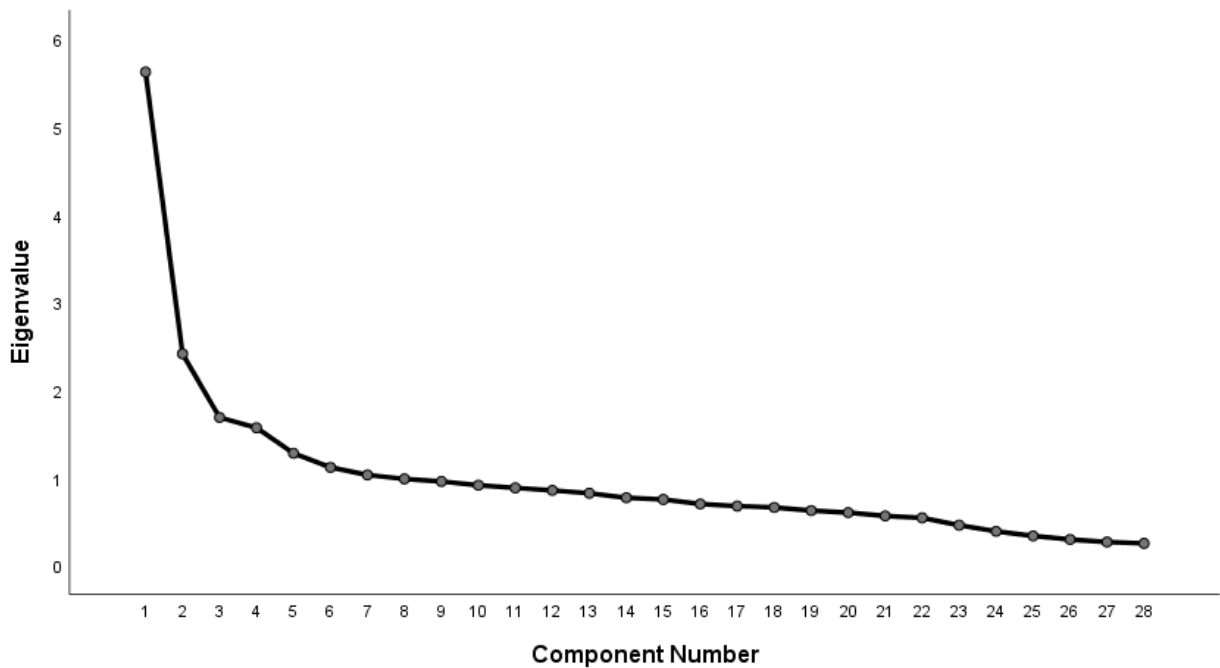


Figure 5.2. Scree plot showing eigenvalues for each component, in component extraction of data obtained from items assessing midwives' HePPBes cognitions.

The four-factor solution explained a total of 40.3% of the variance, with component 1 contributing 20.1%, component 2 contributing 8.6%, component 3 contributing 6.0% and component 4 contributing 5.6% of the variance. To assist in the interpretation of these four components, Varimax rotation was performed. The rotated solution revealed the presence of a simple structure (Thurstone, 1947). Component loadings and communalities of the rotated solution are presented in Table 5.10 below.

Table 5.10

Rotated Structure Matrix for Principal Component Analysis with Varimax Rotation of a Four-Component Questionnaire

Items	Rotated Component Coefficients				Communalities
	Component 1	Component 2	Component 3	Component 4	
	1	2	3	4	
Item 4 (I have the appropriate skills to address public health topics)	.835	.161	-.099	.101	.744
Item 2 (I have enough knowledge to address public health topics)	.810	.099	-.118	.093	.688
Item 5 (I have been adequately trained to address public health topics)	.735	.113	-.127	.237	.626
Item 10 (I am confident in my ability to address public health topics)	.724	.319	-.084	.006	.633
Item 11 (I am confident in my ability to refer women on to the appropriate public health service(s))	.570	.259	-.099	.063	.406
Item 6 (When addressing public health topics I use skills that I have developed from training I have attended)	.420	.237	.106	.273	.318
Item 26 (I have a pre-formed strategy of how to address public health topics)	.261	-.010	.214	.250	.176

Items	Rotated Component Coefficients				Communalities
	Component 1	Component 2	Component 3	Component 4	
	1	2	3	4	
Item 15 (Addressing public health topics is important)	.092	.786	-.026	.088	.634
Item 16 (I am motivated to help women by addressing public health topics)	.230	.725	-.095	.161	.613
Item 7 (Addressing public health topics is a key part of my role as a midwife)	.135	.704	-.042	.068	.521
Item 14 (Addressing public health topics can be rewarding for me)	.265	.564	-.013	.053	.391
Item 18 (I only address public health topics in detail if the woman raises them with me)	-.078	-.375	.251	-.074	.215
Item 12 (I have sufficient computer literacy skills to address public health topics)	.193	.335	.240	.010	.207
Item 24 (I sometimes have a feeling that addressing public health topics is pointless)	-.091	-.253	.592	-.153	.446
Item 8 (There is conflict between my role and addressing public health topics)	-.167	-.254	.522	-.108	.376
Item 20 (There are too many public health topics to address them all in depth)	-.237	-.048	.487	-.224	.346

Items	Rotated Component Coefficients				Communalities
	Component 1	Component 2	Component 3	Component 4	
	1	2	3	4	
Item 13 (Addressing public health topics can impact on the relationship I have with the woman in my care)	-.102	.101	.486	-.096	.266
Item 28 (I feel women aren't always honest with me when I am addressing public health topics)	-.062	-.017	.479	-.027	.234
Item 25 (I feel uncomfortable when addressing some public health topics)	-.322	-.098	.472	.013	.337
Item 9 (There is conflict between me addressing public health topics and my own health-related behaviours)	-.101	-.246	.436	-.009	.261
Item 17 (I use my instinct and/or "gut feeling" to help me address public health topics)	.026	.078	.431	.131	.210
Item 1 (I sometimes draw on my own personal experience when addressing public health topics)	.103	.009	.421	.041	.190
Item 3 (It is necessary for public health providers (such as smoking cessation services) to provide me with information to update my knowledge)	.094	.328	.345	-.044	.237
Item 27 (I aim for "small changes in the right direction" when addressing public health topics)	.069	.204	.339	.099	.171

Items	Rotated Component Coefficients				Communalities
	Component 1	Component 2	Component 3	Component 4	
	1	2	3	4	
Item 22 (My midwifery colleagues support me in addressing public health topics)	.159	.044	-.071	.811	.690
Item 23 (My midwifery colleagues and I work together as a team to solve issues related to public health topics)	.178	.000	-.118	.778	.650
Item 21 (I have high-quality materials (e.g. leaflets, booklets) to address public health topics with women)	.226	.175	-.142	.504	.355
Item 19 (I use prompts (e.g. checklists) when addressing public health topics)	-.191	.278	.192	.450	.353

Note. Factor loadings over .30 appear in bold.

Consideration of the items loading onto the four principal components took place to generate four scales measuring midwives' HePPBes cognitions. The items which loaded most strongly onto component 1 appeared to relate to **confidence** about performing HePPBes. Most items which loaded most strongly onto component 2 appeared to be about **intrinsic drive**, except for item 12 (*"I have sufficient computer literacy skills to address public health topics"*) which was removed. *"I only address public health topics in detail if the woman raises them with me"* produced a negative loading and was reverse scored. The items which load onto component 3 appeared to be linked to HePPBe **impediments** (items 8, 9, 13, 20, 24, 25, 28) or enablers (items 1, 3, 17 and 27). Therefore, these groups of items were treated as separate scales. However, the items measuring the enablers resulted in an unacceptable Cronbach's alpha score of 0.38 and were removed from further analysis. The remaining items all appeared to reflect a perception that HePPBes were **not part of the role of the midwife**. The items which loaded onto component 4 all appeared to be about HePPBe **support**. However, removal of item 19 improved Cronbach's alpha from 0.60 to 0.66 and it was therefore excluded. The items loading on each component and the resulting scales are summarised in Table 5.11.

Table 5.11

Midwives' HePPBe Cognitions Items Clustered on Principal Component and the Resulting Scales

Component	Items from Principal Component Analysis	Scale label	Items included in scales	Cronbach's alpha
1	2, 4, 5, 6, 10, 11	HePPBe confidence	2, 4, 5, 6, 10, 11	0.83
2	7, 12, 14, 15, 16, 18 (-ve),	HePPBe intrinsic drive	7, 14, 15, 16, 18	0.66
3	1, 3, 8, 9, 13, 17, 20, 24, 25, 27, 28	HePPBes excluded from midwifery role	8, 9, 13, 20, 24, 25, 28	0.68
4	19, 21, 22, 23	HePPBe support	21, 22, 23	0.66

Note. -ve = reversed item.

The scale "HePPBe confidence" consisted of six items and had a high level of internal consistency, Cronbach's alpha = 0.83 (DeVellis, 2012). The scale "HePPBe intrinsic drive" consisted of five items and had a minimally acceptable level of internal consistency, as determined by a Cronbach's alpha of 0.66. The scale "HePPBes excluded from midwifery role" consisted of seven items and had a minimally acceptable level of internal consistency, Cronbach's alpha = 0.68. The scale "HePPBe support" consisted of three items and had a minimally acceptable level of internal consistency, Cronbach's alpha = 0.66. Table 5.12 below presents the items contained within each scale.

Table 5.12

HePPBe Cognition Scales Items

Scale	Items
HePPBe confidence	<p>I have enough knowledge to address public health topics</p> <p>I have the appropriate skills to address public health topics</p> <p>I have been adequately trained to address public health topics</p> <p>When addressing public health topics I use skills that I have developed from training I have attended</p> <p>I am confident in my ability to address public health topics</p> <p>I am confident in my ability to refer women on to the appropriate public health service(s)</p>
HePPBe intrinsic drive	<p>Addressing public health topics is a key part of my role as a midwife</p> <p>Addressing public health topics can be rewarding for me</p> <p>Addressing public health topics is important</p> <p>I am motivated to help women by addressing public health topics</p> <p>I only address public health topics in detail if the woman raises them with me</p>
HePPBes excluded from midwifery role	<p>There is conflict between my role and addressing public health topics</p> <p>There is conflict between me addressing public health topics and my own health-related behaviours</p> <p>Addressing public health topics can impact on the relationship I have with the woman in my care</p>

Scale	Items
HePPBe support	<p>There are too many public health topics to address them all in depth</p> <p>I sometimes have a feeling that addressing public health topics is pointless</p> <p>I feel uncomfortable when addressing some public health topics</p> <p>I feel women aren't always honest with me when I am addressing public health topics</p> <p>I have high-quality materials (e.g. leaflets, booklets) to address public health topics with women</p> <p>My midwifery colleagues support me in addressing public health topics</p> <p>My midwifery colleagues and I work together as a team to solve issues related to public health topics</p>

Aim (a) to Test if There is a Relationship Between Factors (Including Demographics, Personal Health Behaviours and Midwives' Cognitions About Their HePPBes) and Midwives' Self-Reported HePPBe Performance

Pearson correlations were computed for demographics, midwives' personal health behaviours and cognitions about HePPBes using the scales generated by the principal component analysis described above. Table 5.13 demonstrates the correlation matrix. There was a statistically significant moderate positive correlation between HePPBe confidence and self-reported HePPBe performance, $r(394) = .36, p < .001$. There was a statistically significant positive correlation between HePPBe intrinsic drive and self-reported HePPBe performance, $r(394) = .34, p < .001$. There was a statistically significant negative correlation between perceptions of HePPBes being out with the midwifery role and self-reported HePPBe performance, $r(394) = -.281, p < .001$. Finally, there was a statistically significant positive correlation between HePPBe support and self-reported HePPBe performance, $r(394) = .32, p < .001$.

Table 5.13

Intercorrelations for Self-Reported HePPBe Performance, Demographics, Personal Health Behaviours and HePPBe Cognitions

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. HePPBe performance		.030	.108*	.049	.016	-.132**	-.057	-.004	-.115*	.154	.157	.360***	.343***	-.281***	.315** *
2. Age			.796***	-.182***	.184***	.006	-.011	.192***	.158	.129	.016	.173***	.071	-.162	.027
3. Years of midwifery experience				-.243***	.188***	-.014	-.069	.125**	.056	.168	.096*	.178***	.073	-.163	.041
4. Booking appointment status					-.128**	-.037	.093*	-.056	-.052	.076	-.045	-.049	.012	.038	.078
5. Health promotion training status						-.022	.027	-.091*	.103*	.005	-.003	.228***	-.018	-.094*	.067
6. Primary role							-.011	.022	.071	-.053	.038	-.042	-.070	.043	-.016
7. Smoking behaviour								-.003	.050	-.092*	-.059	-.020	.011	.015	.035
8. Alcohol consumption behaviour									-.047	.025	.019	.017	.100*	-.021	.027

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
9. BMI status											-				
										-.057	.235* **	.066	-.037	.213***	-.048
10. Fruit and vegetable consumption											.228* **	.133*	.158**	-.065	.038
11. Physical activity status												.112*	.140**	-.095*	.100*
12. HePPBe confidence													.432***	-.388***	.386* *
13. HePPBe intrinsic drive														-.328***	.304* *
14. HePPBes excluded from midwifery role															-. .227* *
15. HePPBe support															

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

A hierarchical multiple regression was run to determine if the addition of health behaviours, and then of HePPBe cognitions, improved the predictions for levels of HePPBe performance over and above demographics. See Table 5.14 for full details on each regression model.

There was linearity, as assessed by partial regression plots, and a plot of studentized residuals against the predicted values. There was independence of residuals, as assessed by a Durbin-Watson statistic of 1.78. Following square root transformation there was homoscedasticity, as assessed by visual inspection of a plot of studentized residuals versus unstandardized predicted values. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. Two cases had studentized deleted residuals greater than ± 3 standard deviations; however there were no leverage values greater than 0.2 or values for Cook's distance above 1, so these cases were retained. The assumption of normality was met, as assessed by P-P Plot.

The full model of demographics, health behaviours and HePPBe cognitions to predict levels of self-reported HePPBe performance (Model 3) was statistically significant, $R^2 = .252$, $F(4, 381) = 9.162$, $p < .001$, adjusted $R^2 = .224$. The addition of health behaviours to the prediction of midwives' HePPBe behaviour (Model 2) led to a statistically significant increase in R^2 of .035, $F(5, 385) = 2.919$, $p < .05$. The addition of HePPBe cognitions to the prediction of midwives' HePPBe behaviour (Model 3) also led to a statistically significant increase in R^2 of .175, $F(4, 381) = 22.256$, $p < .001$.

Significant predictors for the level of HePPBe performance, when controlling for years of experience and midwifery occupational status, were HePPBe confidence ($\beta = .185$, $p < .05$), HePPBe intrinsic drive ($\beta = .157$, $p < .05$) and HePPBe support ($\beta = .160$, $p < .05$).

Table 5.14

Hierarchical Multiple Regression Predicting Midwives' Self-Reported HePPBe Performance from Demographics, Health Behaviours and HePPBe Cognitions

Variable	HePPBe					
	Model 1		Model 2		Model 3	
	B	β	B	β	B	β
Constant	2.04**		2.01**		1.68**	
Age	-.002	-.150	-.001	-.105	-.002	-.137
Years of experience	.003*	.243	.003*	.180	.002*	.157
Booking appointment status	.024	.077	.021	.068	.016	.050
Training received	.002	.004	.006	.014	-.016	-.040
Job role	-.043	-.124	-.042*	-.120	-.034*	-.098
Smoking status			-.022	-.035	-.027	-.044
Alcohol intake			-.001	-.006	-.002	-.026
BMI			-.002	-.066	-.001	-.049
Daily fruit and vegetable intake			.010	.094	.006	.056
Hours per week of moderate physical activity			.004*	.110	.002	.055
Scale 1 HePPBe confidence					.006*	.185
Scale 2 HePPBe intrinsic drive					.009*	.157
Scale 3 HePPBes excluded from midwifery role					-.003	-.100
Scale 4 HePPBe support					.008*	.160
R ²	.042		.077		.252	
F	3.42*		3.21**		9.16**	
ΔR^2	0.42		.035		.175	
ΔF	3.42*		2.92*		22.26**	

Note. N= 396, * $p < .05$, ** $p < .01$

To further understand the barriers and facilitators midwives perceive in carrying out their HePPBes, the free text responses to the question *“If you have any other comments on your public health role then please include them below”* were coded into seven TDF domains: professional role and identity; beliefs about consequences; motivation and goals; environmental context and resources; social influences; emotion; and beliefs about capabilities. The definitions for each domain are the same as those presented in Chapter 3. The domains are presented in terms of the number of responses and supporting evidence.

Environmental context and resources. Twenty-six responses were coded as environmental context and resources, focusing on a need for improved resources – particularly a need for more time – wider access to online materials (*“Apps and online mediums for encouraging behaviour change may take the pressure off midwives”*), and more accessibility to training. Some statements stressed the need for continuity of care.

Beliefs about consequences. Nine responses were coded as beliefs about consequences. The potential for weight management HePPBes to impact the midwife-woman relationship was mentioned. Mixed statements about women’s receptiveness to HePPBes emerged.

Motivation and goals. Nine motivation and goals statements suggested high levels of motivation to carry out HePPBes. Some midwives indicated that the degree to which they were able to support women was limited.

Social influences. Eight responses were coded as social influences, and focused on midwives’ own health behaviours in relation to carrying out their HePPBes. Some midwives described their own health behaviours and/or health status as either helping or hindering HePPBes: *“My own lifestyle and motivation in public health topics can impact the delivery and communication when approaching topics with women”*. Others reported that their own health behaviours were irrelevant: *“Don’t confuse my welfare with those of the woman and baby I’m caring for... Public health roles should not be judged by the delivering midwife”*.

Professional role and identity. Three responses were coded as professional role and identity, reflecting on a need for health promotion topics to be tackled before pregnancy and the demands placed on midwives to fulfil multiple professional roles.

Emotion. Three responses coded as emotion focused on the taxing nature of the job and the potential negative health consequences of burnout.

Beliefs about capabilities. Three responses coded as beliefs about capabilities highlighted that midwives potentially feel more confident in addressing health promotion topics which have greater attention placed on them in health policy, and that capability to carry out HePPBes was reliant on resources such as training and time.

Aim (b) to Understand What Strategies Midwives use to Perform HePPBes

Midwives were asked about strategies they use to select which health promotion topics to cover when there was not enough time to cover everything. The mean responses to each of the statements about the use of strategies are provided in Table 5.15 below. The strategies that midwives most strongly agreed should be focused on when there was not enough time included: the topics the midwife perceived as most important; the topics the woman wants the midwife to focus on; and the topics where the midwife regarded themselves as the most appropriate professional to give advice. Correlations were run to assess if there was any association between the strategies used and previous HePPBes. There was a small positive correlation between the strategy labelled “*I focus on the topic(s) that are the most important*” and behaviour ($r=.11$, $n=490$, $p=.019$).

Table 5.15

Mean Responses to Survey Item “When there is not enough time to cover all public health topics I focus on the topic(s) that...”

Strategies	Mean	SD
I think are the most important	4.3	0.1
The woman wants me to focus on	4.1	1.1
I am the most appropriate professional to advise on	3.9	1.1
I know have a reliable and high-quality service to refer to	3.7	1.1
I know there is a good referral pathway for	3.6	1.2
I can cover in the available time but not in any detail	3.4	1.2
I am most comfortable speaking about	3.2	1.4
Are least likely to need follow-up options	2.2	1.3

Note. SD = standard deviation, responses on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

The majority (67%) of midwives provided free text responses of “other” strategies they used to carry out their HePPBes. This data was organised into the categories shown in Table 5.16 below.

Table 5.16

Responses to Survey Item “Please state any other strategies that you use when there is not enough time to address all public health topics”

Other Strategies	n	%
Signposting to written/online materials and support groups	181	54
Follow-up at subsequent appointment	65	19
Combinations e.g. signposting and follow-up	43	13
Relevant to the woman	23	7
Other	12	4
Referral service	7	2
Make time/ extend the appointment	6	2

Note. n= 337. Totals of percentages are not 100 because of rounding.

Aim (c) to Understand What Support Midwives Require

Midwives were asked about the type of support they would like to help them perform their HePPBes. Table 5.17 below shows that getting updates from the services to which they referred women was the type of support that midwives most strongly agreed they would like to receive, followed by resources with information and content, then training, and finally peer support. 72.5% of respondents strongly disagreed that no further support was necessary. Approximately 60% of midwives strongly agreed that they would prefer to receive updates, resources with information and content, and training.

Table 5.17

Mean Responses to Survey Item “to support me in addressing public health topics I would prefer to receive...”

Type of Support	Mean	SD
Updates on the public health services I am referring women to	4.6	0.7
A resource with information and content	4.5	0.8
Training	4.4	0.8
Peer support	3.9	1.0
No further support	1.5	0.8

Note. SD = standard deviation, responses on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Midwives were asked how they would like to receive HePPBe support (i.e. their preferred delivery channel). Table 5.18 shows that the most frequently requested delivery channel was via a person. Digital deliveries of HePPBe support, via either email or mobile phone application, were selected by over half of all midwives who took part as a preferred delivery channel for receiving HePPBe support.

Table 5.18

Responses to Survey Item “I would prefer to receive support in addressing public health topics via the following delivery channels (please tick all that apply)”

Delivery channel	n	%
Delivered by a person	361	72
Email	300	60
App	272	54
Self-help	122	24
Text message	42	8
Other	36	7
Telephone	13	3

Note. N= 505.

In elaborating on the option marked as “other”, 36 midwives provided free text responses of alternative forms of support. The most frequently suggested methods were e-learning, e.g.: *“What about a one-stop-shop website with sections for midwives and for women...particular apps downloadable for women for particular subjects, and in the midwife section, more research documents and background.”*

In terms of preferred delivery method, 55.4% of midwives responded that they wanted HePPBe support to be delivered via a mixture of 1:1 and group, 39.4% wanted the support to be delivered purely in a group setting, and 4.6% wanted the support to be delivered solely on a 1:1 basis.

Finally, midwives were asked if they had any other comments about the support they would like to help them carry out their HePPBes. The free text responses were grouped in terms of the type of support requested and are presented in terms of the number of responses and supporting evidence.

Eighteen responses related to developing HePPBe support via a specific delivery channel including online support (*“Midwives are busy, and resources quickly go out of date – paper is expensive...makes sense to have an internet*

resource that can easily be updated and easily accessed ... I can't hold it all in my head!") and training ("Training with or from other public health professionals – this can feel like an add-on to core midwifery, even though it has always been a part of the role, and expertise from public health professionals would be welcomed.")

Thirteen responses related to requests for updated HePPBe information: *"I think the information and advice changes so frequently that there needs to be stronger links between public health practitioners and midwives, we need to work in partnership more and less in uni-professional groups."*

Nine responses involved requests for more resources to carry out HePPBes, including time (*"More time to actually deliver the message to women"*) and better HePPBe materials (*"Good quality resources to show women that are easy to understand and reliable"*).

Six responses made statements about topic-specific support with regards to health promotion: *"Obesity is the main focus now for public health, and staff need to have set terminology, which I feel would support them in addressing this topic."*

Five responses requested easier access to HePPBe-related services. For example, there were requests for more straightforward referral pathways: *"It's fine identifying possible barriers to a healthy pregnancy but most of us don't know what to do when needs are more complex, which is not a good service for women."*

Five responses gave specific statements about how much HePPBe support they felt they received. These varied from midwives feeling they received no support (*"Any support! I don't feel like I get any at present"*) to midwives who felt well equipped (*"I am lucky I feel I have all the tools I need"*).

Integration of Chapters 3 & 4

The previous chapter presented the findings of interviews with midwives which provided qualitative data about midwives' HePPBes cognitions. Table 5.19 presents the integration of those findings with the current chapter. The table shows that five of the nine TDF domains identified as important in the interview study

were supported by the findings from the questionnaire study.

Table 5.19

Evidence of Midwives' Views Identified in the Interview and Survey Studies

Key TDF domains from the interview study	Survey study findings support or extend interview study findings (✓= evidence or X= no evidence)	Details of how questionnaire findings relate to interview study barriers and facilitators
Professional role and identity	✓	The interview study identified that most midwives view HePPBes as part of their professional role, although there were some midwives who viewed addressing certain topics as not being part of the role of the midwife. The results of the questionnaire supported the interview findings, as the item <i>“Addressing public health topics is a key part of my role as a midwife”</i> had a mean Likert scale response of 4.6 and the items <i>“There is conflict between my role and addressing public health topics”</i> and <i>“There is conflict between me addressing public health topics and my own health-related behaviours”</i> had mean Likert scale responses of 2.1. A small number of responses to the qualitative open-ended questions suggested that, as

Key TDF domains from the interview study	Survey study findings support or extend interview study findings (✓= evidence or X= no evidence)	Details of how questionnaire findings relate to interview study barriers and facilitators
Beliefs about consequences	✓	<p>identified in the interview study, some midwives perceived some topics as being outside their professional remit.</p> <p>The interview study finding that midwives perceived possible harm to the quality of relationships with pregnant women as a barrier to performing HePPBes was partially supported by the questionnaire findings. The item <i>“Addressing public health topics can impact on the relationship I have with the woman in my care”</i> had a mean Likert scale response of 3.4, suggesting that midwives moderately agreed with this statement. The responses to the qualitative open-ended questions regarding the potential for weight management HePPBes to</p>

Key TDF domains from the interview study	Survey study findings support or extend interview study findings (✓= evidence or X= no evidence)	Details of how questionnaire findings relate to interview study barriers and facilitators
Motivation and goals	✓	<p>impact the midwife-woman relationship provided further evidence of this interview study finding being present within the current study.</p> <p>The facilitator of midwives' motivation to support pregnant women to address their health identified within the interview study was supported by the questionnaire findings, which found intrinsic drive to predict performance of HePPBes to be a motivation. The finding that midwives rated importance of HePPBes more highly than level of performance of HePPBes for each of the health promotion topics also suggests that midwives being motivated to perform their HePPBes is a facilitator.</p>
Memory, attention and	X	No further evidence identified.

Key TDF domains from the interview study	Survey study findings support or extend interview study findings (✓= evidence or X= no evidence)	Details of how questionnaire findings relate to interview study barriers and facilitators
decision processes		
Environmental context and resources	✓	The interview study identified that midwives perceived the requirement to perform an increasing amount of HePPBes on top of existing clinical workload as a key barrier to performing their HePPBes. The questionnaire findings provided some support for this finding as the item <i>“There are too many public health topics to address them all in depth”</i> had a mean Likert scale response of 3.7, suggesting that midwives agreed to an extent that this was barrier. The qualitative questionnaire responses, which stated that midwives felt they needed more time to carry out their HePPBes, also provided evidence of this interview study finding being present within the current study.

Key TDF domains from the interview study	Survey study findings support or extend interview study findings (✓= evidence or X= no evidence)	Details of how questionnaire findings relate to interview study barriers and facilitators
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The barrier identified in the interview study with regards to midwives' difficulties in accessing appropriate training was supported by the support need items from the questionnaire, which indicated that midwives require support for HePPBes. There was a mean Likert scale response of 4.4 to the Likert scale item *"To support me in addressing public health topics I would prefer to receive training"*, and the responses to the qualitative open-ended question about preferred HePPBe support indicated HePPBe-related training was required.

The interview study finding that a lack of continuity of care was perceived by midwives as a barrier to performing HePPBes was supported by the qualitative questionnaire findings, which emphasised the need for continuity of care to perform HePPBes.

Key TDF domains from the interview study	Survey study findings support or extend interview study findings (✓= evidence or ✗= no evidence)	Details of how questionnaire findings relate to interview study barriers and facilitators
Social influences	✗	The interview study suggested that some midwives believed their own health behaviours and/or health status, specifically their BMI, could influence their health promotion practice by exerting social pressure. However, the responses to the qualitative open-ended questions in the questionnaire study demonstrated widely differing views as to whether midwives feel their own health behaviours and/or health status has a potential impact on their health promotion practice.
Emotion	✗	Except for a small number of open-ended responses, the interview study finding that midwives' cognitive resources could be a barrier was not evident within the questionnaire

Key TDF domains from the interview study	Survey study findings support or extend interview study findings (✓= evidence or X= no evidence)	Details of how questionnaire findings relate to interview study barriers and facilitators
Behavioural regulation	✓	<p>study. It would have been helpful to have had an item within the questionnaire which assessed if cognitive load was perceived as a barrier to midwives' performances of HePPBes.</p> <p>The interview study identified the use of self-regulation strategies as a facilitator to carrying out HePPBes. The high response rate to the qualitative questionnaire responses suggests that the use of strategies is a key facilitator to performing HePPBes. However, the mean Likert scale response to the statement "<i>I have a pre-formed strategy</i>" was 3.3, and suggests that midwives may not perceive themselves as being strategic in addressing HePPBes.</p>
Nature of the behaviour	X	No further evidence identified.

Note. ✓ = evidence in the survey study to support interview study findings, ✗ = no evidence in the survey study to support interview study findings

5.4 Discussion

Statement of Principal Findings

The midwife's level of HePPBe performance was predicted by their **confidence** in carrying out HePPBes, their **intrinsic drive** to carry out HePPBes, and the degree to which they felt **supported** by resources and colleagues in carrying out HePPBes when controlling for demographics or health behaviours. When selecting which HePPBes to prioritise, midwives appear to be most likely to focus on the health promotion topics they perceive as being the most important. The high number of midwives who provided examples of strategies suggests they are frequently used to overcome barriers to HePPBe performance. Midwives view regular updates from the health promotion services to which they refer pregnant women, as well as information resources, as the most effective methods to support their HePPBes. Midwives want such support to be provided in person and digitally, via a mixture of group and 1:1 input.

Strengths and Weaknesses

A major strength of this study is that it investigates a wide range of factors, including HePPBe cognitions, midwives' personal health behaviours, midwives' HePPBe strategies and midwives' HePPBe support needs, to understand how midwives can be most effectively supported in the performance of their HePPBes. The current study and the interviews reported in Chapter 4 are also the first to use the TDF to investigate the factors influencing the HePPBes that target women's multiple health behaviours that are carried out by midwives. The interviews provided detailed insight from a group of midwives working in a community setting, whilst the questionnaire data is from a large sample of midwives employed within a variety of professional roles. The complementary nature of the quantitative and qualitative methodologies used strengthens the confidence one can have in the findings of both studies (Creswell, Klassen, Plano Clark, & Smith, 2011). There is a degree of overlap in the findings, as shown in Table 5.18. The sample size is at the high end compared to other survey studies using the TDF to study midwives' HePPBes in relation to a

single health-risk topic; Beenstock et al., (2012; n= 589), Holly & Swanson (2019; n= 345) and McParlin et al., (2017; n= 192). However, the midwives in the current study were recruited through social media and therefore the current sample is likely to be more heterogeneous than previous studies, where midwives were recruited as NHS employees. The use of the TDF v1 (Michie et al., 2005) opposed to the TDF v2 (Cane et al., 2012) in developing the questionnaire is justified by a previous study, which found the 12 domains outlined in the TDF v1 (Michie et al., 2005) to be more applicable than the 14 domains reported by the TDF v2 when developing a TDF-based questionnaire (Huijg, Gebhardt & Crone, et al., 2014).

A screening question at the beginning of the questionnaire was used to deter non-eligible individuals from taking part. However, the use of an online study using social media for recruitment means there is a possibility that some non-midwives or non-student midwives may have completed the questionnaire. The inclusion of student midwives in the sample is also a limitation as they are technically not midwives. However, analysis showed that there was no effect of primary role on performance of HePPBes.

There may have been a potential response bias to the strategy items, as midwives may have been less likely to admit to using strategies which could have negative connotations. For example, midwives may have perceived that agreeing with the strategy of focusing on the health promotion topic that can be covered in the available time, but not in any detail, as inferring they are providing suboptimal antenatal care.

Midwife-led continuity models of care include (i) team midwifery models, where midwives share a caseload, or (ii) caseload midwifery, where a midwife has their own caseload of women they care for before, during and immediately after birth. Midwives can also provide maternity care through shared models of care, where they work alongside other maternity care professionals such as obstetricians (Sandall, Soltani, Gates, Shennan & Devane, 2016). The model of care midwives worked within was

not assessed in the current study, as the aim of the intervention is to support midwives regardless of the type of model of care within which they are working. However, it may have been useful to have gathered information about this variable as some of the qualitative data suggested that the “other” HePPBe strategies used were based upon the model of care within which the midwife worked. For example, follow-up at a subsequent appointment is only possible if the midwife is working within a caseload continuity of care model.

Demographic information including midwives’ gender, ethnicity and pregnancy status was also not gathered in the survey. Capturing this data may have potentially explained more of the variance in midwives’ performance of their HePPBes. For example, if a midwife is pregnant, or their partner is pregnant, then this may influence their motivation to address health behaviours during pregnancy.

Relation to Other Studies

Limited evidence exists on the factors influencing midwives’ HePPBes that target women’s multiple health behaviours. The finding that confidence is a predictor of HePPBe performance supports previous study findings which have identified confidence as barrier to performing HePPBes (Lavender et al., 2001; McNeil, Doran et al., 2012). The finding that intrinsic drive or motivation to address HePPBes can predict HePPBe performance is in line with previous evidence which has suggested that pregnancy can be regarded by midwives as an opportunity to engage pregnant women in behaviour change (McNeil, Doran et al., 2012). The finding that feeling supported by resources and colleagues is a predictor of the level of HePPBe performance validates previous literature which has called for more support for midwives (e.g. Sanders et al., 2016). Despite time being a widely cited barrier to midwives carrying out HePPBes, the identification of strategies used to select which health promotion topic to focus on when there isn’t enough time to cover everything has not been reported on before.

Meaning of the Study: Possible Mechanisms and Implications for Clinicians or Policymakers

The current study suggests that midwives want to be actively supported in overcoming perceived barriers to HePPBe performance. The development of an information resource which enhances self-efficacy and motivation, and provides support from colleagues – for example through sharing examples of strategies that other midwives use to perform their HePPBes – may be a potential method through which support may be provided.

Unanswered Items and Future Research

The questionnaire study findings provide support for the previous chapter, which suggested that the development of an intervention to support midwives in helping pregnant women address multiple health behaviours is necessary. Chapter 6 will describe the translation of the findings from Chapters 3, 4 and 5 into an intervention to support midwives in performing their HePPBes. Most midwives stated both the woman and the unborn baby as being their main concern when making decisions about HePPBes. The current study did not examine this finding in detail, but future research could explore it further. For example, how and when do midwives think more about the pregnant woman or the baby?

Conclusion

Midwives' performance of HePPBes were predicted by confidence, intrinsic drive, and perceived support from colleagues and resources. Midwives reported using a variety of strategies in carrying out HePPBes; however, support needs were identified. The development of an intervention to support midwives by addressing barriers and facilitators to carrying out their HePPBes will be described in the next chapter.

CHAPTER 6

THE DEVELOPMENT OF AN INTERVENTION TO SUPPORT MIDWIVES IN ADDRESSING MULTIPLE HEALTH BEHAVIOURS WITH PREGNANT WOMEN

This chapter outlines the development of an intervention to support midwives in addressing health behaviours with pregnant women. The aim of the intervention is to ensure that midwives are covering the health promotion topics they are asked to cover, and that they are carrying out their health promotion practice in a style that is meaningful to them and helpful to the pregnant woman they are caring for. The content of the intervention is based on the evidence presented in the preceding chapters, as well as input from midwives and other key stakeholders (the co-development aspect of the intervention is presented in Chapter 6).

Previous interventions aimed at changing healthcare professionals' behaviour have been based on a variety of intervention development frameworks, such as the Medical Research Council's framework (MRC; Craig et al., 2008), the Behaviour Change Wheel (Michie, van Stralen, & West, 2011), and Intervention Mapping (Bartholomew, Parcel, & Kok, 1998). The intervention development phase of the MRC framework (Craig et al., 2008) recommends identifying the evidence base, identifying/developing theory, and modelling process and outcomes (see Figure 6.1). This was the generic approach taken to developing an intervention to support midwives in addressing health behaviours with pregnant women. The evidence base was identified through Chapters 2, 3, 4 and 5. An appropriate theory was identified and extended (see the theory section below) and a modelling of the process and outcomes was presented through the creation of a logic model (presented in the intervention development overview section below).

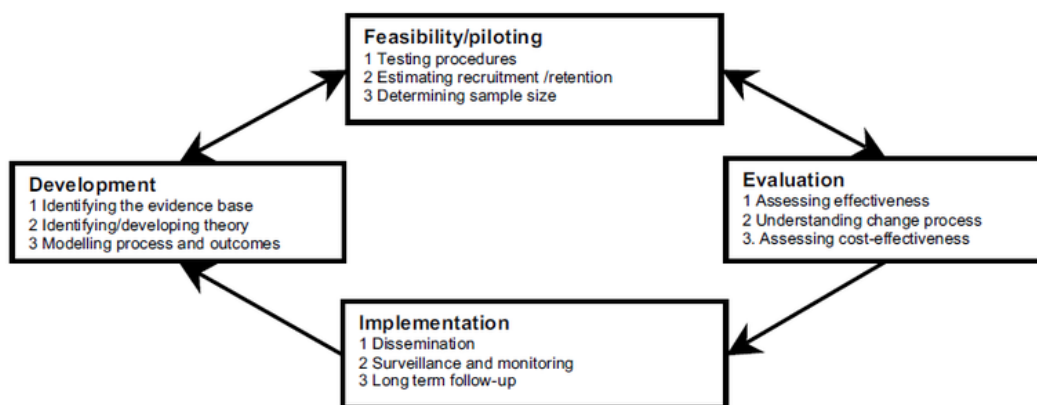


Figure 6.1: Key Elements of Development and Evaluation of Complex Interventions (Craig et al., 2008, p.8).

This chapter presents the systematic development of the intervention in the following stages.

- 1. Background to the intervention development:** a brief overview of the intervention development process, including the individuals involved and the timeline of the intervention development process.
- 2. The intervention:** a presentation of the intervention and suggestions about how it could be implemented within midwifery care.
- 3. Intervention development overview:** a description of the approach taken is presented, along with a logic model and a table presenting a summary of the underlying evidence, theory, behaviour change techniques, and format of delivery.
- 4. Target population:** the identification of the primary and intermediate targets for change are described in the target population section.
- 5. Target behaviours:** selection of the target behaviours and the associated target behaviours are outlined.

6. **Theoretical model:** the development of the underlying theoretical model is reported.

7. **Behaviour change techniques:** the selection of an appropriate taxonomy and BCTs is described.

8. **Format of delivery:** a description of the format of delivery and the development of the materials is provided.

6.1 Background to the Intervention Development

Background information, including details of the key individuals involved and the timeline over which the intervention development took place, is outlined below.

The Core Intervention Development Team

Intervention development is reliant on expert-based consultation to support the integration and translation of existing and newly gathered evidence into an applicable intervention, particularly where knowledge is lacking regarding evidence and theory. For the purposes of the intervention development, expert-based consultation will be defined as: input from individuals of the core intervention team with relevant key skills including knowledge and experience of health psychology behaviour change theory; methodology and evaluation (SD & RO'C); or knowledge and experience in midwifery practice (HC). The core intervention team consisted of the three PhD supervisors and the PhD researcher:

- **SD:** an Assistant Professor and Health Psychologist
- **RO'C:** a Professor in Psychology, and Clinical and Health Psychologist
- **HC:** a Professor of Maternal and Child Health Research, and the Royal College of Midwives (Scotland) Professor of Midwifery
- **JM:** a PhD researcher and Health Psychologist with NHS-based experience of maternity care professional behaviour change

Timeline of the Intervention Development

The evidence informing the development of the intervention was gathered between January 2016 and June 2018 and included a literature review (Chapter 3), an interview study (Chapter 4), and a survey study (Chapter 5). The intervention development took place between June and December 2018 (see Table 1) and consisted of five core intervention team meetings, the gathering of User, patient and public Involvement (UPPI) data (including a one-day intervention refinement workshop for stakeholders), and an acceptability study.

During the first core team meeting, the general approach to intervention development was agreed, namely the identification of relevant theory, BCTs and appropriate format of delivery. The second meeting focused on the underpinning theory and BCTs whilst the intervention development workshop provided an opportunity for key stakeholders to provide their perspective on the format of delivery. At the third core team meeting, JM reported the findings from the workshop and the main components of the intervention were finalised. The fourth core team meeting involved the core intervention team providing feedback on the first draft of the intervention. JM made amendments to the draft intervention before sending it to stakeholders to obtain their feedback. Following UPPI feedback, further amendments were made and a final version of the intervention was drafted (see Chapter 6 for further information on user, patient and public Involvement). The final step in the intervention development process was to carry out a small study to assess the acceptability of the intervention (see Chapter 7 for further details). The timeline of the intervention development is summarised in Table 6.1.

Table 6.1

Timeline of the Intervention Development

Time	Activity	Team members involved
January 2016	Evidence gathering	JM
May 2018		
June 2018	First intervention development meeting	JM & SD
July 2018	Second intervention development meeting	JM/SD/RO'C
October 2018	- Intervention development workshop with key stakeholders - Third intervention development meeting - Preparation of first draft of intervention	JM/SD/RO'C/HC
November 2018	- Fourth intervention development meeting - UPPI data gathering with key stakeholders - Fifth intervention development meeting	JM/SD/RO'C/HC
December 2018	- Re-draft of the intervention - Acceptability data gathering with midwives	JM/SD/RO'C/HC

6.2 The Intervention

The final version of the intervention and suggestions about its use are presented below.

The HePPBe Toolkit

The final version of the intervention was the HePPBe toolkit, which is made up of three components:

1. **The woman's prioritisation tool:** designed to be used by women prior to antenatal appointments and by midwives during antenatal appointments.
2. **The midwife's consultation tool:** designed to be used by midwives during or outside of antenatal appointments.
3. **The personalised plan:** designed to be used by midwives in collaboration with pregnant women, at the end of the antenatal appointments.

Each component of the HePPBe toolkit is presented in the following format:

- (i) an overview image highlights the most important elements;
- (ii) the full-sized version is provided;
- (iii) recommended use and potential impact are outlined.

An overview of the prioritisation tool is presented in Figure 6.2. The prioritisation tool is presented on a larger scale in Figures 6.3 and 6.4. An overview of the midwife's consultation tool is presented in Figures 6.5 and 6.6. The midwife's consultation tool is presented on a larger scale in Figures 6.7, 6.8, 6.9 and 6.10. An overview of the personalised plan is presented in Figure 6.11. The personalised plan is presented on a larger scale in Figures 6.12 and 6.13. A hard copy of each component of the HePPBe toolkit is included as an appendix (see Appendix M for further details).

