UNDERSTANDING MATERNAL MORBIDITY: A CONCEPT ANALYSIS

UNDERSTANDING MATERNAL MORBIDITY FROM THE PERSPECTIVES OF WOMEN & PEOPLE WITH PREGNANCY EXPERIENCE: A CONCEPT ANALYSIS

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A Thesis Submitted to the School of Graduate Studies in Partial Fulfilment of the Requirements for the Degree Master of Public Health

McMaster University – Master of Public Health (2023) Hamilton, Ontario (Health Research Methodology, Evidence and Impact)

Title: Understanding Maternal Morbidity from the Perspectives of Women & People with Pregnancy Experience: A Concept Analysis

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Number of Pages: x, 105

Lay Abstract

Reducing poor maternal health outcomes is a global health priority. An indicator of maternal health is maternal morbidity (MM), which describes adverse pregnancy-related outcomes, excluding death, among the pregnant and postpartum population. However, MM is a concept without a universal definition. There has been a recent increase in qualitative research on the MM perspectives of women and people with pregnancy experience (WPPE), which are less well-understood than clinical MM definitions. Therefore, our aim was to understand the conditions and events that WPPE consider as MM. We collected our data from qualitative studies that interviewed WPPE about their MM experiences and analyzed the data for themes that we presented in a concept model. Our findings resulted in a MM concept consisting of physical, social, psychological, and healthcare-related attributes. Factors from the pre-pregnancy period contributed to WPPE's perceived MM experiences and postpartum events with long-term consequences were also relevant to their health and wellbeing. Protective factors including having good support and faith increased WPPE's resilience in the face of unexpected MM events. This understanding of WPPE's perspectives may support future research and interventions to reflect their needs and improve healthcare approaches to MM.

Abstract

Background

Maternal morbidity (MM) describes adverse pregnancy-related outcomes, excluding mortality, among the pregnant and postpartum population. It is a concept without a universal definition, and most of the literature consists of clinical definitions rooted within the biomedical model of health. The MM perspectives of women and people with pregnancy experience (WPPE) are less well understood, which has resulted in a recent increase in qualitative research on the topic. However, the literature varies in its descriptions of MM which limits data comparisons across institutions and regions that measure differently.

Objectives

This study aims to a) understand the conditions and events that WPPE conceptualize as MM, b) identify the themes that arise across WPPE's experiences, and c) produce a schematic representation of how WPPE conceptualize MM.

Methods

A concept analysis adapted from the evolutionary model investigated MM from WPPE's perspectives. The steps included:

1) Identifying and naming the concept and surrogate terms (synonyms)
2) Data collection: literature search consisting of title/abstract and full-text screenings, appraisal, and chart extraction
3) Identifying the concept's 'antecedents' (events that lead to the concept), 'attributes' (events that form concept), and 'consequences' (events that result from the concept)
4) Analyzing data using thematic analysis
5) Developing a model of the concept

Results

A literature search identified 40 eligible studies. Analysis of WPPE's MM perceptions from these studies resulted in a MM concept consisting of four attributes – physical (themes relating to pain, bleeding, and adverse infant outcomes), social (themes relating to financial distress, lack of support, abuse, and mothering), psychological (themes relating to fear and distress), and healthcare-related (themes relating to the provider-patient relationship and healthcare facility). Antecedents that preceded MM included being labelled high-risk, access to care, financial stress, cultural norms, physical symptoms, previous adverse experience, lack of support, lack of information, effects of pregnancy on WPPE's life, and lack of resources. The consequences that followed MM included continued morbidity, inability or reluctance to conceive again, changes to bodily function, strained relationship with partner, financial stress, and in some instances positive outcomes (e.g., gratitude for surviving, good health of baby).

Conclusions

This study illustrated the concept of MM from WPPE's perspectives by identifying its antecedents, attributes and consequences. In doing so, it demonstrated that MM as perceived by WPPE encompasses more than physical attributes, which largely form the basis of current classification systems. Incorporating these findings into clinical definitions can help inform health and community care approaches to increasingly meet WPPE's needs.

Acknowledgements

I would like to thank God for guiding me through each day and for surrounding me by wonderful individuals who contributed to my success throughout my master's and thesis.

My sincere gratitude goes to my Supervisor, Dr. Rohan D'Souza, for his support, expertise, and encouragement throughout my master's and thesis. Thank you for bringing me onto your research team in my first year, introducing me to the topic of maternal morbidity, and fostering my growth as a researcher. Working with the Canadian Obstetric Survey System team was a great learning opportunity, and I continue to enjoy exchanging ideas with the other researchers across your lab. I would like to extend my gratitude to my Associate Member (and Dr. D'Souza's Post-Doctoral Fellow), Dr. Rebecca Seymour, for her mentorship, further encouragement, and assistance in supervising me. I appreciate all the wisdom you shared from your graduate experiences to help me as I navigated my own, your frequent check-ins, and your feedback on even my roughest drafts.

A heartfelt thank you goes to my committee members, Dr. Laura Anderson and Dr. Beth Murray-Davis, for their encouragement, insights, and flexibility throughout my thesis. I am grateful for your perspectives and feedback that enriched the research project and guided me to express my ideas clearly. Your support and rapid response in making revisions is greatly appreciated.

I would also like to thank my lab colleague Eden Manly for her support as my second reviewer, Dr. Diane Ménage for sharing her concept analysis expertise after an introduction through our mutual Dr. Seymour, and Taylor Moore for sharing her information spacialist expertise. Working with you was a pleasure, Eden, and I appreciate your flexibility in the early stages of the research project. Dr. Ménage, I am grateful for your feedback and insights that helped orient me within the concept analysis method and further encouraged me to think critically about my findings. Taylor, thank you for lending your expertise early in the project and for your support with the search strategy.

My appreciation also goes to my Program Director, Dr. Emma Apatu, for her mentorship and encouragement throughout my two years in the MPH program. The learning environment, leadership focus and exposure to diverse opportunities in public health helped me to grow and have a truly personalized experience in this program, thank you.

Lastly, I am grateful to my family for believing in me and cheering me on throughout my MPH and thesis. To my parents and brother – Abraham, Sadia and Jeswende – and the family tuning in from the United States and Ghana, I felt your love and support throughout this experience.

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List of Abbreviations and Important Terms

Abbreviations

CDC	Centers for Disease Control and Prevention
EPIMOMS	Epidemiology of Severe Maternal Morbidity
ICD	International Classification of Diseases
INOSS	International Network of Obstetric Surveillance Systems
MM	Maternal Morbidity
SMM	Severe Maternal Morbidity
UKOSS	United Kingdom Obstetric Surveillance System
WHO	World Health Organization
WPPE	Women and People with Pregnancy Experience

Important Terms

Although pregnancies can only be borne by biological females (sex), not all individuals that are pregnant identify as 'women' (gender or age identity). The term WPPE has been used as an inclusive term to describe all individuals with childbearing experience, regardless of whether they identify as women.

Declaration of Academic Achievement

I, Tegwende Seedu, declare this thesis to be my own work. I assisted with creating the study design, performed the data collection and thematic analysis, and wrote this thesis document.

My Supervisor, Dr. D'Souza, and Associate Member, Dr. Seymour, led the creation of the study design and provided detailed guidance and feedback throughout the whole thesis process. My Committee Members, Dr. Anderson and Dr. Murray-Davis provided feedback and support throughout the thesis process as well. Additional contributors included Taylor Moore for supporting the search strategy, Dr. Ménage for providing guidance on the study methods, and Eden Manly for acting as my second reviewer when screening studies for inclusion.

Chapter 1: Background and Literature Review

1.1 Background on Maternal Morbidity

Maternal morbidity (MM) refers to adverse events related to pregnancy, childbirth, and the postpartum period. MM lies on a continuum between uncomplicated pregnancies and maternal mortality, with events ranging in severity from uncomfortable to life-threatening (Figure 1).[1] Since maternal deaths have become rare events in high-income countries, the focus of maternal health has shifted towards the more commonly occurring event of MM.[2] MM is a global public health concern given its position on the pathway to more serious complications (i.e., maternal mortality). Reducing MM is now considered pivotal to improving maternal health and is increasingly being used to measure the effectiveness of maternal healthcare.

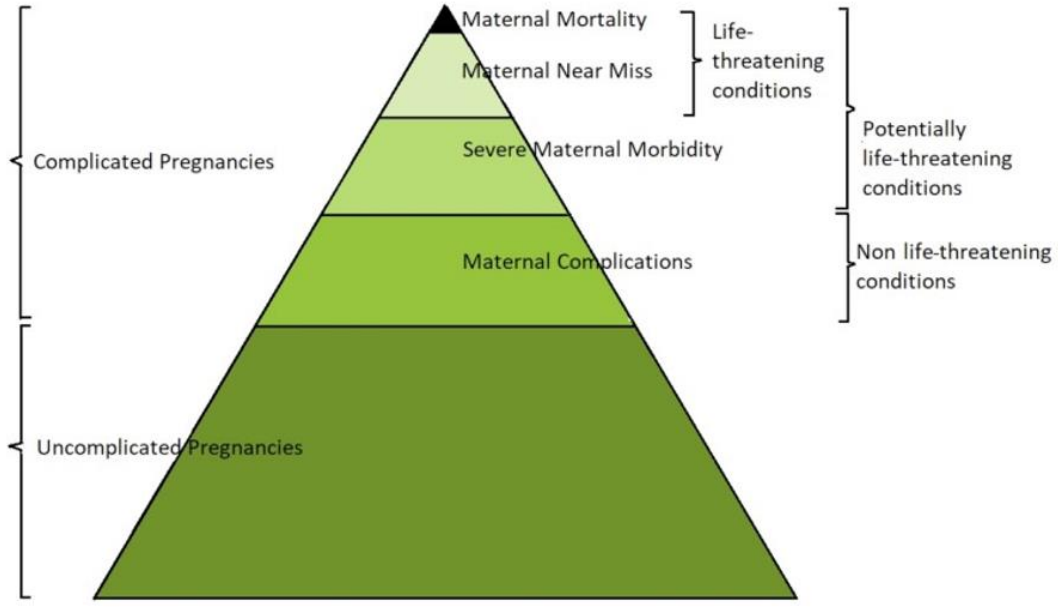

Figure 1. A schematic representation of the range of pregnancy-related adverse events by Vandenberghe et al.

Despite global interest in reducing and preventing MM, there lacks consensus on the definition and criteria that constitute the concept of MM. Studies use differing clinical criteria to define MM from a healthcare system's perspective, which prioritizes physical conditions and

clinical diagnoses that do not always overlap with WPPE's own identification of MM. For example, in Assarag et al.'s cross-sectional study in Morocco, 15% of the 538 postpartum individuals who self-reported MM did not receive a MM diagnosis from their provider.[3] Moreover, half of the participants who self-reported psychological morbidity did not receive a clinical diagnosis, which was higher than the self-reported physical morbidities.[3] The clinical criteria mainly captured participants' self-reported MM for physical problems while largely overlooking non-physical MM. In contrast to the clinical focus on physical diagnoses, qualitative studies soliciting patient perspectives tend to point to experiences beyond the physical aspects of health.[4] The lack of consistent and person-centred definitions and criteria limits the use of findings from studies between organizations and regions that may define or measure MM differently, and may be especially pronounced for the qualitative studies.[4,5] The next section 1.2 will examine MM definitions and criteria employed across the literature and by global healthcare bodies to discuss how the lack of consensus can be a barrier to advancing MM research and management efforts.

1.2 Maternal Morbidity Criteria

While there is no universally accepted description or criteria for defining MM, the World Health Organization (WHO) defines MM as "any health condition attributed to and/or aggravated by pregnancy and childbirth that has a negative impact on the woman's wellbeing."[6] Broad descriptions of MM allow for the inclusion of varying criteria and conditions into the concept and may contribute to the variation of MM meanings across studies. A scoping review of English-language literature published from 1990-2011 by Vanderkruik et al. identified similarities and differences in MM definitions.[7] The authors noted among the differences that some studies considered the pre-pregnancy period, including pre-existing health conditions that

were worsened by pregnancy.[6,7] In contrast, others focused on conditions arising from pregnancy onwards.[7] Studies also differed in where they ended their timeline, with some observing morbidity until 42 days postpartum and others until one year postpartum.[7] When describing the conditions that comprise MM, one study explored all perceived discomforts as experienced by participants; a second focused only on clinically severe conditions that resulted in hospitalization and may have caused mortality without medical intervention; while another examined a singular morbidity.[7] The methods used in case identification was cause for another source of variation. Methods used across studies to identify MM included patient interviews, hospital records and classification codes, such as the International Classification of Diseases (ICD) codes.[7,8] In addition to the diverse criteria identified across the review, more recent literature has continued to revise and propose MM criteria based on existing and emerging evidence.[9] Whether the question was what is, how to measure, or when is the timeframe of MM, the literature varied in its descriptions. This variation limits the comparison of data across institutions and regions that measure MM differently. The impact of the variation in MM descriptions especially contributes to the underuse of qualitative evidence specific to the population studied, which, when presented alone, is not usually transferrable to other contexts.

At the organizational level where MM has not been explicitly described, different terms and criteria for severe maternal morbidity (SMM) are in use. The variation in defining SMM reflects the lack of consensus even at the extreme end of the MM spectrum. Table 1 includes examples of the differing SMM definitions and criteria in use around the world.[10–16] While there are commonalities across organ dysfunction, intervention and diagnostic criteria, they are not universal criteria, and organizations continue to measure SMM differently. Possible reasons for this variation may include the available healthcare resources, knowledge of providers or the

rural-urban setting of a health institution, all of which may shape the priorities for measuring SMM, and in turn, MM. Although healthcare systems may differ in the criteria they use, they largely prioritize physical conditions and clinical diagnoses at the exclusion of other pregnancy-related experiences (e.g., mental and social health) when defining their MM priorities. The next section 1.3 explores how the healthcare system approach to MM aligns with the medical view of childbirth – or the similar biomedical approach to health – which mainly considers the physical component of health.

Table 1. Maternal morbidity terms and definitions used at the organizational level
Wherever possible, the description is written in sentences to demonstrate the idea behind each MM term. Conditions comprising the MM term are listed if the organization had an established set of conditions that did not change between studies or contexts.

Source/Organization	Region of primary use	Last year updated	MM Term(s)	Description
Centres of Disease Control and Prevention (CDC) - International Classification of Diseases (ICD) Codes	United States and global use	2015	Severe maternal morbidity (SMM)	Medically severe cases of MM are "unexpected outcomes of labor and delivery that result in significant short- or long-term consequences to a woman's health."[11] The ICD codes consist of 21 SMM indicators used during pregnancy/labour hospitalization[17]: 1. Acute myocardial infarction, 2. Aneurysm, 3. Acute renal failure, 4. Adult respiratory distress syndrome, 5. Amniotic fluid embolism, 6. Cardiac arrest/ventricular fibrillation, 7. Conversion of cardiac rhythm, 8. Disseminated intravascular coagulation, 9. Eclampsia, 10. Heart failure/arrest during surgery or procedure, 11. Puerperal cerebrovascular disorders, 12. Pulmonary edema/Acute heart failure, 13. Severe anesthesia complications, 14. Sepsis, 15. Shock, 16. Sickle cell disease with crisis, 17. Air and thrombotic embolism, 18. Blood products transfusion, 19. Hysterectomy, 20. Temporary tracheostomy, 21. Ventilation
Épidémiologie de la morbidité maternelle sévère (EPIMOMS)	France	2012	SMM	Case criteria "combines diagnostic criteria (major obstetric bleeding, eclampsia, severe pre-eclampsia, pulmonary embolism, stroke, selected psychiatric disorders), organ dysfunction criteria (hepatic, haematologic, respiratory, cardiovascular, renal, neurological), and interventional criteria (admission to ICU, laparotomy after delivery)."[12]
EURO-PERISTAT	France and Europe	2018	SMM	"Severe Maternal Morbidity: Severe acute morbidity resulting during pregnancy, delivery or the puerperium period (<42 days) as a proportion of all women delivering live or stillborn births: Eclampsia (includes convulsion following specified or unspecified hypertensive disorders (that are not due to unknown epilepsy) during pregnancy, delivery or the puerperium. Corresponds to ICD-10 code O150) Hysterectomy (surgical remove of the uterus (partial or total, body and/or cervix) for stopping the untreatable post partum haemorrhage) or embolisation (the process by which a blood vessel is obstructed by the lodgement of a material mass (or an embolus) to stop severe obstetric haemorrhage). Blood transfusion (all acts or processes of transferring blood into the vein, including transfusion of red blood cells, platelets (thrombocytes) and fresh frozen plasma). Collected by units of blood (3 units or more, 5 units or more, other amount, no units specified) ICU >24 hours (admission during pregnancy, delivery or the puerperium to any facility or unit providing intensive or acute care or resuscitation-whether inside or outside of the maternity unit- for greater than 24 hours)." [13]

International Network of Obstetric Surveillance Systems (INOSS)	High-income countries	2017	SMM	Although INOSS did not limit MM to eight conditions, their study only produced criteria for eight conditions of MM: "(1) Eclampsia: Seizures in a woman during pregnancy or up to 14 days postpartum, without any other attributable cause, with at least one of the following signs: Hypertension (≥140 mmHg systolic and/or ≥90 mmHg diastolic); Proteinuria [spot urine protein/creatinine >30 mg/mmol (0.3 mg/mg) OR >300 mg/day OR at least 1 g/l ['2 +'] on dipstick testing]; Thrombocytopenia (platelet count of <100 × 109/l); Raised plasma ALT or AST (twice the upper limit of normal). (2) Amniotic fluid embolism: Acute cardio-respiratory collapse within 6 hours after labour, delivery or ruptured membranes, with no other identifiable cause, followed by acute coagulopathy in those women who survive the initial event. (3) Pregnancy-related hysterectomy: Surgical removal of the uterus during pregnancy or up to 42 days postpartum. (4) Severe primary postpartum haemorrhage: Postpartum blood loss exceeding 2000 cc AND/OR the need of transfusion of at least four units of red blood cells, within 24 hours after end of pregnancy, in a pregnancy of at least 20 weeks gestational age. (5) Uterine rupture: A visually confirmed, complete rupture of the myometrium and serosa. (6) Abnormally invasive placentation: Various degrees of invasive growth of the placenta in the uterine wall, with an abnormally difficult or incomplete removal (including leaving the placenta in situ). (7) Spontaneous haemoperitoneum in pregnancy: Spontaneous (nontraumatic) intraperitoneal haemorrhage during pregnancy and up to 42 days postpartum, requiring surgical intervention or embolisation. Excluding ectopic pregnancy, uterine rupture and caesarean section associated bleeding. (8) Cardiac arrest in pregnancy: Any woman receiving at least cardio-pulmonary resuscitation (CPR) during pregnancy, in labour or within 42 days postpartum."[14]
UK Obstetric Surveillance System (UKOSS)	UK		Rare/uncommon obstetric disorders	Conditions that are not well-researched and, therefore, poorly understood. As a result, limited evidence-based interventions may be available for these conditions, which include near-miss events as defined by the WHO.[10]
World Health Organization (WHO)	Global use		Maternal morbidity	"Any health condition attributed to and/or complicating pregnancy and childbirth that has a negative impact on the woman's wellbeing and/or functioning."[15]
			Maternal near-miss	"A woman who nearly died but survived a complication that occurred during pregnancy, childbirth or within 42 days of termination of pregnancy."[16]
			Severe maternal complications	"…Defined as 'potentially life-threatening conditions.' This is an extensive category of clinical conditions, including diseases that can threaten a woman's life during pregnancy and labour and after termination of pregnancy."[16]

1.3 Medical vs. Social View of Pregnancy and Childbirth

The two apparently opposing social and medical views of pregnancy and childbirth point to part of the problem with MM definitions based solely on physical criteria. Although childbirth often proceeds without complications, there are inherent risks for complications that may require medical intervention. The medical view of childbirth considers the average birth to be an inherently risky event only qualifying as safe or uncomplicated in retrospect.[18] Medicalized childbirth manifests in high-income countries through the majority of high- and low-risk deliveries occurring in the hospital with the aim of preventing physical complications. The typical hospital is generally better equipped to manage high-risk births that may require medical intervention than provide comfort throughout a medically uncomplicated birth.[19,20] Alternatively, the social view considers only the environment in childbirth outcomes, with factors such as poverty determining the state of health or ill health during pregnancy.[18] A closer look at the reality of pregnancy and childbirth experiences reveals that rather than being completely medicalized or non-medicalized, they fall along the spectrum in between. For example, Neiterman's participants framed their "embodied pregnancy experience" in a medicalized context (e.g., marking the milestone of feeling baby kicks) and recounted social experiences (e.g., eating healthier and avoiding unsafe settings for the baby's health).[21] Additionally, while hospital births are normalized and perhaps accepted in high-income settings, their feasibility in lower-resourced and remote settings is often overlooked. In their review and thematic synthesis of factors influencing facility delivery in lower-resourced settings, Bohren et al. found that barriers to facility delivery included care costs, perceived quality of care, family preferences, and the burden of travelling a far distance to the facility.[22] There are both medicalized and non-medicalized experiences during pregnancy and childbirth, which a MM definition focused on

physical criteria would not encompass. The next section 1.4 discusses person-centred care and maternal health to explore the value of a holistic approach to pregnancy and childbirth.