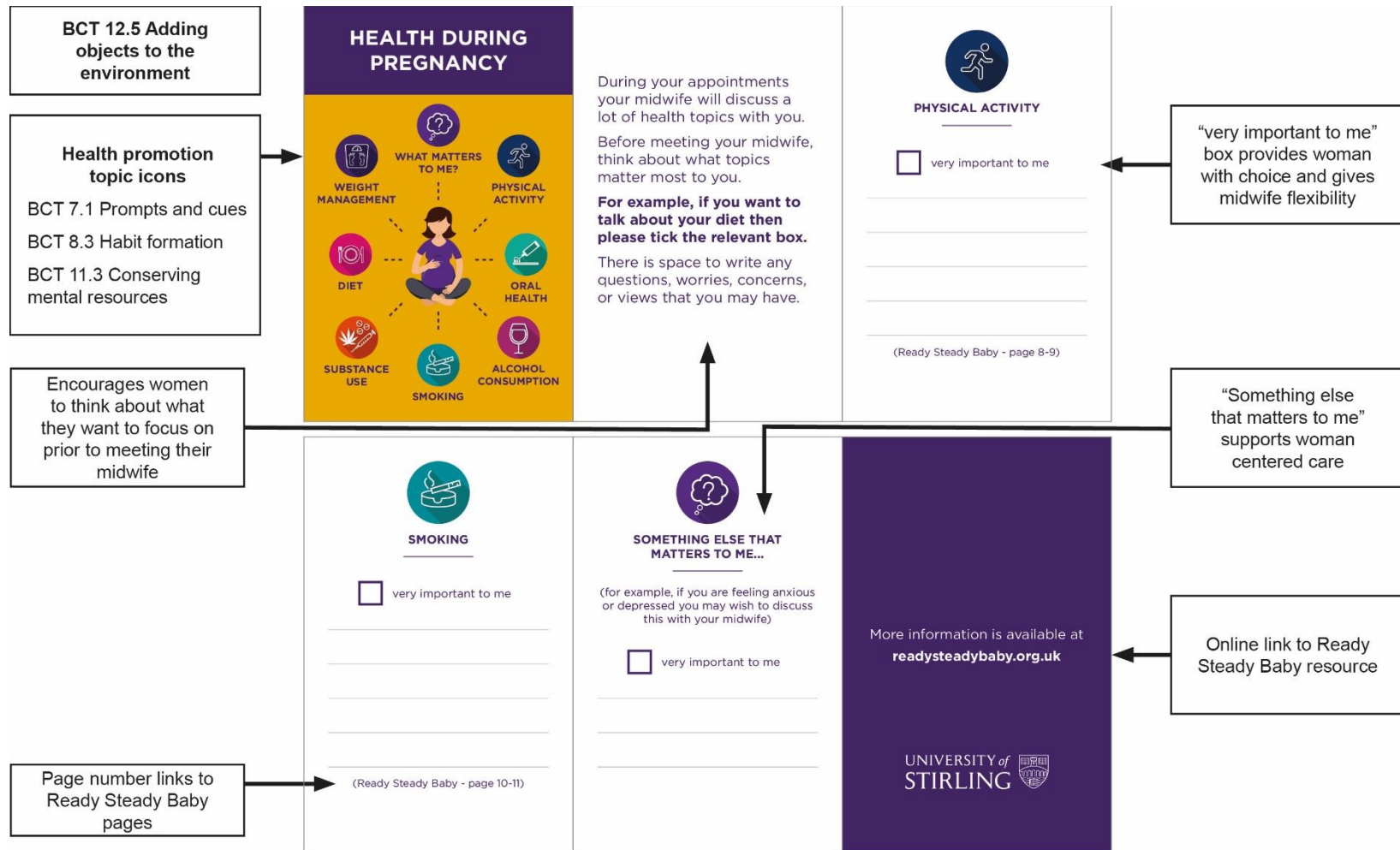


Figure 6.2. Overview of the woman's prioritisation tool.

HEALTH DURING PREGNANCY



During your appointments your midwife will discuss a lot of health topics with you.

Before meeting your midwife, think about what topics matter most to you.

For example, if you want to talk about your diet then please tick the relevant box.

There is space to write any questions, worries, concerns, or views that you may have.



PHYSICAL ACTIVITY

very important to me

(Ready Steady Baby - page 8-9)



ORAL HEALTH

very important to me

(Ready Steady Baby - page 46)



ALCOHOL CONSUMPTION

very important to me

(Ready Steady Baby - page 12)

More information is available at readysteadybaby.org.uk



Figure 6.3. The woman’s prioritisation tool (side A).

 <p>SMOKING</p> <p><input type="checkbox"/> very important to me</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>(Ready Steady Baby - page 10-11)</p>	 <p>SUBSTANCE USE</p> <p><input type="checkbox"/> very important to me</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>(Ready Steady Baby - page 13)</p>	 <p>DIET</p> <p><input type="checkbox"/> very important to me</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>(Ready Steady Baby - page 15-17)</p>	 <p>WEIGHT MANAGEMENT</p> <p><input type="checkbox"/> very important to me</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>(Ready Steady Baby - pages 54-55)</p>	 <p>SOMETHING ELSE THAT MATTERS TO ME...</p> <p>(for example, if you are feeling anxious or depressed you may wish to discuss this with your midwife)</p> <p><input type="checkbox"/> very important to me</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
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Figure 6.4. The woman's prioritisation tool (side B).

Tool 1: The Woman's Prioritisation Tool

Recommended use of the woman's prioritisation tool: this component of the HePPBe toolkit would be given to women before their booking appointment (either by post or in the waiting room prior to their booking appointment). It would be used by the woman to choose which health promotion topics they wish to prioritise in a formal manner.

Suggested phrasing/questions: *"Have you been able to have a think about what health topics are most important to you?"*

Potential impact for the woman: provides an opportunity for women to shape their antenatal care specifically to their needs before they have met their midwife.

Potential impact for the midwife: potentially reduces the time spent making decisions about what topics to focus on, which may alleviate pressure of the HePPBe burden. The woman's prioritisation tool may also help the midwife feel that raising topics such as weight management is less stigmatizing as the woman is aware that it is a topic that should be covered regardless of their BMI. The midwife can use the woman's prioritisation tool to structure their HePPBes: for example, they could ask the woman to rate her top topic or her top three topics.

Other impacts: the woman's prioritisation tool could help in the early stages of building the woman-midwife relationship by making the woman aware of the health promotion topics that she will be asked about. It may also enhance continuity of care by providing a resource that can be used longitudinally throughout pregnancy. The images may potentially be useful for overcoming literacy/language barriers.

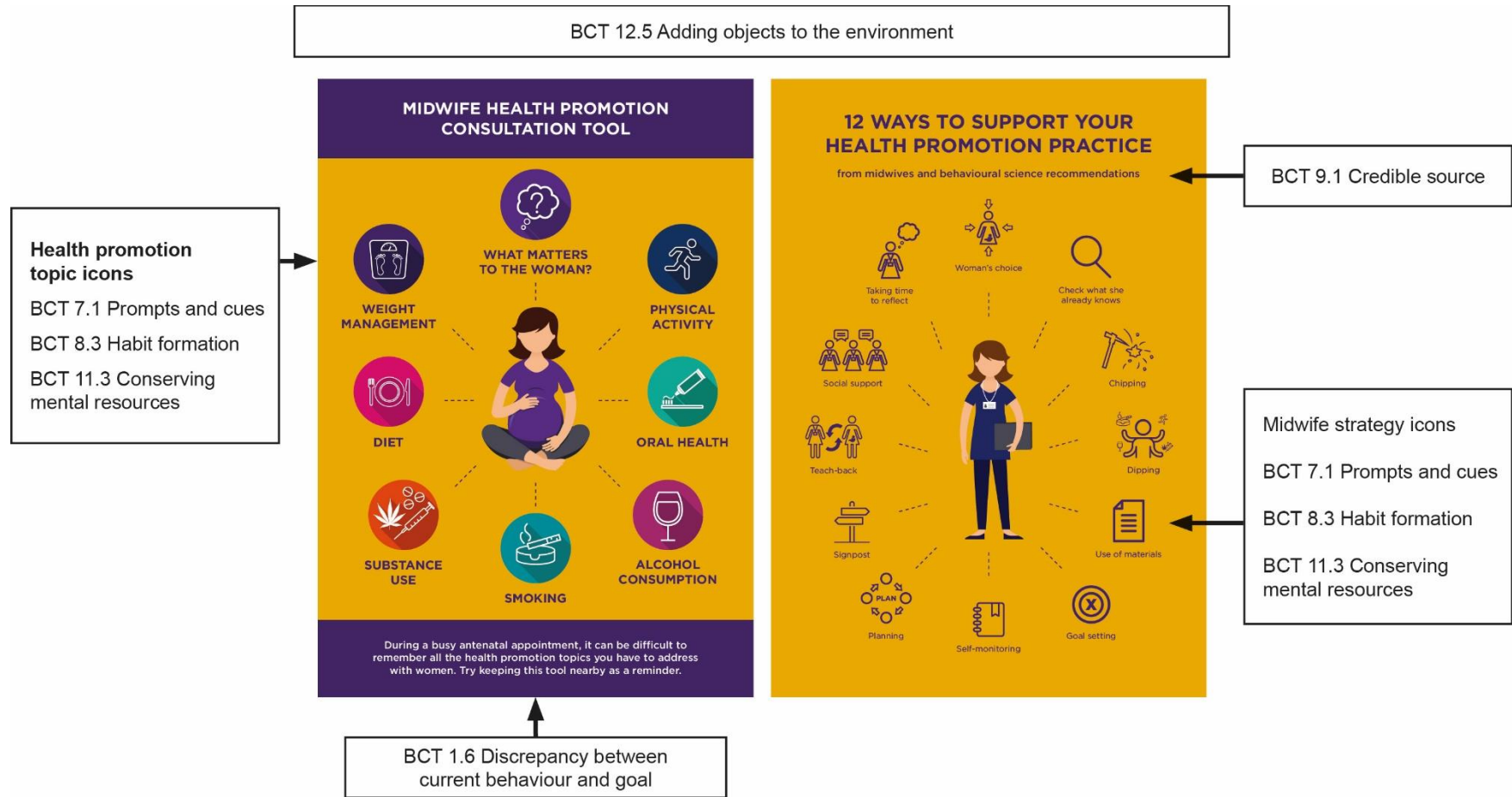


Figure 6.5. Overview of the midwife's consultation tool (pages 1 and 2).

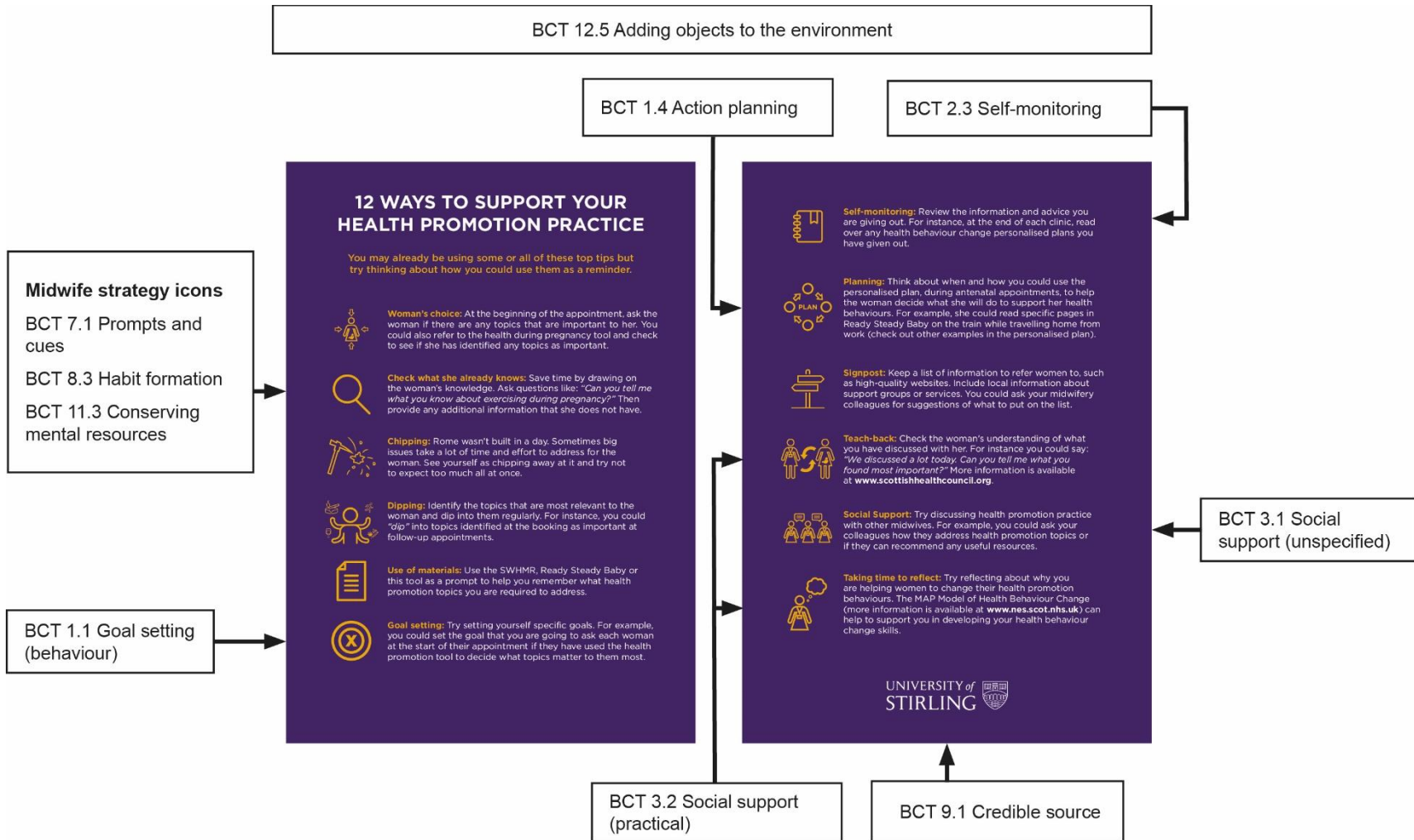


Figure 6.6. Overview of the midwife's consultation tool (pages 3 and 4).



Figure 6.7. Midwife's consultation tool (page 1).



Figure 6.8. Midwife's consultation tool (page 2).

12 WAYS TO SUPPORT YOUR HEALTH PROMOTION PRACTICE

You may already be using some or all of these top tips but try thinking about how you could use them as a reminder.



Woman's choice: At the beginning of the appointment, ask the woman if there are any topics that are important to her. You could also refer to the health during pregnancy tool and check to see if she has identified any topics as important.



Check what she already knows: Save time by drawing on the woman's knowledge. Ask questions like: "Can you tell me what you know about exercising during pregnancy?" Then provide any additional information that she does not have.



Chipping: Rome wasn't built in a day. Sometimes big issues take a lot of time and effort to address for the woman. See yourself as chipping away at it and try not to expect too much all at once.



Dipping: Identify the topics that are most relevant to the woman and dip into them regularly. For instance, you could "dip" into topics identified at the booking as important at follow-up appointments.



Use of materials: Use the SWHMR, Ready Steady Baby or this tool as a prompt to help you remember what health promotion topics you are required to address.



Goal setting: Try setting yourself specific goals. For example, you could set the goal that you are going to ask each woman at the start of their appointment if they have used the health promotion tool to decide what topics matter to them most.

Figure 6.9. Midwife's consultation tool (page 3).

Self-monitoring: Review the information and advice you are giving out. For instance, at the end of each clinic, read over any health behaviour change personalised plans you have given out.

Planning: Think about when and how you could use the personalised plan, during antenatal appointments, to help the woman decide what she will do to support her health behaviours. For example, she could read specific pages in Ready Steady Baby on the train while travelling home from work (check out other examples in the personalised plan).

Signpost: Keep a list of information to refer women to, such as high-quality websites. Include local information about support groups or services. You could ask your midwifery colleagues for suggestions of what to put on the list.

Teach-back: Check the woman's understanding of what you have discussed with her. For instance you could say: *"We discussed a lot today. Can you tell me what you found most important?"* More information is available at www.scottishhealthcouncil.org.

Social Support: Try discussing health promotion practice with other midwives. For example, you could ask your colleagues how they address health promotion topics or if they can recommend any useful resources.

Taking time to reflect: Try reflecting about why you are helping women to change their health promotion behaviours. The MAP Model of Health Behaviour Change (more information is available at www.nes.scot.nhs.uk) can help to support you in developing your health behaviour change skills.

UNIVERSITY of STIRLING

Figure 6.10. Midwife's consultation tool (page 4).

Tool 2: Midwife's Consultation Tool

Recommended use: the midwife health promotion consultation tool would be kept nearby (e.g. in diaries) as a visual prompt for the midwife during antenatal consultations. The strategies could be reflected upon before or after the antenatal appointment.

Potential impact for the woman: n/a.

Potential impact for the midwife: the availability of a prompt and/or strategies to assist midwives may reduce their cognitive load during the appointment.

Source of the strategies: a total of 12 strategies were included in the midwife's consultation tool. Seven strategies were recommended by midwives who took part in the interview and survey studies described in Chapters 4 and 5 (woman's choice, social support, chipping, dipping, signposting, use of materials, and checking what the woman already knows). One strategy (teach-back) was suggested by stakeholders during the intervention development workshop (see Chapter 7 for more information).

Three strategies were BCTs (self-monitoring, action planning and goal setting) which were included to address the psychological processes underpinning the theoretical model (see the sections on the HePPBe theoretical model and the selection of BCTs later in this chapter). Self-monitoring and action planning were also included as strategies to support midwives in using the personalised plan component of the HePPBe toolkit.

One strategy (taking the time to reflect) was included as it is a key element of the MAP of behaviour change training ((NES, n.d.-b); see Chapter 2 for more details) and was included to link the midwife consultation tool to other behaviour change support materials available to HCPs working in Scotland.

BCT 12.5 Adding objects to the environment

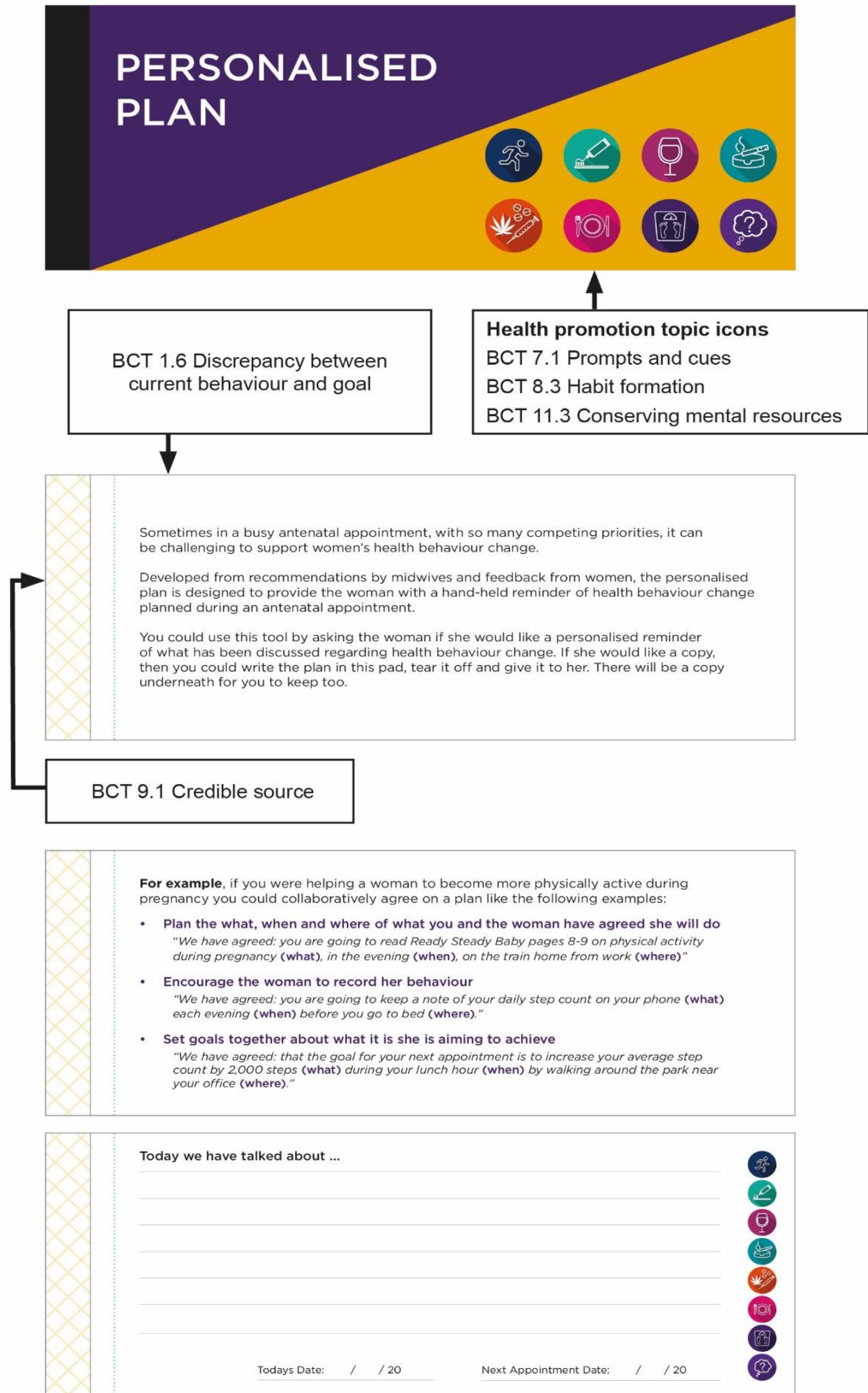


Figure 6.11. Overview of the personalised plan.



Sometimes in a busy antenatal appointment, with so many competing priorities, it can be challenging to support women's health behaviour change.

Developed from recommendations by midwives and feedback from women, the personalised plan is designed to provide the woman with a hand-held reminder of health behaviour change planned during an antenatal appointment.

You could use this tool by asking the woman if she would like a personalised reminder of what has been discussed regarding health behaviour change. If she would like a copy, then you could write the plan in this pad, tear it off and give it to her. There will be a copy underneath for you to keep too.

Figure 6.12. Personalised plan (pages 1 and 2).

For example, if you were helping a woman to become more physically active during pregnancy you could collaboratively agree on a plan like the following examples:

- **Plan the what, when and where of what you and the woman have agreed she will do**
"We have agreed: you are going to read Ready Steady Baby pages 8-9 on physical activity during pregnancy (what), in the evening (when), on the train home from work (where)"
- **Encourage the woman to record her behaviour**
"We have agreed: you are going to keep a note of your daily step count on your phone (what) each evening (when) before you go to bed (where)."
- **Set goals together about what it is she is aiming to achieve**
"We have agreed: that the goal for your next appointment is to increase your average step count by 2,000 steps (what) during your lunch hour (when) by walking around the park near your office (where)."

Today we have talked about ...

Today's Date: / / 20 Next Appointment Date: / / 20




Figure 6.13. Personalised plan (pages 3 and 4).

Tool 3: Personalised Plan

Recommended use: the personalised plan could be used by the midwife during an antenatal appointment to provide the woman with a written record of her planned health behaviour change. The use of non-carbon copy paper means that a copy of the plan could be given to the woman and one could be kept by the midwife (see the section on the development of the materials later in this chapter).

Suggested phrasing/questions: *“Would you like me to write down what we discussed today?”*

Potential impact for the midwife: helps guide the conversation from the perspective of the midwife.

Potential impact for woman: the personalised plan provides women with a personalised reminder of what has been discussed. It also provides the woman with something concrete to take away.

Other impacts: the personalised plan would potentially facilitate continuity of care as the midwife could potentially follow up on the plan at subsequent appointments.

Future Implementation of the HePPBe Toolkit

The HePPBe toolkit is designed so it has the potential to be used by midwives without additional support. However, there are two potential avenues through which the HePPBe toolkit could be implemented: i) a dedicated behaviour change expert and ii) integration within standard training. These potential avenues for implementation of the HePPBe toolkit are discussed below.

Future use 1: educational outreach from a dedicated behaviour change expert. Educational outreach has been shown to be effective in changing health professionals' behaviour (Johnson & May, 2015) and therefore one potential method of ensuring HePPBe toolkit implementation would be for a dedicated behaviour change expert to visit midwifery teams and introduce them to its use. Follow-up visits from a behaviour change expert could also help sustain the use of the HePPBe toolkit by midwives.

In Scotland the integration of primary care and psychological services is currently being piloted through the provision of Behavioural Health Consultants (BHCs), who provide psychological and behaviour change expertise in a primary care setting (Dale & Lee, 2016). The support that BHCs provide is delivered in two ways: firstly, through directly working with patients (e.g. delivering high-intensity psychological interventions), and secondly, through working with HCPs to enhance their behaviour change skills. The BHC role could be adapted for a maternity care setting and used to support the implementation of the HePPBe toolkit.

Future use 2: integration of HePPBe toolkit in standard training.

Integrating the HePPBe toolkit within standard behaviour change training could be beneficial for two reasons. Firstly, the midwife's consultation tool and the personalised plan components of the HePPBe toolkit actively encourage midwives to use BCTs. Undertaking behaviour change training would enable midwives to practise using BCTs; this could therefore help to ensure that the HePPBe toolkit is used in an effective manner. Secondly, unless midwives are continuously supported in using the HePPBe toolkit, there will be no way of ensuring its use will

be sustained. Participation in continuing training, such as a coaching group, could potentially support the ongoing use of the toolkit.

In Scotland, the MAP of Behaviour Change (NES, n.d.-b; see chapter 2 for more details) is a blended learning programme designed to equip HCPs with the skills needed to help their patients make and maintain behaviour change. Along with support based on behaviour change skills and a coaching network, MAP contains a module which encourages HCPs to reflect upon how they could use MAP and its associated BCTs to influence their own behaviour. Undertaking MAP could potentially help midwives to apply the BCTs recommended within the HePPBe toolkit.

6.3 Intervention Development Overview

The MRC framework (Craig et al., 2008) informed the general approach taken to the development of the intervention to support midwives in addressing health behaviours with pregnant women. However, the specific details of the intervention development process are reported according to the Flex Five framework (Dombrowski, O'Carroll & McLellan, 2019).

The Flex Five framework (shown in Figure 6.14) is based on five critical components that should be part of any behaviour change intervention:

- i) target population – who the intervention is aimed at,
- ii) target behaviours – what changes the intervention is attempting to make,
- iii) theory – how the intervention is supposed to work,
- iv) BCTs – what the intervention includes and
- v) format of delivery – the way in which the intervention is being delivered.

The main ethos behind Flex Five is that each behaviour change intervention consists of an integration of the five critical components, and there is no prescribed or stepped guidance on targeting each of these key components. Instead, each aspect can be considered simultaneously or in whatever order developers deem appropriate, necessary or feasible.

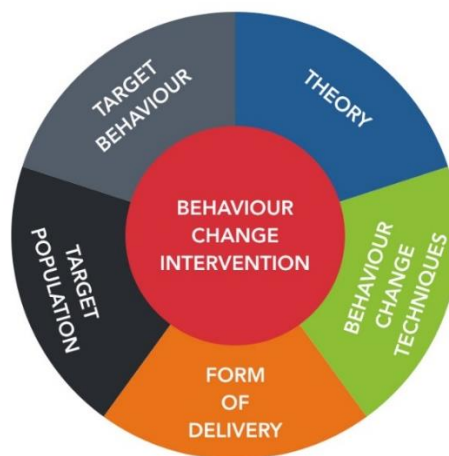


Figure 6.14. Flex Five approach to intervention development (Dombrowski et al., 2019).

The remainder of this chapter describes each of the Flex Five components in turn. Before these separate components are described in detail, an overview of the intervention development process is presented by the logic model (Figure 6.15) and Table 6.2 highlights the link between the evidence collected, the theoretical processes being targeted, the BCTs, and the format of delivery.

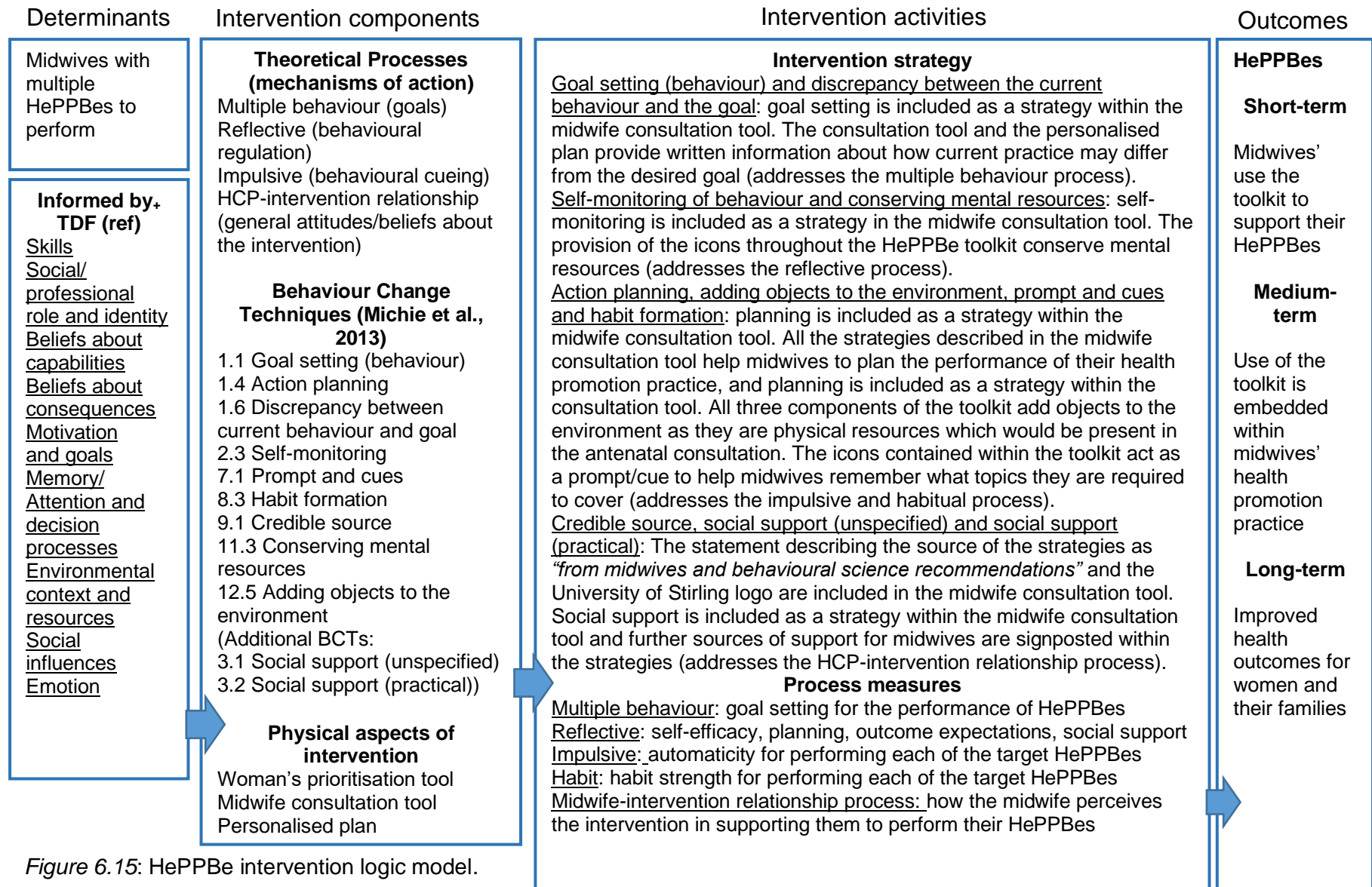


Figure 6.15: HePPBe intervention logic model.

Table 6.2

Relationship between the Evidence Collected, Theoretical Processes, BCTs and FoD

What the evidence collected suggests	Source of the evidence from the thesis	Process	BCT(s)	FoD ¹
Midwives have multiple goals when delivering antenatal care. They have high order goals, such as ensuring the health and wellbeing of both the woman and the unborn baby in their care, and they have low order goals, such as ensuring that pregnant women are aware about the benefits of physical activity. These goals are not exclusive and ultimately overlap, leading to goal facilitation, goal conflict and goal prioritisation.	Chapters 2 (background): highlighted the wide range of public health and clinical tasks that midwives are expected to perform.	Multiple behaviour	1.1 (Goal setting (behaviour))	Goal setting is included as a strategy in the midwife consultation tool: <i>“Goal setting: try setting yourself specific goals. For example, you could set the goal that you are going to ask each woman at the start of their appointment if they have used the health promotion tool to decide what topics matter to them most.”</i> (Midwife consultation tool, page 4).
	Chapter 3 (narrative review): highlighted the multiple HePPBes that midwives are expected to perform.		1.6 (Discrepancy between current behaviour and goal)	Sentence highlighting the discrepancy between current behaviour and goal in the midwife consultation tool: <i>“During a busy antenatal appointment, it can be difficult to remember all the health promotion topics you have to address with women.”</i> (Midwife consultation tool, page 1).
	Chapter 4 (interviews): identified motivation and goals, a key TDF domain.			Sentence highlighting the discrepancy between current behaviour and goal in the personalised plan:
	Chapter 5 (survey): identified intrinsic drive as a predictor of HePPBe level.			

¹ In this table, Format of Delivery refers to how the BCTs are presented within the intervention materials

What the evidence collected suggests	Source of the evidence from the thesis	Process	BCT(s)	FoD ¹
Midwives use various cognitive skills (strategies) to carry out their HePPBes.	<p>Chapter 4 (interviews): identified that midwives use various cognitive skills (strategies) to carry out HePPBes.</p> <p>Chapter 5 (survey): demonstrated that the strategies the midwives most strongly agreed with using when there was not enough time included focusing on the topics the midwife perceived as most important, the topics the woman wants the midwife to focus on, and the topics where the midwife regarded themselves as the most appropriate professional</p>	Reflective process	<p>2.3 (Self-monitoring of behaviour)</p> <p>11.3 (Conserving mental resources)</p>	<p><i>“Sometimes in a busy antenatal appointment, with so many competing priorities, it can be challenging to support woman’s health behaviour change.”</i> (Personalised Plan, page 2).</p> <p>Self-monitoring is included as a strategy in the midwife consultation tool: <i>“Self-monitoring: review the information and advice you are giving out. For instance, at the end of each clinic, read over any personalised plans you have given out.”</i> (Midwife consultation tool, page 3).</p> <p>The presence of the health promotion topic icons throughout the HePPBe toolkit and the midwife strategy icons in the midwife consultation tool help to conserve mental resources.</p>

What the evidence collected suggests	Source of the evidence from the thesis	Process	BCT(s)	FoD ¹
<p>Midwives carry out some HePPBes as a result of cues from the environment (behavioural cueing works by triggering the behaviour from the external environment). Over time the behaviours will be triggered automatically or via habits (Gardner, 2015; Potthoff et al., 2019).</p>	<p>Chapter 4 (interviews): midwives described prompts from the environment, such as maternity notes, or physical prompts, such as the smell of smoke, acting as cues to facilitate performance of HePPBes.</p>	<p>Impulsive process</p>	<p>1.4 (Action planning)</p>	<p>Planning is included as a strategy in the midwife consultation tool:</p> <p><i>“Planning: think about when and how you could use the personalised plan, during appointments, to help the woman decide what she will do to support her health behaviours. For example, she could read specific pages in Ready Steady Baby² on the train while travelling home from work.”</i> (Midwife consultation tool, page 3).</p> <p>Sentence describing how to use the personalised plan:</p> <p><i>“Think about when and how you could use the prescription pad, during antenatal appointments, to help the woman plan what she will do to support her health behaviours.”</i> (Personalised plan, page 2).</p>

² The Ready Steady Baby book (NHS Health Scotland, 2019c) is given to all pregnant women in Scotland and contains NHS guidance about pregnancy and early parenthood.

What the evidence collected suggests	Source of the evidence from the thesis	Process	BCT(s)	FoD ¹
<p>The healthcare professional relationship with the intervention is about how the HCP views the intervention, their general attitudes and beliefs, e.g. if they perceive it as beneficial, if it fits in with their values. Relationships can strongly influence behaviour change (e.g. Kanfer et al., 1991); therefore, the midwife's relationship with the HePPBe toolkit was considered influential in contributing towards</p>	<p>Chapter 5 (survey) demonstrated that midwives wanted more support in performing their HePPBes.</p> <p>Chapter 4 (interviews) highlighted the importance of midwives' relationship with their colleagues (social support) as facilitator to carrying out HePPBes,</p>	<p>HCP-intervention relationship</p>	<p>7.1 (Prompts and cues) and 8.3 (Habit formation)</p>	<p>The presence of the health promotion topic icons and the midwife strategy icons act as a prompt/cue to help midwives remember what topics they are required to cover, and enhances automaticity and habit formation.</p>
			<p>12.5 (Adding objects to the environment)</p>	<p>The presence of the HePPBe toolkit adds an object to the environment.</p>
			<p>9.1 (Credible source)</p>	<p>Sentence describing the source of the strategies: <i>“from midwives and behavioural science recommendations”</i>. University of Stirling logo on the midwife consultation tool. (Midwife consultation tool, page 2).</p> <p>Sentence within the personalised action tool describing stakeholder input: <i>“developed from recommendations by midwives and feedback from women”</i> (Personalised plan, page 2).</p>

What the evidence collected suggests	Source of the evidence from the thesis	Process	BCT(s)	FoD ¹
performance of their HePPBes.				

What the evidence collected suggests	Source of the evidence from the thesis	Process	BCT(s)	FoD ¹
			3.1 (Social support (unspecified))	<p>Social support is included as a strategy in the midwife consultation tool:</p> <p><i>“Social support: try discussing health promotion practice with other midwives. For example, you could ask your colleagues how they address health promotion topics or if they can recommend any useful resources.”</i> (Midwife consultation tool, page 4).</p>

What the evidence collected suggests	Source of the evidence from the thesis	Process	BCT(s)	FoD ¹
			3.2 (Social support (practical))	<p>Signposting midwives to other sources of support as part of two of the strategies included within the midwife consultation tool.</p> <p><i>“Teach-back: check the woman’s understanding of what you have discussed with her. For instance, you could say: “We discussed a lot today. Can you tell me what you found most important?” More information is available at www.scottishhealthcouncil.org.”</i> (Midwife consultation tool, page 4).</p> <p><i>“Taking time to reflect: try reflecting about why you are helping women to change their health promotion behaviours. The MAP Model of Health Behaviour Change (more information is available at www.nes.scot.nhs.uk) can help you in developing your health behaviour change skills.”</i> (Midwife consultation tool, page 4).</p>

6.4 Target Population

The decisions made concerning the identification of the primary and secondary target populations of the HePPBe toolkit are described in the following section.

Primary targets of the intervention

There are several healthcare professionals (HCPs) who can influence a woman's health behaviours during pregnancy and in the immediate postnatal timeframe. These include midwives, student midwives, maternity care support workers, general practitioners and health visitors. Depending on the health of the woman and her baby, other groups of health professionals, such as paediatricians, neonatal nurses, obstetricians, dieticians and physiotherapists could also promote health behaviour change.

It was agreed early on that the intervention would focus on the healthcare professionals most closely associated with routine maternal healthcare provision, i.e. midwives and health visitors. During the evidence-gathering stage, it was decided that the intervention would focus exclusively on helping health professionals to support women during pregnancy rather than the postnatal timeframe. This decision was made on the basis that pregnancy has consistently been regarded as a "teachable moment" (Phelan, 2010), meaning there has been an intense focus by policymakers to ensure HCPs capitalise on pregnant women's supposed motivation for behaviour change (Olander, Darwin, Atkinson, Smith & Gardener, 2015; Olander, Smith & Darwin, 2018). The intense focus on pregnancy as a time for health behaviour change is evidenced by the volume of relevant government and NHS policies/strategies and guidelines presented in Chapters 2 and 3. Health visitors were excluded, as they do not provide support until the end of pregnancy or after birth.

The literature review (Chapter 2) suggested that, in the UK, community midwives were most likely to be performing HePPBes. However, due to the introduction of a continuity model of care in Scotland in 2017 (described in Chapter 2), no decision was taken to focus the intervention towards a specific midwifery

role. The primary targets of the intervention are midwives providing antenatal care, which means that the intervention is designed to fit within many models of care and to be adaptable for an international context.

Student midwives, maternity care support workers or healthcare assistants working in maternity care were not formally excluded at any point in the intervention development process. It is assumed that they can also benefit from the intervention produced, as much of what has been developed could potentially be useful for their professional roles. However, these groups of professionals were not the primary targets of the intervention, and therefore the intervention content does not make any reference to them.

Secondary targets of the intervention

The secondary targets identified were women receiving maternity care, and their unborn babies. Although the intervention is aimed at midwives' health promotion behaviours, it is assumed that there would be an indirect impact on the pregnant woman and her baby, as it is their health and wellbeing that midwives are attempting to influence.

6.5 Target Behaviours

The selection process for the intervention target behaviours is described in the following section.

Midwives' Antenatal Care Behaviours

The different behaviours performed by midwives when providing antenatal care were identified through examining the Scottish Woman-Held Maternity Record (SWHMR; Healthcare Improvement Scotland, 2011). Two main groups of antenatal behaviours were identified: (i) clinical health behaviours which assess the immediate health of the woman and her baby; and (ii) public health behaviours which relate to health promotion, managing social issues, and health protection. These behaviours are outlined below.

(i) Clinical health behaviours

- Behaviours checking the immediate health of the woman: e.g. testing urine and measuring blood pressure.
- Behaviours checking the immediate health of the baby: e.g. listening to the foetal heart rate and assessing foetal growth.

(ii) Public health behaviours

- Health promotion behaviours (e.g. discussing healthy eating, physical activity, breastfeeding or assessing mental health).
- Behaviours managing social issues (e.g. ensuring 1:1 time with the woman to discuss topics she may not wish to discuss in front of her partner).
- Health protection behaviours (e.g. asking for consent for screening tests).

Clinical health behaviours were considered as falling outside of the scope of the thesis, which was centred on midwives' public health behaviours. Health promotion behaviours were prioritised over behaviours related to social issues and health protection, as these were in line with the intervention's aim of supporting

midwives in addressing health behaviours with pregnant women. Due to the high number of health promotion behaviours midwives are required to address (see Chapters 2 and 3), the number of behaviours that were covered was reduced to allow sufficient focus, whilst also keeping a multiple behaviour change perspective. Therefore, the target behaviours of the intervention are midwives' HePPBes (as described in Chapter 1) relating to women's health behaviours which:

- address the woman's and baby's health during pregnancy (excludes infant feeding, personal hygiene and sexual health, as these are health behaviours which address the woman's postnatal behaviours);
- are repeatable by women in their own homes;
- can be performed by women without healthcare service provision.

HePPBes therefore related to the following health behaviours for women: weight management, smoking, alcohol consumption, substance use, physical activity, diet, and oral health.