1.4 Person-Centred Maternal Care

Midwifery is central to maternal care and uses a holistic viewpoint promoted by the use of the person-centred maternal care model. Through a partnership lens, person-centred care involves the healthcare provider treating the patient as an equal decision-maker and cooperating to achieve the patient's desired health outcome.[23] While the provider is the expert on caring for the patient, the patient is the expert on their life, body and values. In maternal care, this partnership manifests through and extends beyond the provision of respectful care and empowering WPPE to be active participants in their birth experiences.[19] The concept of person-centred maternal care is also represented across the literature by the terms 'woman-centred care' or 'woman-centred maternal care.' Woman-centred care is a midwifery concept wherein the midwife and pregnant woman collaborate to prioritize the woman's needs during her childbearing events.[24,25] Underlying each term of person-centred maternal care is the intersection of person-centred care and the unique experiences of pregnancy and childbirth. Centring WPPE's MM perspectives in addition to the severe physiological outcomes at the centre of the medical perspective of MM aligns with person-centred maternal care.

The medical and social perspectives described in section 1.3 exist on a spectrum, and achieving a balance on this spectrum can contribute to improved quality of maternal care. Finding a balance between the medical and social views of childbirth is characteristic of the holistic approach that incorporates multiple dimensions when considering people's health and wellbeing. Rather than the extremes of a completely medicalized or non-medicalized birth experience, person-centred maternal care that is holistic occurs when care moves along the

spectrum in response to WPPE's needs as they progress towards and beyond childbirth. For example, specialized hospital maternity wards staffed with providers prioritizing minimal intervention for uncomplicated births are associated with increased care satisfaction among low-risk WPPE.[20] In this same hospital, WPPE with complications can receive the medical care required to manage their problems. The medical and social approaches to childbirth are important for multidimensional person-centred maternal care, with the needs and values of the person being cared for dictating the balance of the medical-social approach necessary.

A holistic view of maternal health considers social, psychological and other factors that may affect pregnancy in addition to physical factors. Severe physiological complications are rare, whereas WPPE's difficulties related to values, past experiences, and social determinants may be more commonly important throughout the pregnancy experience.[26] Cultural health capital refers to an individual's healthcare interactions being informed by their social context and past and those of their provider.[19,27] People well-versed in navigating the healthcare system may have better outcomes when seeking preventative care or treatment for complications. The provider's skillset in relating to WPPE and engaging them in shared decision-making may be limited to the provider's experiences and knowledge of different identities and circumstances. The literature describes person-centred maternal care as compassionate, attentive, prompt, and holistic care consisting of trust, respect, shared decision-making, and effective communication between the provider and WPPE.[28–30] A consequence of the many components of person-centred maternal care and its dependence on cultural health capital is that it varies between individuals. The goal of person-centred maternal care, achieving a satisfactory health outcome, also varies from person to person. The meaning of health can differ between individuals based on their previous abilities, culture, values, and accessibility to resources.[31] Person-centred maternal care

is more effective when it weighs in a person's social determinants and standards concerning care and incorporates their views of health and recovery. A person-centred focus in care and health definitions recognizes the distinct experiences that impact each individual differently while recognizing and balancing the value of assessing these concepts.[24]

Understanding the different needs of WPPE may pose a challenge for delivering person-centred maternal care. The differing perceptions of risk, care accessibility or quality, and expectation of health outcomes between individuals offer opportunities for individualized care that require healthcare systems and providers to be informed and equipped to accommodate these differences.[27,30] A condition deemed 'high risk' by providers may not be perceived as high risk by all WPPE.[27] Communicating risk perceptions may allow providers and patients to further their collaboration of person-centred maternal care. Other barriers to person-centred maternal care include provider-patient power imbalances in decision-making, structural barriers, and neglectful care.[29,32] While these barriers may not be salient if they are normalized in a care setting, they remain barriers that challenge the quality of person-centred maternal care.[28] Overcoming these barriers requires intentional efforts to account for individual needs and consideration of obstacles that are not always obvious. Thus, person-centred maternal care is not consistently uniform or easily achieved since quality care for one person may differ from another and care outcomes may be shaped by factors at different levels (i.e. systemic, individual).[30] The person-centred maternal care definition may be achieved by various means depending on the woman or person. Multiple events may comprise related concepts of health and adverse health experiences, even when a straightforward definition defines these concepts. For example, Leinweber and colleagues described traumatic birth as "a woman's experience of interactions and/or events directly related to childbirth that caused overwhelming distressing emotions and reactions; leading to short

and/or long-term negative impacts on a woman's health and wellbeing."[33] By this definition, WPPE's perceptions determine the events comprising the concept. The WHO also centres the woman in their MM definition, with the events constituting the concept being determined by WPPE's perceptions.[6] The next section 1.5 discusses the importance of conceptualizing MM from WPPE's perspectives.

1.5 Conceptualizing Maternal Morbidity

The limited inquiry into WPPE's collective MM experiences has framed MM from the medical perspective or focused on select populations. For example, Furuta et al.'s synthesis investigated women's experience of SMM only.[34] Their findings suggested that women perceived their initial experiences as both physical and emotional, characterized by pain, blood loss, and unconsciousness as well as fear, worry, anger, guilt, and faith.[34] Other researchers have focused on WPPE's experiences from a specific setting, such as Lange et al's inquiry of women's perspectives of MM in low- and middle-income countries.[35] Efforts to expand MM measures to address WPPE's multifaceted needs, such as Filippi and colleagues' work on a new MM measurement framework, have complemented the literature aiming to describe MM from WPPE's points of view.[36] The research on SMM, specific populations of WPPE and MM measurement leave a gap in understanding the concept of MM inclusive of all levels of severity and from the perspectives of the general population of WPPE. My research explored the medical and non-medical events that WPPE, globally, may perceive as MM.

The ongoing efforts to include a deeper understanding of WPPE's perspectives in MM research and care is important for WPPE's health outcomes. Population Services International is an example of an organization addressing global health challenges that based their decision-making on population health measurements of burden of disease.[37] Following an analysis of

disability-adjusted life years (an estimate of the burden of healthy life years lost to morbidity and mortality) that showed a high burden of tuberculosis in their Asian and Eastern European region, they increased their tuberculosis interventions in that region.[37] This example demonstrates how measuring a problem can affect decision-making. In their article of MM prevalent in low-income countries, Hardee et al. discussed conditions that have been excluded from disability-adjusted life year calculations.[38] The exclusion of fistula, incontinence, poor mental health, and other conditions may have contributed to an underestimated burden of health of MM and impacted related decision-making.[38] Conceptualization of MM from WPPE's perspectives has implications for research and care that reflect their needs.

1.5.1 Study Rationale

MM is an evolving concept dependent on the perspectives and experiences of its users. Most evidence on MM originates from the healthcare system's perspective, where the biomedical model prevails, and researchers most often describe MM using clinical data in the literature.[5,39,40] Although there are no universally accepted criteria for describing MM, the prevalence of literature with researchers' descriptions of the concept allows clinical perspectives to be discernable. Less evidence is available on WPPE's perspectives, and a knowledge gap exists in conceptualizing maternal morbidity from their perspective. Studies have begun addressing this gap by investigating subpopulations of WPPE or specific MM.[34,35] However, global literature on the concept of MM from WPPE's perspectives has not been synthesized. A concept analysis would help establish an understanding of the evolving nature of MM and how WPPE experience and understand the concept. This understanding can support the improvement of clinical definitions, case management, data collection, and care to reflect the needs of WPPE and improve maternal healthcare regarding morbidity.

1.6 Thesis Objectives

The goal of my thesis was to determine MM from the perspectives of WPPE.

The objectives of this study were to

1) describe the conditions and events that WPPE conceptualize as MM,

2) identify the themes that arise across WPPE's experiences, such as regional and cultural differences and similarities, and

3) produce a schematic representation of how WPPE conceptualize MM.

Chapter 2: Methods

To address my objectives, I conducted a concept analysis to investigate WPPE's perspectives of MM. A concept analysis is an iterative approach that describes a concept based on its usage.[41] In this approach, the concept of MM is a product of its context and the meaning its users, WPPE, associate with it.[41] Analyzing a concept already in common use, such as MM, provides the opportunity to develop it further and expand its general understanding.[42] While there have been increasing studies on WPPE's perspectives of MM, the lack of consensus in MM definitions and criteria across the literature limits the comparison of MM findings. Consolidating these findings through a concept analysis from WPPE's perspectives will develop an understanding of MM that can support further research and care.

Through this concept analysis, I aimed to investigate qualitative findings on WPPE's personal encounters with MM to build an understanding of MM from their shared perspectives. The concept analysis approach incorporated scoping review methods and thematic analysis. Scoping reviews provide an overview of broad topics and highlight evidence gaps in the available literature.[43] In this study, scoping review methods were appropriate for seeking a more comprehensive understanding of MM and identifying potential gaps in the literature concerning WPPE's perspectives. Thematic analysis is a flexible tool for investigating themes arising from a dataset.[44] Braun & Clarke described thematic analysis as unbounded to one framework, providing opportunities for researchers to adapt its use.[44] The concept analysis framework used thematic analysis to describe the events principal to and surrounding MM from WPPE's perspectives. The next section 2.1 describes terminology and processes relevant to concept analysis.

2.1 Concept Analysis Methodology

A concept is an abstract idea that can be understood as the sum of its defining characteristics.[45] Contextual factors, such as culture, also influence the meaning of a concept.[45] Rather than fixed, unchanging entities, many concepts evolve as they are shaped by the users and contexts that give them meaning.[45] Theoretical definitions are important for clarifying ideas of interest in research, which allows for more accurate measurement and analysis.[45] The concept analysis is a method for investigating concepts in relation to their use, usually with the aim of laying a foundation for further research or enhanced application.[41] The evolutionary approach to concept analysis, proposed by Rodgers and prevalent in the nursing discipline, views the concept as dynamic and context dependant.[41] The name of a concept differs from the concept itself by being an identifying term.[41] A concept is defined by the characteristics it contains, while the name and any synonyms provide a means to refer to the concept.[41] The concept's name can remain unchanged while its characteristics may develop as a product of its context.[41]

Concept analysis is part of the larger concept development process.[41,42] Concept development consists of the concept's significance, use and application, with the concept analysis having relevance to the concept's use.[41] The concept's *significance* lies in its relevance to problem-solving, its *use* encompasses how its characterized, and its *application* demonstrates the concept's parameters, strengths and limitations.[41] Concept analysis is an investigation of the concept's use. Terminology specific to the concept analysis includes surrogate and related terms, antecedents, attributes, consequences, and scope (Table 2). Surrogate terms refer to the name of the concept and its synonyms, while related terms share some characteristics with the concept but differ fundamentally. The characteristics that define the concept are its attributes, with antecedents being the circumstances that precede these attributes and consequences being the

circumstances that follow. The parameters of the concept comprise the scope. The concept analysis is an inductive approach whereby evidence of the concept's use determines its attributes and illustrates its evolutionary nature. Health concepts exist within the ever-changing contexts of health and medicine, which demonstrates the need for research to understand them as they evolve alongside medical advances.

Table 2. Concept analysis terms in logical order

Term	**Definition**[45]
Surrogate Term	The name of a concept and its synonyms.
Related Term	The name of a concept that shares some characteristics with a concept of interest but differs fundamentally.
Attribute	The characteristics that define a concept are its attributes.
Antecedent	The circumstances that precede a concept.
Consequence	The circumstances that follow or result from a concept.
Scope	The parameters of a concept.

There are several approaches to conducting a concept analysis, and individual studies have adapted these steps further within their methods (Figure 2). The evolutionary approach consists of i) identifying the concept, ii) determining the parameters of the analysis and the data of interest, iii) collecting data, iv) analyzing the data, v) describing an example of the concept if possible, and vi) discussing implications and future directions.[41] Examples of adapting these steps include adding an additional step of identifying surrogate and related terms or removing the step of describing an example case of the concept.[46,47] Walker & Avant's methods provide an example of another common approach to concept analysis that places more emphasis on the application of the concept as demonstrated by their additional step describing invalid and imagined example cases and cases related to, bordering and opposing the concept.[45] Commonalities across the different approaches and variations to the concept analysis methods include that they are not restricted to linear progression and they align with the same goal. The concept analysis steps can occur simultaneously and be revisited in any order as the researcher

organizes the usage of the concept into attributes that will then describe the concept.[45] This study uses an adapted form of Rogers' evolutionary model and will be explained further in the next section.

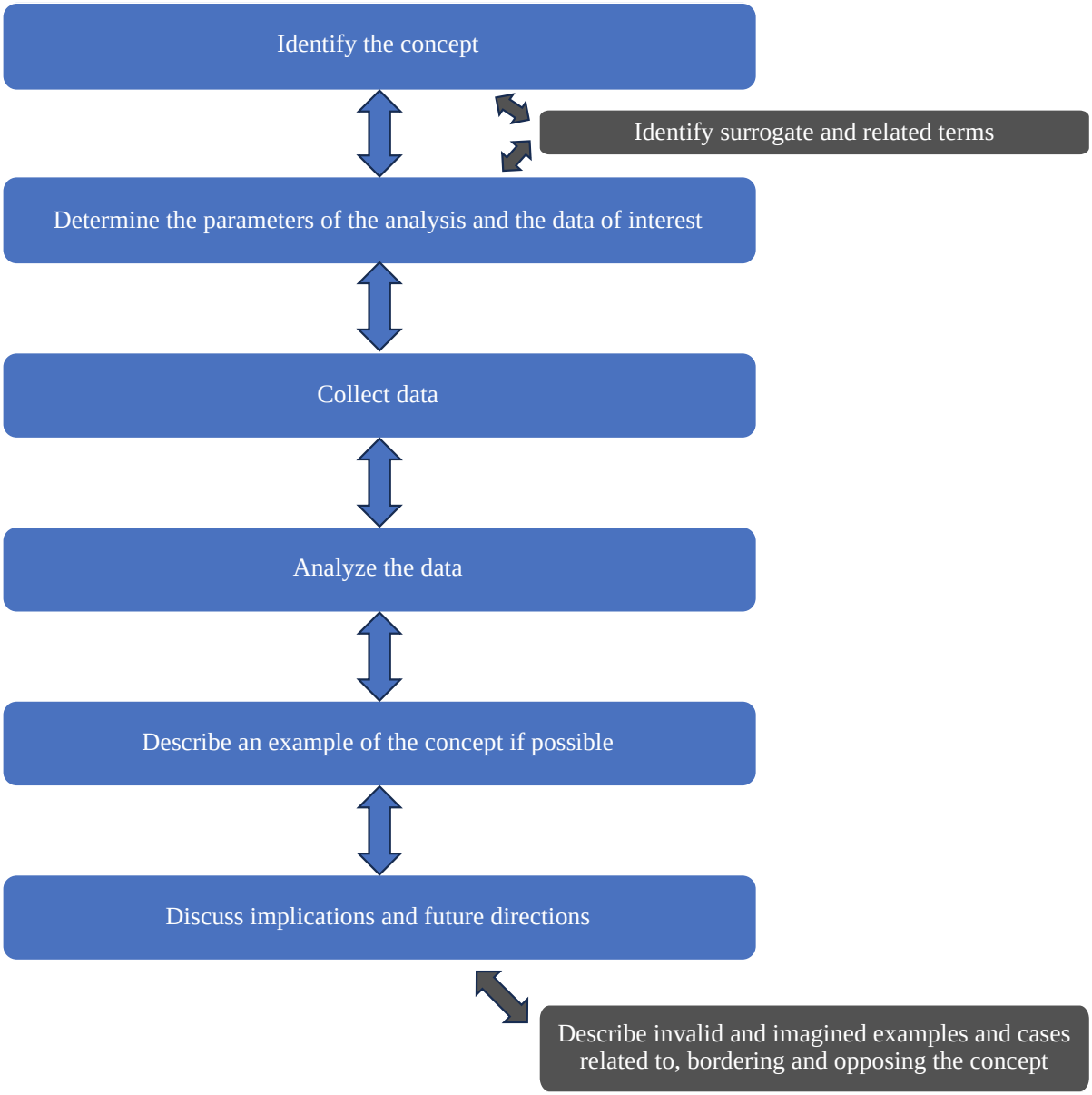

Figure 2. Evolutionary concept analysis steps
The steps to Rodgers' evolutionary concept analysis are in shaded in blue.[41] The gray boxes provide examples of adaptations and additional steps other approaches incorporate.[45,46] The bidirectional arrows indicate that the concept analysis is not a stepwise process and that steps may be repeated or conducted concurrently.

2.2 Concept Analysis Steps

Table 3 summarizes steps adapted from the evolutionary approach for the present study.[41,47] The concept analysis is not strictly linear, its iterative nature allows for steps to be revisited and completed concurrently throughout the entire study. The steps include naming the concept, data collection, identifying the concept's attributes, thematic analysis, and concept model development. Data collection consisted of a literature review following the PRISMA scoping review extension guidelines.[48] The scoping review methods portion of my concept analysis included protocol registration, determining eligibility criteria, describing the search and databases, and screening the studies from my search. My methods deviate from the scoping review guidelines during data extraction and analysis. While the final steps of the scoping review include a general approach to data charting and synthesis,[48] the concept analysis framework centred my data extraction around the concept's antecedents, attributes, and consequences. Following data extraction, I thematically analyzed my data to develop concept themes and represented them in a visual model.

Table 3. Concept analysis steps used by present study

Step	Description
1. Name the concept and identify surrogate and related terms.	The concept term is maternal morbidity. The concept and its surrogate terms were used in the literature search (Appendix 1). Surrogate terms are synonyms of the concept, including maternal near-miss, severe maternal morbidity, adverse pregnancy outcome, potentially life-threatening event, and serious untoward events/outcomes.
2. Data collection.	A literature review using scoping review methods was used to include articles for this study (Appendix 2). Data from the included articles were collected using a data extraction tool (Appendix 3).
3. Identify the concept's components and contextual information	Using qualitative analytic software to manage the data extraction forms, the concept's antecedents, attributes, consequences, and scope were identified from each article.
4. Analyze data	The thematic analysis consisted of i) organizing the extracted data into code groupings on Quirkos (qualitative analytic software), ii) translating these groupings into themes based on relationships between the data, and iii) interpreting the themes.
5. Develop a model of the concept	The antecedent, attribute, and consequence themes were used to form a schematic representation of the concept.

2.2.1 Identify the Concept

The concept analysis begins by identifying the concept using a term and by naming its surrogate and related terms. MM from the perspectives of WPPE was chosen as the concept based on a review of the literature. The term used to identify *maternal morbidity* was not the concept itself but rather an expression used to convey it. Surrogate terms are synonyms that refer to the same concept. An example of a surrogate term for MM is *adverse pregnancy outcome*. Such surrogate terms were used in the search strategy detailed in Appendix 1.

While surrogate terms are synonymous with the concept, related terms only share some characteristics but refer to a different concept.[41] An example of a related term is *maternal mortality,* another adverse outcome resulting from pregnancy and birth experiences. However, maternal mortality is the specific outcome of death whereas MM excludes death. Identifying related terms aided in distinguishing concepts that were not MM during data collection.

2.2.2 Collect Data

In consultation with a medical information specialist (TM) and my supervisory committee (RD, RS), I developed search terms consisting of the concept's surrogate terms for my literature search using McMaster University's library search system. The search included the MEDLINE, EMBASE, CINAHL, and LILACS databases and dates to May 2022 (Appendix 1). I prospectively registered my protocol with INPLASY in December 2022 (https://inplasy.com/inplasy-2022-12-0097/). We followed the PRISMA scoping review extension methods to conduct a literature review and form my data sample for concept analysis (Appendix 2).[48]

I used the Distiller screening program to conduct the title/abstract and full-text screenings of the review.[49] The two screening questions were rooted in the eligibility criteria. 1) Does this

paper refer to maternal (pregnancy-associated) morbidity, maternal near-miss, potentially life-threatening events, serious untoward events/outcomes, or similar terms describing morbid events affecting pregnant and postpartum individuals? 2) Is this a qualitative research paper involving the voice of persons with pregnancy experience, their family members or pregnancy care providers?

Inclusion and exclusion criteria reflected the objective of investigating WPPE's first-hand accounts of their pregnancy-related morbidity experiences (Table 4). To obtain personal descriptions of MM experiences, we included qualitative studies and studies with a qualitative component that referred to MM or related terms. We included articles with WPPE as participants or those who were involved in WPPE's childbirth experiences who could convey their perspectives since pregnancy and birth are seldom solitary experiences. WPPE themselves, their partners, family, community members, traditional birth attendants, midwives, and nurses were participant groups that could share WPPE's perspectives. The aim of first-hand accounts of these perspectives resulted in the sole inclusion of primary articles. Due to English being the only shared language between the reviewers, we only included articles written in or translated to English.