Midwives' HePPBes and Outcomes

The intervention was developed to focus on changing multiple practice behaviours. The focus on multiple behaviours requires different levels of specificity of the target behaviour. The general level is the behavioural domain healthcare provision, defined in terms of Target(s), Action, Context(s), Time(s) (TACT; Fishbein, 1967): *"Carrying out specific behaviours (including asking questions) aimed at improving the health of a pregnant woman, and her baby, in a routine antenatal care consultation"*. At the general level, the aim of the intervention is to help midwives to cover everything they are asked to cover and to carry out their health promotion practice in a style that is meaningful to them and helpful to the woman. The specific level of the target behaviours covers the actual behaviours themselves, such as the calculation of BMI and measuring of carbon monoxide levels.

The aim of the intervention was to support midwives while ensuring they are reliably and effectively engaging in recommended HePPBes. Therefore, the target behaviour and target outcome were:

- i) performance of the HePPBes
- ii) carrying out HePPBes in a way that is meaningful to the midwife

Process Measures

This thesis will assess the prospective acceptability of the HePPBe toolkit. The description of the measurement of behaviour change described below is on a hypothetical level, as behaviour change was not assessed in the context of this thesis.

The principal of correspondence (Fishbein & Ajzen, 2011) suggests that to predict a behaviour, the measure used must be at the same level of the behaviour being predicted – specifically, the intention and behaviour have to include the same TACT. Since it is not possible to measure meaningfulness of HePPBes objectively, the performance of HePPBes was considered the appropriate behaviour change target to assess. Process measures are described below in relation to the element of the theoretical model (which underpins the intervention and is described in section 4) that they represent.

Multiple behaviour process measure

- i) Goal setting for the performance of HePPBes

Reflective process measures

- ii) Self-efficacy – midwives' confidence in performing HePPBes
- iii) Planning of the performance of HePPBes
- iv) Outcome expectations regarding the performance of HePPBes
- v) Perceived social support in performing HePPBes

Impulsive/intuition/heuristic process measures

- vi) Automaticity for performing each of the target HePPBes

Midwife-intervention relationship process

- vii) How the midwife perceives the intervention as supporting them to perform their HePPBes

6.6 Theoretical Model

The development of the HePPBe theoretical model (displayed in Figure 6.16 below) informing the intervention is reported below.

The HePPBe model was informed by consideration of the evidence presented in Chapters 2, 3, 4 and 5. Psychological constructs defined as component parts of theories (Michie et al., 2005) were grouped into “processes” – a representation of what the grouping of constructs stands for. Four general types of processes were generated: multiple behaviour process, reflective process, impulsive process, and the HCP-intervention relationship process. The reasons why these processes were identified as important in understanding midwives’ HePPBes are outlined below.

Multiple Behaviour Process

Chapters 2 and 3 highlighted the multiple HePPBes that midwives are expected to perform alongside all their clinical behaviours. Chapters 4 and 5 indicated that midwives are motivated in performing their HePPBes, so behaviour change constructs related to the pursuit of multiple goals are included within the multiple behaviour process. Goal conflict (when multiple goals compete), goal facilitation (when multiple goals provide cross-over benefits) and goal priority (the prioritisation of one goal over another) have been shown to be predictive of HCP behaviour (Presseau, Sniehotta, Francis & Campbell, 2009; Presseau, Francis, Campbell & Sniehotta, 2011) and are included as constructs in the multiple behaviour change process. The evidence collected within Chapters 4 and 5 also suggested midwives held different levels of goals. Higher-order goals related to self or identify, e.g. *“I want to help women and their families be healthy”*, and lower-order goals related to plans or strategies e.g. *“I will discuss the benefits of PA while I’m taking bloods”*. The construct goal hierarchies (Carver & Scheier, 1998), where higher-order goals are the sum output of the lower-order goals, is included in the multiple behaviour change process. The multiple behaviour process is shown in purple in Figure 6.16.

Reflective/Impulsive Processes

The evidence collected in Chapters 4 and 5 highlighted that midwives use various cognitive skills to carry out their HePPBes, but also perform HePPBes as a result of cues from the environment. Most theories explaining health-related behaviour focus on the conscious thought processes (e.g. attitudes, norms, intention and self-efficacy) and do not incorporate behaviour which is cued by the environment (Presseau, Johnston, Heponiemi et al., 2014). Dual process theories (e.g. Strack and Deutsch, 2004; Hofmann, Friese & Wiers, 2008) consider behaviour as being managed by two parallel processes – the reflective system, which consists of conscious, effortful processes, and the implicit system, which accounts for impulsive processes. These processes were principal components of the HePPBe theoretical model.

The reflective process within the HePPBe model is based on evidence collected in Chapters 4 and 5 that suggests that whilst midwives are motivated to undertake HePPBes, carrying out a high number of HePPBes alongside all their clinical tasks can place demands on their cognitive resources. Previous research has shown that intentions can quickly be forgotten in demanding situations (Einstein, McDaniel, Williford, Pagan & Dismukes, 2003). Hence, the reflective process within the HePPBe model included the Health Action Process Approach (HAPA; Schwarzer & Luszczynska, 2008) so that both motivational constructs (self-efficacy, outcome expectations and intention) and volitional constructs (action planning and coping planning) are included. The reflective process is shown in orange in Figure 6.16.

The impulsive process is based upon the evidence gathered in Chapters 4 and 5 which highlighted that cues had the potential to trigger midwives' HePPBes. Habit is defined as the activation of automatic reactions based on internal and external cues (Gardner, 2015) and previous research has demonstrated that habit plays a significant role in HCP behaviour (Potthoff et al., 2019). The construct automaticity, which is the defining aspect of habit (Verplanken and Orbell, 2003), is therefore included in the HePPBe theoretical model as contributing towards performance of HePPBes. The reflective process theoretical constructs of action

planning and coping planning may support the impulsive process by creating cue-response links which underlie automaticity (Potthoff et al., 2017). The impulsive process is shown in green in Figure 6.16.

HCP-intervention Relationship Process

Relationships can strongly influence behaviour change (Kanfer & Goldstein., 1991). For instance, alliance between a therapist and patient, defined as “a shared agreement of goals, an assignment of tasks and the development of bonds” (Bordin, 1979, p.253), has been demonstrated as therapeutic to the patient independent of the psychological intervention being delivered (Martin, Garske, Davis, 2000). Hence, midwives’ relationship with the HePPBe toolkit was considered influential in contributing towards performance of their HePPBes. The HCP-intervention relationship process taps into midwives’ higher-order goal of wanting to help women and their families be healthy and is shown in blue in Figure 6.16.

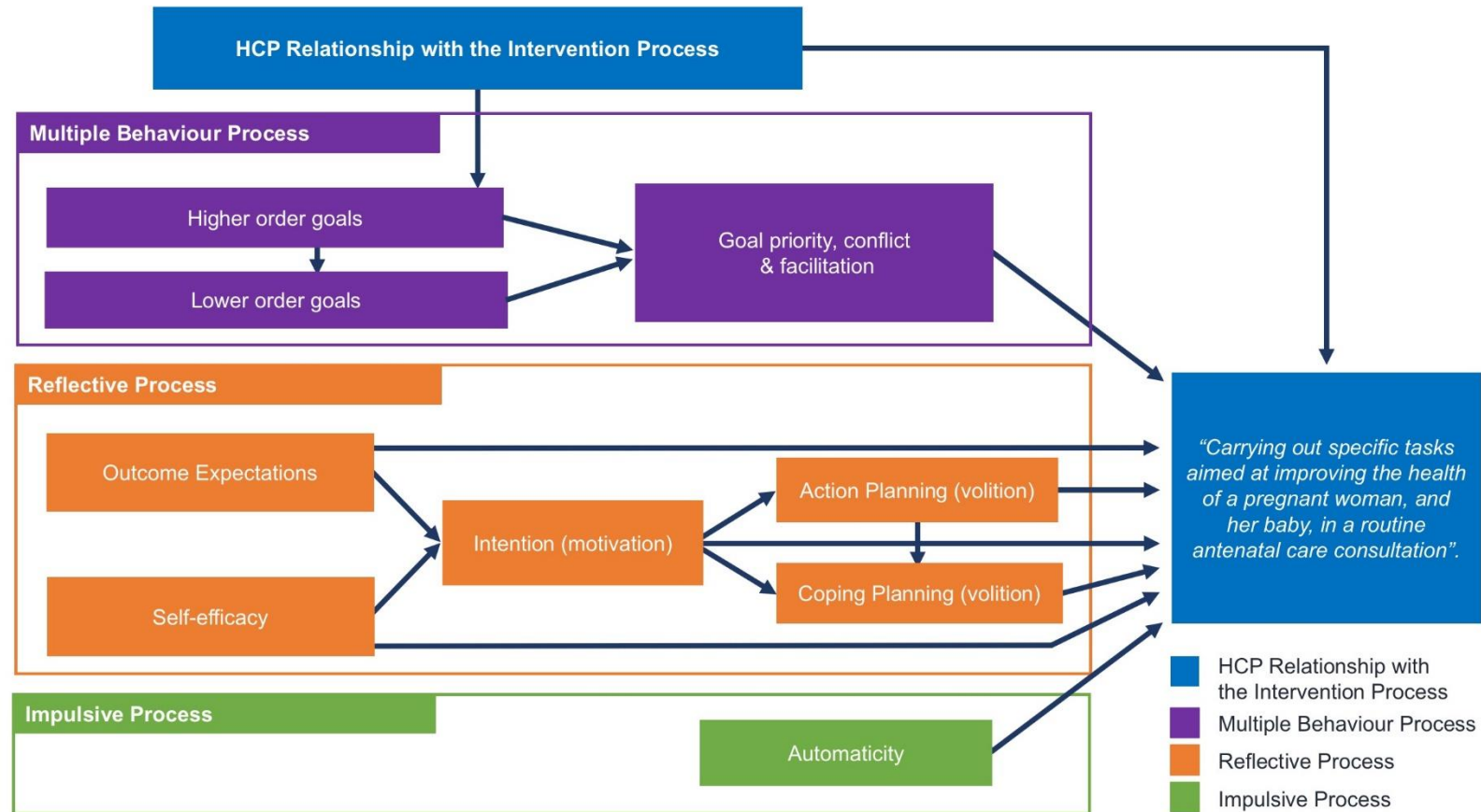


Figure 6.16. HePPBe theoretical model used to develop the HePPBe toolkit.

Comparison of the HePPBe Theoretical Model with the IDEA Theoretical Model

The four processes outlined above were found to be in line with a theoretical model (shown in Figure 6.17) explaining HCPs' multiple health behaviour changes. The Improving Diabetes care through Examining, Advising and prescribing (IDEA) model (Presseau, Hawthorne et al., 2014) has been shown to predict HCPs multiple behaviours (Presseau, Johnston, Francis et al., 2014; Presseau, Johnston, Heponiemi et al., 2014). Therefore the IDEA model was integrated with the evidence collected during the thesis and subsequently expanded into the new HePPBe theoretical model used in this thesis. The theoretical constructs contained within the IDEA model are described and compared to the HePPBe theoretical model in Table 6.3 below. In addition to the differences outlined in Table 6.3, the HePPBe theoretical model also attempted to consider the context in which HePPBes take place by considering HePPBes as occurring in parallel with each other, as demonstrated by the inclusion of the TACT (Fishbein, 1967) definition of the behaviour shown in Figure 6.16. This contrasts with the IDEA model, which considered HCPs' multiple behaviours as occurring sequentially (Presseau, Johnston, Heponiemi et al., 2014).

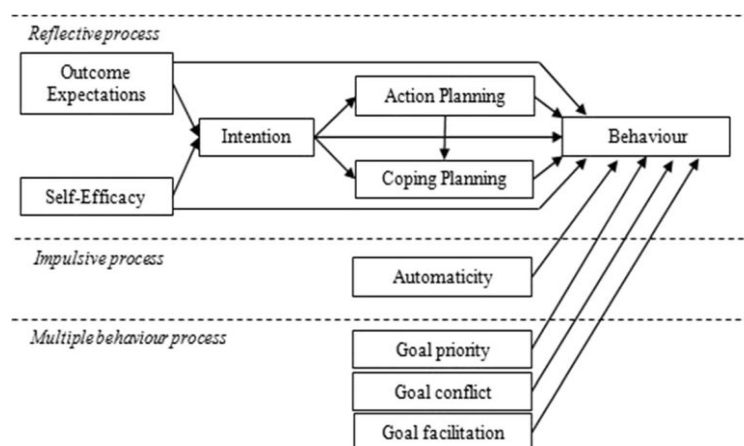


Figure 6.17. Theoretical model used in the Improving Diabetes care through Examining, Advising and prescribing (IDEA) study (Presseau, Hawthorne et al., 2014).

Table 6.3

Differences between the IDEA and HePPBe Theoretical Models

Process	IDEA theoretical model (Presseau, Hawthorne et al., 2014)	HePPBe theoretical model
Multiple behaviour	<p>The IDEA theoretical model suggests that HCP behaviour is influenced by multiple behaviour constructs, including:</p> <ul style="list-style-type: none"> i) goal conflict – when limited resources, such as time, energy and finances, result in competing demands (Presseau et al., 2009) ii) goal facilitation – when multiple goals provide a crossover benefit by providing extra incentives (Presseau et al., 2011) iii) goal priority – when one goal is selected over another (Conner et al., 2016) <p>However, the IDEA model describes goals purely in terms of the healthcare professional’s competing behavioural goals, and does not take account underlying values or overarching goals.</p>	<p>The HePPBe theoretical model includes the role of goal hierarchies (Carver & Scheier, 1998) which take account of higher-order goals relating to self or identify. Higher-order goals are the sum output of the lower-order goals (plans or strategies).</p>

Process	IDEA theoretical model (Presseau, Hawthorne et al., 2014)	HePPBe theoretical model
Reflective	The reflective process described in the IDEA model was based primarily on the HAPA model (Schwarzer & Luszczynska, 2008) and suggests that HCPs' multiple behaviours consist of forming an intention which is mediated by self-efficacy and outcome expectations (motivation phase). Action and coping planning overcome the intention-behaviour gap (volitional phase).	No changes or additions were made to this part of the theoretical model.
Impulsive	The impulsive process in the IDEA model suggests that automaticity, a sub-component of habits (Verplanken and Orbell, 2003), feeds directly into behaviour.	No changes or additions were made to this part of the theoretical model.
HCP-intervention relationship	Not considered.	The HePPBe theoretical model considered the potential impact of the HCP's relationship with the intervention itself and how this relates to higher-order goals. It is hypothesised that if a HCP views the intervention as contributing to the higher-order goal (e.g. for midwives this could be wanting to help women and their families be healthy), then they are more likely to engage in the intervention.

Behaviour Maintenance

To ensure the HePPBe theoretical model supported maintenance of the behaviour, it was informed by the findings of a systematic review of maintenance of behaviour change theories (Kwasnicka et al., 2016). The results of this review suggested that five themes (maintenance motives, self-regulation, resources, habits and contextual influences) are fundamental to the initiation and maintenance of health-related behaviour (see Chapter 2 for more details). Comparison of the HePPBe theoretical model with these five themes was carried out to check that the theoretical constructs contained within the HePPBe model have the potential to support maintenance of midwives' HePPBes. Table 6.4 shows that three themes fundamental to the initiation and maintenance of health-related behaviour (Kwasnicka et al., 2016) are represented within the HePPBe theoretical model. These maintenance themes are self-regulation, resources, and habits.

Table 6.4

Representation of Themes Key to Initiation and Maintenance of Health-Related Behaviour (Kwasnicka et al., 2016) within the HePPBe Theoretical Model

Maintenance theme (Kwasnicka et al., 2016)	How the theory contained within the theme supports maintenance	Contained within the HePPBe theoretical model	How the HePPBe theoretical model represents the theme from the review
Maintenance motives	Behaviour is more likely to be maintained if an individual has a motive, such as enjoyment from engaging in the behavior.	No	n/a
Self-regulation	Individuals are more likely to maintain behaviour if they can monitor and regulate the new behaviour, and overcome issues which may arise and prevent them from performing the new behaviour. Control theory (Carver & Scheier, 1982) suggests that monitoring of current behaviour against goals can either cause an individual to disengage (if they perceive their behaviour as not meeting their goal) or maintain their behaviour (if they	Yes	Presence of theoretical constructs relating to the pursuit of multiple goals (goal conflict/facilitation/prioritisation and hierarchies) within the multiple behaviour process.

Maintenance theme (Kwasnicka et al., 2016)	How the theory contained within the theme supports maintenance	Contained within the HePPBe theoretical model	How the HePPBe theoretical model represents the theme from the review
	perceive their behaviour as meeting or surpassing their goal).		
Resources	Individuals are more likely to maintain their behaviour if they are equipped with enough psychological and physical resources. Dual process models (e.g. Strack and Deutsch, 2004) can support maintenance as, when reflective resources are depleted, the impulsive process supports automaticity of the new behaviour.	Yes	Presence of the reflective and impulsive processes.
Habits	The formation of habits and automatic responses to relevant cues is key in maintaining health behaviours.	Yes	Presence of the psychological construct automaticity, contained within the impulsive process.
Contextual influences	A supportive environment and social support enhance motivation.	No	n/a

6.7 Behaviour Change Techniques

Following on from the conceptualisation and development of the underlying HePPBe theoretical model, appropriate behaviour change techniques (BCTs) were identified as described in the section below.

Selection of a Taxonomy of BCTs

Taxonomies of BCTs provide systematic organization of techniques. Examples include the Effective Practice and Organisation of Care (EPOC) taxonomy, listing techniques to change healthcare professional practice, or the Intervention Mapping taxonomy (Bartholomew et al., 1998), which specifies behaviour change methods alongside the parameters of effectiveness (which are the conditions that must be satisfied for the behaviour change method to be effective). The BCT Taxonomy version 1 (Michie et al., 2013) was chosen for the development of the current intervention because some of the evidence reported in this thesis had been gathered and analysed using the Theoretical Domains Framework, which has been directly linked to the BCT taxonomy (Michie et al., 2017).

Selection of the BCTs

The selection of the BCTs took part in two key stages: an initial selection during the early core team meetings, and a final selection near the end of the intervention development process.

Initial selection of BCTs. An initial selection of BCTs was made by considering literature relating to the four processes underlying the HePPBe theoretical model. For instance, action and coping planning have been shown to be effective in supporting HCP behaviour change by tapping into reflective and impulsive processes (Potthoff et al., 2017), and as such were included as potential BCTs. This initial list of BCTs was discussed and refined during the second core intervention development team meeting to include: 1.1 (Goal setting (behaviour)); 1.4 (Action planning); 2.3 (Self-monitoring of behaviour); 6.1 (Demonstration of the behaviour); 7.1 (Prompts and cues); and 9.1 (Credible source).

Final selection of BCTs. Once the HePPBe theoretical model had been fully developed and the format of delivery (FoD) had been decided (see FoD section below and Chapter 7 for more details), a final selection of BCTs was made with help from the Theory and Techniques Tool (Human Behaviour Change Project, n.d.).

The Theory and Techniques Tool is an online resource which links BCTs and their mechanisms of action – the processes through which BCTs affect behaviour to bring about change. For instance, the BCT prompts and cues influence behaviour via the mechanism of action memory, attention and decision processes. The 74 BCTs included in the Theory and Techniques Tool are from the BCT Taxonomy v1 (Michie et al., 2013). The 26 mechanisms of action consist of the 14 domains from the TDF v2 (Cane et al., 2012) and the 12 additional most frequently cited mechanisms of action from a set of 83 theories of behaviour change (Michie et al., 2014). The links between the BCTs and the mechanisms of action are based upon a literature synthesis study (Carey et al., 2019), expert consensus (Connell et al., 2019), and triangulation of these two studies (Johnston et al., 2018).

The processes described within the HePPBe theoretical model and mechanism of action were considered to have a similar meaning, given that processes were defined as groupings of psychological constructs (the component part of theories) and mechanisms of action were defined as processes through which a BCT affects behaviour. The Theory and Techniques Tool was used to support the identification of the final BCTs by selecting a mechanism of action to represent each of the four general processes contained within the HePPBe theoretical model.

The mechanism of action goals were selected to represent the multiple behaviour process within the HePPBe theoretical model, which contained psychological constructs related to the pursuit of multiple goals. The mechanism of action behavioural regulation was selected to represent the reflective process from the HePPBe theoretical model, as it included cognitive skills for managing

behaviour. The mechanism of action behavioural cueing was selected to represent the impulsive process from the HePPBe theoretical model, as it included processes by which behaviour is triggered by the external environment. No mechanism of action was deemed appropriate to represent the HCP-intervention relationship process. BCTs were therefore selected on the basis that they would enhance midwives' perceptions of the intervention as a resource which could support them in addressing health behaviours with pregnant women.

The BCTs linked to these mechanisms of action (see Table 6.5 below) were therefore considered for inclusion in the intervention. The final BCTs selected were chosen because they targeted the processes underpinning the HePPBe theoretical model and they were deemed the most feasible for use within the format of delivery selected (described in the next section). The final selected BCTs included in the HePPBe toolkit are highlighted in bold in Table 6.5.

Table 6.5 shows that the multiple behaviour process was addressed using the mechanism of action goals. The BCTs selected were 1.1 (Goal setting) and 1.6 (Discrepancy between current behaviour and goal). The reflective process was addressed via the mechanism of action behavioural regulation. The BCTs selected were 2.3 (Self-monitoring) and 11.3 (Conserving mental resources). The impulsive process was addressed by the mechanism of action behavioural cueing. The BCTs selected were 1.4 (Action planning), 7.1 (Prompts and cues), 8.3 (Habit formation) and 12.5 (Adding objects to the environment). To tap into the HCP-intervention relationship, the BCT 9.1 (Credible source) was selected to address midwives' perceptions of how the intervention fitted into their higher-order goals. In addition, 3.1 Social support (unspecified) and 3.2 Social support (practical) were included, as they were deemed appropriate relational techniques to support the HCP-intervention relationship process.

Table 6.5

Potential and Selected BCTs to Target the Processes Contained Within the HePPBe Theoretical Model

Process (mechanism of action = definition from Theory and Techniques Tool)	BCTs linked to process (BCTs selected for the intervention are in bold)
Multiple behaviour (Goals = <i>mental representations of outcomes or end states that an individual wants to achieve</i>)	1.1 Goal setting (behaviour) 1.3 Goal setting (outcome) 1.5 Review behaviour goal 1.6 Discrepancy between current behaviour and goal 1.7 Review outcome goal(s)
Reflective (Behavioural regulation = <i>Behavioural, cognitive and emotional skills for managing or changing behaviour</i>)	1.2 Problem solving 2.3 Self-monitoring of Behaviour 4.2 Information about antecedents 8.2 Behaviour substitution 11.2 Reduce negative emotions 11.3 Conserving mental resources
Impulsive (Behavioural cueing = <i>processes by which behaviour is triggered from either the external environment, the performance of another behaviour, or from ideas appearing in consciousness</i>)	1.4 Action planning 7.1 Prompts and cues 8.3 Habit formation 12.1 Restructuring the physical environment 12.3 Avoidance/reducing exposure to cues for the behavior 12.5 Adding objects to the environment
HCP-intervention relationship	9.1 Credible source 3.1 Social support (unspecified) 3.2 Social support (practical)

6.8 Format of delivery

This section describes the decisions made regarding the format of delivery (FoD) and the development of the materials.

The selection of the FoD for the HePPBe intervention was considered throughout the intervention development process, bearing in mind that it had to support the BCTs selected to address the four theoretical processes (multiple behaviour process, reflective process, impulsive process and the HCP-intervention relationship process) whilst being feasible within the confines of the PhD.

Both ideal and realistic FoDs were considered and three options were identified as potential FoDs given the available time and resources. These were: (i) a Buddy system; (ii) delivery of a training package such as MAP (NES, n.d.-b; see Chapter 2 for more details); and (iii) a (handheld) tool. These three options were presented to stakeholders at the intervention development workshop (see Chapter 7 for more details). The findings from the workshop were discussed at the third core intervention development team meeting, where the concept of a tool evolved into a HePPBe toolkit. Following the fourth core intervention team meeting (where JM presented a first draft of the materials) and collection of UPPI feedback (see Chapter 7 for more details), the final FoD was selected as a handheld toolkit composed of a woman's prioritisation tool, a midwife consultation tool, and a personalised plan.

A preliminary framework (Dombrowski, O'Carroll & Williams, 2016) suggests that the following delivery elements be detailed in the development of FoD: the provider, the format, the materials, the setting, the intensity, the tailoring, and the style. These details, in relation to the format of the current intervention, are presented in Table 6.6 below.

Table 6.6

FoD Summary of the HePPBe toolkit based on Recommendations by Dombrowski, O'Carroll & Williams (2016)

Delivery elements	Delivery features	HePPBe toolkit
Provider	Provider characteristics Professional background Professional experience Number of providers Training in intervention facilitation Training in intervention delivery Intervention relevant competence Continuity	The intervention is self-administrated by the midwife
Delivery format	Mode of delivery Delivery method Delivery channel Delivery route	Environmental Individual Self-help Text and picture
Materials	Participant materials Provider materials Intervention materials	Z-fold single concertina card, A5 leaflet and non-carbon copy (NCR) tear-off pad N/A Feedback form

Delivery elements	Delivery features	HePPBe toolkit
Setting	Location	Hospital, community health centre, women's homes
	Venue	Antenatal clinic rooms
Intensity	Duration of intervention	The intervention is self-administrated, therefore the intensity is determined by the user.
	Number of contacts	
	Length of contacts	
	Frequency	
	Spacing	
	BCT sequencing	
	Contact form	
Tailoring	Intervention variation	Universal
	Tailoring source	Self-tailored
Style	Standardisation	Personal
	Delivery style	Patient-centred and midwife-centred
	Communication style	The woman's prioritisation tool is patient-led and the consultation tool is midwife-led. The personalised plan is led jointly by the woman and the midwife.
	Communication techniques	The HePPBe toolkit was designed to support midwives to plan for and reflect on their health promotion practice. It was also designed to help women plan what health behaviour change support they wanted.
	Visual style	The overall visual style was designed to be bright, noticeable and user-friendly in a busy clinical environment. Iconography was used to

Delivery elements	Delivery features	HePPBe toolkit
	Complexity	provide the midwife with visual cues and to minimise the amount of information presented by text. The intervention was designed to be easy to use in a busy clinical environment.

Development of the Materials

The development of the materials took place following the third intervention development meeting, where the three key components of the intervention were decided. Firstly, JM wrote a graphic design brief which included details of what each element was, why it was being designed, when it would most likely be used within the antenatal care timeframe, and any decisions about the design that had already been made. A graphic designer was then consulted about the development of the materials. The following decisions were made based on a combination of UPPI feedback (see Chapter 7 for more information), advice from the graphic designer, and discussions amongst the core development team. The intervention was designed to be easily adaptable for electronic use. The final materials were:

- A Z-fold single concertina card (the woman's prioritisation tool)
- An A5 leaflet (the midwife consultation tool)
- An NCR tear-off pad (the personalised plan)

These were designed based on the principles described below.

Size. The HePPBe toolkit had to be easily transportable for both the woman and the midwife. Consequently, nothing larger than A5 – the size of a midwife's hand-held diary – could be produced.

Colours. The colours were selected to be eye-catching and easily noticeable by midwives in clinic, particularly the consultation tool, which was designed to be a visual prompt and as such had to be bright and engaging. Therefore, non-clinical, warm, complementary colours were chosen.

Font. Sans serif font was used as it is easily readable and user-friendly.

Iconography. To ensure the intervention was clear and easy to understand, custom-designed iconography and icons from the University of Stirling brand bank were used to create visual prompts which were relatable to the user.

Layout. The HePPBe toolkit was designed to be straightforward to use in a busy clinical environment. Therefore, the amount of text was kept to a minimum and, where possible, information was presented visually. The layout of the content within the intervention is explained in relation to each component of the HePPBe toolkit below.

The woman's prioritisation tool layout. To emphasise the patient-centred nature of the intervention, the image of the woman was placed in the centre with the health promotion topics around her. This image also provided a visual prompt for midwives, as it provided them with information about the health promotion topics they are required to cover.

The health promotion topic icons displayed around the image of the pregnant woman were presented so that the addiction topics were grouped together (i.e. alcohol consumption, smoking and substance use) and the "what matters to me" icon was in the middle, to emphasise patient-centredness. The "something else that matters to me" topic was placed last within the tool, as it was an add-on topic rather than being one of the health promotion topics targeted by the intervention. For consistency, the order of icons was duplicated across the other components.

The midwife's consultation tool layout. The layout of the icons around the image of the midwife and the descriptions of the 12 strategies to support health promotion practice (contained within the midwife consultation tool – see figures 6.7, 6.8, 6.9 and 6.10) were organised in terms of their relatedness. The strategies began with "Woman's choice" and "Check what she already knows", as these were considered useful openers for health promotion discussions. "Chipping", "Dipping" and "Use of materials" were classed as generic approaches to health promotion practice and were also placed near the start of the strategies. The BCTs ("Goal setting", "Self-monitoring", "Planning") were then presented, as these were considered useful for the personalised plan component of the HePPBe toolkit. "Signposting" and "Teach-back" were then presented as ways of ensuring women were supported in-between antenatal appointments (i.e. knew what

information/advice the midwife had provided and where they could get more). The strategies ended with “Social support” and “Taking the time to reflect”, as these were recommended as being useful outside of the appointment setting. The icons depicting the strategies were presented in the same order as the descriptions of the strategies. The layout of the 12 strategies is summarised in Table 6.7 below:

Table 6.7

Order of the Strategies Presented within the Midwife Consultation Tool

Type of strategy	Strategy
Setting the agenda	Woman’s choice
	Check what she already knows
Generic approaches	Chipping
	Dipping
	Use of materials
BCTs	Goal setting
	Self-monitoring
	Planning
Supporting the woman in-between appointments	Signposting
	Use of teach-back
Strategies outside of the appointment setting	Social support
	Taking time to reflect

The personalised plan layout. The health promotion topic icons were presented on the front cover, but also within the pad on the tear-off pages so that the woman would be prompted by them when looking at the plan after the antenatal appointment.

Conclusion

The intervention development process produced a HePPBe toolkit to support midwives in helping pregnant women address their health behaviours. The HePPBe toolkit is underpinned by behavioural science theory which is supported by the evidence gathered (see Chapters 3, 4 and 5). The BCTs contained within

the HePPBe toolkit reflect the theory applied. There was a strong co-design focus to the work, particularly in identifying the format of delivery of the intervention (described in more detail in Chapter 7). The testing of the acceptability of the intervention amongst midwives is reported in Chapter 8.

CHAPTER 7

USER, PATIENT AND PUBLIC INVOLVEMENT IN THE DEVELOPMENT OF AN INTERVENTION TO SUPPORT MIDWIVES IN ADDRESSING HEALTH BEHAVIOURS WITH PREGNANT WOMEN

This chapter presents the user, patient and public involvement (UPPI) that took place in the development of the intervention described in Chapter 5. The UPPI process is reported according to the Guidance for Reporting Involvement of Patients and the Public (or GRIPP2) checklist (Staniszewska et al, 2017).

The background section provides the formal definition of UPPI, the theoretical underpinnings and influencing conceptual models, and the aim of the chapter. The methodology is described, including the design, the stakeholders involved, and the procedure. There were two distinct stages in which UPPI was used: in developing the intervention, and in obtaining feedback about the first draft of the intervention materials. The nature of the UPPI is described for each of the two stages. The results are reported including the outcomes of the UPPI and the impact it had on the intervention development. The contextual and process factors that influenced the impact of the UPPI are also described. Finally, there is a discussion of how the UPPI influenced the development of the intervention. It is suggested that the definition of PPI should be formally extended to include “users”. The influence of contextual and process factors on the UPPI are considered. The chapter concludes with a summary of the reflections and key lessons learnt from the UPPI process.

7.1 Background

The previous chapter outlined the three key elements involved in the intervention development process: i) the construction of the theoretical basis, ii) the selection of appropriate BCTs, and iii) the translation of BCTs into a format of delivery. This intervention development process was based primarily upon the evidence collected (see Chapters 3, 4 & 5) and expert consultation (see Chapter 6). In addition, stakeholder input is a vital component in the development of effective behaviour change interventions (Byrne, 2019). Therefore, the translation of theory and BCTs into the HePPBe intervention – the format of delivery – was influenced by key stakeholders (i.e. midwives, pregnant women, new mothers and health promotion professionals). This chapter describes how stakeholder involvement informed the development of the intervention by helping to translate the evidence collected from a theoretical concept to a working intervention.

Definition of Patient and Public Involvement Used and Links to Comparable Studies

There are numerous ways in which to define or describe stakeholders' input within healthcare research, one of the most popular being the INVOLVE (2012) definition of patient and public involvement (PPI): *“research being carried out ‘with’ or ‘by’ members of the public rather than ‘to’, ‘about’ or ‘for’ them”* (p. 6). It is important to highlight that, although this definition of PPI refers to research, there is a clear distinction between PPI and research. Research is where an individual provides data to contribute to answering pre-specified research questions, whilst PPI is where *“patients actively contribute through discussion to decisions about research priorities, design, relevance, conduct and governance from study conception to dissemination”* (Hoddinott et al., 2018, p.9).

The INVOLVE definition of PPI does not include professionals and the accompanying guidance states that the perspectives of the public and the perspectives of people who have a professional role in health and social care services are distinctly different (INVOLVE, 2012). However, PPI is typically carried out in relation to clinical research, which is often focused on patient behaviour. The

development of the intervention, described in Chapter 6, can be considered implementation research as the focus is on the behaviour of a group of health professionals – midwives (Gray-Burrows et al., 2018). Therefore, the INVOLVE definition of PPI was extended to include “users”, as midwives were the intended target group of the intervention and were able to offer unique insight that was not obtainable from purely a patient or public perspective. The definition of UPPI that was eventually used was: *“research being carried out ‘with’ or ‘by’ members of the public and users of interventions rather than ‘to’, ‘about’ or ‘for’ them”*.

Few published studies exist which specifically report on the development of interventions aimed at supporting maternity care professionals. A recent study (Henshall et al., 2018) reported a “co-production approach” to developing an intervention to improve discussions between midwives and women about their planned place for giving birth (in an obstetric unit, in a midwifery-led unit, or at home). Another study reported not including midwives in PPI activities aimed at designing an online intervention to support midwives experiencing work-related psychological distress (Pezaro, Pearce & Bailey, 2018). Midwives were not involved in the PPI activities related to this study, and the reason for this is stated by the authors as being due to HCPs not being considered eligible to take part under the INVOLVE (2012) definition of PPI. However, the authors also suggest that, arguably, midwives should have been included PPI activities as it is midwives, rather than pregnant women, who would directly benefit from the intervention. This view puts an emphasis on the need for intervention users to be considered as part of the PPI process.

Theoretical Rationale and Theoretical Influences

A user-centred design approach was taken and the UPPI is in line with the framework for intervention co-production and prototyping (Hawkins et al, 2017). This framework comprises three distinct stages: stage 1 involves evidence review and stakeholder consultation; stage 2 is where stakeholders work collaboratively with researchers to develop intervention materials; and stage 3 is the prototyping of the intervention. Stages 1 and 2 are reported within the current chapter and

stage 3 (an acceptability study) is reported in Chapter 7.

The reporting of stakeholder involvement in research has been stated as being inconsistent (Brett et al., 2014). Therefore, the UPPI described in the current study is reported according to the Guidance for Reporting Involvement of Patients and the Public checklist (Staniszewska et al., 2017), also known as GRIPP2, which provides detailed guidelines on what should be reported. The UPPI is also reported according to a format of delivery framework (Dombrowski, O'Carroll & Williams, 2016), which provides an overview of the key elements of the intervention development that required stakeholder input (see Chapter 5 for further details).

Aims

The UPPI was carried out to obtain input from stakeholders in developing the HePPBe intervention. Therefore the aims of the UPPI were:

- To gain more understanding of the barriers and facilitators midwives experience in undertaking their HePPBes
- To enable stakeholders to contribute to the intervention development process by influencing the format of delivery of the intervention
- To obtain stakeholder feedback about the intervention developed

7.2 Methods

Design

The UPPI activities used a co-design approach in which information was gathered to inform intervention development (Hawkins et al., 2017).

Stakeholders

Several groups of stakeholders were involved in the UPPI activities, including:

- (i) Potential users: midwives working in any capacity, including those who are in managerial or academic positions.
- (ii) Potential or past recipients of antenatal care: women who were either pregnant or had given birth within the last two years.
- (iii) Health promotion professionals: workers who have a role in supporting midwives and/or maternity services, including healthcare workers working in a maternity care setting, dieticians, nutritionists, and health improvement specialists and managers.

Stages of Involvement and Nature of UPPI at Each Stage

There were two distinct stages in which UPPI was used to shape the development of the intervention. The nature of the UPPI at the first stage was to inform the decisions on the format of delivery of the intervention, including the mode of delivery, delivery method, delivery channel, and delivery route (Dombrowski, O'Carroll & Williams, 2016).

The nature of the UPPI at the second stage involved obtaining feedback on the first draft of the intervention. This included assessing factors such as the usability of the intervention, the design, recommended changes, and any other general comments/feedback. The steps in which UPPI was used in the development of the intervention are summarised in the figure 7.1 below.

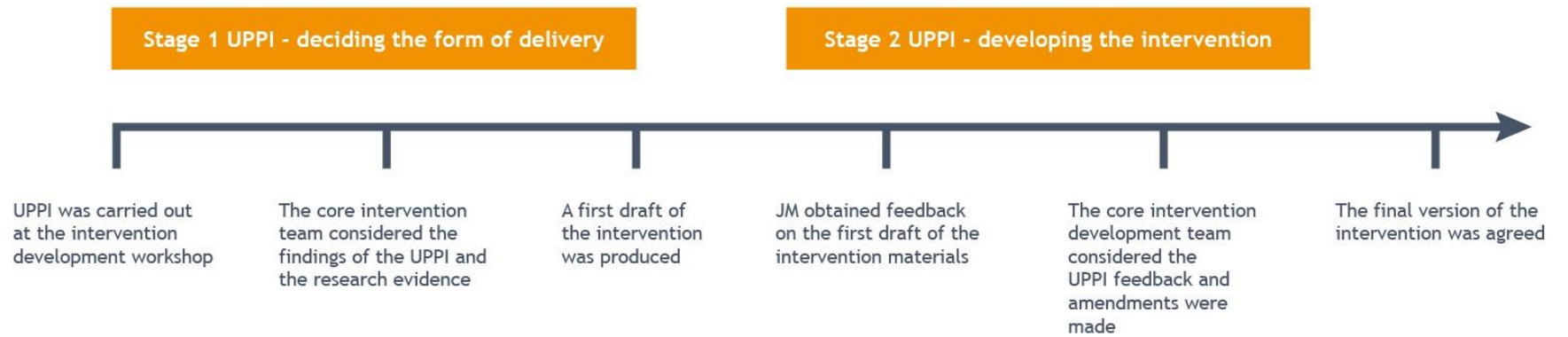


Figure 7.1. Timeline of the UPPI carried out during the development of the HePPBe intervention.

Stage 1 UPPI: Informing Decisions on the Format of Delivery

The UPPI carried out to influence the decision taken on the format of delivery took place through several interactive activities at a HePPBe intervention development workshop, held in October 2018 at Glasgow Caledonian University.

Midwives were recruited through contacts of HC (a Professor of Midwifery at the Royal College of Midwives and member of the core intervention development team – see Chapter 6), and via an e-mail invitation (see Appendix N) circulated around various midwifery networks, or on social media sites such as Twitter. Various methods of recruitment, including invitations sent to charities, social media advertisements, and an advert on the University of Stirling portal, were used to recruit women who were either pregnant or had given birth within the last two years. JM also sent the advertisement to some personal contacts who met the criteria. Health promotion professionals were recruited through the circulation of an email around various health promotion networks.

Stakeholders attending the HePPBe intervention development workshop were allocated into three small groups containing an equal mix of backgrounds to ensure a variety of perspectives were present. Each of the groups sat together at a table and group discussions were facilitated by health psychologists (MC, SC & JM). A mixture of small and large group discussions (where the three groups came together) took place throughout the workshop. Large group discussions were facilitated by JM & SC.

An outline of the HePPBe intervention development workshop (including the stakeholders' activities, facilitators' tasks and materials used) is displayed in Table 7.1 below. An important part of the workshop was the world café session³ where potential forms of delivery were presented. The specific details of each potential format of delivery presented in the world café are presented in Table 7.2 below.

³ A world café involves facilitated group discussions which take place simultaneously and are linked (Scottish Health Council, n.d.-b). In this case the discussions were linked as they were all presenting potential formats of delivery for the HePPBe intervention.

Table 7.1

Outline of the HePPBe Intervention Development Workshop Including Stakeholder Activities, Facilitator Tasks, Materials and Reason for Activities

Time	Content	Stakeholder activities, facilitator tasks and materials	Reason for activities/tasks
10:00	Welcome	Stakeholders were asked to design a name badge using craft materials (e.g. stickers, pens, glitter glue).	To enable stakeholders to warm up/introduce themselves to the others in the group.
10:10	Setting the scene (part 1)	<p>JM presented the background to the intervention development, looking at the justification for its development (see Chapter 1 for more information), and emphasised that the goal of the intervention was to support midwives in helping women and their families to achieve good health outcomes.</p> <p>Due to the complexity of the target behaviour (see Chapter 6 for further information) copies of an image (Appendix O) were kept on the tables</p>	To build on the relationship the stakeholders had with the intervention (see Chapter 5 for the theoretical reasoning behind this).

Time	Content	Stakeholder activities, facilitator tasks and materials	Reason for activities/tasks
		throughout the day to remind stakeholders of what was meant by HePPBes.	
10:15	Group discussion: what is the best way to support midwives' health promotion practice?	Stakeholders were asked to discuss in their small groups: <i>"What is the best way to support midwives in their health promotion practice?"</i> Facilitators encouraged stakeholders to brainstorm potential ideas to deliver the intervention and wrote down their responses. Small group responses were fed back during a large group discussion.	To generate potential ideas to deliver the intervention. This activity was carried out at the beginning of the day to capture stakeholders' responses to the overall aim of the workshop when they were most refreshed.
10:20	Setting the scene (part 2)	SC presented background information about health psychology and provided and highlighted multi-disciplinary research that takes place between health psychologists and maternity care professionals. SC and JM and presented an	To enhance stakeholders' knowledge of the behavioural science informing the intervention development and to provide examples of maternal health psychology research.

Time	Content	Stakeholder activities, facilitator tasks and materials	Reason for activities/tasks
		overview of their maternal health psychology research experience.	
10:45	Presentation of PhD research	JM presented the findings of the literature review, interview study and questionnaire study which were the evidence basis for the intervention.	To inform stakeholders of the evidence base for the intervention development, particularly the key barriers and facilitators to midwives carrying out HePPBes.
11:30	Break		
11:45	Presentation of BCTs	SC and JM presented 6 BCTs (demonstration of the behaviour, goal setting, self-monitoring, credible sources, planning and prompts) with examples of why and how they could be useful to midwives. Stakeholders were provided with a handout summarising this information (Appendix P).	To inform stakeholders of the BCTs selected by the core intervention development team for inclusion in the intervention. The selection of BCTs was based on the theoretical model underlying the development of the intervention (see Chapter 6 for further details).