We excluded quantitative studies due to the limited response options participants would have to describe their experience. Studies referring to specific MM conditions, such as eclampsia or gestational diabetes, were also excluded. The objective was to investigate the experiences WPPE conceptualized as MM, which would come from articles that asked about MM as a general term as opposed to an article that asked about one specific example of MM.

EM and I performed the title/abstract and full-text screenings. We resolved conflicts in consultation with the supervisory committee (RD, RS). The studies marked for inclusion

following the full-text screening comprised the study sample. The iterative process of the concept analysis involved reviewing the excluded full-text articles to enhance rigour, ensuring that we included all studies that fell under the broad umbrella of MM in the sample. I drafted an extraction tool which was then reviewed by the supervisory committee (BMD, LA, RD, RS) and an expert (DM; Appendix 3). I extracted data from the sample of included full-text studies, conferring with the supervisory committee throughout the process.

Table 4. Screening eligibility criteria and justification

Eligibility	Criteria	Justification
Inclusion	1. Qualitative studies and the qualitative components of mixed-methods studies that refer to maternal morbidity or related terms (i.e., maternal near-miss, potentially life-threatening event, serious untoward events/outcomes).	Qualitative methods provide the opportunity for WPPE to share their perspectives concerning pregnancy and MM.
	2. Includes the perspective of WPPE or those intimately involved with the pregnancy experience who could speak on WPPE's perspectives.	The objective of this study is to understand WPPE's perspectives of MM, which can be shared by WPPE themselves or those who shared in their pregnancy experiences, including their partner or family.
	3. English or English-translated articles due to the language abilities of the researchers.	The two reviewers had only English as a common language, which determined the language eligibility of the screened articles.
	4. Primary studies (reviews will be referred to for their references but will not be included in the final full-text screening).	This study is a concept analysis of WPPE's MM perspectives. Primary articles provide the most direct source for acquiring data on their perspectives.
Exclusion	1. Quantitative studies.	Studies investigating WPPE's MM perspectives using strictly quantitative methods do not collect data with enough details and depth for conceptualization.
	2. Articles that refer to a specific maternal morbidity, basing their participant selection on a specific adverse outcome.	The concept of interest is MM, an umbrella term. Conditions such as eclampsia and hemorrhage are specific examples of MM but cannot be used interchangeably with MM to mean the same thing. We excluded articles that asked WPPE about their experiences with a specific MM to focus on the conceptualization of MM rather than specific instances of MM.

Due to my study objective being a broad exploration of the available evidence on WPPE's conceptualization of MM, I included all studies included from the full-text screening in the analysis regardless of their appraisal.[50] Including all studies regardless of quality was appropriate for the scope of this concept analysis, which will better reflect the current data on WPPE's perspectives of MM if more of this data is analyzed. I described the studies by their characteristics, methods, and the main question(s) they used to investigate pregnancy experiences and MM to allow readers to determine how each article's findings may apply to their setting (Appendix 4).

2.2.3 Identify Concept's Antecedents, Attributes, Consequences and Contextual Information

I extracted data in the form of quotes and paraphrases from each study into the extraction tool. This process identified contextual and concept information. Contextual information included descriptive characteristics of each study, such as those listed in Appendix 3. Concept information consisted of antecedents, attributes, consequences, and the scope. Attributes are the characteristics comprising MM, antecedents are events or factors that precede MM, and consequences occur as a result of MM occurring (Figure 3; see glossary). The parameters within which the antecedents, attributes and consequences occur is the scope. During this process, unfamiliar surrogate and related terms were also identified.

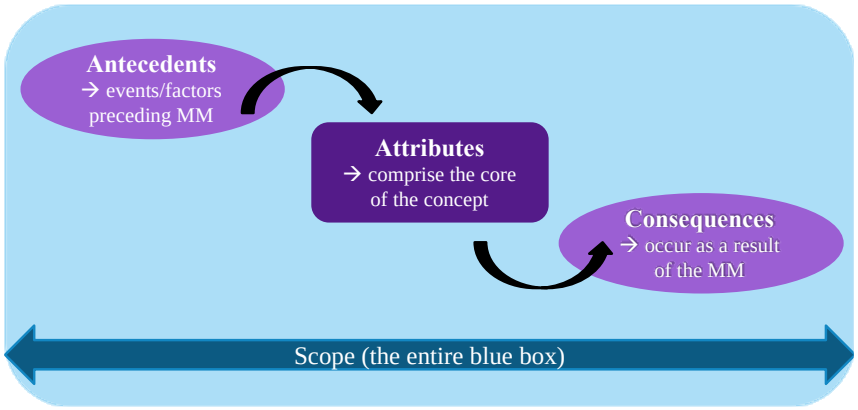

Figure 3. Relationship between the concept's scope, antecedents, attributes, and consequences

2.2.4 Analysis

I thematically analyzed my data. Thematic analysis exists as its own method and is also a tool used to analyze data within qualitative studies. For example, Lange et al. and Furuta et al. analyzed their data on women's perspectives thematically while adhering to different qualitative methods.[34,35] The basis of thematic analysis identifies patterns in the data and interprets these patterns to effectively represent the data.[51] I used this approach to identify and describe the antecedent, attribute and consequence themes comprising the concept.

Well-acquainted with the data through numerous revisions of the studies during the screenings and extractions, the next thematic step was to organize the extracted data into code groupings.[44,52] I uploaded the data extraction forms to Quirkos and organized the data extracts into groupings called codes. I sorted codes by antecedents, attributes, and consequences. During this stage, I grouped data extracts generously, and loosely defined codes. I reviewed these codes and their data extracts repeatedly, refined them, and organized them further according to the relationships between them.

I formed preliminary themes and subthemes based on the relationships between the codes, with an 'outlier theme' for codes that did not fit elsewhere.[44] Continued refining of the preliminary themes gave rise to the developed themes. Refining the themes included reviewing the data extracts to confirm their coherence with the developed themes. Coding and recoding occurred continuously in this iterative process. I concluded analysis when no new refinements resulted in changes to the themes.

2.2.5 Concept Model

Using the final themes from the thematic analysis, I constructed a visual representation of the concept.

2.3 Strengths and Limitations of Concept Analysis

The concept analysis method allowed for inquiry into the available qualitative evidence of how WPPE conceptualize MM. A limitation of qualitative studies is their context-dependence, which can result in the limited generalizability of their findings. Concept analysis offers a method to extend the application of findings of the included studies beyond their contexts for the benefit of a greater collective understanding of WPPE's perspectives of MM. A limitation of the concept analysis method is the potential loss of contextual information essential to understanding the data during analysis from various contexts across included studies. I acknowledged this through the addition of a 'context' section in the data extraction form (Appendix 4). The data extraction form's context sections included items such as setting and participant demographic information to preserve contextual information significant to the pregnancy and MM experiences.

2.4 Author's Positionality

Among people who have never been pregnant, some may fear that pregnancy will ruin their life while others may believe that pregnancy is the only thing missing from theirs. The pregnancy ideas of those who have never been pregnant often come from sharing in or hearing about the pregnancy experiences of others. The view of pregnancy as a social experience allows one to share in the experience without ever having been pregnant. My position as a woman who has never been pregnant, researching the MM experiences of WPPE, is nuanced by the pregnancy stories I have shared in, the maternal health knowledge I have developed as a researcher, and my personal identities in relation to the WPPE being studied.

My earliest experience with a pregnancy narrative was in childhood, when my mother was pregnant with my younger sibling. Between then and now, I have encountered numerous

pregnancy experiences among my family, friends and larger community. Throughout my time volunteering at my local hospital, I learned of antenatal patients' diverse pregnancy experiences. Social media has also provided a platform to learn more about individual experiences, with women I would usually never encounter, like Beyonce and Serena Williams, sharing their pregnancy stories. Together, the pregnancy narratives of my family, friends, community, and others on social media comprise my personal pregnancy experience despite my never having been pregnant.

Recently as a Master of Public Health (MPH) candidate, I had the opportunity to learn about MM and its review systems through a part-time practicum. This knowledge, along with the opportunities to develop my qualitative research and review skills throughout the practicum, prepared me for the present thesis project. The notion that the researcher resides in the space in between being an insider and outsider to the researched group describes how my positionality impacts my interpretation of WPPE's data as their data shapes my positionality.[53] In place of identifying as an insider who has been pregnant, I am an outsider with knowledge of the topic from interpersonal experiences and research.

While I share a commonality with the "W" in "WPPE," my intersectional Black racial, Muslim religious Canadian-Ghanaian ethnic, and middle-income economic backgrounds may make me more of an insider or outsider depending on the group of WPPE being considered. Having spent most of my life in Canada, I am most familiar with North American healthcare systems and disparities. Being a minority in North America shaped my research interests towards social inequities while my education and access to academic literature provided further opportunities to accrue knowledge of the experiences of other social and economic groups. My religious background and familiarity with the Ghanaian collectivistic and Canadian

individualistic societies add to the foundation from which I understand others as well. The value of a collaborative effort between WPPE and their families/communities to support the health and wellbeing of WPPE is evident through my religious background and Ghanaian culture. From my Canadian culture, I also see the value in WPPE being solely in charge of their health and care decisions. My identities, social experiences, and research background provide multiple lenses through which I may observe and learn about pregnancy and begin to understand the diverse experiences of WPPE.

Chapter 3: Results

EM and I screened the titles and abstracts of 1360 studies and identified 93 for full-text screening. We resolved conflicts in consultation with the supervisory team (RD, RS). The full-text screening resulted in 40 included studies that had a qualitative component, referred to MM or related terms, and investigated WPPE's perspectives or participants who could reflect on WPPE's perspectives. Descriptions of the included studies are described in Appendix 3.

3.1 Description of Included Studies

Included studies described MM from the perspectives of diverse racial and ethnic populations from various social backgrounds and geographical locations. A quarter of the studies were mixed methods, with the remaining using qualitative methods. Most studies (70%) were conducted in low- and lower-middle-income countries, while 30% of studies were from high- and upper-middle-income countries. The studies were conducted across the African, Asian, European, and North American continents with diverse participant samples. All studies of African & Caribbean, Central Asian or Southeast Asian populations (55%) had homogenous participant samples, while 18% of the studies had a sample with two or more racial/ethnic groups (Table 5). Six studies (15%) took place in a diverse setting without specifying the racial/ethnic makeup of the participant sample. These studies were conducted in high-income countries that receive frequent immigration and have diverse populations, including the United States, the United Kingdom and France. Without further information from the authors, it was not possible to deduce with certainty the race/ethnicities of the sample.