Time	Content	Stakeholder activities, facilitator tasks and materials	Reason for activities/tasks
12:00	BCT group activity: planning	<p>Stakeholders were provided with a planning sheet (Appendix Q) and asked <i>“Try and generate solutions to the barriers that have been described by other midwives (you can use the list of strategies on your tables to help) and add in any other situations and solutions that might be relevant”</i>.</p> <p>Stakeholders were also provided with a list of the strategies (identified during the evidence-gathering stage of the intervention development) that had been suggested by midwives as being useful in supporting their HePPBes (Appendix R).</p>	To identify additional strategies midwives use to overcome barriers to undertaking HePPBes.
12:15	BCT group activity: prompts	Stakeholders were asked <i>“Choose the health behaviours that are most important to you, try and come up with a mnemonic, image,</i>	To provide examples of prompts (created by stakeholders) to help midwives remember

Time	Content	Stakeholder activities, facilitator tasks and materials	Reason for activities/tasks
		<p><i>sentence, checklist to help remind midwives to cover these topics”.</i></p> <p>Stakeholders were provided with images and words to help them create the prompts (Appendix S).</p>	the health promotion topics included within the aim of the intervention.
12:30	Feedback from BCT activities	Stakeholders were asked to rank the six BCTs in order of how useful they felt they would be for midwives to use in supporting their health promotion practice (Appendix T). The rankings were calculated by LD (a PhD researcher who supported the facilitation of the workshop) during the lunch break.	To obtain stakeholders’ feedback on what BCTs would be most useful in supporting midwives’ HePPBes.
12:45	Lunch		
13:30	Group feedback	JM shared the findings of the BCT ranking activity with stakeholders.	To give the group an idea of how the development of the intervention was progressing.

Time	Content	Stakeholder activities, facilitator tasks and materials	Reason for activities/tasks
13:35	What is the best method of putting behavioural techniques into practice?	JM presented results from the questionnaire study carried out during the evidence-gathering phase of the intervention development (see Chapter 4), which involved presenting findings on the type of support, delivery method and delivery channel that midwives requested.	To prime stakeholders for the next activity.
13:45	Mini world café	<p>Three potential forms of delivery were presented and discussed using a world café method. The forms of delivery presented all had the potential to be intervention components as well as standalone interventions. They were also all considered feasible for development under the constraints of a PhD.</p> <p>Each facilitator moved around the three groups of stakeholders and presented a different format of delivery. SC presented the concept of a buddy</p>	To provide stakeholders with concrete working examples of how midwives could be supported to carry out their HePPBes through the intervention.

Time	Content	Stakeholder activities, facilitator tasks and materials	Reason for activities/tasks
		<p>system, MC presented the MAP of Health Behaviour Change training programme (NES, n.d.-b) and JM presented the concept of a handheld tool. Further details of these potential forms of delivery are provided in Table 2.</p> <p>Handouts (see Appendix U) containing relevant information, such as a brief description of the intervention, the required resources, suggested delivery channel and delivery method, and a related image were provided at each table, so that stakeholders had a clear idea of the type of potential intervention being proposed.</p> <p>Facilitators were also provided with a list of questions to help encourage group discussion (see Appendix V).</p>	

Time	Content	Stakeholder activities, facilitator tasks and materials	Reason for activities/tasks
14:30	Feedback from mini world café	Stakeholders were then asked to complete a ranking exercise to assess which format of delivery was i) most ideal and ii) most feasible in terms of supporting midwives' HePPBes (Appendix W).	To obtain stakeholders' feedback on what format of delivery would be most ideal and most feasible in supporting midwives' HePPBes.
15:00	Break		
15:15	Group discussion: refining the intervention	JM shared the findings of the ranking exercise with stakeholders. A large group discussion was held, jointly facilitated by JM and SC, where it was discussed how the formats of delivery ranked the most ideal and most feasible would work in practice.	To obtain more feedback specific to the intervention component ranked as the most feasible and most ideal from stakeholders.
15:45	Summing up	At the end of the workshop, stakeholders were asked to fill out a feedback form (Appendix X) and were thanked for their participation.	To assess what stakeholders thought about the workshop.

Table 7.2

Potential Formats of Delivery of the Intervention Presented to Stakeholders During the World Café Section of the HePPBe Intervention Development Workshop

Potential format of delivery	Content	Features of format of delivery (Dombrowski, O'Carroll & Williams, 2016)	
Buddy system	Midwives would be selected to train as "Health Promotion midwives" so as to provide ongoing support to other midwives. It was suggested that this would be achieved through peer supervision sessions and/or by acting as a point of contact or support for other midwives regarding health promotion practice (e.g. provide updates on local health promotion services).	Mode of delivery	Face-to-face
		Delivery method	Group or 1:1
		Delivery channel	Delivered by a person
		Delivery route	Experiential
The MAP of Health Behaviour Change	MAP is a blended behaviour change training programme (consisting of an online module, face-to-face workshop(s) and coaching network) designed to support healthcare professionals develop behaviour change skills.	Mode of delivery	Remote and face-to-face
		Delivery method	Online module is 1:1 and training/coaching is group

Potential format of delivery	Content	Features of format of delivery (Dombrowski, O'Carroll & Williams, 2016)	
(NES, n.d.-b)		Delivery channel	Multi-faceted (online module/workshop delivered by a person)
		Delivery route	Experiential
Tool	A handheld resource that could be given to midwives and/or placed in clinic rooms which would act as a prompt to help midwives remember what health promotion topics they are required to cover. The tool would also contain helpful information (such as list of strategies other midwives use to overcome barriers to carrying out HePPBes or useful pages in the Ready Steady Baby book (NHS Health Scotland, 2019c).	Mode of delivery	Environmental
		Delivery method	Individual
		Delivery channel	Self-help
		Delivery route	Text and picture

Photographs from the HePPBe intervention development workshop are presented below.



Figure 7.2. Group work at the HePPBe intervention development workshop, Glasgow, October 12 2018.



Figure 7.3. Group work at the HePPBe intervention development workshop, Glasgow, October 12 2018.



Figure 7.4. Group work at the HePPBe intervention development workshop, Glasgow, October 12 2018.



Figure 7.5. Stakeholder group who attended the HePPBe intervention development workshop, Glasgow, October 12 2018.

The information gathered at the HePPBe intervention development workshop was used to develop the first draft of the intervention (the HePPBe toolkit). The intervention development process is described in detail in Chapter 6.

Stage 2 UPPI: Developing the Intervention

Following the development of the first draft of the intervention, UPPI feedback was sought. Feedback was obtained in several ways, including via email, a session at the Scotland Maternity and Midwifery Festival, a meeting with consultant midwives, and by attending the University of Stirling kindergarten toddlers group. These UPPI activities are described in detail below.

A copy of the draft HePPBe toolkit and feedback form (Appendix Y) was emailed to midwives, who had attended the intervention development workshop and had offered to provide further input into the intervention.

Feedback was gathered from stakeholders attending the Scotland Maternity and Midwifery Festival, who attended a thirty-minute session where JM presented the intervention development process and the draft intervention materials. The room was set up so stakeholders could sit in small groups at tables. Before stakeholders entered the seminar room, copies of the UPPI feedback form were placed on the tables. During the session, JM briefly outlined the intervention development process and presented each component of the HePPBe toolkit. Copies of the draft intervention were then given out and stakeholders were asked to complete the feedback form and/or discuss the HePPBe toolkit with those at their tables. The session ended with some of the stakeholders feeding back to the whole group. The photographs below show JM presenting the intervention development process and the group discussing the intervention.

A meeting took place between JM and four consultant midwives in which the re-drafted version of the intervention was presented. Feedback was gathered by midwives verbally commenting on the intervention.

To obtain feedback from women who were either pregnant and/or had given birth in the last two years, JM visited the University of Stirling kindergarten toddler group on two occasions and approached women who were pointed out by the group leader as being eligible candidates for providing feedback. JM informed each of the women about the aim of the intervention and then provided them with a copy of each component for their study. To make it as easy as possible for women to take part, JM asked the questions verbally from a woman version of the draft HePPBe toolkit feedback form (Appendix Z) and took notes of the responses. JM also obtained some feedback from women via personal contacts.



Figure 7.6. Presentation of the intervention development process during the UPPI feedback session at the Scotland Maternity and Midwifery Festival, Edinburgh, November 28 2018.



Figure 7.7. UPPI feedback session at the Scotland Maternity and Midwifery Festival, Edinburgh, November 28 2018.

Capturing the UPPI Impact

Information from stakeholders that influenced the intervention development processes was captured in a variety of ways. Audio recordings, written notes and photographs were used to capture the information generated by stakeholders at the HePPBe intervention development workshop, and the presentation of the first draft of the HePPBe toolkit at the Scotland Maternity and Midwifery Festival. Feedback forms were also used to obtain information from stakeholders at these events (Appendices 7.11, 7,12 and 7.13), as well as for gathering feedback via email, for the meeting with consultant midwives, and with parents from the University of Stirling kindergarten toddlers' group. JM collated this information and created a summary of the feedback generated.

7.3 Results

Outcomes of Stage 1 UPPI: Deciding the Format of Delivery

This section describes the UPPI carried out to form the decisions taken on the format of delivery.

Eighteen stakeholders attended the intervention development workshop, including nine midwives, two healthcare assistants working in maternity care, six health promotion professionals (including dieticians, nutritionists and those working in health improvement) and one woman who had given birth in the last two years. Details are provided in Table 3 below.

Table 7.3

Job Role and Organisation of Stakeholders who Attended the HePPBe Intervention Development Workshop

Job role	Organisation(s)	Number of stakeholders
Midwives	Royal College of Midwives Scotland NHS Education for Scotland Undergraduate midwifery course Health board	9
Healthcare assistants working in maternity care	Health board	2
Dietician	Health board	3
Nutritionist	Health board	1
Health Improvement manager	Health Scotland	1
Health Improvement specialist	Health board	1

There were four key stages during the workshop where UPPI views were gathered: i) from the group activity around the question “What is the best way to

support midwives' health promotion practice?"; ii) from the group BCT activities; iii) from the world café; iv) from the final group discussion about refining the intervention. The outcomes relating to these four activities are outlined below.

Group discussion activity: what is the best way to support midwives' health promotion practice? The small group discussions led to several suggestions concerning organisational factors which could support midwives' HePPBes including: i) increasing continuity of care; ii) providing midwives with time to undertake CPD training related to health promotion; iii) making all maternity care notes electronic so all HCPs can access them; iv) ensuring all pregnant women are able to access health promotion services regardless of the area in which they live; v) midwifery and health promotion services working in closer collaboration and vi) other maternity professionals such as maternity support workers taking on more HePPBes.

There was also discussion regarding how identifying the skills necessary to perform HePPBes and enhancing midwives' self-efficacy in carrying out HePPBes could support their health promotion practice. It was suggested that self-efficacy could be developed by ensuring HePPBes are a standardised part of undergraduate midwifery courses, and through midwifery mentors encouraging the importance of HePPBes amongst student midwives.

Two specific ideas about interventions to support midwives in their performance of HePPBes were generated. One of these ideas was for a trained professional to visit midwifery teams to update them on HePPBe-related guidelines and health promotion services. It was suggested by stakeholders that this individual could also provide midwives with training on topics such as using BCTs and having time-efficient conversations. The second idea was for the provision of a screening tool for women to prioritise which health promotion topics they wished to focus on during their antenatal care. Stakeholders suggested that, by asking women to select what topics they wished to focus on ahead of their antenatal appointment, it would reduce the HePPBe burden on midwives by helping them know what was important to the women themselves.

BCT Activity Outcomes. The BCT planning activity resulted in the identification of several strategies used by midwives to carry out their HePPBes (in addition to those identified by the research carried out in the evidence-gathering phase of the intervention development). These strategies were teach-back (a communication technique in which HCPs check patient understanding of the information they have given by asking patients to explain the information back to them (Scottish Health Council, n.d.-a)), delivering information in a generalisable manner, the use of humour, and the setting of boundaries, e.g. specifying the time available at the start of the appointment.

Two examples of the prompts created by stakeholders during the BCT prompts activity include the “WODSSAP” image shown in figure 7.8. (WODSSAP – weight, oral health, diet, smoking, substance use, alcohol, physical activity – was an acronym created by stakeholders to help midwives remember the health promotion topics they are required to address antenatally). Stakeholders suggested the WODSSAPP image could be used as a prompt for midwives to tick off the health promotion topics as they were addressed during antenatal appointments. Another group developed a “Rank and Pick” game for women, the concept of which was to provide women with a box of cards or a ranking sheet and ask them to prioritise what wished to talk about first. Stakeholders suggested that the game could be used in waiting rooms or at antenatal education classes.



Figure 7.8. Image created by stakeholders during the prompt activity at the HePPBe intervention development workshop, Glasgow, October 12 2018.



Figure 7.9. Image created by stakeholders during the prompt activity at the HePPBe intervention development workshop, Glasgow, October 12 2018.

Nineteen stakeholders ranked the BCTs presented at the workshop in terms of their usefulness in supporting midwives carry out their HePPBes. Five stakeholders ranked “Prompts” as the most useful BCT, making it most frequently ranked. Goal-setting and demonstration of the behaviour were both ranked by four stakeholders as being the most useful BCTs. Three stakeholders ranked planning as the most useful BCT, and two stakeholders ranked self-monitoring as the most useful BCT. Credible source was the least frequently ranked, with just one stakeholder voting for it as the most useful BCT.

World café outcomes. The feedback about each potential intervention component presented during the world café and the results of the associated world café rankings are described below.

Buddy system. Stakeholders appeared to like the idea of having a midwife with behaviour change knowledge and expertise providing support in the role of a “buddy”. However, they also expressed concerns that its effectiveness could be easily affected by factors such as the personality of the buddy midwife and a lack of time to dedicate to the buddy role. It was suggested that someone with relevant expertise who is not a midwife, i.e. a healthcare assistant or public health professional, could assume the role of a buddy. Some stakeholders emphasised that they felt the focus of the intervention should be on ensuring that all midwives, not just “buddies”, have the knowledge and skills to deliver HePPBes effectively, and so standardising care for all women.

Tool. The concept of a tool aimed solely at enhancing the processes followed by midwives was poorly received. For example, stakeholders reported that if midwives were asked to fill out a planning sheet, then it was unlikely that it would be completed. However, stakeholders fed back that the idea of a tool which enhanced the feeling of having “done something” for health promotion topics that do not have concrete tasks associated with them would be helpful in enhancing the midwife’s sense of achievement concerning HePPBes (e.g. CO monitoring is a task clearly related to smoking cessation, but topics like physical activity are more

abstract and centred on discussion). Stakeholders also suggested that a tool may help midwives to reflect on whether their practice is working or not. Links to resources, particularly electronic resources, were welcomed.

MAP. The feedback relating to the use of MAP as an intervention component focused on the organisational barriers to its use (e.g. lack of time for training). Stakeholders suggested that protected working time and/or an incentive would be essential to ensuring it could be successfully implemented. MAP was perceived as more suited to student and/or newly qualified midwives and it was suggested that embedding MAP within the midwifery undergraduate curriculum or into the national development programme "Flying Start"⁴ (NES, n.d.-a) may be one way of ensuring it could be used effectively. Some stakeholders also fed back that they felt some of the terminology used within the MAP materials was complex.

Sixteen stakeholders gave rankings on how ideal and how feasible they perceived each potential intervention component to be with regard to supporting midwives' HePPBes. The buddy system was ranked as the most ideal and most feasible intervention component, followed by the tool, and then MAP.

Final group discussion about refining the intervention. The buddy system was ranked by stakeholders as the most ideal and most feasible intervention component. Consequently, the outcomes from the large group discussion at the end of the workshop were focused on refining the buddy system into a "Maternity Health Promotion Specialist" role and discussing how it would work in practice.

Stakeholders agreed that although the buddy system sounded plausible in theory, they were concerned that *"for the buddies it may end up being another thing tagged on to your job role"* and that its success would be dependent on personalities of the buddies themselves, as well as organisational factors such as

⁴ Flying Start is a national development programme that all newly qualified midwives, working in Scotland, are required to complete during the first year of practice (NES, n.d.-a)

staffing levels. As a result, stakeholders suggested that the buddy position needed to be a job itself and not something that would be included as part of a midwife's job description, given existing workload pressures. It was also suggested by stakeholders that the creation of a specific role would provide momentum and highlight the importance of HePPBes amongst maternity care professionals. The buddy system therefore evolved into a "Maternity Health Promotion Specialist" role.

Stakeholders recommended that the Maternity Health Promotion Specialist would have the necessary skills to teach, motivate and support midwives in having more "efficient conversations" during booking. The role would be held at health board level and the Maternity Health Promotion Specialist would be responsible for holding health promotion information specific to the health board. The Maternity Health Promotion Specialist would visit midwifery teams to share knowledge, by providing updates and HePPBe-specific training (educational outreach). It was agreed that, in order to work in different health boards, the role of the health promotion specialist would need to be flexible. For instance, in small rural health boards, it may be possible to allocate the role of Maternity Health Promotion Specialist to one individual as part of their job description, while in larger health boards it may take a whole team. It was also suggested that for the role of the Maternity Health Promotion Specialist to work effectively, the individual carrying out the job did not necessarily need to be a midwife, but would need to be someone who was viewed by midwives as a credible source of information and advice concerning difficult health promotion issues.

Feedback form outcomes. A total of 13 stakeholders completed the feedback form. The information collected suggested that stakeholders felt the workshop was well organised and various approaches had been used to obtain their input to the development of the intervention. In terms of what could be improved, it was suggested that the presentation of the PhD findings could have been held earlier in the day to ensure stakeholders had a better understanding of the underlying themes before engaging in the first group activity. It was also suggested that it would have been beneficial for more practising midwives, from a

wider range of health boards, to have attended so that more insight into facilitators for HePPBes could have been provided. In terms of the intervention, some stakeholders felt that a multi-faceted approach was required to make a meaningful difference in supporting midwives' HePPBes. Two stakeholders suggested that although the buddy system was the chosen intervention, the tool should not be discounted, as it may be applicable to a wider range of midwives.

New mother's views compared to the other stakeholders at the HePPBe intervention development workshop. In general, the views of the woman who attended the workshop as a new mother aligned with those of the other stakeholders. One notable exception was that the new mother rated the tool as the most ideal and feasible intervention option in contrast to the other stakeholders who rated the buddy system more highly.

Impact of Stage 1 UPPI: Deciding the Format of Delivery

The impact of stage 1 UPPI on the research and the researcher, as well as the wider effects of the stage 1 UPPI, are reported below.

The impact of stage 1 UPPI on the research. Following the workshop, the core intervention development team met to discuss the UPPI information generated. The main outcome from the workshop, in terms of the type of support required, was that the buddy system was the most ideal and feasible approach. However, the tool was ranked similarly in terms of feasibility and prompts were rated most frequently as the most useful BCT for supporting midwives' HePPBes. It was also noted that, although the buddy system had been presented as a peer support intervention, stakeholders' preferred solution was for an external professional (i.e. a "Maternity Health Promotion Specialist" with expertise in behaviour change) to support them in carrying out their HePPBes. However, it was not possible to develop such a role and it may not be the most effective way to support midwives' in performing their HePPBes.

It was agreed by the core team that the intervention had to have the potential to be developed fully by JM within the confinements and timeline of the

PhD and it also had to have the potential to be transferable and up-scalable to midwives not working within a Scottish context. Therefore, the buddy system was deemed unsuitable for translation into an intervention.

The decision was taken for the main intervention component to be based on the tool option for the following reasons:

i) although technically midwives had rated the buddy system as the best and most feasible approach, the tool option had been ranked very similarly in terms of feasibility;

iii) the new mother woman who attended the stakeholder workshop rated the tool as the best and most feasible format of delivery;

iv) a midwife highlighted in her workshop feedback form that the tool would be something that could be accessed by all midwives whereas the buddy system would only be accessed by those with the adequate resources.

The discussion about the tool evolved into the identification of three distinct components based on the information gathered at the workshop:

i) the woman's prioritisation tool to help women decide what health promotion topics they wanted to prioritise (to be used by women prior to antenatal appointments and by midwives during antenatal appointments);

ii) a consultation tool for midwives to use as a prompt/reminder during antenatal consultations or as a source of information before/after antenatal appointments;

iii) a health behaviour change prescription pad so that the midwife had the opportunity to "give something" to women near the end of the antenatal appointment.

Therefore, the tool became the HePPBe toolkit. The influence of the UPPI from the workshop is outlined in Table 7.4 below. The evidence that supported the development of each aspect of the toolkit is presented in Chapter 6.

To address the feedback from stakeholders that there was a need for a Maternity Health Promotion Specialist role, it was agreed that one of the recommendations regarding the use of the tool would be for a Behavioural Health Consultant (Dale and Lee, 2016) to support the implementation and maintenance of the tool (see Chapter 6 for more details).

Table 7.4

Impact of UPPI on the Development of the First Draft of the HePPBe Toolkit

Component of the HePPBe toolkit	UPPI which informed the development of the HePPBe toolkit	Impact on the HePPBe toolkit
The woman's prioritisation tool	<p>The concept of a prioritisation tool for women to select the health promotion topics they wished to focus on prior to their appointment was raised during the opening group discussion. The BCT prompts activity generated the "rank and pick" game (shown in photograph 4) which provided an example of how women could select the health promotion topics they wished to focus by picking cards (containing images representing health promotion topics) and placing them in order of how much they mattered to them.</p> <p>The "rank and pick" game included the corresponding page number for Ready Steady Baby (NHS Health Scotland, 2019c) on the back of each topic card.</p>	<p>A pocket-sized selection card was developed as it was agreed that the use of cards (as suggested by the rank and pick game) was perhaps not practical for women to transport.</p> <p>Page number for Ready Steady Baby is included for each topic.</p>

Component of the HePPBe toolkit	UPPI which informed the development of the HePPBe toolkit	Impact on the HePPBe toolkit
	The creation of the image of the woman with the visual cues of the different health behaviours to be addressed by midwives (shown in photograph 3).	The image created by stakeholders inspired the main image used of the pregnant woman with the health promotion icons around her (also included in the midwife consultation tool).
	Both the game and image talked about leaving space for “what matters to me”.	Inclusion of “What matters to me” as a topic (also present on the other elements of the HePPBe toolkit).
The midwife’s consultation tool	Additional strategies midwives use to support their HePPBes were identified during the workshop.	A consultation tool was developed to include recommendations of strategies midwives use which came from the evidence gathered, UPPI and BCTs to support the underlying HePPBe theoretical model.
The health behaviour	The feedback from the world café suggested that it was necessary for the HePPBe toolkit to include an element of reinforcing the feeling of having “done something” amongst midwives.	The health behavior change prescription pad was designed so that the midwife could provide the woman with personalised reminders of what had

Component of the HePPBe toolkit	UPPI which informed the development of the HePPBe toolkit	Impact on the HePPBe toolkit
change prescription pad		been discussed. It also provides the woman with something concrete to take away.
General comments	Stakeholders advised that the tool should be easily portable and that colours like blue should be avoided as this would look too clinical and too similar to resources produced by RCM.	All materials were designed so that they were no bigger than A5 (the size of a midwife's diary). The colours were selected so that they were bright and engaging.

The impact of stage 1 UPPI on the researcher. In terms of the impact on JM, organising and facilitating the workshop resulted in pre-workshop anxiety and stress on the day. However, feedback indicated that the workshop had been positively received and, most importantly, it provided vital stakeholder input for intervention development. Overall, leading the workshop was an important professional development milestone for JM.

The wider impact of stage 1 UPPI. It is possible that the workshop enhanced the working relationship between midwifery and health promotion/public health, as it brought together professionals from both disciplines and provided them with an opportunity to learn about the challenges encountered by midwives in carrying out their HePPBes. The presentation of the PhD research led to a wider impact in that it highlighted the role that health psychology can play in supporting midwives to overcome the barriers that affect their HePPBes. The workshop also promoted the profile of health psychology amongst maternity care professionals in general: one example of this is that JM was invited to speak to the RCM Early Career Forum about the intervention.

Outcomes of Stage 2 UPPI: Developing the Intervention

This subsection describes the UPPI carried out in relation to the development of the intervention.

Stage 2 outcomes. This stage of PPI involved potential users and recipients (i.e. midwives and women who were pregnant and/or had given birth in the last two years). Forty-five potential users of the intervention provided feedback on the draft version through completion of the stage 2 feedback form. Potential users were from a variety of backgrounds, including 13 hospital-based midwives, six community midwives, four midwifery lecturers, four consultant midwives and an independent midwife. A further eight midwives did not specify their job role. Two student midwives, two healthcare assistants working in maternity care, a doula and a healthcare charity support worker also provided feedback. Eight women who had given birth in the last two years and two women who had given birth in the last two years and were currently pregnant (potential recipients) gave feedback.

The usability of each component of the HePPBe toolkit was rated by midwives and women completing the stage 2 feedback form. The woman's prioritisation tool was ranked as the most useable component. However, there was little difference between the usability rankings of all three components of the HePPBe toolkit. The outcome of the qualitative information gathered (from the feedback forms) about the first draft of the HePPBe toolkit is presented in the UPPI comments column in Table 7.5 below.

Pregnant women and/or new mother's feedback about the first draft of the intervention materials. The responses of pregnant women and/or women who had recently become mothers mainly focused upon practical feedback such as suggestion of inclusion of the health behaviour change icons on each page health behaviour change prescription pad. Also, most women emphasised a clear preference for using either the woman's prioritisation tool or the health behaviour change prescription pad to support their behaviour change.

Impact of Stage 2 UPPI: Developing the Intervention

The impact of stage 2 UPPI on the research and the wider effects are reported below.

The impact of stage 2 UPPI on the research. The impact of the second stage of the UPPI (feedback about the intervention) on the research resulted in several changes to the content of the intervention being made. The changes made are presented in Table 7.5 below.

The wider impact of stage 2 UPPI. The wider impact of stage 2 UPPI was increased promotion of the HePPBe toolkit and of the PhD research. For example, the maternity and midwifery festival provided an opportunity for the toolkit to be presented to a far larger audience than it had been previously.

Table 7.5

Pre- and Post-Intervention Content Following UPPI Comments on the Draft Version of the HePPBe Toolkit

HePPBe toolkit component	Original content	UPPI comments	Changes following UPPI
The woman's prioritisation tool (pre-consultation)	Tick boxes with very important/somewhat important/not important.	Some midwives reported that a woman ticking "not important" may actually present a barrier to them discussing the topic, thereby reducing their autonomy.	Removed the multiple tick box option and instead had a single tick box with the words "very important to me" so women could select the topics that were important to them. Also ensures flexibility for the midwife as they can say "Tick your top 3" or "Tick your top topic"
	Health Promotion topics included were those which are targeted by the PhD.	The most commonly requested topic for addition was mental health.	Added a mental health example for the "What matters to me" option.
	Option of C-fold single concertina or Z-fold panel open for design.	All the women who took part stated they would prefer the Z-fold single concertina option for the health	Z-fold single concertina option used

HePPBe toolkit component	Original content	UPPI comments	Changes following UPPI
The midwife's consultation tool (during consultation)	No sentence included about what a midwife should do if they are already using all the strategies described in the health promotion practice tool.	promotion topic prioritisation tool. Some midwives reported themselves as already using all the strategies mentioned.	Addition of a sentence asking midwives to think about how they could use the strategies to further their health promotion practice: <i>"You may already be using some or all of these strategies but try thinking about how you could use them to further develop your health promotion practice."</i>
	No information about the source of the strategies described in the health promotion practice tool was given.	No UPPI comments were made but the core intervention development team realised this had been an oversight in the original version.	Addition of a credible source sentence: <i>"as described by midwives and behavioural science recommendations"</i> .
The health behaviour change	Name of tool: health behaviour change prescription pad.	Some midwives reported that they thought the health behaviour change	Changed the name to "Personalised Action Plan". Added in a sentence explaining what the personalised action plan was and how it

HePPBe toolkit component	Original content	UPPI comments	Changes following UPPI
prescription pad (end of consultation)		prescription pad was patronising to women.	<p>could be used: <i>“The personalised action plan is designed to provide the woman with a handheld reminder of health behaviour change planned during an antenatal appointment.”</i></p> <p>Added recommendation that women are asked if they want a note: <i>“You could use this tool by asking the woman if she would like a written record of what has been discussed regarding health behaviour change. If she would like a copy, then you could write the plan in the pad, tear it off and give it to her. There will be a copy underneath for you to keep too.”</i></p>
	Icons on front cover only	UPPI from women suggested including the icons on the tear-off sheet	Icons included in the tear-off sheet.

HePPBe toolkit component	Original content	UPPI comments	Changes following UPPI
General Design	Substance use icon was a needle	Some midwives suggested that the image of the needle was presumptive. Others suggested that the woman may not be prompted to think of substance use by the presence of purely a needle.	The icon was modified to include a pill and cannabis leaf as this these were reported to be far more common examples of substance use than drug injection.
	White font used in midwife consultation tool	Some midwives reported the text in white font was difficult to read.	This issue was discussed with the graphic designer who recommended that the problem would be resolved when the final version of the intervention was printed using higher quality paper and ink. No changes were made.

Context of UPPI

The main contextual factor which hindered stage 1 UPPI was that it was challenging to recruit midwives providing frontline maternity care (i.e. the target population) to attend the intervention development workshop. For example, one health board had planned to release a midwife to attend but were unable to do so due to “*other work commitments, emergency obstetric study and annual leave*”. In the end, 5 stakeholders (3 midwives and 2 healthcare assistants working in maternity care) who could potentially use the intervention directly when caring for women contributed to stage 1 UPPI.

Despite various attempts being made by sending invitations to organisations and adverts on social media, it was also difficult to recruit pregnant women and new mothers for stage 1 UPPI, as demonstrated by there being just one potential recipient of the intervention in attendance at the workshop. Two other women contacted JM prior to the workshop to enquire if childcare facilities would be provided, suggesting that had there been childcare available, it may have been easier to recruit new mothers.

In contrast, health promotion professionals were relatively easy to recruit for stage 1 UPPI, and it became apparent that there could easily be more non-midwives than midwives present at the workshop. Therefore, to ensure that midwives were in the majority, the number of spaces for non-midwives was capped. Eight requests made by health promotion professionals for places at the intervention workshop were added to a waiting list; however, no spaces became available.

The contextual factors that enabled the UPPI included funding for the intervention development workshop from the University of Stirling’s Health and Behaviour fund, which made it possible to reimburse travel expenses and provide lunch and refreshments. The proximity of the University of Stirling kindergarten group and its research links with the psychology department, where JM is undertaking her PhD, made it easier to recruit women for the stage 2 UPPI.

Process of UPPI

The UPPI process was enabled by HC's (an RCM Professor of Midwifery) extensive network of midwifery contacts and knowledge of the midwifery population. HC's support enabled JM to approach midwives in senior positions who were able to provide the relevant input to take part in the UPPI process. Three stakeholders in senior midwifery positions contributed to stage 1 UPPI. Two of these midwives also provided and helped generate feedback about the intervention during stage 2 UPPI, therefore providing continuous PPI.

Given the complex nature of the intervention, it was important to find a way to communicate what was meant by HePPBes. Visuals were used throughout the intervention development workshop to remind stakeholders of their meaning (Appendix O). The workshop facilitators were also careful not to use terms that were likely to be unfamiliar to stakeholders. For instance, Behaviour Change Techniques were referred to as behavioural techniques. The translation of the PhD terminology into the intervention workshop terminology is provided in Table 7.6 below.

Table 7.6

Differences Between Terminology Used in the Thesis and at the HePPBe Intervention Development Workshop

PhD terminology	Intervention workshop terminology	Meaning
Midwives' Health Promotion Practice Behaviours	Midwives' Health Promotion Practice	All the tasks in the guidelines that midwives are expected to do e.g. having to raise certain topics as per guidelines
Midwives' Health Promotion Strategies	Strategies midwives use to improve women's health behaviours	These are all the things that midwives state they do to carry out their HePPBes (e.g. chipping and dipping – see Chapter 4 for the definitions of these strategies)
Behaviour Change Techniques	Behavioural techniques	The active components of the intervention (e.g. suggesting self-monitoring of diet or providing instructions)

7.4 Discussion

Outcomes

The overall effect of the UPPI on the study was that the intervention described in Chapter 5 was developed, from conceptualisation to final product, with input from key stakeholders. Positive effects of the UPPI included different groups of professionals working together to generate creative ideas aimed at supporting midwives' HePPBes. For instance, the "Rank and Pick" game developed at the workshop formed the basis of the health promotion prioritisation tool, thus highlighting the far-reaching influence of the UPPI in the intervention development. Stakeholders' constructive feedback about the HePPBe toolkit helps to maximise the likelihood that the final product will be acceptable to midwives.

One concern raised by the UPPI process was that the Maternity Health Promotion Specialist role (suggested by stakeholders at the intervention development workshop as the most effective way to support midwives' HePPBes) may indicate that stakeholders feel the answer to the barriers faced by midwives lies outside of the midwife's own capabilities or control. However, the aim of the intervention was to help enable midwives to carry out their HePPBes and the creation of a specialist role would provide indirect support. The creation of a specialist post also fell outside the scope of what could feasibly be developed as part of a PhD thesis. To ensure this UPPI input was recognised, the core intervention development team included the recommendation that the implementation and sustainment of the intervention be led by a "Maternity Behavioural Health Consultant" whose role would be like that of the Maternity Health Promotion Specialist (see Chapter 6 for further details).

Impacts

The intervention development process contained three main components (theoretical basis, behaviour change techniques and the format of delivery). The impact of the UPPI on intervention development mostly concerned the format of delivery, as the selection of the theory and the BCTs were based on the evidence gathered in Chapters 3, 4 and 5 (see Chapter 6). For instance, some of the BCTs included in the final version of the HePPBe toolkit were ranked poorly by

stakeholders, but were included as they were in line with the HePPBe theoretical model. Understanding and recognising where UPPI can most effectively impact on research is important in maximising its potential reach (Gray-Burrows, 2018).

The overall impact on the individuals involved in the UPPI appeared to be positive. Pregnancy, and the immediate postnatal phase, is a unique time in a woman's life. It should be recognised that there may be exclusive barriers (e.g. psychological adjustment to motherhood) to pregnant women and new mothers taking part in UPPI (Newburn, 2018). Despite these challenges, stakeholder involvement in maternity care research is a relatively underdeveloped area. The development of pregnancy/postnatal or maternity-specific UPPI guidelines within the area of implementation research may help to ensure that there are equal opportunities for women to contribute to research during this time.

Recommendation for a Revised Definition of PPI

The definition of PPI, as previously reported in the background section of this paper, was extended to include "users" of the intervention. If this work had been carried out without the insight of midwives, there would have been no first-hand understanding of the research problem or the potential solutions. Therefore, it is recommended that the INVOLVE and NIHR definition of PPI is extended to recognise the unique insights that users of interventions, who do not come under the definition of patient or member of the public, can provide.

Context

One of the key contextual influences of the UPPI process was the recruitment of midwifery stakeholders providing frontline maternity care. Whilst there is always a limited pool of midwives within Scotland, there is currently a shortage of midwives, with the number of unfilled vacancies rising (RCM, 2018). The current political climate within Scottish maternity care, where there is new core mandatory training in obstetric emergencies, foetal monitoring and neonatal resuscitation (Scottish government, 2018a), may also have influenced the availability of midwives. The contrasting availability of the health promotion

professionals highlights the challenge of recruiting healthcare professionals who are providing responsive care to take part in UPPI activities.

It was extremely challenging to recruit women who were either pregnant or had given birth in the last two years due to many of these women either working and/or having childcare responsibilities. The recruitment of mothers from University of Stirling kindergarten toddler provided some insight into what women thought about the intervention. However, most of these women were caring for their child while providing feedback, which may have influenced some of their responses.

Process

Despite the contextual challenges related to the recruitment of frontline midwives, reported above, the UPPI process was greatly aided by the support of HC in ensuring that midwives in senior positions contributed to the UPPI process. The support of these stakeholders could potentially be influential in whether the intervention is used on a national scale. For instance, their buy-in could mean the intervention is embedded within an undergraduate midwifery curriculum or used within the training for the introduction of the new model of continuity of care (Scottish government, 2017c).

Given the complex nature of the aim of the intervention – the supporting of midwives in helping pregnant women address their health behaviours – communication of the target behaviour was an important aspect of the UPPI process. By developing materials which visually emphasised that the direct focus of the intervention was on the behaviour of the midwife as opposed to the pregnant woman's health behaviours, it helped to highlight the target behaviour. The materials also helped to remind stakeholders of the meaning of the terminology used (e.g. Health Promotion Practice) and may have helped to promote shared meaning between stakeholders.

Conclusion

In conclusion, the co-design approach resulted in the development of an intervention which was heavily influenced by stakeholders. The impacts of the UPPI process were positive. It is recommended that the definition of PPI is extended to include “users” to capture the unique insight they can provide to PPI work. Future UPPI work could benefit from the development of specific guidelines.

CHAPTER 8

THE ACCEPTABILITY OF A HEPPBE SUPPORT INTERVENTION TO MIDWIVES – A SURVEY STUDY

This chapter presents the findings of an online survey study which assessed midwives' acceptance of a toolkit designed to support them in performing HePPBes. The development of the midwife health promotion toolkit (reported in Chapter 5) was informed by the evidence reported in Chapters 2, 3, 4 and the UPPI input described in Chapter 6.

The HePPBe toolkit consisted of three components, including: (i) the woman's prioritisation tool, designed to be used by women prior to antenatal appointments, and by midwives during antenatal appointments; (ii) the midwife's consultation tool, designed to be used by midwives during or outside of appointments; and (iii) the personalised plan, designed to be used by midwives in conjunction with pregnant women, at the end of antenatal appointments.

The survey described in the current chapter aimed to assess midwives' acceptance of the whole toolkit rather than each component separately.

8.1 Background

The acceptability of healthcare interventions to their intended deliverers, users or recipients is crucial to ensuring their successful implementation (Peters, Adam, Alonge, Agyepong & Tran, 2013). Many intervention development guidelines consequently include an assessment of acceptability as an essential part of the development process (e.g. Michie et al., 2011; Moore et al., 2015; Araújo-Soares, Hankonen, Pesseau, Rodrigues, Sniehotta, 2019). The development of the HePPBe toolkit (described in Chapter 6) was in line with the MRC-published framework and acceptability testing was considered a logical part of the toolkit development process.

The Theoretical Framework of Acceptability, or TFA (Sekhon, Cartwright & Francis, 2017) was developed to ensure a consensus was reached about the multiple definitions of acceptability that exist within implementation science literature. Through an overview of reviews and the systematic development of acceptability into a theoretical framework, the following definition was produced: *“A multi-faceted construct that reflects the extent to which people delivering or receiving a healthcare intervention consider it to be appropriate, based on anticipated or experienced cognitive and emotional responses to the intervention”* (Sekhon et al., 2017, p.4.).

The TFA outlines seven component constructs which describe different measures of intervention acceptability. The current study adapted the meaning of the TFA component constructs to make them applicable to the assessment of midwives' acceptance of the health promotion toolkit. The original and modified TFA component construct definitions are provided in Table 8.1 below.

Table 8.1

Original and Modified Definitions of the TFA Component Constructs

Component construct	Original TFA definition (Sekhon et al., 2017)	Adapted definition
Affective Attitude	How an individual feels about the intervention	Degree to which the midwives liked the HePPBe toolkit
Burden	The perceived amount of effort that is required to participate in the intervention	Amount of effort midwives perceived as being required to use the HePPBe toolkit
Perceived Effectiveness	The extent to which the intervention is perceived as being likely to achieve its purpose	Extent to which midwives perceived the toolkit as potentially supporting them in performing their HePPBes
Ethicality	The extent to which the intervention has good fit with an individual's value system	Degree to which the HePPBe toolkit fits within midwives' value system
Intervention Coherence	The extent to which the participant understands the intervention and how it works	Extent to which midwives understand the aim of the toolkit is to support their HePPBes

Component construct	Original TFA definition (Sekhon et al., 2017)	Adapted definition
Opportunity Costs	The extent to which benefits, profits or values must be given up to engage in the intervention	The expense that midwives perceive in using the toolkit to support their HePPBes
Self-efficacy	The participant's confidence that they can perform the behaviour(s) required to participate in the intervention	Midwives' confidence in using the toolkit to support their HePPBes

A principal feature of the TFA is that it distinguishes between prospective (or *anticipated*) and retrospective (or *experienced*) acceptability. The TFA suggests that the time point at which acceptability is measured – prior, during or after intervention delivery – can influence the type of data gathered and recommends that the chosen time point for data collection matches the purpose of the acceptability assessment. The aim of the current study was to collect prospective data about the acceptability of the HePPBe toolkit so that modifications could be made for piloting the intervention. The current study therefore took place prior to intervention delivery.

No previous published interventions have been designed to support midwives in addressing pregnant women's multiple health behaviours (see Chapters 1& 2 for more information). However, many interventions that support pregnant women's health behaviours have been developed, and a small number of studies have examined midwives' acceptance of these interventions. One study reported community midwives' views of an intervention where they supported pregnant women at antenatal appointments to prevent excessive weight gain by regularly weighing women, setting weight gain limits, providing feedback, and encouraging women to weigh themselves weekly. Midwives regarded this intervention as highly acceptable, and feasible to implement within routine antenatal care (Daley et al., 2015). A study which reported midwives' views on the use of text messaging to support the weight management of pregnant women with a BMI ≥ 30 (Soltani et al., 2012) indicated that some midwives considered the intervention could have the potential to cause unintentional harm to pregnant women, such as provoking feelings of guilt. Similar concerns were illustrated in an interview study where the views of healthcare professionals, including midwives, about the use of mobile technology to support pregnant women's nutrition, physical activity and weight gain were gathered (Willcox et al., 2015).

Aim

The aim of this chapter was to assess the prospective acceptability of a toolkit designed to support midwives in performing HePPBes amongst midwives themselves.

8.2 Methods

Study design

Online survey study.

Midwives and Recruitment

The inclusion criterion was being a qualified midwife. Recruitment took place online between December 2018 and February 2019. Advertisements were placed on midwifery forum email lists and social media pages. Advertisements contained a URL link to the online study platform Qualtrics where the survey was hosted. Overall, 221 attempts were made to complete the survey, of which 113 were deemed incomplete (for a survey to be considered complete midwives had to fill out 86% or above of the survey, as this level of completion indicated that midwives had responded to all the Likert scale items). Complete responses were obtained from 108 midwives.