Table 5. Race/ethnicity of the participant samples of included studies

Race/Ethnicity	Number of Studies by Population
Multiple races/ethnicities in sample. Each study with a mixed sample had White participants and participants from at least one other group. - African American - East Asian - Hispanic/Latino - Indigenous - Middle Eastern - South Asian - White - Mixed-race/ethnicity	7
Single race/ethnicity in sample	
African American	1
African & Caribbean	19
Central Asian	1
East Asian	1
Indigenous	1
South Asian	1
Southeast Asian	2
White	1
Not Stated (sample from diverse population)	6
Total Studies	40

The lack of consensus in defining MM was reflected in authors' usage of differing descriptions across studies (Figure 4). Studies defining MM broadly as 'any adverse outcome' comprised 37% of the sample. This broad approach to MM, which allowed WPPE to self-identify as having experienced MM based on their perceptions, aligned most closely with the eligibility criteria. Table 4 in Chapter 2: Methods explained that studies investigating a specific condition were excluded while the aim was to include studies where the researcher loosely defined MM so that WPPE could decide on the meaning themselves. A quarter of studies investigated SMM. The remaining categories of MM descriptions included two studies

investigating traumatic experiences (5%) and three studies investigating pregnancy-related domestic violence (8%). One fifth of studies did not state how they defined MM.

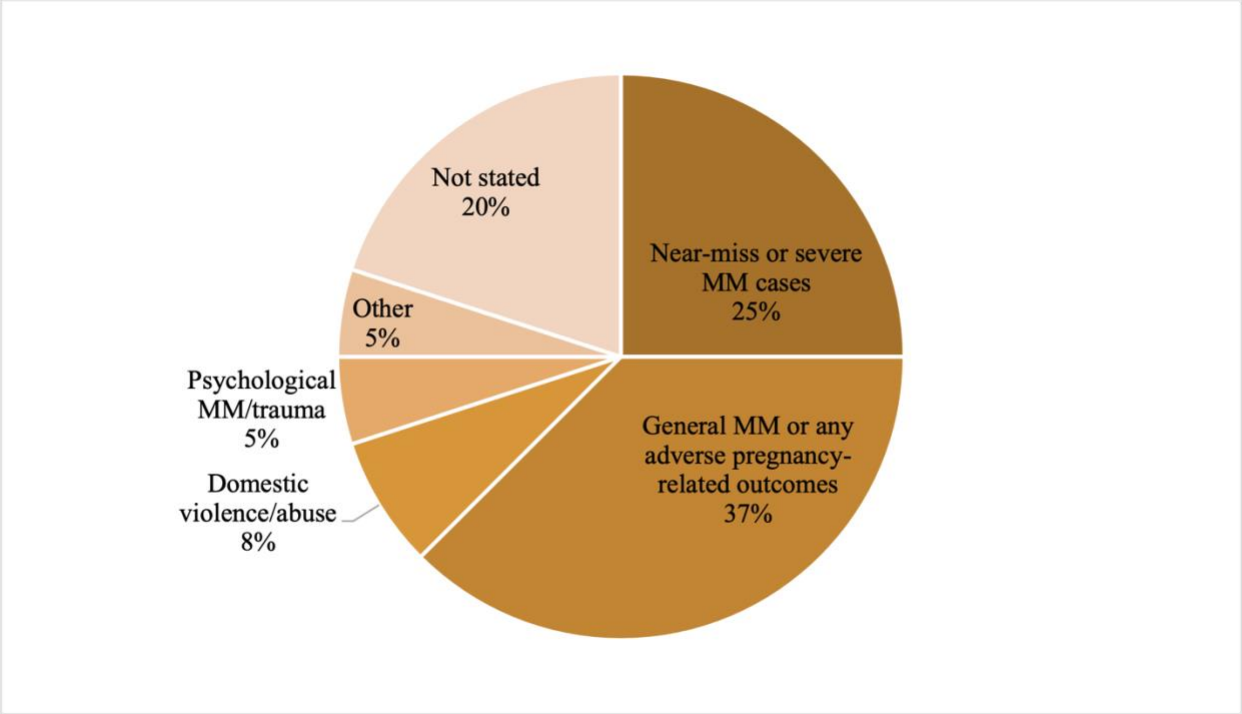

Figure 4. Maternal morbidity definitions used by researchers of included studies

The scope of MM experiences ranged from pre-pregnancy to beyond the postpartum period as defined by researchers in each study (Figure 5). Most participants were asked about their experiences during pregnancy to postpartum (48% of studies), pregnancy to delivery (15%), or labour to postpartum (10%). WPPE's perceptions of their pregnancy experience included conditions or factors from before pregnancy that either worsened with pregnancy or impacted the pregnancy experience, with 10% of studies including the pre-pregnancy period as part of the MM timeframe. The pre-pregnancy occurrences WPPE discussed were categorized as antecedents. These pre-pregnancy occurrences included experiences from previous pregnancies for WPPE who experienced MM prior to this pregnancy.

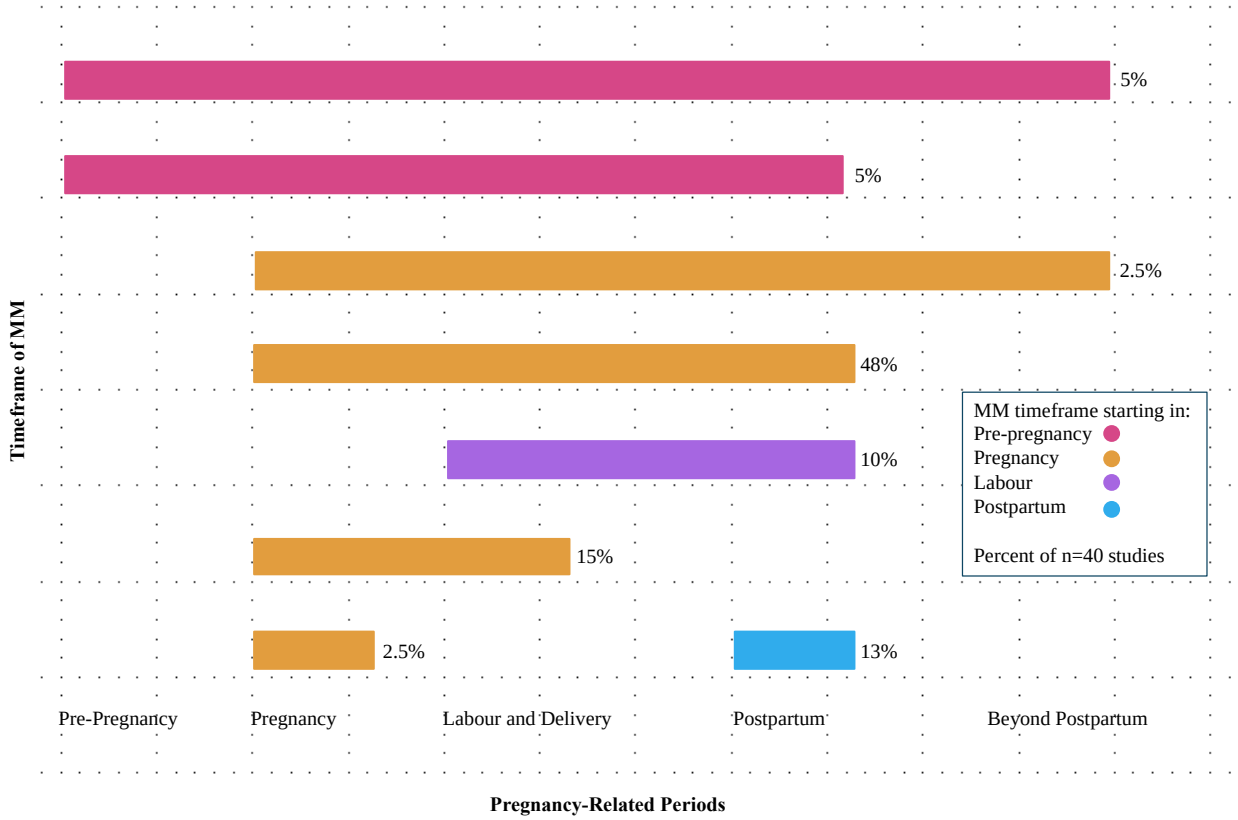

Figure 5. Scope of maternal morbidity experiences defined by the pregnancy-related timeframe used by researchers of the included studies

Consequences resulted from MM experiences and could last beyond pregnancy into postpartum and beyond postpartum. Throughout this document, the postpartum period will refer to within one year after childbirth since that was the most defined postpartum period among the included studies. Researchers and participants had varying definitions of the postpartum period (Figure 6), ranging from less than 48 hours (13% of studies) to six weeks (8%), to one year (25%). The 8% of studies labelled as "no limit" were the same studies that included the beyond postpartum period in their MM timeframe in Figure 5. Descriptions of MM that extended into the postpartum period and beyond, as defined by each individual study, comprised the consequence results.

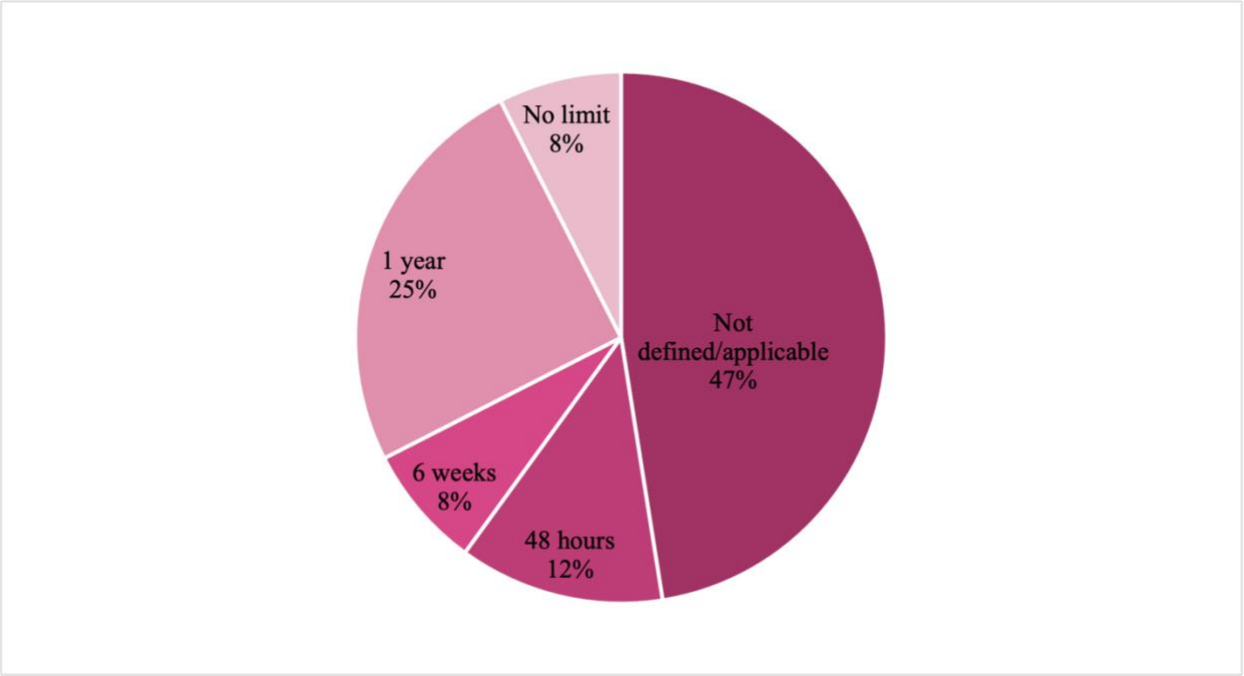

Figure 6. Postpartum definitions across included studies described by time following childbirth

3.2 Concept Model

The concept model in Figure 7 represents the concept of MM constructed from WPPE's perspectives. Attributes formed the core characteristics of their MM experiences, antecedents were experiences or conditions that occurred beforehand, and consequences were experiences or conditions that followed. WPPE perceived experiences from periods in pre-pregnancy to beyond postpartum as relevant to their MM. The following sub-sections explain the concept model and give an overview of each component comprising MM from WPPE's perspectives. Select examples in the form of quotes from the included studies are used to describe the themes in each subsection. Additional examples of each theme are included in Table 6 for antecedents, Table 7 for attributes and Table 8 for consequences. There are some studies that contributed to the concept model not represented in the table.[54–61] The theme tables are at the end of their corresponding subsections and the quotes they contain are alphabetized.

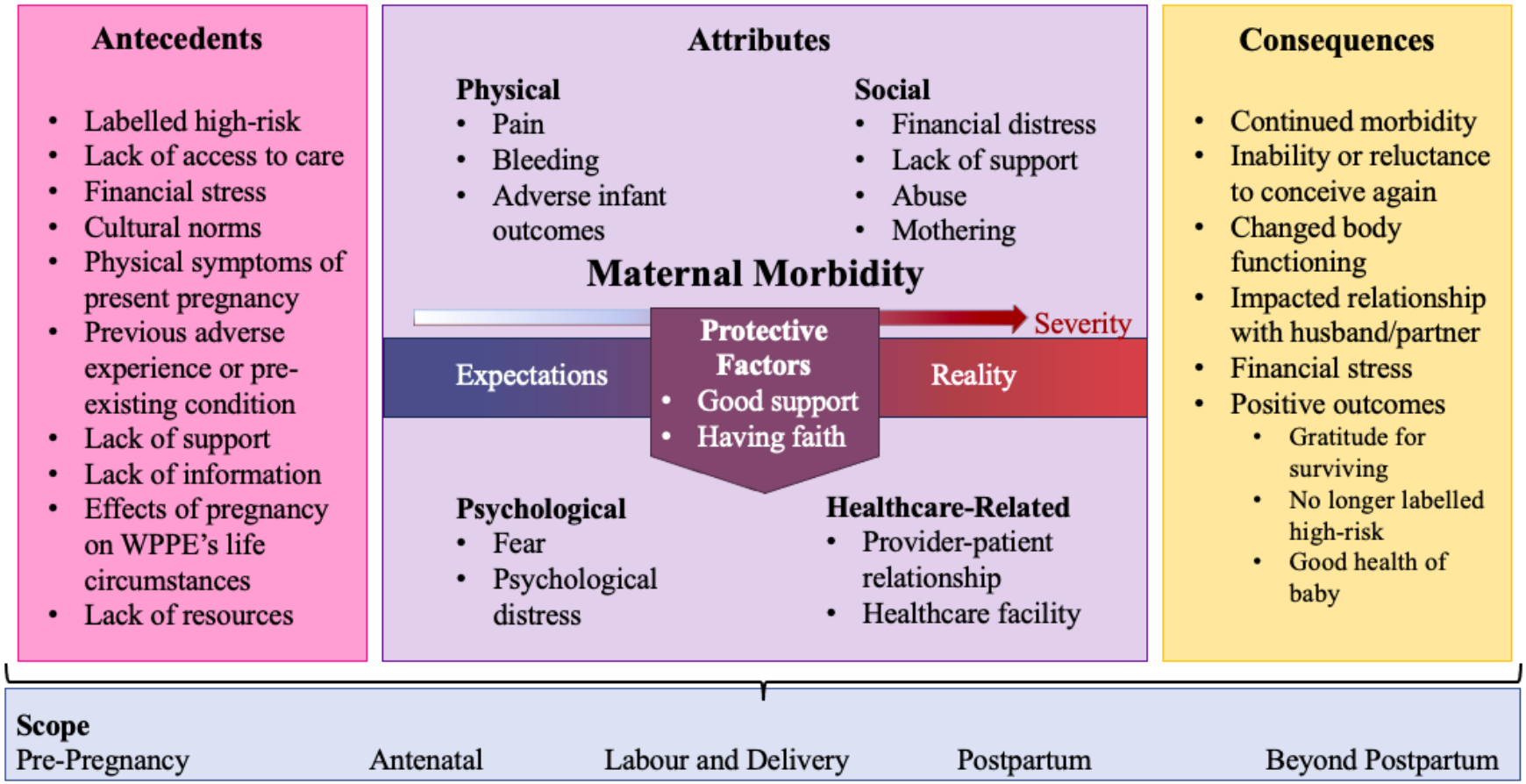

Figure 7. Maternal morbidity concept model based on the results of this study

3.2.1 Expectedness, Severity and Protective Factors

The antecedents, attributes, and consequences of WPPE's collective perceptions of MM are represented in Figure 7. In addition to the themes themselves, there was the characteristic of severity across WPPE's MM perceptions. One factor determining severity was the divide between WPPE's expectations of the pregnancy experience compared to their perceptions of the events that actually occurred. For example, the *high-risk label* the participant in quote A received contrasted with the expectation of a healthy pregnancy she had based on her pre-pregnancy fitness (Table 6).[62] The rift between the participant's expectations and the reality her doctor described to her resulted in a pregnancy experience characterized by fear. Expectedness existed along a spectrum, with pregnancy experiences ranging from being closer to WPPE's expectations to consisting of completely unexpected events. Experiences closer to the right *unexpected reality* side of the *expectation-reality* bar in Figure 7 brought an element of unpreparedness to WPPE's pregnancy experience. For instance, the participant in quote AS required unexpected, unsubsidized emergency care during her pregnancy that she could not afford (Table 7).[2] The participant was unprepared for the emergency care costs and inability to work after her pregnancy, and experienced financial distress as she perceived her situation to have burdened her family. While unexpected events contributed to how severe WPPE perceived their MM to be, there were 'protective factors' that buffered the impact of unexpected adverse pregnancy-related experiences.

'Protective factors' shielded WPPE from experiencing worse pregnancy outcomes and consequences during unexpected MM events (Table 7). These factors were the beneficial aspects of and tools that aided WPPE through their adverse pregnancy experiences. Represented by the shield at the centre of the *expectations-reality* bar in Figure 7, *good support* and *having faith*

were two 'protective factors' that aided WPPE to navigate, rationalize, and move forward from their MM experiences. For example, the mother's insistence in quote BP prevented the participant from further delaying seeking care in the antenatal period, which protected her from potential further complications during her MM experience (Table 7).[63] In quote BQ, the first neighbours and the participant's children initially helped her to navigate the postpartum period, then the pastor, later neighbours and baker helped her to survive and move beyond her adversity in the beyond postpartum period.[64] The support these WPPE received protected them from potentially worse outcomes and consequences during their MM experiences. *Having faith* protected WPPE from further distress during MM, as was the case for the participant in quote BS who felt that she did not have to solely rely on herself to survive her hysterectomy.[65] Faith also helped WPPE to accept adverse outcomes, as explained by the participant's perceptions of fetal and infant loss in quotes BR. *Having faith* and *good support* ultimately prevented an experience WPPE perceived as bad from becoming worse.

3.2.2 Antecedents

The context and occurrences preceding WPPE's MM experiences are described by the antecedent themes in Table 6. All antecedents either began pre-pregnancy or arose during the antenatal period. The experiences comprising the antecedents were either perceived to cause or contribute to MM. For example, the *high-risk labelling* of the participant in quote A brought about the fear she perceived as characterizing her pregnancy experience.[62] In quote G, *financial stress* existing from before pregnancy contributed to participants receiving delayed care and becoming more vulnerable to adverse medical outcomes.[66] In addition to being *labelled high-risk* and experiencing *financial stress*, the themes of a*ccess to care, cultural norms, previous adverse*

experience, lack of support, lack of information, and *lack of resources* were antecedents that led to WPPE's perceived MM.

Labelled high-risk. The notion of a pregnancy at *high-risk* for adverse complications was either assigned by healthcare providers or determined by WPPE for themselves. Some individuals expected a healthy, uncomplicated pregnancy or viewed their pregnancy as equal risk for complications as other WPPE. For these individuals, healthcare providers labelling them as *high-risk* contradicted their self-image and pregnancy expectations. As explained in subsection 3.2.1 Expectedness, Severity and Protective Factors, the participant in quote A viewed herself as fit and expected a healthy pregnancy.[62] Her doctor introduced her to a contrasting reality by labelling her *high-risk,* which led to her experience of psychological MM.[62] WPPE also had the capacity to determine adverse risk for themselves, and care that centred around healthcare provider risk but excluded WPPE-determined risk could result in unmet needs. Quote B demonstrated how WPPE may not view themselves as *high*-risk for the same adverse experiences that doctors assign to them.[67] The idea of being *high-risk* for adverse outcomes helped to inform preventative care and incorporating WPPE-determined risk into maternal care can contribute to making it more person-centred.

Lack of access to care. Inaccessibility to healthcare services or providers contributed to delayed quality care. Distance and transportation were the most common barriers to WPPE accessing care. The examples in quote F recount both the issues of having healthcare facilities located far from WPPE and lacking transportation with which to travel.[68] A lack of access to care adversely impacted the pregnancy experience through the added cost of high transportation fees and worsening of complications when care-seeking was delayed or avoided.