Survey

The survey (Appendix AA) consisted of seven Likert scale items, measured on a scale of 5 (= strongly agree) to 1 (= strongly disagree), and three qualitative open-ended items. Midwives answered one of two versions of the quantitative items, depending on whether they were currently providing antenatal care or not. The items asked the same questions, but the version for midwives currently providing antenatal care asked questions in reference to midwives themselves (e.g. *“Using the toolkit would be something I would like to do”*), whereas the version for midwives not currently providing antenatal care asked questions in reference to other midwives who do provide antenatal care (e.g. *“Using the toolkit would be something midwives would like to do”*).

Measures

Quantitative items (Appendix AA and table 8.2 below) were based on the seven component constructs of the TFA (Sekhon et al., 2017). The qualitative open-ended questions included: *“What do you think the toolkit is attempting to achieve?”*, *“Please give reasons why you think midwives would/would not use the toolkit”*, and *“Please provide any other comments that you have about the toolkit”*.

Procedure

Midwives accessed the survey by clicking on the URL contained within the online advertisement. Following presentation of study information and eligibility criteria, consent was obtained by the midwife selecting an electronic check box. A screening question: *“Are you a qualified midwife?”* was presented to assess eligibility. If the response to the screening question was “no”, then midwives were thanked for their interest in the study and exited from the survey. If the response was “yes”, then midwives were then asked: *“Do you currently provide antenatal care?”* If the answer was “yes”, then midwives were asked the questions in reference to themselves. If the answer was “no”, then midwives were asked the questions in reference to other midwives who currently do provide antenatal care. The answer to this question determined the wording of the TFA Likert scale items (discussed in the survey section above). Midwives were then presented with the aims of the HePPBe toolkit, followed by a description of each of the three components. The description included images of the HePPBe toolkit components, information about the sizing of the materials, and examples of how it could be used by midwives and/or pregnant women.

Quantitative Analysis

A Statistical Package for the Social Sciences (SPSS) spreadsheet containing raw survey data was downloaded from Qualtrics and non-complete responses were removed. Responses from midwives who currently provide antenatal care were initially analysed separately from the responses gathered from midwives who do not currently provide antenatal care before both sets of responses were combined. Descriptive data, including means and frequencies, were calculated for each item.

Qualitative Analysis

The responses to the qualitative open-ended items were removed from the SPSS spreadsheet and stored in a Microsoft Word document. Responses from midwives currently providing antenatal care and those currently not providing antenatal care were combined. Analysis involved the following 6 steps:

- 1) Responses were read several times by JM to ensure familiarity with the data.
- 2) Responses were coded by JM using a directed content analysis approach (Hsieh & Shannon, 2005) in which responses were placed in the most relevant TFA component construct. If a response could be coded into more than one component construct, a decision was made by JM as to which construct would be the most appropriate. Some responses contained multiple statements which were treated as multiple responses if statements related to more than one component construct.
- 3) JM summarised the responses within each component construct into sub-component constructs.
- 4) Coding was checked by SC (a Health Psychologist and lecturer in Health Psychology who had supported the facilitation of the stakeholder workshop described in Chapter 7). SC read through the responses coded within each component construct and highlighted any responses that she considered to be coded incorrectly.
- 5) JM made a final decision about the coding of the responses SC had queried.
- 6) The number of responses coded into each component construct and each sub-component construct was calculated by JM.

Ethical Approval

The University of Stirling's General University Ethics Panel approved the study (GUEP495; Appendix AB).

8.3 Results

Midwives

A total of 108 midwives completed the survey: n= 89 midwives (82%) provided antenatal care in their current role and n= 19 (18%) did not currently provide antenatal care.

Quantitative Responses About the Acceptability of the HePPBe Toolkit

Table 8.2 presents the mean responses and the percentage of midwives who gave responses of 4 or higher (agree or strongly agree) for each TFA item. The responses for all midwives showed that the item with the highest mean score was *“Using the toolkit would support midwives in their health promotion practice”* which was also the item that the highest percentage of midwives agreed or strongly agreed with (85%). The item with the lowest mean score was *“Using the toolkit would not require a lot of effort”* (meaning that midwives felt that using the HePPBe toolkit would require a degree of effort in practice). This item also had the lowest percentage of midwives agreed or strongly agreed with it (45%). These findings were the same regardless of whether midwives were currently providing antenatal care or not.

Table 8.2

Midwives Mean Likert Scale Responses about the Acceptability of the HePPBe Toolkit

Item (component construct)	Midwives who were currently providing antenatal care ^a			Midwives who were not currently providing antenatal care ^b			All midwives ^c		
	<i>M</i>	<i>SD</i>	% agree or strongly agree	<i>M</i>	<i>SD</i>	% agree or strongly agree	<i>M</i>	<i>SD</i>	% agree or strongly agree
Using the toolkit would support me in my health promotion practice (Perceived Effectiveness)	4.11	± 1.07	76	4.21	±1.08	89	4.13	±1.07	79
Using the toolkit would fit well within my values as a midwife (Ethicality)	4.02	± 1.13	76	4.00	±1.45	79	4.02	±1.18	77
Using the toolkit would be straightforward (Self-efficacy)	3.85	± 1.08	64	3.63	±1.01	63	3.81	±1.07	64
Using the toolkit would be something I would like to do (Affective Attitude)	3.80	± 1.18	70	3.53	±1.02	53	3.75	±1.15	67

<i>Item</i> (component construct)	Midwives who were currently providing antenatal care ^a			Midwives who were not currently providing antenatal care ^b			All midwives ^c		
	<i>M</i>	<i>SD</i>	% agree or strongly agree	<i>M</i>	<i>SD</i>	% agree or strongly agree	<i>M</i>	<i>SD</i>	% agree or strongly agree
Using the toolkit would not interfere with my other priorities when providing antenatal care (Opportunity Costs)	3.40	± 1.15	49	3.37	±.096	42	3.40	±1.11	48
Using the toolkit would be something I would do in my antenatal practice (Intervention Coherence)	3.69	± 1.19	63	3.37	±1.07	53	3.63	±1.17	61
Using the toolkit would not require a lot of effort (Burden)	3.28	± 1.25	43	3.26	±1.10	37	3.28	±1.22	42

Note: The questions for midwives currently not providing antenatal care were worded slightly differently and are provided in Appendix AA

^a *n*= 89. ^b *n*= 19. ^c *n*= 108.

Qualitative Responses About the Acceptability of the HePPBe Toolkit

The number of midwives who provided a response to each of the qualitative open-ended items is shown in Table 8.3 below. The percentage of midwives who provided a response ranged between 52% and 92%.

Table 8.3

Number of Midwives who Responded to Qualitative Open-Ended Items About the Acceptability of the HePPBe Toolkit (n= 108)

Item	n	%
What do you think the toolkit is attempting to achieve?	99	92
Please give reasons why you would/would not use the toolkit	90	83
Please provide any other comments that you have about the toolkit	56	52

Checking of Coding. Two hundred and sixty responses were provided by midwives to the qualitative open-ended questions. After checking the coding, SC suggested 27 (10.4%) of responses should be coded into different component constructs. JM re-assessed the coding of these responses and re-coded 19 responses (70.4%) into the component constructs SC had recommended. The remaining 8 responses (29.6%) remained within the component constructs they had originally been coded in by JM.

Component Constructs. The following information is presented in Table 8.4: i) component construct meaning and total number of responses coded within each component construct; ii) a description of the sub-component constructs and the number of responses coded within each sub-component construct and iii) supporting evidence for each sub-component construct.

Table 8.4

TFA Component Construct Summaries With Supporting Evidence From the Qualitative Responses About the Acceptability of the Toolkit

Component construct meaning (n= total number of responses coded within the component construct)	Sub-component constructs (n= total number of responses coded within the sub- component construct)	Example quotation(s) for each sub-component construct
Intervention Coherence (i.e. midwives' perception of the aim of the HePPBe toolkit (n= 106))	To support health promotion (n= 30)	<i>"A reduction in maternal and neonatal morbidities whilst improving all-round health."</i>
	To support pregnant women's health (n= 28)	<i>"Improving women's health in pregnancy."</i>
	To support both midwives' HePPBes and pregnant women's health (n= 22)	<i>"I think the toolkit is trying to make sure that women are given time and space to voice their concerns, feelings and physical sensations, as well as behaviour. I also think that the toolkit is giving midwives a resource to make sure that all the ground is covered that needs to be covered, and that they actively reflect on their practice with another midwife or midwives."</i>

Component construct meaning (n= total number of responses coded within the component construct)	Sub-component constructs (n= total number of responses coded within the sub- component construct)	Example quotation(s) for each sub-component construct
	To support midwives in carrying out their HePPBes (n= 14)	<i>“Help midwives to support and advise women, using clear guidance which is standardised and uses personalised materials.”</i>
	To support midwives in achieving a more structured approach to carrying out their HePPBes (n= 12)	<i>“A more streamlined, thorough and women-led way to discuss health promotion.”</i> <i>“Getting the midwife away from keeping appointments routine and only discussing certain points at these appointments.”</i>
Affective Attitude (i.e. how midwives felt about the HePPBe toolkit (n= 61))	Midwives liked the HePPBe toolkit (n= 25)	<i>“I think that it is intuitive, clear, concise, attractive, and will provide a good pathway for health promotion.”</i> <i>“I think this would be an excellent resource.”</i>
	The design or layout of the HePPBe toolkit was well received (n= 15)	<i>“Looks good and well thought-out.”</i> <i>“Colourful, engaging, not too overwhelming with information, clear and informative.”</i>

Component construct meaning (n= total number of responses coded within the component construct)	Sub-component constructs (n= total number of responses coded within the sub- component construct)	Example quotation(s) for each sub-component construct
	Midwives had mixed feelings about the HePPBe toolkit, liked and/or disliked components (n= 12)	<p><i>"I would like to try it but probably don't really need it."</i></p> <p><i>"I like the visuals and think they would remind us to talk about these topics, but I would not like asking the woman to write, or giving out slips."</i></p> <p><i>"Really like the practical tips behind supporting behaviour change and getting away from the traditional advice-giving."</i></p>
Burden (i.e. the amount of effort midwives perceived as being required to use the HePPBe toolkit (n= 34))	Midwives did not like the HePPBe toolkit (n= 9)	<p><i>"I really don't like this toolkit. Not only is it more work, but it seems so patronising and really unwieldy."</i></p>
	Midwives perceived the HePPBe toolkit as being simple to use (n= 16)	<p><i>"I would use it because it's clear & concise and doesn't appear labour-intensive".</i></p>
	Midwives considered the HePPBe toolkit as being	<p><i>"I discuss these topics during appointments, but I wouldn't use the personalised plan as I already have so much to</i></p>

Component construct meaning (n= total number of responses coded within the component construct)	Sub-component constructs (n= total number of responses coded within the sub- component construct)	Example quotation(s) for each sub-component construct
Perceived Effectiveness (i.e. the extent to which midwives perceived the toolkit as potentially supporting them in performing their HePPBes (n=29))	resource-intensive, particularly in terms of paperwork (n= 13)	<i>cover at each antenatal appointment that I don't have the time to fill out another piece of paperwork."</i>
	Midwives' suggestions of how to reduce the perceived burden of using the HePPBe toolkit (n= 5)	<i>"As it is pocket-size it may get lost. Would there be a way to attach it to a woman's handheld notes if she has these?"</i>
	Midwives considered the toolkit useful or helpful in performing their HePPBes (n= 17)	<i>"I tend to talk a lot and explain a lot during the booking appointment. This toolkit would enable me to relax and give more information at a later stage."</i>
(n=29))	Midwives perceived the HePPBe toolkit as ineffective (n= 7)	<i>"May be viewed as yet another piece of paper."</i>

Component construct meaning (n= total number of responses coded within the component construct)	Sub-component constructs (n= total number of responses coded within the sub- component construct)	Example quotation(s) for each sub-component construct
Opportunity Costs (i.e. the expense that midwives perceive in using the toolkit to support their HePPBes (n= 19))	Midwives considered that to enhance the effectiveness of the HePPBe toolkit it needed to be made into an e-health resource (n= 5)	<i>“With the move to electronic records in most Scottish boards, perhaps something that shows on the woman’s maternity record app would be more acceptable, with the questions and tips incorporated into the electronic record.”</i>
Self-Efficacy (i.e. midwives’ confidence in using the toolkit to support their HePPBes)	Time cost of using the HePPBe toolkit (n= 19) Influences reducing midwives’ self-efficacy to use the HePPBe toolkit (n= 11)	<i>“The toolkit is a good idea but time is the main issue. Having time to fill out the slips in an appointment or making a plan would be challenging in view of the practical things that need completing in a 10-minute appointment.”</i> <i>“It would be hard to complete in short 15-minute appointments.”</i> <i>“It requires the women to be interested too.”</i>

Component construct meaning (n= total number of responses coded within the component construct)	Sub-component constructs (n= total number of responses coded within the sub- component construct)	Example quotation(s) for each sub-component construct
Ethicality (i.e. the degree to which the HePPBe toolkit fits within midwives' value system (n=0))	No responses were coded within the given component construct.	n/a

Integration of Quantitative and Qualitative Findings About the Acceptability of the HePPBe Toolkit

An overview of the quantitative and qualitative findings is presented in Table 8.5. The component constructs are presented in Table 8.5 in descending order of the total percentage of midwives who agreed or strongly agreed with the Likert scale statements. Based on this measure, perceived effectiveness was the component construct with the highest degree of acceptability whilst burden had the lowest. Table 8.5 also contains suggestions of future modifications that could be made to the HePPBe toolkit to enhance its acceptability.

Table 8.5

Integration of Qualitative and Quantitative Findings about the Acceptability of the HePPBe Toolkit and Future Modifications to Enhance Acceptability

TFA Component Construct	How qualitative and quantitative data findings relate	Possible modifications to enhance acceptability of the HePPBe toolkit
Perceived Effectiveness	85% of midwives agreed or strongly agreed that using the toolkit would potentially support them in performing their HePPBes. The qualitative data suggests that some midwives considered the toolkit useful as it provided clear guidance on how to enhance their HePPBes. However, other midwives perceived the HePPBe toolkit as ineffective. A small number of midwives specified that the HePPBe toolkit should be made into a digital resource.	<ul style="list-style-type: none"> - Provide HePPBe toolkit training to demonstrate how the HePPBe toolkit can be used. - Endorsement of the HePPBe toolkit by senior midwives. - Digitalisation of the HePPBe toolkit.
Ethicality	83% of midwives agreed or strongly agreed that using the HePPBe toolkit fitted within their value system. No responses were coded within the Ethicality component construct, suggesting there were few issues with the ethicality of the HePPBe toolkit amongst midwives.	<ul style="list-style-type: none"> - No modifications to the HePPBe toolkit appear to be necessary.

TFA Component Construct	How qualitative and quantitative data findings relate	Possible modifications to enhance acceptability of the HePPBe toolkit
Affective Attitude	72% of midwives agreed or strongly agreed that using the HePPBe toolkit would be something they would like to do. The qualitative data provided responses indicating the degree to which midwives liked the HePPBe toolkit. Most of the responses were positive, indicating that in general midwives liked the toolkit. However, some midwives indicated they only liked specific components of the HePPBe toolkit and other midwives did not like it at all.	<ul style="list-style-type: none"> - Provide HePPBe toolkit training to midwives to emphasis flexible nature of the toolkit (no requirement to use all three components). - Highlight that HePPBe toolkit materials can be used flexibly, meaning there is no requirement to use all three components. - Develop support materials to accompany the HePPBe toolkit which emphasise its flexible nature.
Self-efficacy	69% of midwives agreed or strongly agreed that using the HePPBe toolkit would be straightforward. A small amount of qualitative data indicated potential influences that could reduce midwives' self-efficacy in using the HePPBe toolkit.	<ul style="list-style-type: none"> - Use HePPBe training, and techniques such as role play, to enhance midwives' self-efficacy in using the HePPBe toolkit. - Point midwives towards the MAP of behaviour change training (NES, 2018).

TFA Component Construct	How qualitative and quantitative data findings relate	Possible modifications to enhance acceptability of the HePPBe toolkit
Intervention Coherence	66% of midwives agreed or strongly agreed that using the HePPBe toolkit would be something that they would do in their antenatal practice. The qualitative responses suggested that some midwives understood that the HePPBe toolkit was designed primarily to support midwives. However other midwives perceived the toolkit as being solely aimed at supporting women's health behaviours.	<ul style="list-style-type: none"> - Provide HePPBe toolkit training to midwives to emphasis that the aim of the HePPBe toolkit is primarily to support their HePPBes and that pregnant women are the secondary focus. - Develop support materials to accompany the HePPBe toolkit which emphasis to midwives that the aim of the HePPBe toolkit is primarily to support their HePPBes and that pregnant women are the secondary focus.
Opportunity Costs	52% of midwives agreed or strongly agreed that using the HePPBe toolkit would not interfere with their other priorities when providing antenatal care. The qualitative responses highlighted that appointment time was the factor which was perceived most frequently by midwives as being sacrificed to use the HePPBe toolkit.	<ul style="list-style-type: none"> - Use HePPBe training to demonstrate the time taken to use the toolkit - Develop support materials to accompany the HePPBe toolkit which specify the average amount of time taken to use the toolkit.

TFA Component Construct	How qualitative and quantitative data findings relate	Possible modifications to enhance acceptability of the HePPBe toolkit
Burden	45% of midwives agreed or strongly agreed that using the HePPBe toolkit would not require a lot of effort. The qualitative responses suggested midwives who perceived the toolkit as a burden or considered it as extra paperwork.	<ul style="list-style-type: none"> - Use HePPBe training to emphasise that the HePPBe toolkit can be used simply as a prompt to remind midwives what health behaviours they are required to address with pregnant women during pregnancy. - Digitalisation of the HePPBe toolkit.

8.4 Discussion

Statement of Principal Findings

This study suggests that many midwives considered the HePPBe toolkit might be potentially effective in helping them to perform their HePPBes. The toolkit also appeared to fit well within midwives' values, and most midwives appeared to like the HePPBe toolkit and considered it straightforward to use. However, many midwives also perceived the HePPBe toolkit as being additional work that would cost them time within antenatal appointments. Some midwives also seemed to consider the HePPBe toolkit as being primarily designed to support pregnant women, thereby suggesting that they did not perceive midwives to be the primary focus. A small number of midwives also expressed the need to translate the HePPBe toolkit into a digital resource.

Strengths and weaknesses of the study

The current study is unique in that it is the first to examine the acceptability of an intervention designed to support midwives' multiple HePPBes. This study is also the first to use the TFA (Sekhon et al., 2017) in assessing the acceptability of an intervention aimed at supporting healthcare professionals. The use of TFA in assessing the acceptability of the HePPBe toolkit provided a clear, theoretically based structure through which to identify specific elements of acceptability that may otherwise have gone unconsidered. The TFA was also helpful in organising the data gathered. However, the use of the TFA introduced some redundant questions. For instance, no qualitative data was gathered regarding the ethicality of the HePPBe toolkit. Some of the labels used to describe the component constructs could be considered ambiguous (e.g. Affective Attitude). The use of the framework may have also constrained midwives with regards to the type of feedback they may have provided. Modification of the TFA is required before it can be regarded as being a user-friendly resource, particularly for researchers without knowledge of complex psychological terminology.

Online data-gathering lowered the potential for social desirability bias (Fisher, 1993) to influence midwives' feedback as they were not providing face-to-face responses to the researcher who developed the HePPBe toolkit. Gathering

acceptability data online also meant that the HePPBe toolkit was treated as a standalone intervention and midwives' responses were based on their own raw interpretations (a brief description of how the HePPBe toolkit could be used was included in the survey, but it is assumed this would also be necessary to use the HePPBe toolkit in a real-life application).

Online data collection also enabled midwives from an international setting to provide their feedback. For instance, one midwife indicated that they worked in Germany. Obtaining feedback from outside of a Scottish context is important, given that the HePPBe toolkit was designed to be used within many models of care (see Chapter 5 for more information). A drawback of gathering data online was that midwives could not physically interact with the HePPBe toolkit and had to rely on descriptions such as "credit card-sized" to gain an impression of the size of the materials.

Overall, this study provides initial feedback from a small group of midwives obtained through voluntary sampling. More robust testing of the acceptability of the toolkit is required as part of a larger feasibility study which is discussed in more detail in chapter 9. Further acceptability testing of the toolkit should also incorporate the views of pregnant women as the secondary targets of the intervention. The TFA is a relatively new framework and has yet to be validated. There appears to be, as described above, some issues with the TFA regarding the language used to describe the component constructs. Researchers using the TFA should take this limitation into account when applying it.

Relation to Other Studies

Previous studies (Daley et al., 2015; Soltani et al., 2012; Willcox et al., 2015) have examined midwives' acceptance of interventions aimed directly at pregnant women's health behaviours, as opposed to interventions to support midwives in addressing health behaviours with pregnant women. These studies also differ from the current study in that they used face-to-face qualitative research methods (focus groups and interviews) with small numbers of midwives, whereas the current study was an online survey with a larger sample.

The finding that midwives perceived the HePPBe toolkit as an addition to their workload differs from the study reported by Daley et al., (2015), in which midwives considered their workload to be unaffected by performing up to four additional HePPBes during routine antenatal appointments. Although there is a subtle difference between using the toolkit and performing additional HePPBes, the difference in results may be due to the view expressed by midwives that using the HePPBe toolkit meant additional paperwork, whilst the only additional materials introduced in the intervention described by Daley et al. (2015) was a weight gain chart. Changing midwives' perceptions that using the HePPBe toolkit would add to their workload is crucial to ensuring it is a fully acceptable intervention and potential ways of making use of the HePPBe toolkit appear more feasible to midwives are outlined in section 5.5 below.

Meaning of the Study: Possible Mechanisms and Implications for Clinicians or Policymakers

The current study suggests that, following further development of the materials to address some aspects of acceptability, clinicians could consider piloting the toolkit so as to support midwives in carrying out their HePPBes. Given the clear desire from midwives for more support in carrying out their HePPBes (see the questionnaire findings in Chapter 4), midwifery educators could consider implementing the HePPBe toolkit as part of a specific health promotion module during midwifery training and/or as continuous professional development after qualification.

Unanswered Questions and Future Research

The purpose of the study was to provide initial insight into the acceptability of the HePPBe toolkit amongst midwives. Therefore, despite the involvement of pregnant women and new mothers in the design and development of the HePPBe toolkit, (outlined in Chapter 6) their views regarding its acceptability were not obtained in this study. However, future research should gather these stakeholders' perspectives, especially given that the woman's prioritisation tool and the personalised plan are designed to be used in conjunction with pregnant women.

The current study findings have highlighted aspects of the HePPBe toolkit that need to be modified to enhance its acceptability amongst midwives. It is essential that we address midwives' perceptions that using the HePPBe toolkit would be additional work which would cost them time within antenatal appointments. The aim of the HePPBe toolkit is to provide supportive materials that can help structure HePPBes, but it could equally be used in an ad hoc manner. Therefore, using the toolkit should help midwives to streamline their HePPBes, whilst ensuring they are carrying out all the HePPBes they are asked to perform, and doing so in a style that is meaningful to them and helpful to the woman they are caring for. Providing midwives with training that demonstrates how the HePPBe toolkit can be used briefly within routine antenatal appointments could address midwives' concerns. Instructions could also be added to the intervention materials to remind midwives of the flexible nature of the HePPBe toolkit or support materials could be developed (see Table 8.5 for more detail).

Future development of the HePPBe toolkit into a digital resource, such as a smart device application, needs to be carried out to ensure the toolkit is in keeping with the digitalisation of maternity care (see Chapter 2 for more details), as well as making the HePPBe toolkit as easily accessible for midwives to use as possible. Altering the format of the delivery in this way may also help to address midwives' perceptions about the acceptability of the HePPBe toolkit. For instance, not having additional paper materials present may help to address midwives' perceptions that using the HePPBe toolkit is extra work. Following modification of the intervention into a digital resource, retrospective acceptability and feasibility testing should take place as part of a pilot study.

Conclusion

Overall, midwives appear to demonstrate a reasonable degree of acceptance towards the HePPBe toolkit. However, many perceive the HePPBe toolkit as yet another item of paperwork for them to undertake within already time-constrained antenatal appointments. Providing training on how the use of the HePPBe toolkit could make completion of their tasks easier is important in addressing these perceptions. However, the most obvious next step is to translate

the format of delivery into an e-health resource. A pilot study would then be required to assess the toolkit's effectiveness in supporting midwives in the performance of their HePPBes. This future research will be discussed in more detail in Chapter 9.

CHAPTER 9

DISCUSSION AND CONCLUSIONS

This thesis described the systematic development of a behaviour change intervention to support midwives in addressing health behaviours with pregnant women. The four different phases of the development process – review of existing evidence, gathering of new evidence, intervention development and acceptability study – were outlined in the preceding chapters.

The aim of this final chapter is to present: (i) a summary of the thesis findings; (ii) a discussion of the strengths and limitations of the thesis; (iii) a comparison of the thesis findings to other studies; (iv) the implications of the thesis findings; and (v) any unanswered questions and potential areas of future research. The chapter concludes with recommendations based on the thesis findings, their implications, and possible next steps for the progression of the intervention into a resource that can be implemented within midwifery care to evaluate for effectiveness.

9.1 Summary of Thesis Findings

The findings from the thesis are summarised below in terms of the four phases of the PhD outlined in Figure 9.1:

Phase 1: Review of the Existing Evidence

Chapter 1 provides a rationale for the research undertaken and an overview of the thesis. The rationale for developing an intervention to support midwives in addressing health behaviours with pregnant women is given as the short- and long-term consequences of health during pregnancy for women and their children. The overview of the thesis reports a four-phase approach (outlined above and in Figure 9.1). Chapter 2 presents contextual information relevant to the thesis, including midwifery care, behaviour change and evidence-based intervention development. The presentation of this background information emphasises the potential influence of midwives to the health and wellbeing of pregnant women and their families. Chapter 2 highlights key gaps within behaviour change and intervention development literature, specifically: limited theoretical evidence and key concepts relating to multiple health behaviour change; maintenance of behaviour change; and sustainability of health professional behaviour change interventions. Chapter 3 demonstrates that, as of 2016, there are multiple policies and guidelines implicating midwives in HePPBe performance; however, there is no peer-reviewed literature reporting the existence of interventions that support midwives in the health promotion aspect of their practice. These findings inform the next phase of the intervention development process: the gathering of new evidence.

Phase 2: Gathering new Evidence

Chapter 4 provides new insight into the barriers and facilitators midwives perceive in performing HePPBes, using one-to-one interviews and an online survey. Key barriers from the interview study include: a requirement to perform an increasing amount of HePPBes on top of existing clinical workload; midwives' cognitive resources; the quality of relationships with pregnant women; a lack of continuity of care; and difficulty in accessing appropriate training. Key facilitators are midwives' motivation to support pregnant women to address their health, and

strategies that midwives have developed to overcome the barriers they face in carrying out their HePPBes. The interview findings were used to inform the survey study, which indicated that psychological factors – including confidence, intrinsic drive and feelings of being supported – were significant predictors of midwives' self-reported levels of HePPBe performance. Midwives' desire for support in performing their HePPBes was also highlighted by the survey findings. These findings, along with the findings from phase 1, inform the intervention development phase of the thesis.

Phase 3: Intervention Development

Chapter 6 outlines the Flex Five intervention development approach taken to develop the current intervention, including the identification of the target population (midwives) and target behaviour (HePPBes), as well as the selection of appropriate theory, BCTs and Format of Delivery (FoD). The resulting intervention is a handheld HePPBe toolkit comprising of three components: (i) prioritisation tool - designed to be used by women prior to antenatal appointments and by midwives during antenatal appointments, (ii) consultation tool - designed to be used by midwives during or outside of the appointment setting and (iii) personalised plan - designed to be used by midwives in collaboration with pregnant women, at the end of the antenatal appointments. Chapter 7 describes how user, patient and public Involvement input had been key in developing the HePPBe toolkit, particularly in terms of FoD, from conceptualisation to final product. The acceptability of the HePPBe toolkit is tested in the final phase of the thesis.

Phase 4: Acceptability Study

Chapter 8 shows evidence from an online survey that midwives demonstrate a reasonable degree of acceptance towards the HePPBe toolkit. However, some midwives perceive it as yet another piece of work for them to undertake within already time-constrained antenatal appointments, and this issue requires addressing when implementing the newly developed intervention.

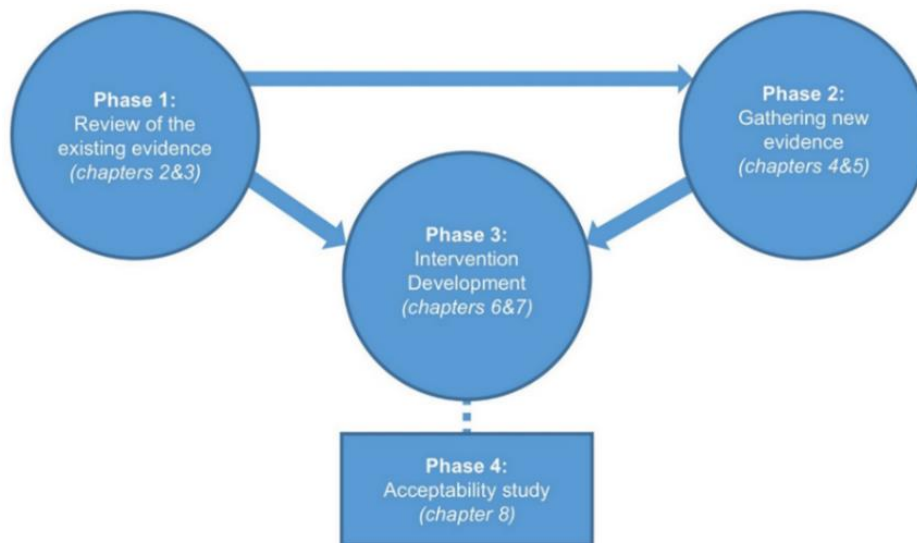


Figure 9.1: Diagram of the four-phase structure of the thesis.

9.2 Thesis Strengths and Limitations

The strengths and limitations of this thesis are considered below for each of its four phases.

Review of the Existing Evidence (Phase 1)

Strengths include the detailed presentation of contextual information and the exhaustive nature of the search for previous interventions. Although a systematic review was not performed, as no interventions were identified as supporting midwives in performing their HePPBes, the search of databases was carried out to the same degree as would have been required for a systematic review. Weaknesses include the observation that the review of the evidence concerning midwives' HePPBes could have been reported using "empty review" guidelines (Cochrane Effective Practice and Organisation, 2017; see Chapter 3 for further details). Presentation of an empty review would have been useful in highlighting the pressing need for interventions that support midwives in HePPBes performance to researchers working within the field of maternal health.

Gathering new Evidence (Phase 2)

The number of midwives who participated in the evidence-gathering studies was variable. The sample size of the interview study (Chapter 4) was smaller than other, similar studies ($n= 11$), yet the survey study (Chapter 5) was, as of 2019, larger than any comparable previous studies in this population ($n= 505$). Therefore, given that data had been gathered from over 500 midwives combined during the evidence-gathering phase, it was considered that perspectives had been obtained from a sufficiently large sample to allow a variety of views and perspectives to be expressed.

The TDF is a theory-based tool which aided understanding of the barriers and facilitators midwives perceive in performing their HePPBes. However, the TDF provides an overview of the potential factors influencing behaviour rather than providing insight into the potential relationships between the domains (Francis, O'Connor & Curran, 2012). Thus, the TDF is a way of organising theory, but it is not a theory in itself. Another limitation of the use of the TDF in this thesis is that,

although it provides an overview of the main psychological constructs explaining health behaviours, the theories that these constructs belong to are mainly used to explain single behaviours. Therefore, multiple behaviour change processes, such as goal facilitation (Riediger & Freund, 2014), goal conflict (Presseau, et al., 2015) and transference (Fleig et al., 2015), have not been captured by the TDF domain interview questions and survey items and therefore might have been missed.

Intervention Development (Phase 3)

The use of the Flex Five approach (Dombrowski et al., 2019) enabled a meta-perspective, so that the key elements of various intervention development frameworks could be incorporated. The adaptable nature of Flex Five meant that it was possible to carry out intervention development in a non-consecutive manner, as each of the five components could be modified at various time points. Such an approach made it possible to iteratively incorporate stakeholder feedback throughout the intervention development process.

The traditional focus of Patient and Public Involvement is clinical-based research, which is often focused on patient behaviour as opposed to implementation research (Gray-Burrows et al., 2018), which is what is described in this thesis. Therefore, the description of the user patient and public involvement (UPPI) using the Guidance for Reporting Involvement of Patients and the Public (GRIPP2) checklist (Staniszewska et al, 2017) was novel. The formal UPPI process began during the intervention development phase, and although implicit consultation with stakeholders took place during the earlier phases of the thesis (the review of existing evidence and the gathering of new evidence), it may have been useful to have involved stakeholders more explicitly during these phases. For example, setting up a working group at the beginning of the thesis may have been beneficial in helping to establish strong working relationships with some key stakeholders, and thereby may have increased the number of midwives who attended the intervention development workshop (see Chapter 7).

A key milestone of the intervention development phase is the output of an evidence-based resource which provides midwives with a tool to support them in addressing health behaviours with pregnant women. The HePPBe toolkit has been

designed so it can be used flexibly, without specialist training, and does not require specialist midwifery knowledge. Consequently, it could be used by other HCPs working to promote women's health during pregnancy, such as maternity care workers. The HePPBe toolkit was designed for potential use by midwives internationally, and although some of the information contained within it is specific to a Scottish context, this could be modified with localised information to make it applicable to midwives worldwide. Overall, the pragmatic nature of the HePPBe toolkit may help it to be implemented within real-world settings.

Acceptability Study (Phase 4)

The acceptability study (Chapter 8) has ensured that important data has been gathered about potential barriers to using the HePPBe toolkit. This initial assessment has been carried out to enable modifications to be made before more in-depth, resource-intensive testing of the HePPBe toolkit takes place. Assessing prospective acceptability helps to minimise research wastage by ensuring that interventions are more likely to be considered acceptable and feasible when piloted (Ioannidis, et al., 2014).

9.3 Relation to Other Studies

This section will compare the thesis findings with three sets of studies. These sets of studies reported: the use of the TDF to understand HCPs' barriers and facilitators to addressing multiple behaviour change; intervention development guidelines; and interventions which aim to support HCPs in addressing multiple health behaviours.

Use of the TDF to Investigate the Barriers and Facilitators to HCPs

Addressing Multiple Behaviour Change

The first set of studies report the use of the TDF to understand the barriers and facilitators perceived by HCPs in addressing multiple behaviour change. They include an interview study with a mixed group of HCPs to identify the barriers and facilitators to providing opportunistic behaviour change interventions during routine medical consultations (Keyworth et al., 2019), and an interview study with primary care HCPs to identify the barriers and facilitators in implementing multiple health behaviour change interventions for cardiovascular risk reduction (Alageel et al., 2018). The final study is a meta-synthesis using the TDF to investigate maternity HCPs' barriers and facilitators to the implementation of pregnancy and weight management obesity guidelines (Heslehurst, Newham et al., 2014). Details of these studies are shown in Table 9.1 below.

Table 9.1

Comparison of the Thesis Findings in Relation to Other TDF Studies Investigating the Barriers and Facilitators to HCPs Addressing Multiple Behaviour Change

Study characteristics	Chapters 4 and 5 and McLellan et al. (2019)	Keyworth et al., 2019	Alageel et al., 2018	Heslehurst, Newham et al., 2014
Country	Scotland	England	England	England
Type of study	Interviews and open-ended survey question (described in Chapters 4 and 5)	Interviews	Interviews	Meta-synthesis
HCP Behaviour	Performance of HePPBes	Providing opportunistic behaviour change interventions during routine medical consultations	Implementing multiple health behaviour change interventions for cardiovascular risk reduction	Implementation of guidelines in relation to weight identification and communication, risk communication, nutrition, physical activity and weight management
Total sample size	HCPs Chapter 4 (n= 11) and Chapter 5 (n= 61)	HCPs (n= 28)	HCPs working in primary care (n= 30)	Number of studies (n= 25)

Study characteristics	Chapters 4 and 5 and McLellan et al. (2019)	Keyworth et al., 2019	Alageel et al., 2018	Heslehurst, Newham et al., 2014
Participants profession	Community midwives (n= 11) in interview study Midwives (n= 47) and student midwives (n= 14) provided a statement to an open-ended question in the survey study	Mental health nurse (n= 4), Nurse (n= 4), Dermatology nurse (n= 4), GP/Doctor (n= 4), Midwife (n= 3), Audiologist (n= 1), Health visitor (n= 1), Mental health worker (n= 1), Anaesthetist Pharmacist (n= 1), Chiropractor (n= 1), Physio (n= 1), Ophthalmologist (n= 1), Dentist (n= 1)	General practitioners (n= 10), practice nurses (n= 10), healthcare assistants (n= 7) and practice managers (n= 3)	Studies of HCPs providing maternity care of pregnant women (n= 15), or targeted healthcare professional specialities including midwifery or nursing (n= 5), obstetrics or gynaecology (n= 4) and general practice (n= 1)
TDF version	v1 (Michie et al., 2005)	v2 (Cane et al., 2012)	v2 (Cane et al., 2012)	v1 (Michie et al., 2005)
How TDF was used	To inform the interview guide and directed content analysis approach	Behaviour Change Wheel informed a framework	To inform the interview guide and framework analysis in which findings	Framework synthesis approach in which 12

Study characteristics	Chapters 4 and 5 and McLellan et al. (2019)	Keyworth et al., 2019	Alageel et al., 2018	Heslehurst, Newham et al., 2014
	in which interview content was placed in the most relevant TDF domain(s)	analysis in which findings were mapped onto the TDF	were mapped onto the TDF	TDF domains were represented
TDF domains identified as key in understanding barriers and facilitators	<ul style="list-style-type: none"> - Beliefs about consequences - Environmental context and resources - Professional role and identity - Motivation and goals - Memory/Attention and decision processes - Social influences - Emotion - Behavioural regulation 	<ul style="list-style-type: none"> - Beliefs about consequences - Environmental context and resources - Social/professional role and identity - Beliefs about capabilities 	<ul style="list-style-type: none"> - Beliefs about consequences - Environmental context and resources - Social/professional role and identity - Beliefs about capabilities - Knowledge - Emotion - Reinforcement - Goals - Skills - Social influences 	<ul style="list-style-type: none"> - Beliefs about consequences - Environmental context and resources - Knowledge

Study	Chapters 4 and 5 and McLellan et al. (2019)	Keyworth et al., 2019	Alageel et al., 2018	Heslehurst, Newham et al., 2014
characteristics	- Nature of the behaviour		- Behavioural regulation	

All studies described in Table 9.1 report qualitative research methods to investigate the barriers and facilitators to HCPs addressing multiple behaviour change. The study reported in Chapter 4, along with two of the other studies (Alageel et al., 2018; Keyworth et al., 2019), gathered qualitative data through one-to-one interviews, whilst the fourth carried out a meta-synthesis (Heslehurst, Newham et al., 2014). Chapter 4 had a smaller sample size in terms of the number of midwives interviewed; however it was the only study to focus on a specific group of HCPs and provide analysis of an open-ended survey question (see Chapter 5 and McLellan et al., 2019) , which provided additional data to confirm and supplement the barriers and facilitators identified in the interview study. The research reported in the current thesis and the meta-synthesis study (Heslehurst, Newham et al., 2014) used the 12-domain TDF v1 (Michie et al. 2005), whilst the other studies (Alageel et al., 2018; Keyworth et al., 2019) used the 14-domain TDF v2 (Cane et al., 2012). The meta-synthesis (Heslehurst, Newham et al., 2014) was the only study to explicitly explain why one version of the TDF had been chosen over the other: in this case, a focus group was conducted with three health psychologists which led to the decision to use TDF v1. Two TDF domains (Environmental context and resources and Beliefs about consequences) were identified as key in explaining barriers and facilitators for HCPs in addressing multiple behaviour change across all four studies. There were individual differences in the barriers and facilitators identified between the studies; however time constraints, workload pressures, access to appropriate resources and concern about damaging the HCP-patient relationship were cited across all four studies as being barriers to HCPs addressing multiple behaviour change. The overlap in the findings of these studies suggest that environmental context and resources and HCPs' perceptions of the consequences of addressing multiple behaviour change are key in influencing HCP behaviour, regardless of profession or the type of multiple behaviour change they are attempting to address.

Intervention Development Frameworks

The second set of studies are examples of intervention development frameworks, including Behaviour Change Interventions for Self-Management in Chronic Illness (Araújo-Soares et al., 2018), Steps for Developing a Theory-

informed Implementation Intervention (French et al., 2012) and Intervention Mapping (Bartholomew et al., 1998). Details of these studies are shown in Table 9.2 below.

Table 9.2

Comparison of the Main Components of the Flex Five Approach and other Intervention Development Guidelines

Flex Five approach (Dombrowski et al., 2019)	Behavior Change Interventions for Self-Management in Chronic Illness (Araújo-Soares et al., 2018)	Steps for Developing a Theory-informed Implementation Intervention (French et al., 2012)	Intervention Mapping (Bartholomew et al., 1998)
1. Target population	Preparatory work: describe the team and planned development process	Step 1: Who needs to do what differently?	Step 1: Logic model of the problem
2. Target behaviours	Step 1: Analyse the problem and develop an intervention objective	Step 2: Using a theoretical framework, which barriers and enablers need to be addressed?	Step 2: Programme outcomes and objectives;
3. Theory		Step 3: Which intervention components (behaviour change techniques and mode(s) of delivery) could overcome the modifiable barriers and enhance the enablers?	logic model of change
4. Behaviour change techniques	Step 2: Define the scientific core of the intervention	Step 4: How can behaviour change be measured and understood?	Step 3: Programme design
5. Format of delivery	Step 3: Design/develop intervention materials		Step 4: Programme production
	Step 4: Conduct an empirical optimization		Step 5: Program implementation plan
	Step 5: Design and undertake intervention evaluation		Step 6: Evaluation plan

Flex Five approach (Dombrowski et al., 2019)	Behavior Change Interventions for Self-Management in Chronic Illness (Araújo-Soares et al., 2018)	Steps for Developing a Theory-informed Implementation Intervention (French et al., 2012)	Intervention Mapping (Bartholomew et al., 1998)
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Step 6: Design implementation and undertake implementation evaluation

There are many approaches to intervention development, including the frameworks described in Table 9.2 (Araújo-Soares et al., 2018; French et al., 2012; Bartholomew et al., 1998), which all report rigorous, transparent and systematic guidelines to carrying out intervention development. No one approach to intervention development has been demonstrated as being more effective over another. The intervention development process described in this thesis is in line with a majority of the overlapping steps common to many intervention development approaches.

The systematic yet adaptable nature of Flex Five contrasts with more prescriptive and stepped guidelines described in Table 9.2. The complexity of these pre-existing frameworks means they are not applicable to every context in which intervention development can take place. For instance, many behaviour change interventions are developed in public health or health promotion departments, where the resources to engage in highly structured approaches such as intervention mapping are not present (Bartholomew et al., 1998). The Flex Five approach therefore provides a framework that can be applied more universally. Additionally, the Flex Five focuses exclusively on intervention development, whereas the frameworks described in Table 9.2 mix intervention development with methodological aspects, such as evaluation and testing designs.

Interventions Which aim to Support HCPs in Addressing Multiple Health Behaviours

The third set of studies are examples of trials testing interventions designed to support HCPs in addressing multiple health behaviours. These include the Improving Diabetes care through Examining, Advising, and prescribing trial (Presseau et al., 2018), the Talking Lifestyles trial (Butler et al., 2013) and the protocol for the Gestational Obesity Weight management: Implementation of National Guidelines pilot trial (GLOWING; Heslehurst et al., 2018). Details of these studies are shown in Table 9.3 below. The reason for the high level of heterogeneity in the trials reported is that few studies report interventions specifically designed to enhance HCPs' multiple behaviour change practice. Given

that no pilot study has taken place for the HePPBe toolkit, the details describing a possible HePPBe trial in Table 9.3 are speculative.

Table 9.3

Comparison of Future HePPBe Trial with Studies Reporting Interventions to Support HCPs in Addressing Multiple Health Behaviours

Study characteristics	IDEA trial (Presseau et al., 2018)	Talking Lifestyles trial (Butler et al., 2013)	GLOWING trial (Heslehurst et al. 2018)	HePPBe trial
Type of study	Two-armed cluster randomised controlled trial testing intervention effectiveness	Cluster randomised trial	Protocol describing a multi-centre parallel group pilot cluster randomised controlled trial	Planned open-pilot study using an uncontrolled pre- and post-test design
Intervention	Outreach visit from content and behaviour change experts aimed at improving GP staff management of type 2 diabetes	Blended training programme (mixture of face-to-face and e-learning sessions) aimed at helping GP staff to support patient's behaviour change	Intensive face-to-face training and the provision of training and information resources to support midwives' implementation of guidelines to manage maternal obesity	Handheld toolkit (reported in Chapter 6) aimed at supporting midwives' HePPBes
Participants	22 GP practices randomised to the intervention (153 GPs, nurses and HCAs) and 22 randomised to	53 GPs and practice nurses from 27 general practices (one each at all but one practice) recruited 1,827	Community midwives and hospital-based midwives with a specific obesity or weight management role	Midwives providing antenatal care

Study characteristics	IDEA trial (Presseau et al., 2018)	Talking Lifestyles trial (Butler et al., 2013)	GLOWING trial (Heslehurst et al. 2018)	HePPBe trial
	the control (172 GPs, nurses and HCAs).	patients		
Control	Usual practice	Usual practice	Usual practice	Usual practice
Length of intervention	90 minutes	Nine-part training course	Single full-day session of intensive face-to-face training, plus self-administered use of resources. Therefore the length of use is decided in part by the midwife	The intervention is self-administrated; therefore, the length of use is decided by the midwife
Primary outcomes	Performance of six clinical behaviours	Proportion of patients who reported making beneficial changes in at least one of the four risky behaviours at three months	Feasibility and acceptability of the intervention and trial procedures to participants and the feasibility of recruitment and data collection for a definitive trial	Performance of HePPBes and acceptability and feasibility of the HePPBe toolkit

Study characteristics	IDEA trial (Presseau et al., 2018)	Talking Lifestyles trial (Butler et al., 2013)	GLOWING trial (Heslehurst et al. 2018)	HePPBe trial
Results (primary outcome)	No statistically significant improvement on any of the six clinical behaviours	No effect on the primary outcome (beneficial change in behaviour)	Protocol so no results to report	Planned study so no results to report

Due to the lack of literature available concerning interventions to enhance HCPs' multiple behaviour change practice, the studies described in Table 9.3 are somewhat different from the HePPBe toolkit. However, the Improving Diabetes care through Examining, Advising and prescribing (IDEA) theoretical model (Presseau et al., 2014) was used to inform the HePPBe theoretical model. The IDEA intervention used outreach visits from content and behaviour change experts aimed at improving GP staff management of type 2 diabetes and was not found to be effective in improving performance of targeted guideline-recommended clinical behaviours (Presseau et al., 2018). The authors suggest several reasons for this finding, including the observation that the IDEA intervention did not attempt to adjust specific environmental cues that were potentially influencing existing behaviour. Whilst the HePPBe toolkit does not seek to change pre-existing environmental cues, its presence does provide a prompt within consultations, which arguably addresses the associative component of the dual process model (Strack and Deutsch, 2004) to a greater degree than a one-off outreach visit feasibly could. One other potential reason for the IDEA intervention not demonstrating effectiveness is that there might have been a disconnect between the IDEA theoretical model, which considered multiple HCP behaviours sequentially, and the delivery/implementation of the intervention, which facilitated practice staff to consider multiple behaviours in parallel with each other. The HePPBe theoretical model and delivery/implementation of the HePPBe toolkit consistently consider performance of HePPBes as a concurrent or parallel process.

The Talking Lifestyles trial used a blended learning behaviour change counselling programme to equip GP staff with skills to support patient behaviour change in relation to smoking, alcohol use, exercise and healthy eating (Butler et al., 2013) and did not demonstrate effectiveness in changing patient behaviour. The authors cite the possible loss or "diffusion" of clinicians' skills as a reason for this finding. However, no assessment of HCPs' behaviours was reported. Assessing the impact of the programme on clinicians' behaviours may have useful in understanding why they were not successful in changing patients' behaviours. Midwives' performance of their HePPBes would be the primary focus of any future

randomised control trial that tests the effectiveness of the HePPBe toolkit. It would then be possible to assess if changes in pregnant women's behaviours had incurred as a direct result of midwives' HePPBes being influenced by use of the toolkit in future studies.

Finally, a pilot randomised control trial of a guideline implementation intervention for the management of maternal obesity by midwives, known as the Gestational Obesity Weight management: Implementation of National Guidelines (GLOWING; Heslehurst et al., 2018), is currently being undertaken. This study shares similarities with the potential HePPBe pilot trial described in Table 9.3 and in the further research section below, as it involves midwives performing HePPBes specific to the area of maternal obesity. Future comparisons of the HePPBe trial with the GLOWING trial will add to knowledge about supporting HCPs to help pregnant women engage in multiple behaviour change.

9.4 Implications of the thesis findings

The description of behaviour change research reported in Chapter 2 identified limited theoretical evidence and key concepts within behaviour change and intervention development literature, specifically with regards to: (i) multiple health behaviour change; (ii) maintenance of behaviour change; and (iii) sustainability of health professional behaviour change interventions. The potential implications of the thesis findings in relation to these key areas are described below.

Multiple Health Behaviour Change

The development of the HePPBe toolkit comes at a time of transition for midwifery care in the UK, with the introduction of a continuity model of care (see Chapter 2 for further details). Consequently, many midwives will be carrying out multiple HePPBes that have not been part of their responsibilities for some time, if ever, since they qualified. Therefore, this major shift in maternity care provision presents an optimal time for the HePPBe toolkit to be piloted and potentially implemented within maternity care, as many midwives will require training to update their HePPBes. Ensuring midwives are equipped to carry out multiple HePPBes effectively is even more important when the impact of public health cuts on pregnant women's multiple health behaviours is considered. For instance, the findings of the National Maternity and Perinatal Audit (NMPA) organisational report show that there had been no improvement in access to specialist weight management or smoking cessation services in England, Scotland and Wales from 2017 to 2019 (Blotkamp & NMPA project team, 2019).

Maintenance of Behaviour Change

The interview and survey studies (Chapters 4 and 5) identified lack of continuity of care as a barrier to midwives performing HePPBes. Therefore, the introduction of the continuity of care model means, in theory, that repeated contact by midwives will enhance midwife-woman relationships and potentially facilitate the maintenance of HePPBes. Each component of the HePPBe toolkit has been designed to support maintenance of midwives' HePPBes. The presence of the

consultation tool provides a visual prompt for midwives and the prioritisation and the personalised plan component supports midwives in the follow-up of women's behaviour change throughout pregnancy.

Sustainability of the Health Professional Behaviour Change Interventions

The recent introduction of mandatory training for midwives working in a Scottish context (see Chapter 2 for more information) means that there is technically little allocated CPD time to spend on HePPBe-related training. To enhance sustainability, the FoD that was selected, the HePPBe toolkit, can be used without training, is relatively low in cost, and can be updated. The HePPBe toolkit can also work by being supported by a behavioural change consultant or by being integrated into behaviour change programmes to enhance its sustainability and spread (see Chapter 6). Midwifery managers, policymakers or major influencers like the RCM could consider implementing the HePPBe toolkit to support midwives in addressing health behaviours with pregnant women.

The findings of the acceptability study described in Chapter 8 suggested that midwives perceived the HePPBe toolkit as being additional work that would cost them time within antenatal appointments. Therefore, a possible unintended consequence is the HePPBe toolkit being perceived by midwives as a burden, which could negatively impact its sustainability. Further unintended consequences that could influence the sustainability of the HePPBe toolkit include the consultation tool distracting the midwife, resulting in patient safety issues. The HePPBe toolkit could also undermine midwives' confidence in delivering behaviour change interventions, or may perhaps be perceived as being too prescriptive, particularly as midwives are autonomous HCPs. Potential ways in which these issues could be overcome include the provision of HePPBe toolkit training, or the addition of more detailed instructions on the use of the toolkit to the materials.

9.5 Unanswered Questions and Future Research

Unanswered questions and future research are outlined in terms of the three areas known to have limited theoretical evidence and key concepts within behaviour change and intervention development literature: (i) multiple health behaviour change; (ii) maintenance of behaviour change; and (iii) sustainability of health professional behaviour change interventions. The further development, testing and implementation of the HePPBe toolkit is displayed in Figure 9.2 below.

Multiple Health Behaviour Change

Multiple health behaviour change is an emerging research area which, given the number and variety of health behaviours considered important during pregnancy and the postnatal timeframe, is of interest to maternal health researchers (Olander, Smith & Darwin, 2018).

To implement the HePPBe toolkit to support midwives in addressing multiple health behaviours, future research would be required to address and overcome the perception amongst midwives that the HePPBe toolkit is additional work which would use up much-needed time during antenatal appointments. Given the digitalisation of maternity care services (described in Chapter 2) and the findings of the prospective acceptability study, which highlight midwives' preference for the development of the HePPBe toolkit into a digital resource, this change in the FoD of the HePPBe toolkit also appears to be an imperative next step.

Following these modifications, an open-pilot study using an uncontrolled pre- and post-test design (Dombrowski et al., 2012) could be used to evaluate the effectiveness of the HePPBe toolkit in supporting midwives to address multiple health behaviours with pregnant women. The open-pilot study would also include measuring and enhancing the acceptability and feasibility of intervention content, procedures and materials (Eldridge et al., 2016; Thabane et al., 2016). A definitive RCT to assess effectiveness, both in terms of performance of midwives' HePPBes (primary outcome) and women's multiple health behavior change (secondary

outcome), would be required to estimate the potential effectiveness of the intervention prior to implementation within maternity care settings.

One issue that would need to be resolved as part of any RCT to test the HePPBe toolkit would be how to measure multiple health behaviour change. Potential methods to measure midwives' multiple health behaviour change include observation (McCrea, Wright, & Murphy-Black, 1998) and case note analysis (Morgan, Fenwick, McKenzie, & Wolfe, 1998). Alternatively, proxy measures of midwives' multiple behaviours (described in Chapter 6) could be assessed. An assessment of the fidelity of the HePPBe toolkit would also be necessary. One potential way to assess fidelity would be to audio-record appointments where the intervention is used and compare it to audio recordings of appointments carried out without the HePPBe toolkit.

More research is needed to understand further the barriers and facilitators that HCPs other than midwives perceive in addressing multiple health behaviours with pregnant women and new mothers. Research is also needed to explore how pregnant women and new mothers perceive multiple health behaviour change (Talbot, Strong, Peters & Smith, 2018). Extension of the TDF to include multiple behaviour change constructs would help to support such research. A slightly modified version of the survey described in Chapter 5 is, as of 2019, being used to identify the barriers and facilitators that midwives working in Australia perceive in referring pregnant women to a health coaching service. Comparison of these new findings with the current thesis findings should be undertaken in order to learn more about the contextual similarities and differences that midwives experience in attempting to engage pregnant women in behaviour change.

Despite the increased knowledge on midwives' perceptions of HePPBes as part of this thesis, how pregnant women perceive midwives' HePPBes remains unknown. The thesis findings indicated that midwives often perceive performing HePPBes – particularly regarding weight management – as potentially damaging to their relationship with the pregnant woman. However, previous research both within and outside of the field of maternal health has shown that pregnant women

and primary care patients find such interventions appropriate and helpful (Patel, Atkinson & Olander, 2013; Aveyard et al., 2016). Therefore, if pregnant women indicate that they welcome multiple HePPBes, then such findings could be included in the HePPBe toolkit. This would potentially enhance the HCP relationship with the intervention (described in Chapter 6) and support midwives' higher-order goals (Carver & Scheier, 1998).

Understanding pregnant women's perspectives of receiving multiple HePPBes could also be useful in understanding more about women's multiple health behaviour change during pregnancy. A small number of studies have begun to explore pregnant women's multiple health behaviour change (e.g. Davis et al., 2014; Grant, Morgan, Mannay & Gallagher, 2019) and future research in this area could inform the further development of the prioritisation tool and the personalised plan components of the HePPBe toolkit, which are designed to be used collaboratively by midwives and pregnant women.

Maintenance of Behaviour Change

Maintenance of behaviour change was considered in the development of the intervention by mapping the HePPBe theoretical model onto the variables – self-regulation, resources, habits and contextual influences – suggested as key in the initiation and maintenance of health-related behaviours (Kwasnicka et al., 2016). Given that there are few models of maintenance, future research could focus on learning how these variables maintain HCP behaviour change. Maintenance of midwives' HePPBes following the implementation of the toolkit should be assessed at follow-up.

Sustainability of HCP Behaviour Change Interventions

The sustainability of health professional behaviour change interventions is vastly overlooked and intervention developers working in the field of implementation science should consider sustainability a critical issue (Dombrowski, Campbell et al., 2016). The Flex Five approach to intervention development (see Chapter 6) could be extended to include sustainability as a key component, and once the HePPBe toolkit has been implemented within maternity

care then an assessment of its sustainability should take place. Additional developments which could potentially enhance the sustainability of the HePPBe toolkit could include expanding the target population so that other HCPs who address pregnant women's health behaviours during pregnancy, such as obstetricians, could use the HePPBe toolkit too.

Other health psychology interventions have been designed to support HCPs behaviour change practice amongst specific groups of professionals. For example, Healthy Conversations is a training intervention with Sure Start Children's Centre⁵ professionals designed to support staff have more productive conversations with parents about diet and physical activity (Barker et al., 2011). The "Tent-Pegs" booklet is a tool designed to support medical students enhance their generic behaviour change practice (Chisholm, Hart, Mann and Peters, 2013). The HePPBe toolkit therefore adds to this small body of research of behaviour change interventions tailored to specific groups of HCPs. Future testing of the maintenance of midwives HePPBes and sustainability of the toolkit should be done in comparison with interventions such as these.

⁵ Sure Start Children's Centres exist in England to provide help and advice on child and family health, parenting, money, training and employment in the early years.

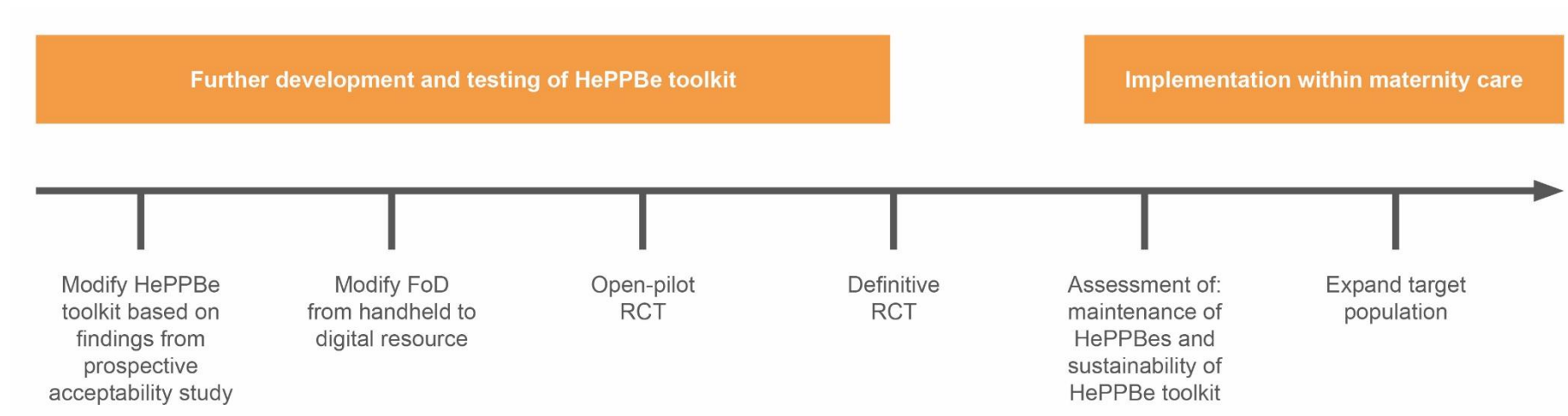


Figure 9.2: Timeline of future development, testing and implementation of the HePPBe toolkit.

9.6 Key recommendations

Recommendations based on the thesis findings, the future development, testing and implementation of the HePPBe toolkit, and areas of research requiring expansion are outlined below.

- a) Midwives now have a very high health promotion workload and although the HePPBe toolkit developed during this thesis may provide initial assistance, midwives require more support to fully overcome the barriers they perceive in addressing health behaviours with pregnant women.
- b) The HePPBe toolkit developed during this thesis should be considered a practical example of the development of a multiple integrated behaviour change intervention, using the systematic Flex Five approach which considers target population, target behaviour, theory, BCTs and FoD in line with existing intervention development frameworks.
- c) The Flex Five provides a universal approach and can be applied in contexts where there are limited resources to support intervention development.
- d) Future development of the HePPBe toolkit should include addressing midwives' perceptions that using it would add to their workload, as the aim of the HePPBe toolkit is to help midwives streamline their HePPBes.
- e) The FoD of the HePPBe toolkit needs to be modified from a handheld to a digital resource to ensure it is applicable within maternity care services.
- f) Retrospective acceptability and feasibility testing as part of an open-pilot RCT, followed by a definitive RCT, is required before implementation of the HePPBe toolkit within maternity care can be realistically considered.
- g) Given the number and variety of health behaviours considered important during and shortly after pregnancy, multiple health behaviour change

should be of interest to maternal health researchers. Future research should identify the barriers and facilitators that HCPs other than midwives perceive in addressing multiple health behaviours with pregnant women and new mothers. Research is also needed to explore how pregnant women and new mothers perceive multiple health behaviour change.

- h) Maintenance of behaviour change is an underdeveloped area of behavioural science and future research should include assessment of midwives' maintenance of HePPBes following implementation of the toolkit.
- i) Sustainability of HCP behaviour change interventions needs to be considered more explicitly by developers and future research should include assessment of the sustainability of the HePPBe toolkit.

Overall Conclusion

The current thesis outlines one systematic approach to developing an intervention to support midwives in addressing health behaviours with pregnant women. The use of the Flex Five approach provides an example of how an evidence-based, theory-informed intervention can be systematically developed in collaboration with stakeholders within contexts where there are limited resources. It is as yet unknown whether the HePPBe toolkit will be effective in supporting midwives. However, in a context where midwives' resources are required to address a high number of health behaviours, whilst carrying out all other public health and clinical tasks, the HePPBe toolkit provides a pragmatic approach to supporting midwives by ensuring that HePPBes are performed in an efficient yet meaningful way. The ad hoc nature of the HePPBe toolkit means that it should support midwives without reduplicating effort or expending resources unnecessarily. The prospective acceptability testing of the HePPBe toolkit highlights potential barriers to the implementation of the HePPBe toolkit, but provides enough positive feedback to develop it further and explore its effect on midwives' HePPBes. This thesis provides a practical example of how to systematically develop a multiple behaviour change intervention for, and in consultation with, health professionals.

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APPENDIX A: SEARCH TERMS USED TO IDENTIFY PEER-REVIEWED
LITERATURE REPORTING INTERVENTIONS THAT SUPPORT MIDWIVES
IN CARRYING OUT THEIR HEPPBES

Table A1

*Search Terms Used to Identify Peer-Reviewed Literature Reporting Interventions
that Support Midwives in Carrying Out Their HePPBes*

Category	Medline (Ovid)	CINAHL (EBSCO)	PsychInfo (EBSCO)
Pregnancy	exp pregnancy/	MH "pregnancy+"	MH "Pregnancy"
	pregnant women/ (antenatal or ante- natal*).tw.	MH "pregnant women+" TX (antenatal*) or TX (ante-natal*)	MH "pregnant women+" TX (antenatal*) or TX (ante-natal*)
	(anteoartum or ante- partum).tw. Gestation.tw.	TX (anteoartum) or TX (ante-partum) TX Gestation	TX (anteoartum) or TX (ante-partum) TX Gestation
	gravid*.tw.	TX "gravid*"	TX "gravid*"
	maternal.tw.	TX maternal	TX maternal
	maternity.tw.	TX maternity	TX maternity
	natal*.tw.	TX "natal*"	TX "natal*"
	(perinatal* or peri- natal*).tw. pregnan*.tw.	TX (perinatal*) OR TX (peri-natal*) TX "pregnan*"	TX (perinatal*) OR TX (peri-natal*) TX "pregnan*"
	or/1-11	or/1-11	or/1-11
	Behaviour change	exp education, continuing/	MH "education, continuing+"
(education\$ adj2 (program\$ or intervention? or meeting? or session? or strategy\$ or workshop? or visit?)).tw.		TX (education* n2 program*) or TX (education* n2 intervention*) Or TX (education* n2 meeting*) Or TX (education* n2 session*) Or TX (education* n2 strategy*) or TX (education* n 2 workshop*) Or TX	TX (education* n2 program*) or TX (education* n2 intervention*) Or TX (education* n2 meeting*) Or TX (education* n2 session*) Or TX (education* n2 strategy*) or TX (education* n 2 workshop*) Or TX

Category	Medline (Ovid)	CINAHL (EBSCO)	PsychInfo (EBSCO)
		(education* n2 visit*)	(education* n2 visit*)
	(behavior?r\$ adj2 intervention?).tw.	TX (behavior* n2 intervention*) or TX (behaviour* n2 intervention*)	TX (behavior* n2 intervention*) or TX (behaviour* n2 intervention*)
	pamphlets/ or (leaflet? or booklet? or poster or posters).tw.	TX (pamphlets) or TX (leaflet) or TX (booklet*) Or TX (poster or posters)	TX (pamphlets) or TX (leaflet*) or TX (booklet*) Or TX (poster or posters)
	((written or printed or oral) adj information).tw.	TX (written n1 information) or TX (printed n1 information) or TX (oral n1 information)	TX (written n1 information) or TX (printed n1 information) or TX (oral n1 information)
	(information\$ adj2 campaign).tw.	TX (information* campaign)	TX (information* campaign)
	(education\$ adj1 (method? or material?)).tw.	TX (education* n1 method*) Or TX (education* n1 material*)	TX (education* n1 method*) Or TX (education* n1 material*)
	Outreach.tw.	TX Outreach	TX Outreach
	((opinion or education\$ or influential) adj1 leader?).tw.	TX (opinion n1 leader*) or TX (education* n1 leader*) or TX (influential n1 leader*)	TX (opinion n1 leader*) or TX (education* n1 leader*) or TX (influential n1 leader*)
	Facilitator?.tw.	TX Facilitator*	TX Facilitator*
	Academic detailing.tw. Consensus conference?.tw. Practice guidelines as topic/ *guideline adherence/ Practice guideline?.tw.	TX Academic detailing TX Consensus conference* MH "Practice guidelines as topic" MH "guideline adherence" TX Practice guideline*	TX Academic detailing TX Consensus conference* "Practice guidelines as topic" "guideline adherence" TX Practice guideline*

Category	Medline (Ovid)	CINAHL (EBSCO)	PsychInfo (EBSCO)
	(guideline? adj2 (introduce\$ or issu\$ or impact or effect? or disseminat\$ or distribut\$)).tw.	TX (guideline* n2 introduce*) or TX (guideline* n2 issu*) or TX (guideline* n2 impact) or TX (guideline* n2 effect*) Or TX (guideline* n2 disseminat*) or TX (guideline* n2 distribut*)	TX (guideline* n2 introduce*) or TX (guideline* n2 issu*) or TX (guideline* n2 impact) or TX (guideline* n2 effect*) Or TX (guideline* n2 disseminat*) or TX (guideline* n2 distribut*)
	((effect? or impact or evaluat\$ or introduce\$ or compar\$) adj2 training program\$).tw.	TX (effect* n2 training program*) Or TX (impact n2 training program*) or TX (evaluat* n2 training program*) or TX (introduce* n2 training program*) or TX (compar* n2 training program*)	TX (effect* n2 training program*) Or TX (impact n2 training program*) or TX (evaluat* n2 training program*) or TX (introduce* n2 training program*) or TX (compar* n2 training program*)
	reminder systems/ Reminder?.tw.	MH "reminder systems" TX Reminder	"reminder systems" TX Reminder*
	(recall adj2 system\$).tw. (prompter? or prompting).tw. Algorithm?.tw.	TX (recall system*) TX (prompter*) Or TX (prompting) TX Algorithm*	TX (recall system*) TX (prompter*) Or TX (prompting) TX Algorithm*
	feedback/ or feedback.tw. (feedback adj1 (loop? or control? or regula\$ or mechanism? or inhib\$ or system? or circuit? or sensory or visual or audio\$ or auditory)).tw.	MH "feedback" or TX (feedback) TX (feedback n1 loop) OR TX (feedback n1 control*) Or TX (feedback n1 regula*) or TX (feedback n1 mechanism*) Or TX (feedback n1 inhib*) or TX (feedback n1 system*) Or TX (feedback n1 circuit*) Or TX (feedback n1	MM Feedback TX (feedback n1 loop*) OR TX (feedback n1 control*) Or TX (feedback n1 regula*) or TX (feedback n1 mechanism*) Or TX (feedback n1 inhib*) or TX (feedback n1 system*) Or TX (feedback n1 circuit*) Or TX (feedback n1

Category	Medline (Ovid)	CINAHL (EBSCO)	PsychInfo (EBSCO)
		sensory) or TX (feedback n1 visual) or TX (feedback n1 audio*) or TX (feedback n1 auditory)	sensory) or TX (feedback n1 visual) or TX (feedback n1 audio*) or TX (feedback n1 auditory)
	Chart review\$.tw.	TX Chart review*	TX Chart review*
	((effect? or impact or records or chart?) adj2 audit).tw.	TX (effect n2 audit) Or TX (impact n2 audit) or TX records n2 audit) or TX (chart* n2 audit)	TX (effect n2 audit) Or TX (impact n2 audit) or TX records n2 audit) or TX (chart* n2 audit)
	Compliance.tw	TX Compliance	MM Compliance
	Marketing	TX Marketing	TX Marketing
	Counselling.tw. OR Counseling	TX Counselling OR TX Counseling	MM "counselling" or TX Counselling or Counseling
	Development.tw.	TX Development	TX Development
	guideline implementation.tw. behaviour change.tw. guide for practitioners.tw. guide for health?care professionals.tw.	TX (guideline implementation) TX (behaviour change) TX (guide for practitioners) TX (guide for health care professionals) or TX (guide for healthcare professionals) or TX (guide for health- care professionals)	TX (guideline implementation) TX (behaviour change) TX (guide for practitioners) TX (guide for health care professionals) or TX (guide for healthcare professionals) or TX (guide for health- care professionals)
	clinical behaviour.tw. Behavio?r.tw.	TX (clinical behaviour) TX (Behavior) or TX (behaviour)	TX (clinical behaviour) MM Behaviour
	Practice\$.tw.	TX Practice*	TX Practice*
	Community health planning/ Community health systems/ Delivery of healthcare/	MH "Community health planning" MH "Community health systems" MH "Delivery of healthcare"	MM "Community health" MH "Community health systems" MH "Delivery of healthcare"

Category	Medline (Ovid)	CINAHL (EBSCO)	PsychInfo (EBSCO)
	Health care systems/ Health information systems/ Health systems agencies/ Commissioning.tw.	MH "Health care systems" MH "Health information systems" MH "Health systems agencies" TX Commissioning	MH "Health care systems" MH "Health information systems" MH "Health systems agencies" TX Commissioning
midwifery	or/ 13-56 exp Maternal Health Services/ *prenatal care/ *midwifery/ *Birthing Centers/ *Hospitals, Maternity/ exp health personnel/ (healthcare adj professional*) or health-care professional* or health care professional* or HCP).ab,ti. (primary adj care).ab,ti. (community adj services).ab,ti. (nurse or nurses).ab,ti.	or/ 13-56 MH "Maternal Health Services+" MH "perinatal care+" MH "midwifery+" MH "Birthing Centers" MH "Hospitals, Maternity" MH "health personnel+" TI (healthcare professional*) or TI (health-care professional*) or TI (health care professional*) or TI (HCP) OR AB (healthcare professional*) or AB (health-care professional*) or AB (health care professional*) OR AB (HCP) TI (primary care) OR AB (primary care) TI (community services) OR AB (community services) TI (nurse) or TI (nurses) OR AB (nurse) or AB (nurses)	or/ 13-56 MM "Prenatal Care" MH "perinatal care+" MM "Midwifery+" MH "Birthing Centers" MH "Hospitals, Maternity" MM "Health Personnel" TI (healthcare professional*) or TI (health-care professional*) or TI (health care professional*) or TI (HCP) OR AB (healthcare professional*) or AB (health-care professional*) or AB (health care professional*) OR AB (HCP) TI (primary care) OR AB (primary care) TI (community services) OR AB (community services) TI (nurse) or TI (nurses) OR AB (nurse) or AB (nurses)

Category	Medline (Ovid)	CINAHL (EBSCO)	PsychInfo (EBSCO)
	(maternity adj unit*).ab,ti.	TI (maternity unit*) OR AB (maternity unit*)	TI (maternity unit*) OR AB (maternity unit*)
	health professional*.ab,ti.	TI (health professional*) OR AB (health professional*)	TI (health professional*) OR AB (health professional*)
	(midwife* or midwife*).ab,ti.	TI (midwife*) or TI (midwife*) OR AB (midwife*) or AB (midwife*)	TI (midwife*) or TI (midwife*) OR AB (midwife*) or AB (midwife*)
	(secondary adj care).ab,ti.	TI (secondary care) OR AB (secondary care)	TI (secondary care) OR AB (secondary care)
	(multi-disciplinary adj (team or care)).ab,ti.	TI (multi-disciplinary n1 team) or TI (multi-disciplinary n1 care) OR AB (multi-disciplinary n1 team) or AB (multi-disciplinary n1 care)	TI (multi-disciplinary n1 team) or TI (multi-disciplinary n1 care) OR AB (multi-disciplinary n1 team) or AB (multi-disciplinary n1 care)
	(maternity adj service*).ab,ti.	TI (maternity service*) OR AB (maternity service*)	TI (maternity service*) OR AB (maternity service*)
	(maternity adj ward*).ab,ti.	TI (maternity ward*) OR AB (maternity ward*)	TI (maternity ward*) OR AB (maternity ward*)
	practioner.ab,ti.	TI (practioner) OR AB (practioner)	TI (practioner) OR AB (practioner)
	(care-provider or care provider or careprovider).ab,ti.	TI (care-provider) or TI (care provider) or TI (careprovider) OR AB (care-provider) or AB (care provider) or AB (careprovider)	TI (care-provider) or TI (care provider) or TI (careprovider) OR AB (care-provider) or AB (care provider) or AB (careprovider)
	exp Health Personnel/ *patient care team/	MH "Health Personnel+" MH "patient care team"	MH "Health Personnel+" MH "patient care team"
	exp patient care planning/ (team? adj2 (care or treatment or assessment or consultation)).tw.	MH "patient care planning+" TX (team* n1 care) or TX (team* n1 treatment) or TX (team* n1 assessment) or TX	MH "patient care planning+" TX (team* n1 care) or TX (team* n1 treatment) or TX (team* n1 assessment) or TX

Category	Medline (Ovid)	CINAHL (EBSCO)	PsychInfo (EBSCO)
		(team* n1 consultation)	(team* n1 consultation)
	(integrat\$ adj2 (care or service?)).tw.	TX (integrat* n2 care) or TX (integrat* n2 service*)	TX (integrat* n2 care) or TX (integrat* n2 service*)
	(care adj2 (coordinat\$ or program\$ or continuity)).tw.	TX (care n2 coordinat*) or TX (care n2 program*) or TX (care n2 continuity)	TX (care n2 coordinat*) or TX (care n2 program*) or TX (care n2 continuity)
	(case adj1 management).tw. *ambulatory care/	TX (case management) MH "ambulatory care"	TX (case management) MH "ambulatory care"
	*home care services/ *office visits/ *house calls/	MH "home care services" MH "office visits" MH "house calls"	MH "home care services" MH "office visits" MH "house calls"
	*day care/ *aftercare/	MH "day care" MH "aftercare"	MH "day care" MH "aftercare"
	community health nursing/ (chang\$ adj1 location?).tw. (home adj1 treat\$).tw.	MH "community health nursing" TX (chang location*) TX (home treat*)	MH "community health nursing" TX (chang* location*) TX (home treat*)
	*health facilities/ or *academic medical centers/ or *ambulatory care facilities/ or *birthing centers/ or *health facilities/	MH "health facilities" or MH "academic medical centers" or MH "ambulatory care facilities" or "birthing centers" or "health facilities"	MH "health facilities" or MH "academic medical centers" or MH "ambulatory care facilities" or "birthing centers" or "health facilities"
	*hospital units/ or exp hospitals/ facilities/	MH "hospital units" MH "facilities"	MH "hospital units" MH "facilities"
	*group practice/ or *institutional practice/ or *nursing faculty practice/ or *partnership practice/ or *private practice/	MH "group practice" or MH "institutional practice" or MH "nursing faculty practice" or MH "partnership"	MH "group practice" or MH "institutional practice" or MH "nursing faculty practice" or MH "partnership"

Category	Medline (Ovid)	CINAHL (EBSCO)	PsychInfo (EBSCO)
		practice" or MH "private practice"	practice" or MH "private practice"
Trials	<p>or/ 58-96 randomized controlled trial.pt. Randomized Controlled Trials as Topic/ random allocation/ double blind method/ single blind method/ clinical trial.pt. exp Clinical Trial/ (clin\$ adj25 trial\$).tw. ((singl\$ or doubl\$ or trebl\$ or tripl\$) adj25 (blind\$ or mask\$)).tw. random\$.tw. research design/ comparative study/ exp evaluation studies/ follow up studies/ prospective studies/ (control\$ or prospective\$ or volunteer\$).ti,ab. intervention\$.ti,ab. or/ 98-114 12 and 57 and 97 and 115 limit 116 to (english language and humans and yr="1990 - 2016")</p>	<p>(MH "Clinical Trials+") PT Clinical trial TX clinic* n1 trial* TX ((singl* n1 blind*) or (singl* n1 mask*)) TX randomi* control* trial* (MH "Random Assignment") TX random* allocat* TX placebo* (MH "Placebos") (MH "Quantitative Studies") TX allocat* random* Or/98-109 12 and 57 and 97 and 109 limit 110 to (english language and humans and yr="1990 - 2016")</p>	<p>MM "clinical trials" PT Clinical trials TX clinic* n1 trial* TX ((singl* n1 blind*) or (singl* n1 mask*)) TX randomi* control* trial* (MH "Random Assignment") TX random* allocat* TX placebo* (MH "Placebos") (MH "Quantitative Studies") TX allocat* random* Or/98-109 12 and 57 and 97 and 109 limit 110 to (english language and humans and yr="1990 - 2016")</p>

APPENDIX B: HEPPBE QUESTIONS LISTED IN SCOTTISH WOMAN HELD
MATERNITY RECORD (SWHMR)

Table B1

*HePPBe Questions Listed in Scottish Woman Held Maternity Record (SWHMR;
Healthcare Improvement Scotland, 2011)*

Health behaviour	Midwives required questions as listed in the SWHMR
Weight management	n/a
Smoking	<p><i>What do you know about smoking during pregnancy?</i></p> <p><i>Have you smoked in the 12 months prior to pregnancy? Take CO level and record date stopped for former smokers</i></p> <p><i>Do you or anyone in the household currently smoke?</i></p> <p><i>Are you interested in getting help to stop? Current smokers: record cigarettes smoked per day Number</i></p> <p><i>Referral made to smoking cessation Service (Consider delivering brief intervention)</i></p> <p><i>Referral made to smoking cessation service</i></p>
Alcohol consumption	<p><i>What do you know about drinking alcohol in pregnancy?</i></p> <p><i>How many units of alcohol did you drink each day before you were pregnant? Number</i></p> <p><i>How many units of alcohol a day are you drinking now? Number</i></p> <p><i>How many units of alcohol do you drink in an average week? Number</i></p> <p><i>If drinking where are you drinking, at home, in clubs/pubs?</i></p> <p><i>Consider delivering brief intervention. Refer to Alcohol brief interventions antenatal professional pack</i></p> <p><i>Postnatally give information on alcohol consumption and breastfeeding</i></p>

Health behaviour	Midwives required questions as listed in the SWHMR
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	<i>Info on: Support for alcohol issues is available from Drinkline Scotland on 0800 7 314 314 or at www.alcohol-focus-scotland.org.uk</i>
Substance use	<i>Have you used any street drugs, gas or glue in the last year? If yes, are you currently using any street drugs, gas or glue? Have you ever injected drugs? Referral for advice on substance abuse Does your current partner use any street drugs, gas or glue or inject drugs? Do you currently or have you ever attended an addiction service? (including smoking and alcohol) Does your partner currently or has s/he attended an addiction service?</i>
Diet	<i>Have you been taking folic acid? Have you been taking Vitamin D? What do you know about healthy eating during pregnancy? Do you have any special dietary needs?</i>
Physical activity	<i>What do you know about the benefits of Physical Activity during pregnancy?</i>
Diet	<i>Have you been taking folic acid? Have you been taking Vitamin D? What do you know about healthy eating during pregnancy? Do you have any special dietary needs?</i>
Oral health	<i>Do you go to the dentist regularly?</i>

APPENDIX C: PUBLISHED INTERVIEW FINDINGS BY MCLELLAN ET AL. (2019)

McLellan et al. *Implementation Science* (2019) 14:64
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Implementation Science

RESEARCH

Open Access

Investigating midwives' barriers and facilitators to multiple health promotion practice behaviours: a qualitative study using the theoretical domains framework



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Abstract

Background: In addition to their more traditional clinical role, midwives are expected to perform various health promotion practice behaviours (HePPBes) such as informing pregnant women about the benefits of physical activity during pregnancy and asking women about their alcohol consumption. There is evidence to suggest several barriers exist to performing HePPBes. The aim of the study was to investigate the barriers and facilitators midwives perceive to undertaking HePPBes.

Methods: The research comprised of two studies.

Study 1: midwives based in a community setting ($N = 11$) took part in semi-structured interviews underpinned by the theoretical domains framework (TDF). Interviews were analysed using a direct content analysis approach to identify important barriers or facilitators to undertaking HePPBes.

Study 2: midwives ($N = 505$) completed an online questionnaire assessing views on their HePPBes including free text responses ($n = 61$) which were coded into TDF domains. Study 2 confirmed and supplemented the barriers and facilitators identified in study 1.

Results: Midwives' perceived a multitude of barriers and facilitators to carrying out HePPBes. Key barriers were requirements to perform an increasing amount of HePPBes on top of existing clinical work load, midwives' cognitive resources, the quality of relationships with pregnant women, a lack of continuity of care and difficulty accessing appropriate training. Key facilitators included midwives' motivation to support pregnant women to address their health. Study 1 highlighted strategies that midwives use to overcome the barriers they face in carrying out their HePPBes.

Conclusions: Despite high levels of motivation to carry out their health promotion practice, midwives perceive numerous barriers to carrying out these tasks in a timely and effective manner. Interventions that support midwives by addressing key barriers and facilitators to help pregnant women address their health behaviours are urgently needed.

Keywords: Midwives, Health promotion, Multiple health behaviours, Theoretical domains framework

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Contributions to the literature

- This research systematically examines barriers and facilitators midwives perceive in helping pregnant women with multiple health behaviour change
- The theoretical domains framework is used to understand midwives' multiple health promotion practice behaviours across a range of health topics
- The barriers and facilitators health care professionals face in addressing multiple health behaviour change topics will help inform interventions to support the uptake of evidence-based guidelines into routine clinical healthcare practice

Introduction

In many developed countries, the public health focus for midwives has extended from health protection issues, such as reducing maternal and infant mortality and preventing the spread of disease, to health promotion topics, such as smoking cessation, and weight management [1]. In the United Kingdom (UK), midwives are expected to perform multiple health promotion practice behaviours (HePPBes) for a variety of health promotion topics throughout pregnancy and postnatally. Examples of HePPBes include monitoring carbon monoxide levels, discussing recommended daily fruit and vegetable intake or delivering an alcohol brief intervention (in the UK, the booking appointment takes place between 8 and 12 weeks gestation and is the first routine antenatal appointment).

HePPBes are outlined in the various policies, strategies and guidelines published by government and public-sector bodies, which either directly or indirectly implicate midwives as public health professionals [2–4]. For example, in the UK, the National Institute of Clinical Excellence (NICE) Smoking: stopping in pregnancy and after childbirth guidelines outline that midwives participate in up to 12 different smoking cessation-related HePPBes during pregnancy, such as measuring carbon monoxide levels, asking the woman if they or anyone in their household smokes and referring to NHS Stop smoking services [4]. Whilst the NICE Weight management before, during and after pregnancy guidelines [5] outline various HePPBes including measuring weight and height, asking questions about the pregnant women's diet and physical activity and giving dietary and physical activity advice. For pregnant women with a BMI ≥ 30 , midwives are expected to carry out additional HePPBes such as offering referral to a dietitian. Considering the variety of health promotion topics to be addressed during pregnancy, midwives face a high health promotion workload [6–10].

The factors related to midwives performing multiple HePPBes are poorly understood. Previous studies have

examined maternal health care professionals' behaviour using the theoretical domains framework [TDF; 11 [11]]. However, these studies examined single health-risk topic such as smoking cessation [12], weight management and obesity [13] and physical activity [14]. The TDF provides a comprehensive grouping of the overlapping constructs within behavioural theories. The original version (TDF v1) summarises the main factors of relevant behaviour change theories into 12 independent domains [11]. The TDF v1 has been validated through the development of a refined version (TDF v2; [15]).

Midwives experience several challenges in undertaking multiple HePPBes such as a shortage of resources [6], a lack of clarity about their public health role [7, 8] and lack of self-efficacy [8, 9]. However, limited evidence exists on the barriers and facilitators midwives perceive in undertaking multiple HePPBes. This study applies a theoretical approach to investigate potentially relevant factors at a multiple behaviour level.

Research aim

The aim of this study is to investigate midwives' barriers and facilitators to performing multiple HePPBes across various health promotion topics using the theoretical domains framework in qualitative interviews (study 1) and free text questionnaire responses (study 2).

Methods

This study reports two different sources of qualitative data gathered through interviews and questionnaires. Interviews obtained detailed evidence about the barriers and facilitators midwives experience in carrying out their HePPBes. The questionnaires used an open-ended question to capture additional comments on barriers and facilitators that midwives may have had about their HePPBes.

Study 1

Study design

Qualitative semi-structured interview study.

Participants

Midwives working in a community setting were eligible to participate if they were qualified, practising midwives employed by an NHS health board in central Scotland. Recruitment involved JM, a researcher previously unknown to participants, visiting an out-patient maternity clinic and providing 12 midwives with information about the study. The information provided to midwives included the reason for carrying out the research to inform JM's PhD to develop an intervention to support midwives in addressing health behaviours with pregnant women. Eleven midwives agreed to take part. One midwife opted not to take part in the study.

Interview topic guide

The interview topic guide (see Additional file 1) contained (i) demographic questions (number of years of experience and job title) and (ii) questions based on each of the 12 TDF (v1) domains [11]. The behavioural category of interest, within the topic guide, was specified as: “supporting pregnant women to change their health behaviour” and the questions were designed to elicit beliefs about the behaviour in relation to each domain.

To remind midwives of the target behaviour of interest, an A4 prompt card was placed in front of them outlining typical examples of women’s health behaviours to be addressed (see the prompt card in Additional file 2). The behaviour was specified using terms Target, Action, Context and Time, known as the TACT principle [16]. TACT summarises the behaviour in terms of doing what, to whom, in a given context and at a specific time [17]. The behaviour was specified as: “All the things you do in a routine antenatal care consultation, including asking questions, to support pregnant woman change their health behaviours”. The TACT specification complements the general TDF definition used within the topic guide by breaking down of what was meant by “supporting pregnant women to change their health behaviour”.

Procedure

Face-to-face semi-structured interviews were conducted by JM (a female PhD researcher and Health Psychologist with previous experience of supporting midwives’ behaviour change practice) on two separate occasions in October 2016. Interviews took place within consultation rooms at an out-patient maternity clinic in central Scotland. Information about the study was provided verbally and in written format. Interviews lasted between 27 and 76 min (mean \pm SD, 43 \pm 14). All interviews were audio recorded and anonymously transcribed verbatim. The demographic data was entered into a Microsoft Excel spreadsheet. The consolidated criteria for reporting qualitative research (COREQ; [18]) was used to ensure all aspects of the qualitative research had been reported (a copy of the checklist is provided in Additional file 3).

Analysis

Transcripts were stored as Microsoft Word documents. Qualitative data analysis was based on recommendations for conducting TDF based qualitative research [19] and involved the following ten steps:

1. Interviews were read several times by JM to ensure familiarity with the data.
2. One interview was jointly coded by JM and SD to develop a coding strategy.
3. Two interviews were coded by JM using a directed content analysis approach [20] in which interview

content was placed in the most relevant TDF domain(s). Responses which could be attributed to more than one domain were coded into multiple domains.

4. The coding of the two interviews was checked by SD. Where discrepancies in coding occurred, discussion took place to reach a consensus.
5. The remaining interviews were coded by JM.
6. Data saturation was reached as the final three transcripts did not introduce any additional barriers and facilitators than those already identified.
7. Summaries of domain codings were produced by JM and checked by SD.
8. Identification of relevant theoretical domains was identified by consensus discussion between JM & SD. Relevance of a domain was based on the following criteria: (i) high frequency of specific beliefs and/or (ii) existence of conflicting beliefs and/or (iii) indication of clear beliefs that may influence the behaviour of interest [21].
9. Views were generated for relevant domains by JM and coded as being either generic (views which are made in reference to HePPBes in general) or behaviour specific (views which are in reference to a specific health promotion behaviour).
10. The views generated were checked by HC (a Professor of Midwifery) to ensure they made sense from a midwifery perspective.

Ethical approval

The University of Stirling Psychology Ethics Committee approved the study. NHS Research and Development approval was granted by Greater Glasgow and Clyde Health Board (R&D reference: GN16OG406).

Study 2**Study design**

Online questionnaire study including a qualitative open-ended question.

Participants

Individuals registered as a qualified midwife or training to be a midwife, worldwide, were eligible to take part. Recruitment took place online between the February and May 2018. Advertisements were placed on discussion forums, email lists and social media pages. The study was endorsed by the Royal College of Midwives on their Facebook and Twitter pages. Advertisements contained an URL link to the online study platform Qualtrics where the questionnaire was hosted. Overall, 719 participants consented to take part in the study and confirmed they were either a qualified or student midwife. Of those, 214 completed less than 95% of the questionnaire and therefore were excluded from further

analysis. Complete responses were obtained from 505 participants.

Questionnaire

The questionnaire examined factors relevant to HePPBes. At the end of the questionnaire, participants were asked: "If you have any other comments on your Public Health role then please include them below". The current paper reports on the qualitative data obtained from this question.

Procedure

Midwives accessed the questionnaire by clicking on the URL contained within the online advertisement. Following presentation of study information and eligibility criteria, consent was obtained by the midwife selecting an electronic check box. A screening question: "Are you a qualified or student midwife?" was presented as a method of reducing the likelihood of non-midwives completing the questionnaire. If the response was "no", then participants were thanked for their interest in the study and exited from the questionnaire. At the end of the questionnaire, midwives were offered the opportunity to be entered into a prize draw to win 1 of 4x £25 shopping vouchers.

Analysis

Analysis of the qualitative questionnaire data involved the following five steps:

1. Responses were read several times by JM to ensure familiarity with the data.
2. Responses were coded by JM using a directed content analysis approach [20] in which responses were placed in the most relevant TDF domain. If a response could be coded into more than one domain, a decision was made by JM as to the most appropriate domain.
3. Coding was checked by SD.
4. The number of responses coded into each domain was calculated by JM.
5. JM checked how much the barriers identified reflected those in study 1 and if there were any additional barriers or facilitators identified.

Ethical approval

The University of Stirling's General University Ethics Panel approved the study (GUEP316).

Results

Study 1

Participants

All 11 participants were female, employed as community midwives, except one who worked as a Senior Charge

Midwife. The mean number of years of experience as a qualified midwife was 22 (range from 3 to 31).

Reviewing of coding

Agreement between coders for two interviews was 76% and 88% for the first and second interview respectively, and disagreement for the same interviews was 17% and 5% respectively. The mean agreement was 82% and mean disagreement was 11%. An additional 7% of codes were suggested by the second coder for each interview.

Relevant theoretical domains

All barriers and facilitators could be identified within the TDF. Nine of the 12 TDF domains were classified as important in understanding the barriers (*b* = barrier) and facilitators (*f* = facilitator) to undertaking HePPBes. Table 1 lists these domains alongside a domain descriptor.

The identified domains are outlined below and a table containing the associated belief statements are provided in Additional file 4.

Professional role and identity

Midwives mostly saw HePPBes as part of their professional role (*f*): "I just see it as my job" (M10) and "I think public health is an essential part our role" (M7). However, some thought that several HePPBes could be addressed prior to conception, especially around weight management (*b*): "She's thirty-five and she's pregnant, so why is it suddenly the midwife that has to look into that?" (M3). Midwives frequently mentioned that the role of the midwife had evolved from providing traditional midwifery care (e.g. measuring the growth of the baby) to having a strong focus on undertaking HePPBes (*b*): "They seem to keep adding to the list of things we're expected to do" (M11), and some midwives expressed a feeling that their traditional professional role was being eroded (*b*): "Our role now, as community midwives, seems to be for referring on ... it feels as if your role's been kind of eroded at" (M10).

Beliefs about consequences

Midwives mentioned several consequences that potentially impact their HePPBes. Contrasting beliefs about how HePPBes impacted on the relationship with the woman were voiced. If performed well, midwives believed it could be useful in gathering information about aspects of the women's wellbeing (*f*). However, some stated that performing HePPBes could potentially damage the relationship if they were not carried out carefully, particularly for HePPBes related to weight management (*b*): "Women get quite offended at that one" (M10).

Similarly, contrasting beliefs about the women's receptiveness to HePPBes emerged. Some midwives reported that women expect them to carry out HePPBes (*f*): "Most women are quite receptive to that because they

Table 1 Criteria for why TDF domains were identified as key in understanding the barriers and facilitators midwives experience in undertaking multiple HePPBes

TDF domain	Domain description	(i) High frequency of specific beliefs	(ii) Existence of conflicting beliefs	(iii) Indication of clear beliefs
Professional role and identity	Views of how HePPBes relate to the professional role of being a midwife	✓	✓	
Beliefs about consequences	Expectations about what would occur if midwives perform HePPBes		✓	✓
Motivation and goals	Reasons for carrying out or not carrying out HePPBes	✓		
Memory/Attention and decision processes	The ability to remember, observe and select in relation to HePPBes	✓		✓
Environmental context and resources	The effects of the healthcare setting on HePPBes and the impact of what is available to midwives (in terms of physical and psychological resources) on HePPBes			✓
Social influences	The interpersonal processes which influence midwives' cognitions, emotions and HePPBes	✓	✓	
Emotion	Feelings about performing HePPBes			✓
Behavioural regulation	Midwives' attempts to influence HePPBes	✓		
Nature of the behaviour	Midwives' descriptions of how they have carried out HePPBes in the past and how HePPBes operate within the NHS	✓		

know they're pregnant and know it's not just about their health anymore" (M11). Other midwives said that women were not receptive to HePPBes (b): "It seems to be that everything is piled on to this booking visit and I don't think it's fair on the women either" (M3).

The time it takes to perform HePPBes was seen as a clear barrier with appointments over running the allotted time which could impact on other women (b): "You run over and then people are kept waiting." (M11). Furthermore, midwives held a clear belief that HePPBes had the potential to have positive health benefits for the women and their child (f): "Absolutely, there's a huge knock-on effect" (M5). Clear views on the short-term impact of HePPBes depended on the behavioural topic. For instance, smoking was perceived as an issue that could be dealt with during pregnancy (f): "This is probably a time, particularly for the smokers, they've got that motivation for the baby to change" (M5). Meanwhile, the impact of diet-related HePPBes was considered as unobservable (b): "I'm never going to know whether she's changed her diet, or even if she did change her diet, whether that's going to last" (M6). Some midwives expressed a clear belief that it was rewarding for them to observe the benefits of women engaging in health behaviour change attributed to their HePPBes (f): "That is rewarding if you feel like you've helped someone make a change in their life." (M11). Benefits in reducing future workload if HePPBes were carried out effectively were noted (f): "If we do our job well at the booking clinic and women take that on board then we don't have as much to do" (M2).

Motivation and goals

Midwives frequently reported being highly motivated to undertake HePPBes to benefit the long-term health of

the woman and the baby (f): "I think it's a huge window of opportunity for midwives" (M5). However, HePPBes were not a priority if there were conflicting clinical risks to the woman and/or baby such as patient safety or adult/child protection issues (b): "I'd say it's definitely secondary though, obviously check the woman's blood pressure, making sure she's well, doing urine analysis, making sure there's no infections, ruling out pre-eclampsia, listening to baby. That comes first and everything else, I think, would come second to that." (M11).

Memory/attention and decision processes

Midwives described being prompted by the woman's maternity notes to cover all HePPB topics (f): "My booking visit would be just going through that book with them because everything I need to tell them is in there, it's a good thing for me cause it saves me forgetting to stop to talk about things" (M3) which also acted as a prompt to HePPBes at follow-up appointments (f): "I usually always have a wee flick through the notes at the beginning just to check if there's any kind of outstanding issues to be aware of (M11)".

If the woman wanted to discuss a particular behaviour, midwives prioritised this (f): "If the woman is worried about her weight, I'm happy to talk about it at every appointment, but if she's not then I'm not gonna bring it up", (M6). Some midwives covered a topic in depth if they felt it was of specific relevance (f): "Say I did three bookings yesterday one of them would have had none of these problems, one of them had a BMI was over 35 so that's the one I concentrated on." (M5).

Intuition was frequently reported as guiding decision making in relation to HePPBes (f): "If I get vibes from them, that actually they do know" (M5) and "I just have

to go with my gut at the time" (M6). Midwives also based performing HePPBes on the physical health of the woman during the appointment (b): "If they are very sick or they've had bleeding, then I'll just say, 'we'll talk about this another time' because it's not appropriate to get ahead of ourselves" (M2).

Environmental context and resources

Changes in health care service provision (e.g. changes in timing of booking appointments) were perceived as making it more difficult to carry out HePPBes (b): "... with continuity of care being removed from us we're not getting the same chance to see the same women again so I find it a bit harder to address things." (M10).

Some midwives held a belief that accessibility to resources such as training related to HePPB could be improved (b): "It's quite haphazard how you can get on to these things" (M4). Materials related to HePPBes were generally perceived as high quality (f): "Ready Steady Baby' is I think a fantastic book" (M10). However, some felt the wording of questions within maternity notes made them difficult to ask (b): "That's a barrier to me asking, because I actually don't ask the way it's worded on that because it doesn't make sense." (M4). A belief that there were too many HePPBes to undertake in too little time was apparent (b): "We've also got to try and work within the time constraints" (M9). Some midwives believed that the woman's health status at the booking appointment affected the degree to which they could carry out HePPBes (b): "The booking appointment is really difficult for some women to sit there and actually not vomit" (M7). Physical cues were mentioned as prompts to undertake HePPBes (f): "If you pick up a book and it stinks of smoke, you know, you might well say, how you getting on?" (M2).

Social influences

Women were reported as a strong influence on midwives HePPBes and were seen to increasingly inform themselves through online sources. This was perceived as helpful to recommend high-quality information (f): "Get them to use websites because most of them are on computer all the time anyway" (M3) and unhelpful due to the potential to increase stress (b): "A lot of the women have got health anxieties and that's fuelled by the internet" (M2). Mixed views emerged about how accurately women reported some health behaviours such as alcohol consumption, which impacted on health promotion efforts. Some midwives perceiving accurate accounts (f): and others reporting the opposite (b): "Alcohol, I think, is probably one that's probably hidden, getting women to be honest is probably very difficult" (M10).

Team working and social support was seen as helpful in resolving issues regarding HePPBes (f): "My kind of closest colleagues, we'd probably have a wee chat and

we'll probably complain about how we're meant to put this in amongst everything else that people want out of us." (M10). Intergroup conflict was perceived by some in relation to performing HePPBes (b): "It's come up in the tearoom and there will be conversations with people saying, 'Oh public health that's a load of nonsense' and I'll sit there quite openly and say 'I think it's one of the best things that's ever occurred'" (M7).

Midwives described shifting social and group norms useful to normalise addressing health behaviours (f): "There's very few people that are not happy to answer these questions nowadays because we've been doing this for so long they expect it and they do all talk amongst each other" (M7). However, social norms appeared to be unhelpful in normalising obesity (b) "If a lady's got a BMI of not over 30, I still sort of don't see it as a huge issue with them" (M7).

Some saw a midwife's own body mass index (BMI) potentially making it harder to perform weight management HePPBes (b): "I think midwives find it really difficult because if you're big yourself they're looking at you thinking: 'well, she's got a cheek'; if you're small they're looking at you thinking: 'you have never had a problem in your life'" (M10).

Emotion

Carrying out HePPBes was associated with a range of positive emotions if these were seen to result in positive outcomes (f): "You feel dead pleased they actually brought it up again" (M9). Some reported concerns about performing specific HePPBes (b): "I do find it causes me anxiety if I know I'm going to tell her today that we're doing a Social Work referral." (M10). Carrying out HePPBes was potentially stressful (b): "Sometimes I'm thinking you just want to do the right thing, which is hard sometimes" (M5) and draining (b): "I'm exhausted after a clinic because you feel as if you want to have your senses hyper alert" (M9).

Behavioural regulation

Midwives described using behavioural regulation strategies such as using maternity notes as a prompt to cover all HePPBes, writing notes in SWHMRR as prompt for carrying out HePPBes follow-up appointments, carrying out HePPBes whilst performing clinical tasks, e.g. asking questions about physical activity while taking bloods (f): "I have to say I multi task. I'll be testing the urine while I'm asking about how they feel in pregnancy and had they had any sickness and how they're getting on with eating." (M7). For a list of strategies reported, see Additional file 5.

Nature of the behaviours

The majority of HePPBes took place at the booking appointment when there is usually the most time to

undertake HePPBes (f). Midwives reported HePPBes as being routine practice (f): “We’ve got to tick boxes, we’ve got to tick that we’ve discussed alcohol, we’ve discussed smoking” (M10). The habitual nature of performing HePPBes included the strategies used to regulate health promotion practice as well as the behaviours themselves.

Study 2 results

Participants

Forty-seven fully qualified midwives and 14 student midwives provided a statement to the final question. The majority (92%) were based in the UK. The mean number of years of experience as a qualified midwife was 17 (range from 1 month to 40 years).

Relevant theoretical domains

Responses were coded into seven TDF domains: professional role and identity, beliefs about consequences, motivation and goals, environmental context and resources, social influences, emotion and beliefs about capabilities. The definitions for each domain are the same as those presented in study 1. The domains are presented in terms of (i) the number of responses and (ii) supporting evidence.

Environmental context and resources

Twenty-six responses were coded as environmental context and resources focusing on a need for improved resources, particularly a need for more time, wider access to online materials: “Apps and online mediums for encouraging behaviour change may take the pressure off midwives” and more accessibility to training. Some responses stressed the need for continuity of care.

Beliefs about consequences

Nine responses were coded as beliefs about consequences. The potential for weight management HePPBes to impact the midwife-woman relationship was mentioned. Mixed responses about women’s receptiveness to HePPBes emerged.

Motivation and goals

Nine motivation and goals responses suggested high levels of motivation to carry out HePPBes. Some midwives indicated that the degree to which they were able to support women was not ideal.

Social influences

Eight responses were coded as social influences and focused on midwives’ own health status in relation to undertaking HePPBes. Some midwives described their own health behaviours and status helping or hindering HePPBes: “My own lifestyle and motivation in public

health topics can impact the delivery and communication when approaching topics with women”. Others reported that their health status was irrelevant: “Don’t confuse my welfare with those of the woman and baby I’m caring for... public health roles should not be judged by the delivering midwife”.

Professional role and identity

Three responses were coded as professional role and identity commenting on a need for health promotion topics to be tackled before pregnancy and the demands placed on midwives to fulfil multiple professional roles.

Emotion

Three responses coded as emotion focused on the taxing nature of the job and the potential negative health consequences of burn-out.

Beliefs about capabilities

Three responses coded as beliefs about capabilities highlighted that midwives potentially feel more confident in addressing health promotion topics which have greater attention placed on them in health policy and that capability to undertake HePPBes was reliant on resources such as training and time.

Integration of study 1 and 2 findings

Table 2 presents the integration of the findings from both studies by highlighting whether the views demonstrated in study 1 were supported by the responses generated in study 2. The table shows that six of the nine domains identified as important in study 1 were supported by responses from study 2.

Discussion

Principal findings

Midwives perceived a multitude of barriers and facilitators to carrying out HePPBes. Key barriers were requirements to perform an increasing amount of HePPBes on top of existing clinical work load, which impacted on the time available, midwives’ cognitive resources and the quality of relationships with pregnant women. Organisational issues such as a lack of continuity of care and difficulty accessing appropriate training were also identified. Key facilitators included midwives’ motivation to support pregnant women to address their health. Study 1 also highlighted strategies that midwives use to overcome the barriers they face in carrying out their HePPBes. Some findings were considered both barriers and facilitators as mixed views were expressed about whether certain health promotion topics should be addressed by other health professionals prior to pregnancy, women’s receptiveness to HePPBes during pregnancy and the social influence of midwives’ own health status.

Table 2 Evidence of midwives' views identified in study 1 also present in the study 2 responses

Key TDF domains from study 1	Study 2 supports or extends study 1 findings (✓ = yes or ✗ = no evidence)	Details of how study 2 responses relate to study 1 barriers and facilitators
Professional role and identity	✓	Study 2 responses support those in study 1 that suggest midwives are expected to address various topics that could be targeted prior to pregnancy (b). However, unlike the study 1 findings which suggested that other health professionals could potentially address some health promotion topics prior to pregnancy, there was a suggestion in the study 2 responses that midwives could be the professional to do this (e.g. by visiting schools). There was also further evidence of the perception that the role of the midwife has evolved to incorporate a wide variety of HePPBes (b).
Beliefs about consequences	✓	Study 2 responses strengthen the findings of study 1 which suggested that midwives believed HePPBes related to weight management were most likely to have a negative impact on the midwife-woman relationship (b). Study 2 also provides further evidence of the differing beliefs that midwives have regarding how receptive women are to HePPBes (b&f).
Motivation and goals	✓	Study 2 responses support those of study 1 which demonstrated that midwives are motivated to carry out their health promotion practice (f) but competing clinical demands mean that it was a secondary goal (b).
Memory, attention and decision processes	✗	No further evidence identified.
Environmental context and resources	✓	The responses from study 2 support the findings of study 1 which outlined issues including not having enough time to address health promotion meaningfully (b), problems accessing training (b) and a lack of continuity of care (b) in influencing midwives' HePPBes. Study 2 also identified the need for greater access to online materials which was not reported in study 1.
Social influences	✓	The findings of study 1 suggested that some midwives believed their own health status, specifically their BMI, could influence their health promotion practice by exerting social pressure. However, the responses generated by study 2 show that there is widely differing regard as to whether midwives feel their own health status has a potential impact on their health promotion practice (b&f).
Emotion	✓	Study 2 responses supported the study 1 finding that midwives' HePPBes could potentially be influenced by the exhaustive nature of the midwifery role (b). However, study 1 did not identify the potential impact of burn-out on midwives' own health as was suggested by the study 2 responses. This is perhaps as study 1 contained purely midwives working in a community setting only.
Behavioural regulation	✗	No further evidence identified.
Nature of the behaviour	✗	No further evidence identified.

Strengths and limitations

The complimentary nature of the two presented studies is a strength. Study 1 provided detailed insight from a group of midwives working in a community setting which was supplemented in study 2 by free text commentary from a larger sample of midwives, employed within a variety of professional roles.

Limitations include the difficulty to specify target behaviours when simultaneously investigating multiple HePPBes for a variety of health promotion topics at the same time. The use of the TACT principle [16], and the image within the A4 prompt card provided midwives with a visual aid to remind them of the study focus during the interview. The sample size in study 1 was based on evidence-based guidelines [22], but is smaller than other qualitative TDF-based studies [23, 24]. In addition, the midwives who took part in study 1 were recruited from a single out-patient maternity clinic in Scotland and different and additional barriers and facilitators might have emerged within different contexts.

Study 2 used online recruitment which prevents checking that participating individuals fully met inclusion criteria. The current paper examined HePPBes at a general level but some of the barriers raised were health promotion topics specific (e.g. a lack of dietary services to refer women to). Future research could further explore similarities and differences of HePPBes for different health promotion topics.

Relation to other studies

Limited evidence exists on the psychological factors associated with midwives HePPBes targeting women's multiple health behaviours. Previously identified barriers to midwives undertaking HePPBes including a lack of time, resources and variability in training quality [6] were confirmed in the current study and therefore highlight a continued need for midwives to be provided with support. Uncertainty amongst midwives about their public health role [7, 8] was also demonstrated through the mixed views midwives expressed regarding whether all HePPBes should fall under the remit of the midwife. Midwives' use of strategies to overcome the barriers they face in carrying out HePPBes has not been previously reported.

Examining multiple HePPBes increases the complexity of the behavioural influences identified and provides greater understanding of the influences on midwives HePPBes. The complexity of investigating multiple HePPBes is demonstrated by the higher number of barriers identified within the current study compared with studies which have used the TDF to explore midwives' behaviours in relation to single health risk topics [11, 13, 14].

The TDF [10] provides an overview of the main psychological constructs explaining health behaviours. However,

the theories that these constructs belong to are mainly used to explain single behaviours. Multiple behaviour change processes such as goal facilitation [25] and goal conflict [26] and transference [27] have not been captured by the TDF domain interview questions and therefore might have been missed by the current study.

Possible mechanisms and implications

Barriers such as difficulty to access HePPBe-related training suggest a specific public health component in midwife training or after qualification may be useful. The finding that carrying out HePPBes can be taxing suggests that more support for midwives may be required. Policy makers and key stakeholders commissioning midwives' continuous professional development opportunities could provide HePPBe support in multiple formats (e.g. through training, handheld materials or peer support).

Given the variations in the type of care that midwives provide, the pressure placed on maternity services by midwives attending training and the limited time that midwives would have to access support, developing handheld (or electronic) materials may be the most feasible option. For example, a leaflet containing examples of the strategies midwives use to carry out their HePPBes, that midwives could refer to during or outwith antenatal consultations, could capitalise on some of the HePPBe facilitators identified within this study.

Unanswered questions and future research

The development of an intervention to support midwives in helping pregnant women address multiple health behaviours is necessary to maximise the effectiveness of public health interventions aimed at behaviour change during pregnancy. Future studies should translate the current findings into acceptable, scalable and effective interventions to support midwives to perform HePPBes.

Conclusion

The findings suggest that despite high levels of motivation to carry out HePPBes, midwives perceive numerous barriers to carrying out these tasks in a timely and effective manner. Interventions that support midwives by addressing key barriers and facilitators to help pregnant women address their health behaviours are urgently needed.

Additional files

Additional file 1: Study 1 Interview Topic guide. (DOCX 19 kb)

Additional file 2: Study 1 Prompt card. (DOCX 2283 kb)

Additional file 3: COREQ checklist. (DOCX 18 kb)

Additional file 4: Study 1 table of midwives view statements table. (DOCX 18 kb)

Additional file 5: Study 1 table of midwives HePPBe strategies. (DOCX 16 kb)

Abbreviations

COREQ: Consolidated criteria for reporting qualitative research; HePPBes: Health promotion practice behaviours; TDF: Theoretical domains framework

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Authors' contributions

JM contributed to the design of the study, carried out data collection and analysis and was primarily responsible for drafting the manuscript. SD contributed to the design of the study, was involved in data analysis and commented on drafts of the manuscript. ROC and HC were involved in designing the study and commented on drafts of the manuscript. All authors read and approved the final manuscript.

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Availability of data and materials

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Ethics approval and consent to participate

The University of Stirling Psychology Ethics Committee approved study 1 and NHS Research and Development approval was granted by Greater Glasgow and Clyde Health Board (R&D reference: GN16OG406). The University of Stirling's General University Ethics Panel approved study 2 (GUEP316). Consent to participate was obtained from all midwives who took part in the studies.

Consent for publication

Consent for publication was obtained from all midwives who took part in the studies.

Competing interests

The authors declare that they have no competing interests.

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APPENDIX D: INTERVIEW TOPIC GUIDE

Today, I'm going to ask you some questions about your thoughts on the things you do to support pregnant women change their health behaviour, like smoking/drinking/substance abuse/diet and physical activity. There are no right or wrong answers and your responses will be anonymised. If you don't want to answer a question, then please just say "I'd rather not answer that" and I'll move onto the next one. Do you have any questions before we begin?

To start us off, can you please tell me a bit about you and current role- what is your job title?/ what band you are employed at?/ where do you work? and how many years' experience have you got working as a midwife?/ Are there any health behaviours that you are particularly involved in helping women address?

Ok, now that I have a bit more of an idea of your background, I'll focus in on asking you about your views of what you do to help women change their health behaviour.

Nature of behaviour

- *Can you tell me some of the things that you do to support pregnant women to change their health behaviour? (Prompt: like smoking/drinking/substance abuse/diet and physical activity)*
- *Are there any other things you do (to support pregnant women to change their health behaviour)?*

Knowledge

- *Please tell me what you think that midwives are expected to do in order to try and help pregnant women change their health behaviour?*
- *What is expected of you in regard to helping pregnant women change their health behaviour?*

Skills

- *What skills do you need, as a midwife, to support pregnant women to change their health behaviour?*
- *Do these skills differ for different health behaviours?*
- *Do you think you have all of these skills? (Prompt: Have you been trained? What did you think of the training? Did you need it?)*

Social/ professional role and identity (self-standards)

- *Do you think supporting health behaviour change in pregnant women should be part of the role of a midwife?*
- *Do you think the role of midwives in supporting pregnant women to change their health behaviour has changed over time? If yes, how?*

Beliefs about capabilities (self-efficacy)

- *How confident are you that you can support pregnant women change their health behaviour?*
- *Are there any health behaviours that you are especially confident about, or equally, not very confident about?*

Beliefs about consequences (anticipated outcomes/attitude)

- *What do you think are the benefits of helping pregnant women change their health behaviour? For you as a midwife/ the women?*
- *What do you think are the bad things of helping pregnant women change their health behaviour? For you as a midwife/ the women?*
- *Do you think the benefits outweigh the bad things?*

Memory, attention and decision processes

- *Is supporting pregnant women to change their health behaviour something that you usually do?*
- *Are there other things that get in the way of you supporting pregnant women change their health behaviour?*

Motivation and goals (intention)

- *How important is helping pregnant women change their health behaviour in comparison to all the other things that you have to do?*
- *Are there any health behaviours that you are particularly keen to help change?*
- *Are there any health behaviours that you are not keen to change?*

Social influences (norms)

- *Do you think your colleagues help pregnant women change their health behaviour?*
- *Do you sometimes talk with your colleagues about supporting pregnant women change their health behaviours?*
- *What do you talk about? Do you support each other in this aspect of your job?*

Environmental context and resources (environmental constraints)

- *Tell me about the challenges of helping pregnant women change their health behaviour in your workplace?*
- *Do you think you have enough resources to support pregnant women change their health behaviour? Time, materials, training, pathways, support and supervision?*

Emotion

- *How do you feel when trying to help pregnant women change their health behaviour? (Prompt e.g. feel emotionally)*
- *Do you sometime avoid raising certain health behaviour topics with pregnant women because talking about this makes you feel a certain way, e.g. uncomfortable or awkward?*

Behavioural Regulation

- *Are there ways of working that encourage you to help pregnant women change their health behaviour?*
- *Is there anything that could help encourage you to help women change their health behaviour?*

That's all my questions answered. Do you have anything you'd like to ask? Thank you for taking part in the study. If you'd like to hear more about it then please contact XXX or myself for a summary.

APPENDIX E: A4 PROMPT CARD USED DURING INTERVIEWS

All the things you do in a routine antenatal care consultation, including asking questions, to support pregnant woman change their health behaviours



APPENDIX F: CONSOLIDATED CRITERIA FOR REPORTING QUALITATIVE STUDIES (COREQ): 32-ITEM CHECKLIST

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International journal for quality in health care*. 2007; 19(6):349-57.

Table F1

COREQ 32-Item Checklist Completed for the Interview Study Reported in Chapter 4

No. Item	Guide questions/description	Page number and/or section reported
Domain 1: Research team and reflexivity		
<i>Personal Characteristics</i>		
1. Interviewer/facilitator	Which author/s conducted the interview or focus group?	Pg 72 (Methods)
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	Pg 72 (Methods)
3. Occupation	What was their occupation at the time of the study?	Pg 72 (Methods)
4. Gender	Was the researcher male or female?	Pg 72 (Methods)
5. Experience and training	What experience or training did the researcher have?	Pg 72 (Methods)
<i>Relationship with participants</i>		
6. Relationship established	Was a relationship established prior to study commencement?	Pg 71 (Methods)
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	Page 71 (Methods)
8. Interviewer characteristics	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	N/A
Domain 2: study design		
<i>Theoretical framework</i>		
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis,	Pg 72 and 73 (Methods)

No. Item	Guide questions/description	Page number and/or section reported
	ethnography, phenomenology, content analysis	
<i>Participant selection</i>		
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	Pg 71 (Methods)
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	Pg 71 (Methods)
12. Sample size	How many participants were in the study?	Pg 74 (Results)
13. Non-participation	How many people refused to participate or dropped out? Reasons?	Pg 71 (Methods)
<i>Setting</i>		
14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	Pg 72 (Methods)
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	N/A
16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	Pg 74 (Results)
<i>Data collection</i>		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	Pg 7 (Methods)
18. Repeat interviews	Were repeat interviews carried out? If yes, how many?	N/A
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	Pg 72 (Methods)
20. Field notes	Were field notes made during and/or after the interview or focus group?	N/A
21. Duration	What was the duration of the interviews or focus group?	Pg 72 (Methods)
22. Data saturation	Was data saturation discussed?	Pg 72 (Methods)
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	N/A
Domain 3: analysis and findings		
<i>Data analysis</i>		
24. Number of data coders	How many data coders coded the data?	Pgs 72 & 73 (Methods)
25. Description of the coding tree	Did authors provide a description of the coding tree?	N/A

No. Item	Guide questions/description	Page number and/or section reported
26. Derivation of themes	Were themes identified in advance or derived from the data?	Pgs 72 & 73 (Methods)
27. Software	What software, if applicable, was used to manage the data?	N/A
28. Participant checking <i>Reporting</i>	Did participants provide feedback on the findings?	N/A
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	Results
30. Data and findings consistent	Was there consistency between the data presented and the findings?	Discussion
31. Clarity of major themes	Were major themes clearly presented in the findings?	Results
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	N/A

APPENDIX G: UNIVERSITY OF STIRLING PSYCHOLOGY ETHICS
COMMITTEE APPROVAL FOR THE INTERVIEW STUDY

From: Psychology Ethics Submissions <psychethicssubs@stir.ac.uk>
Date: Wednesday, 8 June 2016 at 17:19
To: Julie McLellan <j.m.mclellan@stir.ac.uk>
Cc: Stephan Dombrowski <s.u.dombrowski@stir.ac.uk>, Psychology Ethics Submissions <psychethicssubs@stir.ac.uk>
Subject: RE: Ethics application -Julie McLellan

Dear Julie
Thank you for your ethics application. Your project titled:
“Investigating midwives’ views about the multiple demands of their public health practitioner role”
has been approved by the Psychology Ethics Committee.
Regards,
Lindsay

Lindsay Wilson
Chair, Psychology Ethics Committee

APPENDIX H: NHS GREATER GLASGOW AND CLYDE RESEARCH AND DEVELOPMENT APPROVAL FOR THE INTERVIEW STUDY



Senior Research Administrator: Kayleigh Pender
 Telephone Number: 0141 232 1826
 E-Mail: Kayleigh.pender@ggc.scot.nhs.uk
 website www.nhsggc.org.uk/r&d

Clinical Research & Development
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01/08/2016

Miss Julie McLellan
 Psychology, Faculty of Natural Sciences
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 University of Stirling
 FK9 4LA

NHS GG&C Board Approval

Dear Miss McLellan,

Study Title:	Investigating midwives' views about the multiple demands of their public health practitioner role
Principal Investigator:	Miss Julie McLellan
GG&C HB site	Princess Royal Maternity Hospital, Queen Elizabeth University Hospital, Royal Alexandra Hospital
Sponsor	University of Stirling
R&D reference:	GN16OG406
REC reference:	N/A
Protocol no: (including version and date)	Version 01 dated 29.07.16

I am pleased to confirm that Greater Glasgow & Clyde Health Board is now able to grant **Approval** for the above study.

Conditions of Approval

1. **For Clinical Trials** as defined by the Medicines for Human Use Clinical Trial Regulations, 2004
 - a. During the life span of the study GGHB requires the following information relating to this site
 - i. Notification of any potential serious breaches.
 - ii. Notification of any regulatory inspections.

It is your responsibility to ensure that all staff involved in the study at this site have the appropriate GCP training according to the GGHB GCP policy (www.nhsggc.org.uk/content/default.asp?page=s1411), evidence of such training to be filed in the site file.

2. **For all studies** the following information is required during their lifespan.
 - a. Recruitment Numbers on a quarterly basis
 - b. Any change of staff named on the original SSI form
 - c. Any amendments – Substantial or Non Substantial
 - d. Notification of Trial/study end including final recruitment figures



e. Final Report & Copies of Publications/Abstracts

Please add this approval to your study file as this letter may be subject to audit and monitoring.

Your personal information will be held on a secure national web-based NHS database.

I wish you every success with this research study

Yours sincerely,

A handwritten signature in black ink, appearing to read 'K Pender', written in a cursive style.

Kayleigh Pender
Research Co-ordinator

CC: E.Frame (Head of Midwifery)

APPENDIX I: ADVERTISEMENT FOR THE ONLINE SURVEY STUDY

**The role of Midwives' in Public Health**

You are invited to participate in a web-based online survey on midwives' views of their Public Health role. You have been invited to participate because you are a midwife or a student midwife. This questionnaire is part of a research project being conducted by researchers at the University of Stirling and is open to midwives and student midwives worldwide. It should take approximately 15-20 minutes to complete. You will be given some questions to answer on your views of your role as a Public Health professional and have the opportunity to be entered into a prize draw to win one of 4x £25 shopping vouchers.

If you are interested in taking part in this research, please follow the questionnaire link below:

https://stirlingpsych.eu.qualtrics.com/jfe/form/SV_7TI95QR7j8gmpYF

For further information, please contact: j.m.mclellan@stir.ac.uk

APPENDIX J: QUESTIONNAIRE USED IN THE ONLINE SURVEY STUDY ASSESSING MIDWIVES' VIEWS OF THEIR HEALTH PROMOTION PRACTICE BEHAVIOURS



Information and consent

The role of Midwives' in Public Health

You are invited to participate in a web-based online survey on midwives' views of their Public Health role. You have been invited to participate because you are a midwife or a student midwife. This questionnaire is part of a research project being conducted by researchers at the University of Stirling. It should take approximately 15-20 minutes to complete. You will be given some questions to answer on your views of your role as a Public Health professional.

Please read through the information before agreeing to participate below.

1. Background, aims of project

Midwives are expected to address a multitude of health behaviours (not smoking, no alcohol during pregnancy, healthy foods, avoiding obesity, regular exercise and breastfeeding) with pregnant women. The promotion of maternal health behaviours requires midwives to take on a Public Health professional role. However, there is very limited evidence about how to help midwives' carry out this role. By understanding what factors influence midwives in their Public Health role, the study will enable the development of an intervention to support midwives in addressing health behaviours with pregnant women.

2. Do I have to take part?

No. Your participation in this survey is voluntary. You may refuse to take part in the research or exit the survey at any time without reason by pressing the 'Exit' button / closing the browser. Should you agree to participate, you are free to disregard any question which you do not wish to answer (by leaving it blank). If after participating you decide that you would like to withdraw your data, you are free to do so by contacting Julie McLellan (j.m.mclellan@stir.ac.uk), up to 2 weeks after participating. Data from participants who choose to withdraw from the study will be destroyed and will not be used in the analyses.

3. Are there any potential risks in taking part?

The possible risks or discomforts of the study are minimal. You may feel a little uncomfortable answering the questions about your own health. However, you have the option not to answer these questions.

4. Are there any benefits in taking part?

There will be no direct benefit to you from taking part in this research. However, this study will inform an intervention to support midwives in addressing health behaviours with pregnant women.

5. Prize draw

You will be entered into a prize draw to win one of 4x £25 shopping vouchers. If you would like to be included then it will be necessary to provide your email address at the end of the questionnaire. This contact information will be stored securely and separately from your responses.

6. What happens to the data I provide?

Your answers will be completely anonymous, and we will use all reasonable endeavours to keep them confidential. Your data will be stored in a password-protected file and may be used in academic publications. Your IP address will not be stored.

7. Will the research be published?

The research will be modified for presentation in relevant midwifery and health psychology peer reviewed journals and conferences. The findings will also inform a PhD thesis which aims to develop an intervention to support midwives in providing health promotion antenatal care to women. Participants will be able to access a copy of the published results by emailing Julie McLellan (j.m.mclellan@stir.ac.uk).

The University of Stirling is committed to making the outputs of research publically accessible and supports this commitment through our online open access repository STORRE. Unless funder/publisher requirements prevent us this research will be publicly disseminated through our open access repository.

8. Who is organising and funding the research?

The University of Stirling is organising this research.

9. Who has reviewed this research project?

This project has been ethically approved via The University of Stirling General University Ethics Panel.

10. Whom do I contact if I have concerns about this study or I wish to complain?

If you would like to discuss the research with someone then please contact Julie McLellan (j.m.mclellan@stir.ac.uk) or Dr Stephan Dombrowski (s.u.dombrowski@stir.ac.uk). If you wish to speak to someone independent of the study, please contact Dr Sinead Currie (Sinead.currie@stir.ac.uk).

11. Electronic Consent

Please select your choice below. Clicking on the "Agree" button indicates that:

- You have read and understood the above information
- You voluntarily agree to participate

Agree

Disagree

Screening

Are you a qualified or student midwife?

Yes

No

Section 1: Professional background

This section asks you about your experience as a midwife.

Please identify the county in which you are currently working

(Please tick one)

- | | |
|--------------------------------|--|
| <input type="radio"/> England | <input type="radio"/> Northern Ireland |
| <input type="radio"/> Wales | <input type="radio"/> Other |
| <input type="radio"/> Scotland | |

Please specify the country in which you are currently working

What is your primary role?

- | | |
|--|---|
| <input type="radio"/> Midwife | <input type="radio"/> Consultant Midwife |
| <input type="radio"/> Student Midwife | <input type="radio"/> Specialist Midwife |
| <input type="radio"/> Midwifery Lecturer | <input type="radio"/> Independent Midwife |
| <input type="radio"/> Midwifery Manager | <input type="radio"/> Other |

Please specify your primary role?

Please state the number of years and/or months you have been a registered midwife

(student midwives please state what year you are in)

Please state whether you carry out booking appointments in your current role:

(Please tick one)

- My current role involves carrying out booking appointments
- My current role does not involve carrying out booking appointments but I have done in a previous role
- I have never carried out booking appointments

Please select which, if any, of the following training you have received:

(Please tick all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Behaviour change (generic) | <input type="checkbox"/> RCM ilearn modules |
| <input type="checkbox"/> Motivational interviewing | <input type="checkbox"/> Topic specific e.g. smoking cessation training |

If you have received topic specific training, please state what topics you have received training for:

Section 2: Addressing Public Health Topics

The following set of questions relates to your view about addressing Public Health topics at booking appointments. Please answer the questions, even if you are not currently carrying out booking appointments. (The booking appointment is usually the first antenatal care appointment a woman attends during pregnancy. It is the appointment where midwives spend the most time addressing Public Health topics. Non-UK based midwives should think about the antenatal care appointments where they spend the most time addressing Public Health topics with women).

When answering these questions, please think about a typical pregnant woman in your care, who is having a straightforward pregnancy. Please answer by selecting the number that best represents your views:

When I have the opportunity, I address these Public Health topics at a booking appointment:

	1= Never	2	3	4	5= Always
Oral health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sexual health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol consumption	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smoking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Substance abuse	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physical activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Weight management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal hygiene	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How important is it to address this Public Health Topic at a booking appointment?

	1=Never	2	3	4	5= Always
Alcohol consumption	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Weight management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Oral health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sexual health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physical activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal hygiene	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Substance abuse	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smoking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Who is your main concern when making decisions about addressing Public Health Topics?

- The woman
- The unborn baby
- Both the woman and the baby
- Other

Who is your main concern when making decisions about addressing Public Health Topics?

The following questions relate to instances where there is not enough time to cover all the Public Health Topics (alcohol consumption, diet, physical activity, weight management, personal hygiene, oral health, smoking, substance abuse and sexual health) in an antenatal booking appointment.

Please answer by selecting the number that best represents your views:

When there is not enough time to cover all Public Health Topics I focus on the topic(s) that...

	1=Strongly Disagree	2	3	4	5= Strongly Agree
I am most comfortable speaking about	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
that I think are the most important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am the most appropriate professional to advise on	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	1=Strongly Disagree	2	3	4	5=Strongly Agree
the woman wants me to focus on	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
are least likely to need follow-up options	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can cover in the available time, but not in any detail	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know have a reliable and high quality service to refer to	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know there is a good referral pathway for	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please state any other strategies that you use when there is not enough time to address all Public Health topics:

Section 3: Barriers and Facilitators to Addressing Public Health Topics

Please think about the following Public Health topics when answering the statements below: Alcohol consumption, Diet, Physical activity, Weight management, Personal Hygiene, Oral health, Smoking, Substance abuse and Sexual health.

Please answer by selecting the number that best represents your views.

	1= strongly disagree	2	3	4	5= strongly agree
When addressing Public Health topics I use skills that I have developed from training I have attended	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have enough knowledge to address Public Health topics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Addressing Public Health topics is a key part of my role as a midwife	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have been adequately trained to address Public Health topics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the appropriate skills to address Public Health topics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I sometimes draw on my own personal experience when addressing Public Health topics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is necessary for Public Health providers (such as smoking cessation services) to provide me with information to update my knowledge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	1= strongly disagree	2	3	4	5= strongly agree
Addressing Public Health topics can impact on the relationship I have with the woman in my care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is conflict between my role and addressing Public Health topics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident in my ability to address Public Health topics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is conflict between me addressing Public Health topics and my own health related behaviours	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Addressing Public Health topics can be a rewarding for me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident in my ability to refer women on to the appropriate Public Health service(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have sufficient computer literacy skills to address Public Health topics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	1= strongly disagree	2	3	4	5= strongly agree
I am motivated to help women by addressing Public Health topics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are too many Public Health topics to address them all in depth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have high quality materials (e.g. leaflets, booklets) to address Public Health topics with women	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Addressing Public Health topics is important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use prompts (e.g. checklists) when addressing Public Health topics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I only address Public Health topics in detail if the woman raises them with me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use my instinct and/or "gut feeling" to help me address Public Health topics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	1= strongly disagree	2	3	4	5= strongly agree
I sometimes have a feeling that addressing Public Health topics is pointless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a pre-formed strategy of how to address Public Health topics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My midwifery colleagues and I work together as a team to solve issues related to Public Health topics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel women aren't always honest with me when I am addressing Public Health topics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel uncomfortable when addressing some Public Health topics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My midwifery colleagues support me in addressing Public Health topics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I aim for "small changes in the right direction" when addressing Public Health topics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Section 4: Support for you in your Public Health role

The following questions ask about the type of support you may wish to receive to support you in your Public Health role:

To support me in addressing Public Health topics I would prefer to receive...

	1= Strongly Disagree	2	3	4	5= Strongly Agree
Updates on Public Health services I am referring women to	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No further support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Peer support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A resource with information and content to support me in addressing Public Health topics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would prefer to receive this support via the following delivery channels

(Please tick all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Delivered by a person | <input type="checkbox"/> Telephone |
| <input type="checkbox"/> Self-help | <input type="checkbox"/> Mobile phone application (App) |
| <input type="checkbox"/> Text message | <input type="checkbox"/> Other |
| <input type="checkbox"/> Email | |

Please specify what other delivery channel you would like to receive this support via

I would prefer to receive this support via the following delivery method:

(Please tick one)

- 1:1 Both 1:1 and group
 Group

If you have any other comments on what support you would like to receive in your Public Health role then please include them below:

Section 5: About you

In today's busy, stressful working environment many health professionals face their own health issues. The final set of questions therefore focuses on your own health. **If there are any questions you would prefer not to answer then please leave these blank.**

What is your age? (Please state in years)

What is your height? (Please include units of measurement (e.g. metres and cm or feet and inches)

What is your weight? (Please include units of measurement e.g. kilos, pounds or stones and pounds)

This question is about the time you spend sitting while at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading or sitting or lying down to watch television.

During the **last 7 days**, how much time did you spend sitting on a **work day?** (please answer in hours and/or minutes)

This question is about the time you spend sitting while at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading or sitting or lying down to watch television.

During the **last 7 days**, how much time did you spend sitting on a **non-work day** (please answer in hours and/or minutes)

During the last month, how many days did you usually have any kind of drink containing alcohol?

(Please tick one)

- Everyday
- 5 to 6 times a week
- 3 to 4 times a week
- Twice a week
- Once a week
- 2 to 3 times a month
- Once a month
- Never

Do you currently smoke or have you ever smoked?

(Please tick one)

- Yes, I currently smoke tobacco every day
- Yes, I currently smoke tobacco, but not every day
- Yes, I used to smoke tobacco but have quit
- No, I have never smoked tobacco
- Prefer not to answer

How many portions of fruit and vegetables (including pulses, salad, vegetables, fruit juices and fresh, dried and canned fruit) did you eat yesterday?

Please tick one

- | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7+ |
|----------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Portions of fruit and vegetables | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Finally, if you have any other comments on your Public Health role then please include them below:

Thank you for participating in this research project

The aim of this project is to understand what factors influence midwives in their Public Health role, how they carry it out and the barriers and facilitators encountered. If you decide you would like further information on the study or to withdraw your data (up to 2 weeks after participating), please contact Julie McLellan (j.m.mclellan@stir.ac.uk) or Dr Stephan Dombrowski (s.u.dombrowski@stir.ac.uk) with your unique identifying number below:

Your 6-digit identifying number is: 457216

Please write this number in the field below (and keep your own copy of it):

Once again, I would like to thank you for your participation. If you would like to be included the prize draw to win one of 4x £25 shopping vouchers then please provide your email address below:

APPENDIX K: UNIVERSITY OF STIRLING'S GENERAL UNIVERSITY ETHICS
PANEL APPROVAL FOR THE ONLINE SURVEY STUDY ASSESSING
MIDWIVES' VIEWS OF THEIR HEALTH PROMOTION PRACTICE
BEHAVIOURS



Julie McLellan
University of Stirling
FK9 4LA

j.m.mclellan@stir.ac.uk

General University Ethics Panel (GUEP)
University of Stirling
Stirling
FK9 4LA
Scotland UK

E: GUEP@stir.ac.uk

16 January 2018

Dear Julie

Re: Ethics Application: *The role of Midwives in Public Health*- GUEP316

Thank you for your submission of the above to the General University Ethics Panel.

I am pleased to confirm that GUEP has approved your application, and you can now proceed with your research.

Please ensure that your research complies with Stirling University policy on storage of research data
<http://www.stir.ac.uk/is/researchers/data/afteryourresearch/>

Please note that should any of your proposal change, a further submission (amendment) to GUEP will be necessary.
If you have any further queries, please do not hesitate to contact the Committee by email to guep@stir.ac.uk.

Yours sincerely,

Pp

A handwritten signature in black ink, appearing to read "Helen S. Cheyne".

On behalf of GUEP
Professor Helen Cheyne
Deputy Chair of GUEP

APPENDIX L: UNIVERSITY OF STIRLING'S GENERAL UNIVERSITY ETHICS
 PANEL AMENDMENT APPROVAL FOR THE ONLINE SURVEY STUDY
 ASSESSING MIDWIVES' VIEWS OF THEIR HEALTH PROMOTION
 PRACTICE BEHAVIOURS



Julie McLellan
 Faculty of Natural Sciences
 University of Stirling
 FK9 4LA

General University Ethics Panel (GUEP)
 University of Stirling
 Stirling
 FK9 4LA
 Scotland UK

E: GUEP@stir.ac.uk

1 February 2018

Dear Julie

Re: Ethics Application: The role of Midwives in Public Health - GUEP316A

Thank you for your submission of a further amendment to the above project to the General University Ethics Panel.

I am pleased to confirm that GUEP has approved your application, and you can now proceed with your research.

Please ensure that your research complies with Stirling University policy on storage of research data
<http://www.stir.ac.uk/is/researchers/data/afteryourresearch/>

Please note that should any of your proposal change, a further submission (amendment) to GUEP will be necessary. If you have any further queries, please do not hesitate to contact the Committee by email to guep@stir.ac.uk.

Yours sincerely,

Pp

A handwritten signature in black ink, appearing to read 'Edna S. Docherty'.

On behalf of GUEP
 Dr Bill Munro
Deputy Chair of GUEP

APPENDIX M: THE HEPPBE TOOLKIT

Please find a copy of the HePPBe toolkit in a folder at the end of the thesis.

APPENDIX N: HEPPE INTERVENTION DEVELOPMENT WORKSHOP INVITATION SENT TO STAKEHOLDERS



Supporting midwives in helping women address multiple health behaviours in pregnancy – intervention development workshop

12th October 2018

Time: 10:00- 4:00

Venue: Glasgow Caledonian University

Why is an intervention necessary and what does it aim to achieve?

Midwives are now asked to do a lot of things to promote health during pregnancy. For example: alcohol brief interventions, supporting women to manage their weight or measuring carbon monoxide levels. We (the researchers mentioned below) are developing an intervention that aims to support midwives in their health promotion practice (please see image below for a visual representation).

The research we have carried out so far suggests that a lot of midwives find health promotion a challenging aspect of their role in a time-limited clinical context. Many midwives have developed strategies to help them promote health. The intervention we are developing aims to support midwives in using these strategies effectively and efficiently to help women change their health behaviours, therefore, improving the health of women and their babies.

Why should I attend the intervention development workshop?

The aim of the event is to work together to develop an intervention to support midwives. We are interested in your perspective on what you think about supporting midwives' health promotion practice. The event will give you the chance to give your feedback on potential interventions. We will also present novel research findings, such as a survey involving over 500 midwives which includes the strategies midwives use in their health promotion practice.

Who should attend the intervention development workshop?

- Midwives working in any capacity, including those who are in managerial or academic positions.
- Women who are either pregnant or have given birth within the last 2 years
- Individuals working in Health Promotion/ Public Health who have a role in supporting midwives and/or maternity services

Who has organised the intervention development workshop?

Julie McLellan, a PhD student, based in Psychology at the University of Stirling and her supervisory team. The project aims to develop an intervention to support midwives in helping women improve their health behaviours during pregnancy. PhD supervisors are: Professor Helen Cheyne (Professor of Maternal and Child Health Research & Royal College of Midwives (Scotland)), Dr Stephan Dombrowski (Assistant Professor and Health Psychologist, University



of New Brunswick, Canada) and Professor Ronan O'Carroll (Professor of Psychology, University of Stirling).

What are the arrangements for the intervention development workshop?

The details of the intervention development day are:

Date: 12th October 2018

Time: 10:00- 4:00

Venue: Glasgow Caledonian University

Travel expenses will be reimbursed, and catering will be provided.

Where do I sign up or get more information?

If you are a midwife, or are pregnant or have given birth in the past 2 years, or work in a relevant health promotion role and would like to take part then please contact: Julie McLellan at (j.m.mclellan@stir.ac.uk) to get further information and/or secure a space.

We very much appreciate you taking the time to read this invitation and would be delighted if you would consider taking part.

Thank you,

Professor Helen Cheyne
Dr Stephan Dombrowski
Professor Ronan O'Carroll
Julie McLellan

Midwives' Health Promotion Practice- all the things midwives are asked to do to promote health during pregnancy.
For example: questions, discussions and carrying out referrals as well as actions such as measuring carbon monoxide levels



APPENDIX O: IMAGE USED AT HEPPE INTERVENTION DEVELOPMENT WORKSHOP TO REMIND STAKEHOLDERS OF THE HEPPE MEANING

Midwives' Health Promotion Practice- all the things midwives are asked to do to promote health during pregnancy.
For example: questions, discussions and carrying out referrals as well as actions such as measuring carbon monoxide levels



APPENDIX P: BEHAVIOURAL TECHNIQUES HANDOUT USED AT THE INTERVENTION DEVELOPMENT WORKSHOP



Behavioural Techniques



Behavioural Technique	Definition	Example of technique being used to support midwives health promotion practice
Demonstration of the behaviour	<i>Provide an observable sample of the performance of the behaviour, directly in person or indirectly e.g. via film, pictures, for the person to aspire to or imitate</i>	Provide videos or case studies of midwives successfully carrying out their health promotion practice
Goal setting	<i>Set or agree a goal defined in terms of the behavior to be achieved</i>	Ask midwives set a specific goal to discuss health behaviours with all patients
Credible source	<i>Present verbal or visual communication from a credible source in favour of or against the behavior</i>	Provide list of strategies that other midwives use to carry out their health promotion practice
Self-monitoring	<i>Establish a method for the person to monitor and record their behaviour</i>	Ask midwives to keep a health promotion diary
Planning	<i>Prompt detailed planning of performance of the behaviour</i>	Encourage midwives to plan solutions to barriers
Prompt	<i>Introduce or define environmental or social stimulus with the purpose of prompting or cueing the behavior.</i>	Provide midwives with prompt to help them to remember to cover all behaviours e.g. image/sentence/checklist/mnemonic

APPENDIX Q: MIDWIVES HEALTH PROMOTION PRACTICE PLANNING SHEET USED AT HEPPBE INTERVENTION DEVELOPMENT WORKSHOP

Midwives Health Promotion Practice Planning sheet

Example
If there is not enough time to cover everything
Then I will check what information she already has

If there is not enough time to cover everything

If a woman responds negatively to a health promotion question

If I'm not sure how to broach a topic

If I can't remember what I've covered

If I'm thinking about keeping my next patient waiting

If the woman wants to focus on a specific topic

The form consists of 15 circular cards arranged in a 3x5 grid. Each card is divided into a top section for a condition and a bottom section for a response. The top section of each card is light blue, and the bottom section is white with horizontal lines for writing. The first card in the top row is an example. The other cards are blank templates for planning.

APPENDIX R: LIST OF MIDWIVES HEPPE STRATEGIES PROVIDED TO STAKEHOLDERS AT THE HEPPE INTERVENTION DEVELOPMENT WORKSHOP

List of strategies suggested by midwives

When there is not enough time

Make an assessment of what is the most relevant topics for the woman in my care



Woman's choice



Sign post to materials



Multi-tasking



Communication approaches

Use of brief interventions/making into a conversation



Chipping & Dipping



Frame information as positive



Information checking (i.e. what do they know already)



Prompts

Materials



Notes



Physical cues



APPENDIX S: IMAGES, WORDS AND LETTERS USED IN PROMPT TASK AT THE HEPPE INTERVENTION DEVELOPMENT WORKSHOP





alcohol consumption	AC	S
diet		
physical activity	D	OH
smoking		
oral health	PA	WM
weight management		
substance misuse	SM	

APPENDIX T: BCT RANKING EXERCISE HANDOUT USED AT THE HEPPE INTERVENTION DEVELOPMENT WORKSHOP

Task 4: Ranking of behavioural techniques

Please tick all that apply:I am a midwife

I am a pregnant woman/new

Mum I work in health promotion

We have talked about 6 behavioural techniques: Planning/ Habit formation/Goal setting/ Credible sources/ Verbal persuasion of capability/information provision.

Please rank the behavioural strategies in order of what you think would be most useful for midwives to use to support their health promotion practice e.g. if you think goal setting would be most useful then list it as number 1 or if you think it is the least useful then list it as 6.

1. _____ (Most useful)

2. _____

3. _____

4. _____

5. _____

6. _____ (Least useful)

APPENDIX U: WORLD CAFÉ HANDOUTS DEMONSTRATING POTENTIAL FORMATS OF DELIVERY FOR THE INTERVENTION USED AT THE HEPPE INTERVENTION DEVELOPMENT WORKSHOP



MAP

- Behaviour change training programme to support healthcare professionals in helping patients make and maintain health behavior change
 - Using MAP with your patients
 - Using MAP to help **you** use these skills
- Programme consists of
 - Online module
 - Face to face workshop
 - Coaching network
- Resources: online access, time to go to training and coach network, putting into practice, materials
- Delivery channel: multi (online module/workshop delivered by a person)
- Delivery method: online 1:1 and training/coaching is group





Health Promotion Buddy system

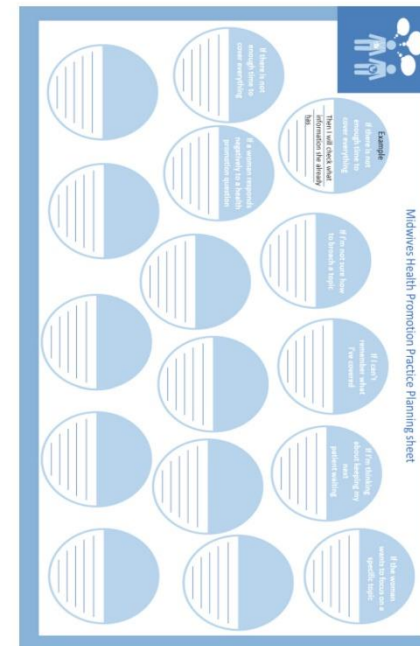
- Midwives selected to train as “Health Promotion midwives” and provide ongoing support to other midwives through peer supervision sessions or simply act as a point of contact/support for other midwives in regard to health promotion practice (e.g. provide updates on local health promotion services).
- Similar example: GG&C buddy system
- Resources required: resources for midwives to train, training manual and materials for trained midwives to use to support others, time for peer supervision sessions.
- Delivery channel: delivered by a person
- Delivery method: could be both group and 1:1



Health promotion tool

- A resource used by midwives to support their health promotion practice. Could be given to midwives to keep and/or placed in clinic rooms as a prompt containing e.g. list of strategies other midwives use, useful pages in ready steady baby, updates on local health promotion services or links to useful resources e.g. SUTPH online repository.
- Resources required: midwives time to read/engage with tool during clinics, resources to update and maintain the tool.
- Delivery channel: self-help, online
- Delivery method: 1:1

Draft of health promotion tool



- 2 sides of A4
- Prompt during clinics
- Handheld version- put on walls in antenatal clinics or give it to midwives to keep
- Electronic version circulated by email?

APPENDIX V: WORLD CAFÉ FACILITATOR QUESTIONS USED AT THE
HEPPBE INTERVENTION DEVELOPMENT WORKSHOP

What do you think of MAP/ the buddy system/ the tool?

Is there anything that is missing?

How can it be improved?

Would you use it?

Would you recommend it?

How would it be delivered? (find out preference for delivered by a person versus online approaches such as email/app/website text (delivery channel) and group versus 1:1(delivery method))

How can you imagine midwives using it?

APPENDIX W: WORLD CAFÉ RANKING EXERCISE HANDOUT USED AT THE HEPPBE INTERVENTION DEVELOPMENT WORKSHOP

Task 6: Ranking of interventions

We have talked about 3 interventions: MAP/ Health Promotion Buddy system/ Health Promotion tool

Please tick all that apply:

I am a midwife

I am a pregnant woman/new Mum

I work in health promotion

Please rank the 3 potential interventions in order of what you think would be most ideal for midwives to use to support their health promotion practice e.g. if you think the buddy system would be ideal then list it as number 1 or if you think it is the least ideal then list it as 3.

1. _____ (Most ideal)

2. _____

3. _____ (Least ideal)

Please rank the behavioural strategies in order of what you think would be most feasible for midwives to use to support their health promotion practice e.g. if you think the tool would be the most feasible then list it as number 1 or if you think it is the least feasible then list it as 3.

1. _____ (Most feasible)

2. _____

3. _____ (Least feasible)

If you have an idea for an alternative intervention please describe it here:

APPENDIX X: HEPPBE INTERVENTION DEVELOPMENT WORKSHOP
FEEDBACK FORM



Supporting midwives in helping pregnant women address health behaviours– intervention development workshop feedback form

What's been the best thing about today?

How could we have improved today?

Please write any other comments you have about designing an intervention to support midwives in helping pregnant women address health behaviours

If you are interested in taking part in a follow-up study about the acceptability of the intervention then please provide your email address:

Thank you for your attendance, participation and feedback.

APPENDIX Y: DRAFT HEPPE TOOLKIT FEEDBACK FORM MIDWIFE VERSION



Midwives Health Promotion Toolkit feedback form

Please contact Julie McLellan (j.m.mclellan@stir.ac.uk) if you have any queries

Please tick all that apply:
 I am a midwife Please state your role (e.g. community midwife):

 I am a student midwife
 I am a maternity support worker
 I am a pregnant woman
 I have given birth in the last 2 years
 Other Please state your job title/experience:

Health promotion topic selection tool (for women): to help women choose what health promotion topics they want to focus on most during their antenatal care

I would use the health promotion topic selection tool (please select the number which best represents your views)

Strongly disagree				Strongly agree
1	2	3	4	5

Please say why you would or wouldn't use the health promotion topic selection tool:

When and how would you use the health promotion topic selection tool?

Would you need any support to use the health promotion topic selection tool?

Is there anything that is missing or could be improved?

What do you think of the design of the health promotion topic selection tool? (e.g. the layout, icons used, colours)

Please write any other comments you have about the health promotion topic selection tool

Midwives' consultation tool: a consultation aid for the midwife containing a visual prompt and strategies to support health promotion practice

I would use the midwives' consultation tool (please select the number which best represents your views)

Strongly disagree				Strongly agree
1	2	3	4	5

Please say why you would or wouldn't use the midwives' consultation tool:

When and how would you use the midwives' consultation tool?

Would you need any support to use the midwives' consultation tool?

Is there anything that is missing or could be improved?

What do you think of the design of the midwives' consultation tool? (e.g. the layout, icons used, colours)

Please write any other comments you have about the midwives' consultation tool

Health behaviour change prescription pad: for the midwife to help the woman to plan what she will do to support her health

I would use the prescription pad (please select the number which best represents your views)

Strongly disagree				Strongly agree
1	2	3	4	5

Please say why you would or wouldn't use the health behaviour change prescription pad:

When and how would you use the health behaviour change prescription pad?

Would you need any support to use the health behaviour change prescription pad?

Is there anything that is missing or could be improved?

What do you think of the design of the health behaviour change prescription pad?
(e.g. the layout, icons used, colours)

Please write any other comments you have about the health behaviour change prescription pad:

Please write any general comments you have about the toolkit:

APPENDIX Z: DRAFT HEPPE TOOLKIT FEEDBACK FORM WOMAN
VERSION



Health Promotion Toolkit feedback form

Please contact Julie McLellan (j.m.mclellan@stir.ac.uk) if you have any queries

Please tick all that apply:

I am pregnant

I have given birth in the last 2 years

Other Please state your job title/experience:

Health promotion topic selection tool (for women): to help women choose what health promotion topics they want to focus on most during their antenatal care.

I would use the health promotion topic selection tool to select what health promotion topics I would prioritise during my antenatal care (please select the number which best represents your views)

Strongly disagree				Strongly agree
1	2	3	4	5

Please say why you would or wouldn't use the health promotion topic selection tool:

When and how would you use the health promotion topic selection tool?

Would you need any support using the health promotion topic selection tool?

Is there anything that is missing or could be improved?

What do you think of the design of the health promotion topic selection tool? (e.g. the layout, icons used, colours)

Please write any other comments you have about the health promotion topic selection tool:

Health behaviour change prescription pad: for the midwife to help the woman to plan what she will do to support her health.

I would use the prescriptions to support my health behaviours during pregnancy (please select the number which best represents your views)

Strongly disagree				Strongly agree
1	2	3	4	5

Please say why you would or wouldn't use the health behaviour change prescriptions to support your health during pregnancy:

Is there anything that is missing or could be improved?

What do you think of the design of the health behaviour change prescription pad? (e.g. the layout, icons used, colours)

Please write any other comments you have about the health behaviour change prescription pad.

Please write any general comments you have about the toolkit:

APPENDIX AA: QUESTIONNAIRE USED IN THE ONLINE SURVEY STUDY ASSESSING THE ACCEPTABILITY OF A HEPPBE SUPPORT INTERVENTION TO MIDWIVES



Introduction

The acceptability of a toolkit to support midwives in addressing health behaviours with pregnant women

You are invited to participate in a web-based online survey on the acceptability of a toolkit to support midwives in addressing health behaviours with pregnant women. You have been invited to participate because you are a qualified midwife. This survey is part of a research project being conducted by Julie McLellan, a PhD researcher at the University of Stirling. It should take approximately 10 minutes to complete. You will be shown the intervention and then be asked to answer some questions on how acceptable you think it is for midwives to use the toolkit. Please read through these terms before agreeing to participate below.

Background, aims of project

Midwives are expected to address a multitude of health behaviours (e.g. not smoking, no alcohol, healthy eating and regular exercise) with pregnant women. Therefore, a handheld toolkit to support midwives in addressing health behaviours, with pregnant women, has been developed. We are inviting midwives to take part in a short online questionnaire to assess the acceptability of the proposed toolkit.

Do I have to take part?

No. Your participation in this survey is voluntary. You may refuse to take part in the research or exit the survey at any time without penalty by pressing the 'Exit' button / closing the browser. You are free to decline to answer any question by simply leaving it blank.

Are there any benefits in taking part?

There will be no direct benefit to you from taking part in this research, however, the information you provide will inform the development of a toolkit to support midwives in helping pregnant women engage in healthy behaviours which ultimately aims to enhance the health of women and their families.

What happens to the data I provide?

Your answers will be completely anonymous, and we will use all reasonable endeavours to keep them confidential. Your data will be stored in a password-protected file and may be used in academic publications. Your IP address will not be stored. At the end of the questionnaire you will be given a unique 6-digit identifier number. Please take a note of this number in case you decide to withdraw your data at a later stage.

Will the research be published?

This research will be used to form part of a PhD thesis and may be published in a journal article or presented at health psychology or midwifery conferences.

Who has reviewed this research project?

This project has been ethically approved via The University of Stirling General University Ethics Panel.

Can I withdraw my data?

Your participation in this research is voluntary and if after the interview you decide that you would like to withdraw your data, you are free to do so up to 2 weeks after participating in this study without providing a reason.

To withdraw your data, please contact Julie McLellan j.m.mclellan@stir.ac.uk at the University of Stirling up to 2 weeks after participating in this study. If emailing to withdraw your data, please include the 6-digit unique identifier number as a method of identifying which participant information to remove. All data from participants who choose to withdraw from the study will be destroyed and will not be used in the analyses.

Whom do I contact if I have concerns about this study or I wish to complain?

If you would like to discuss the research with someone please contact either Professor Ronan O'Carroll ronan.ocarroll@stir.ac.uk, or Julie McLellan j.m.mclellan@stir.ac.uk at the University of Stirling. Alternatively, should you wish to speak to someone independent of this study you may email Dr Sinead Currie Sinead.currie@stir.ac.uk

Thank you for considering participation in this study

Electronic Consent

Please select your choice below. Clicking on the "Agree" button indicates that:

- You have read and understood the above information
- You voluntarily agree to participate

Agree

Disagree

Screening questions

Are you a fully qualified midwife?

Yes

No

Do you provide antenatal care in your current role?

Yes

No

Non-current antenatal practice

Midwife health promotion toolkit

Midwives are expected to address a multitude of health behaviours with pregnant women (e.g. not smoking, no alcohol, healthy eating and regular exercise). The aim of the toolkit is to support midwives by a) helping midwives to ensure they are covering all the health promotion topics they are asked to address, and b) by supporting midwives to carry out their health promotion practice in a style that is meaningful to them and helpful to the woman.

The toolkit contains 3 components:

- Health promotion topic selection tool
- Midwife health promotion consultation tool
- Personalised plan

Component 1: Health Promotion selection tool

The health promotion selection tool is a pocket-sized card designed to be used by women to select what health promotion topics they wish to focus on during their pregnancy. Midwives could refer to the health promotion selection tool in antenatal consultations and use it as a way of structuring their health promotion practice.

Page 1-3:



During your appointments your midwife will discuss a lot of health topics with you. Before meeting your midwife, think about what topics matter most to you.

For example, if you want to talk about your diet then please tick the relevant box.

There is space to write any questions, worries, concerns, or views that you may have.



PHYSICAL ACTIVITY

very important to me

(Ready Steady Baby - page 8-9)

Page 4-6



ORAL HEALTH

very important to me

(Ready Steady Baby - page 46)



ALCOHOL CONSUMPTION

very important to me

(Ready Steady Baby - page 12)

More information is available at readysteadybaby.org.uk

UNIVERSITY of STIRLING



Page 7-9



SMOKING

very important to me

(Ready Steady Baby - page 10-11)



SUBSTANCE USE

very important to me

(Ready Steady Baby - page 13)



DIET

very important to me

(Ready Steady Baby - page 15-17)

Page 10-12



WEIGHT MANAGEMENT

very important to me

(Ready Steady Baby - pages 54-55)



SOMETHING ELSE THAT MATTERS TO ME...

(for example, if you are feeling anxious or depressed you may wish to discuss this with your midwife)

very important to me

Component 2: Midwife health promotion consultation tool

The midwife health promotion selection tool is an A5 leaflet designed to be used by midwives to refer to for support in carrying out their health promotion practice.

Page 1:



Page 2:



Page 3:

12 WAYS TO SUPPORT YOUR HEALTH PROMOTION PRACTICE

You may already be using some or all of these top tips but try thinking about how you could use them as a reminder.



Woman's choice: At the beginning of the appointment, ask the woman if there are any topics that are important to her. You could also refer to the health during pregnancy tool and check to see if she has identified any topics as important.



Check what she already knows: Save time by drawing on the woman's knowledge. Ask questions like: "Can you tell me what you know about exercising during pregnancy?" Then provide any additional information that she does not have.



Chipping: Rome wasn't built in a day. Sometimes big issues take a lot of time and effort to address for the woman. See yourself as chipping away at it and try not to expect too much all at once.



Dipping: Identify the topics that are most relevant to the woman and dip into them regularly. For instance, you could "dip" into topics identified at the booking as important at follow-up appointments.



Use of materials: Use the SWHMR, Ready Steady Baby or this tool as a prompt to help you remember what health promotion topics you are required to address.



Goal setting: Try setting yourself specific goals. For example, you could set the goal that you are going to ask each woman at the start of their appointment if they have used the health promotion tool to decide what topics matter to them most.

Page 4:



Self-monitoring: Review the information and advice you are giving out. For instance at the end of each clinic, read over any health behaviour change prescriptions you have given out.



Planning: Think about when and how you could use the prescription pad, during antenatal appointments, to help the woman plan what she will do to support her health behaviours. She could make a specific plan like reading specific pages in Ready Steady Baby on the train while travelling home from work. (Check out the examples of how you can help women to plan on the prescription pad).



Signpost: Keep a list of information to refer women to, such as high-quality websites. Include local information about support groups or services. You could ask your midwifery colleagues for suggestions of what to put on the list.



Teach-back: Check the woman's understanding of what you have discussed with her. For instance you could say: *"We discussed a lot today. Can you tell me what you found most important?"* More information is available at www.scottishhealthcouncil.org.



Social Support: Try discussing health promotion practice with other midwives. For example, you could ask your colleagues how they address health promotion topics or if they can recommend any useful resources.



Taking time to reflect: Try reflecting about why you are helping women to change their health promotion behaviours. The MAP Model of Health Behaviour Change (more information is available at www.nes.scot.nhs.uk) can help to support you in developing your health behaviour change skills.

UNIVERSITY of STIRLING 

Component 3: Personalised plan

The personalised plan is a cheque book sized

tear-off pad. Midwives could use this part of the toolkit, within an antenatal consultation, by asking women if they would like a personalised reminder, of what has been discussed regarding their health behaviours, to take away with them. If the woman does want a reminder then the midwife would take a 'today we talked about' page out of the booklet and complete it with the woman (i.e. both the midwife and woman would reflect on the discussion and write down the key points or goals).

Page 1:



Page 2:



Sometimes in a busy antenatal appointment, with so many competing priorities, it can be challenging to support women's health behaviour change.

Developed from recommendations by midwives and feedback from women, the personalised plan is designed to provide the woman with a hand-held reminder of health behaviour change planned during an antenatal appointment.

You could use this tool by asking the woman if she would like a personalised reminder of what has been discussed regarding health behaviour change. If she would like a copy, then you could write the plan in this pad, tear it off and give it to her. There will be a copy underneath for you to keep too.

Page 3:



For example, if you were helping a woman to become more physically active during pregnancy you could collaboratively agree on a plan like the following examples:

- **Plan the what, when and where of what you and the woman have agreed she will do**
"We have agreed: you are going to read *Ready Steady Baby* pages 8-9 on physical activity during pregnancy (what), in the evening (when), on the train home from work (where)"
- **Encourage the woman to record her behaviour**
"We have agreed: you are going to keep a note of your daily step count on your phone (what) each evening (when) before you go to bed (where)."
- **Set goals together about what it is she is aiming to achieve**
"We have agreed: that the goal for your next appointment is to increase your average step count by 2,000 steps (what) during your lunch hour (when) by walking around the park near your office (where)."

Tear-off slip:



Today we have talked about ...

Today's Date: / / 20

Next Appointment Date: / / 20



When answering the questions below, please think about the toolkit as a whole, and select the number that best represents your views:

Using the toolkit would...

	1 (strongly disagree)	2	3	4	5 (strongly agree)
fit well within midwives values	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
be something midwives would like to do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not require a lot of effort from midwives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not interfere with midwives priorities when providing antenatal care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
support midwives in their health promotion practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
be straightforward for midwives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
be something midwives would do in their antenatal practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What do you think the toolkit is attempting to achieve?

Please give reasons why you think midwives would/would not use the toolkit

Please provide any other comments that you have about the toolkit

De-brief

The acceptability of an intervention to support midwives in addressing health behaviours with pregnant women

Thank you for participating in this research project

The data gathered will inform the researchers whether the toolkit to support midwives in addressing health behaviours, with pregnant women, is acceptable to midwives. Depending on the findings, the intervention may be adapted before it is tested.

What happens to the data I provided?

The data obtained from this research will be stored in The University of Stirling's secure database for a minimum of 10 years. This will only be accessible by the research team within a password-protected folder.

You will not be identifiable in any publication. For example, if any quotes from are used in the publication, a pseudonym or false name will be used.

Can I withdraw my data?

If you decide to withdraw your data (up to 2 weeks after participating), please contact Julie McLellan (j.m.mclellan@stir.ac.uk) with your unique identifying number below:

Your 6-digit identifying number is: 905310

Please write it in the field below **(and keep your own copy of it):**

Will the research be published?

This research will be used to form part of a PhD thesis and may be published in a journal article or presented at health psychology or midwifery conferences.

Once again, I would like to thank you for your participation and remind you that if you have any questions about the research or any queries you wish to raise, please feel free to contact Julie McLellan at j.m.mclellan@stir.ac.uk

Current antenatal practice**Midwife health promotion toolkit**

Midwives are expected to address a multitude of health behaviours with pregnant women (e.g. not smoking, no alcohol, healthy eating and regular exercise). The aim of the toolkit is to support midwives by a) helping midwives to ensure they are covering all the health promotion topics they are asked to address, and b) by supporting midwives to carry out their health promotion practice in a style that is meaningful to them and helpful to the woman.

The toolkit contains 3 components:

- Health promotion topic selection tool
- Midwife health promotion consultation tool
- Personalised plan

Component 1: Health Promotion selection tool

The health promotion selection tool is a pocket-sized card designed to be used by women to select what health promotion topics they wish to focus on during their pregnancy. Midwives could refer to the health promotion selection tool in antenatal consultations and use it as a way of structuring their health promotion practice.

Page 1-3:



During your appointments your midwife will discuss a lot of health topics with you. Before meeting your midwife, think about what topics matter most to you.

For example, if you want to talk about your diet then please tick the relevant box.

There is space to write any questions, worries, concerns, or views that you may have.



PHYSICAL ACTIVITY

very important to me

(Ready Steady Baby - page 8-9)

Page 4-6:



ORAL HEALTH

very important to me

(Ready Steady Baby - page 46)



ALCOHOL CONSUMPTION

very important to me

(Ready Steady Baby - page 12)



Page 7-9:



SMOKING

very important to me

(Ready Steady Baby - page 10-11)



SUBSTANCE USE

very important to me

(Ready Steady Baby - page 13)



DIET

very important to me

(Ready Steady Baby - page 15-17)

Page 10-12:



WEIGHT MANAGEMENT

very important to me

(Ready Steady Baby - pages 54-55)



SOMETHING ELSE THAT MATTERS TO ME...

(for example, if you are feeling anxious or depressed you may wish to discuss this with your midwife)

very important to me

Component 2: Midwife health promotion consultation tool

The midwife health promotion selection tool is an A5 leaflet designed to be used by midwives to refer to for support in carrying out their health promotion practice.

Page 1:



Page 2:



Page 3:

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Check what she already knows: Save time by drawing on the woman's knowledge. Ask questions like: "Can you tell me what you know about exercising during pregnancy?" Then provide any additional information that she does not have.



Chipping: Rome wasn't built in a day. Sometimes big issues take a lot of time and effort to address for the woman. See yourself as chipping away at it and try not to expect too much all at once.



Dipping: Identify the topics that are most relevant to the woman and dip into them regularly. For instance, you could "dip" into topics identified at the booking as important at follow-up appointments.



Use of materials: Use the SWHMR, Ready Steady Baby or this tool as a prompt to help you remember what health promotion topics you are required to address.



Goal setting: Try setting yourself specific goals. For example, you could set the goal that you are going to ask each woman at the start of their appointment if they have used the health promotion tool to decide what topics matter to them most.

Page 4:



Self-monitoring: Review the information and advice you are giving out. For instance at the end of each clinic, read over any health behaviour change prescriptions you have given out.



Planning: Think about when and how you could use the prescription pad, during antenatal appointments, to help the woman plan what she will do to support her health behaviours. She could make a specific plan like reading specific pages in Ready Steady Baby on the train while travelling home from work. (Check out the examples of how you can help women to plan on the prescription pad).



Signpost: Keep a list of information to refer women to, such as high-quality websites. Include local information about support groups or services. You could ask your midwifery colleagues for suggestions of what to put on the list.



Teach-back: Check the woman's understanding of what you have discussed with her. For instance you could say: "We discussed a lot today. Can you tell me what you found most important?" More information is available at www.scottishhealthcouncil.org.



Social Support: Try discussing health promotion practice with other midwives. For example, you could ask your colleagues how they address health promotion topics or if they can recommend any useful resources.



Taking time to reflect: Try reflecting about why you are helping women to change their health promotion behaviours. The MAP Model of Health Behaviour Change (more information is available at www.nes.scot.nhs.uk) can help to support you in developing your health behaviour change skills.

Component 3: Personalised plan

The personalised plan is a cheque book sized tear-off pad. Midwives could use this part of the toolkit, within an antenatal consultation, by asking women if they would like a personalised reminder, of what has been discussed regarding their health behaviours, to take away with them. If the woman does want a reminder then the midwife would take a 'today we talked about' page out of the booklet and complete it with the woman (i.e. both the midwife and woman would reflect on the discussion and write down the key points or goals).

Page 1:



Page 2:



Sometimes in a busy antenatal appointment, with so many competing priorities, it can be challenging to support women's health behaviour change.

Developed from recommendations by midwives and feedback from women, the personalised plan is designed to provide the woman with a hand-held reminder of health behaviour change planned during an antenatal appointment.

You could use this tool by asking the woman if she would like a personalised reminder of what has been discussed regarding health behaviour change. If she would like a copy, then you could write the plan in this pad, tear it off and give it to her. There will be a copy underneath for you to keep too.

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For example, if you were helping a woman to become more physically active during pregnancy you could collaboratively agree on a plan like the following examples:

- **Plan the what, when and where of what you and the woman have agreed she will do**
"We have agreed: you are going to read Ready Steady Baby pages 8-9 on physical activity during pregnancy (what), in the evening (when), on the train home from work (where)"
- **Encourage the woman to record her behaviour**
"We have agreed: you are going to keep a note of your daily step count on your phone (what) each evening (when) before you go to bed (where)."
- **Set goals together about what it is she is aiming to achieve**
"We have agreed: that the goal for your next appointment is to increase your average step count by 2,000 steps (what) during your lunch hour (when) by walking around the park near your office (where)."

Tear-off slip:



Today we have talked about ...



Today's Date: / / 20

Next Appointment Date: / / 20

When answering the questions below, please think about the toolkit as a whole, and select the number that best represents your views:

Using the toolkit would...

	1 (strongly disagree)	2	3	4	5 (strongly agree)
fit well within my values as a midwife	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
be something I would like to do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not require a lot of effort	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
not interfere with my other priorities when providing antenatal care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
support me in my health promotion practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
be straightforward	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
be something I would do in my antenatal practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What do you think the toolkit is attempting to achieve?

Please give reasons why you would/would not use the toolkit

Please provide any other comments that you have about the toolkit

APPENDIX AB: UNIVERSITY OF STIRLING'S GENERAL UNIVERSITY ETHICS
PANEL APPROVAL FOR THE ONLINE SURVEY STUDY ASSESSING THE
ACCEPTABILITY OF A HEPPE SUPPORT INTERVENTION TO MIDWIVES



Julie McLellan
Faculty of Natural Sciences
University of Stirling
FK9 4LA

j.m.mclellan@stir.ac.uk

22 October 2018

Dear Julie

Re The acceptability of an intervention to support midwives in addressing health behaviours with pregnant women - GUEP495

Thank you for making the requested revisions to your submission of the above to the General University Ethics Panel. I am pleased to confirm that your application now has ethical approval.

Please note that should any of your proposal change, a further submission (amendment) to GUEP will be necessary.

Please ensure that your research complies with Stirling University policy on storage of research data which is available at:

<https://www.stir.ac.uk/about/faculties-and-services/information-services-and-library/researchers/research-data/before-you-start-your-research/our-policy/>

If you have not already done so, I would also strongly encourage you to complete the Research Integrity training which is available at: <https://canvas.stir.ac.uk/enroll/CJ43KW>

If you have any further queries, please do not hesitate to contact the Committee by email to guep@stir.ac.uk.

Good luck with your research.

Yours sincerely,

A handwritten signature in black ink, appearing to read "W. Munro".

p.p. On behalf of GUEP
Dr William Munro
Deputy Chair of GUEP