Financial stress. Pre-existing financial stress became a greater burden during pregnancy and impacted WPPE's care-seeking and pregnancy experience. Economic hardship gave rise to further economic hardship with the costs of healthcare and having an additional mouth to feed after childbirth. The participant in quote I related how her circumstances at home worsened during pregnancy due to the financial burden her in-laws believed her pregnancy added to their economic state.[69] In addition to negatively impacting the pregnancy experience, pre-existing financial hardship was a barrier to care and led to MM. In quote G, the researcher described how participants sought more affordable, alternative care providers or refrained from seeking care altogether, struggled to afford transportation to healthcare facilities and suffered from ill health associated with poor diet due to poverty.[66] Pre-existing financial stress impacted WPPE's health, care-seeking behaviours and access to care.

Cultural norms. Cultural norms and beliefs influenced WPPE's decision-making or limited their available choices. The belief in *evil spirituality* was a common cultural belief that shaped WPPE's approaches to and understanding of their pregnancy. WPPE understood there to be spiritual diseases that affected pregnancy and corresponding precautions that could be taken to protect against them, as explained by the participants in quote M.[70] Underlying cultural norms that limited WPPE's available choices in pregnancy was a *lack of autonomy*. Quote J provides an example where there is a convention that decisions regarding WPPE are based on consensus between their parents and in-laws.[71] However, this convention of mandatory shared decision-making can result in delayed care or care that does not entirely meet WPPE's needs. Cultural norms and beliefs shaped WPPE's approach to pregnancy and impacted their autonomy.

Physical symptoms of present pregnancy. Physical symptoms were the first signs that indicated to WPPE that something was wrong before their condition worsened or they sought

care and learned of a complication. For example, the participant in quote N experienced headaches during her pregnancy that she did not initially perceive as serious, managing them from home herself.[63] However, these headaches were indicative of the eclampsia diagnosis she received after going to the hospital for her more severe symptoms.[63] Physical symptoms were antecedent to the physical attribute of MM but did not always prompt WPPE to seek care medical care immediately. The researcher in quote P described how social responsibilities could contribute delayed care-seeking even when WPPE felt something was wrong during their pregnancy.[72] Inaccessible care could also pose a barrier to WPPE seeking medical care for warning signs. While physical symptoms were early signs of physical MM, WPPE did not have equal opportunities for or ease when seeking care.

Previous adverse experience or pre-existing conditions. Physical and psychological pre-existing conditions and past adverse events as perceived by WPPE had the potential to negatively impact the pregnancy experience. Conditions and past events were either related to a past pregnancy or occurred at another period during WPPE's lives. During her present second childbirth, the participant in quote Q discussed requiring an intervention, an event she perceived as negative, due to having had this intervention during her first birth.[73] A past adverse pregnancy-related experience, or MM, brought about another MM experience for this mother.[73] The participant in quote R experienced a non-pregnancy-related traumatic event earlier in her life that adversely shaped her perception of her present pregnancy experience.[74] Due to past pregnancy-related or life events, WPPE were more vulnerable to adverse events in their pregnancy.

Lack of support. A perceived lack of social support from WPPE's partner or family or feeling overburdened with responsibilities impacted WPPE's decision-making and experiences

during pregnancy. The participant in quote T had work and greater care-taking responsibilities to manage during her present pregnancy compared to her previous pregnancies, adding to her feelings of exhaustion.[75] The lack of support the participant in quote U felt from her husband contributed to her adverse fetal outcome.[76] While having *good support* was a protective factor for WPPE experiencing MM, a *lack of support* contributed to their adverse pregnancy-related experiences.

Lack of information. Pregnancy-related information influenced WPPE's care-seeking and expectations of the pregnancy experience. Information could come from previous pregnancy experiences, WPPE's social network, WPPE's own research, or healthcare providers. In the example of quote W, the participant's mother felt that she lacked the knowledge to guide her daughter through her unique circumstances surrounding childbirth.[74] The participant became fearful with the expectation that her childbirth would be different from a typical childbirth but not knowing how and lacking information on how to prepare.[74] The healthcare provider in quote X explained the importance of sharing knowledge relating to medical MM to help inform WPPE's healthcare decisions.[68] Information shaped WPPE's pregnancy expectations, perceptions and decision-making.

Effects of pregnancy on WPPE's life circumstances. Being pregnant itself was antecedent to perceived pregnancy-related adverse events when the pregnancy was unexpected or in the setting of adverse life circumstances. In the case of an unexpected or unwanted pregnancy, WPPE were unprepared for the pregnancy or had taken precautions against it. For example, the participant in quote AA became pregnant while using contraceptives and perceived her MM experiences to be caused by her attempt at family-planning.[76] By having a completely unexpected pregnancy, every experience the participant had may have been perceived as more

severe due to the lack of opportunity she had to prepare for both typical and atypical pregnancy-related experiences. In the case of welcoming a pregnancy into adverse life circumstances, the life circumstances either worsened in severity or the WPPE's ability to navigate the circumstances was complicated by pregnancy. While the participant in quote AB did not specify whether her husband's domestic violence increased during her pregnancy, she described how the effects of his violence worsened because of her vulnerability carrying a child.[77] The introduction of pregnancy into WPPE's lives was cause for MM when the pregnancy was unexpected and WPPE were unprepared for MM experiences or when the pregnancy entered into pre-existing adverse life circumstances.

Lack of resources. At the regional and intuitional levels, a lack of resources resulted in delayed care, healthcare providers having to manage caring for WPPE with limited tools, and substandard care. Limited staff, equipment, access to medications, and transportation were resources that contributed to WPPE's MM when they sought care. For example, the healthcare provider in quote AC described how a lack of surgical equipment necessitated the transfer of WPPE to higher-level healthcare facilities and contributed to delays in their care.[78] In the example of quote AE, the understaffing of the healthcare facility resulted in the participant give birth unattended and alone.[73] A lack of regional and institutional healthcare resources limited and delayed WPPE's access to healthcare and set the context for WPPE to receive inadequate care.

Table 6. Antecedent themes and example quotes

Theme	Subtheme(s)	Description	Number of articles	Number of quotes	Quote example(s)
Labelled high-risk	• Introduced by healthcare provider • Determined on own	Introduction to the notion of risk by healthcare provider or the conditions/events WPPE label as risky themselves.	7	30	**A.** "Before I had the baby I was very fit. I worked out at the gym and went to yoga and swimming regularly. I thought I would be pretty okay during pregnancy, especially since no one in my family had ever had any problems [having babies]. Then I went to see the doctor and he painted a very different picture. He said because of my age and all that, that he would need to see me more often and I would have to go to Clayton [tertiary facility] in case I needed an emergency delivery. He said I was more at risk. I walked out of there thinking, 'Oh my God, the baby could die, I could die.'"[62] B. "'...[T]here are women who are 120 pounds who have the same problem that your sister had [referring to a woman who's 'grossly overweight' sister had gestational diabetes]. Like they get it too so what is the difference between them getting diabetes and someone who weighs 400 pounds?' While some nulliparous women did state concerns about pregnancy complications, those concerns were limited to losing mobility during pregnancy with additional weight gain."[67] **C.** "A woman from a rural area with eight children who experienced an obstructed labor recounted her delivery experience, 'The doctor checked me and said I had to be operated because the baby's arm had come out. I was counselled on child bearing and sterilization. I was worried about my condition… and I knew that anyone who is operated either comes out alive or dead. I stopped child bearing and I accepted to be sterilized.'"[76]
Lack of access to care	• Distance/ transportation	Lack of access to healthcare services or providers.	11	27	**D**. "Women said they feared that the travel to a clinic would pose problems to them that might either jeopardize their birth or impede a speedy recovery. One woman said, 'There was more pain and bleeding after delivery on the roads home than during the delivery.'"[79] **E.** "Privatization of health care in Nigeria was described as a huge challenge to maternal birth outcomes, particularly in this part of the country. The deployment of lower-cadre nurses and other personnel without appropriate licenses in private health facilities exposes patients to risks. The country's weak regulatory body makes it easy for unlicensed personnel to practice without being penalized. This has huge implications for women. Participants lamented that young women and girls are particularly victims of illegal practitioners, as they seek abortion services from alternative providers, resulting in sepsis and increased risk of morbidity and mortality."[66] (Researcher). **F.** "Climbing up and down the mountains to and from village clinics involves heroic efforts. One saj fanm (skilled birth attendant) stated, 'Some

					[pregnant women] get down from the mountain on their hands and knees, yes, even horses and mules can't grab [the terrain].' Another saj fanm stated, 'There are people who take three hours to get to Mobile Clinic, and yes, some on donkeys.' And another saj fanm pointed out that 'frequently people live so far where we can't go on [a] car to see them, it's like a risk for them to die. Sometimes when there is a problem, there are four men who take like a frame to put the patient on and carry them on wood. But for them to take the patient to the hospital this is very hard.'"[68]
Financial stress		Experiences of economic hardship that impact WPPE's health or access to healthcare.	13	25	**G.** "Poverty has a significant negative effect on birth outcome. Hospital bills were reported to be too high for most women in the state. As a result, those women end up with alternative providers or no care at all, since they cannot afford the cost of their antenatal services, drugs, and delivery fees. Financial hardship, as participants put it, is also manifested in poor diet, making pregnant women weak and susceptible to diseases and possibly premature death. Poverty also makes it difficult for women to get to the health facilities due to the high cost of transportation, especially in the case of emergency, since most hospitals are located far away from the river-line areas where most of the maternal health services consumers reside."[66] (Researcher) **H.** "External factors ranging from seasonality, temporary market closures, to influxes of Chinese goods and the vagaries of world cotton-trading market, put severe pressure on poor households. The weakness of the health system, the high costs of healthcare for obstetric complications and subsequent ailments severely compounded their struggle."[64] (Researcher). **I.** "My in-laws treated me very badly during my pregnancy. They always (physically) hurt me, and when I became pregnant, they treated me more inhumanely. They thought, 'Now there is an increase of one more person in the family and automatically expenses will increase, as well.' They could not afford it."[69]
Cultural norms		Cultural norms and beliefs that influence WPPE's decision-making or available choices.			
	• Lack autonomy	A lack of autonomy, limited ability for informed decision-making, lack of control of self or situation.	11	21	**J.** "Involving multiple individuals in care during pregnancy can become cumbersome, conflictive, and time-consuming, delaying evaluation of symptoms and care-seeking. One woman explained, 'If people don't agree with each other, the midwife doesn't do anything. *First*, the four people – the woman's parents and the man's parents – have to agree, and… *then* they send for the midwife.' Informants clarified that this distribution of influence permitted both consensus and diffusion of blame when things went awry. On the other hand, such multipartite decision-making often minimizes the

					pregnant woman's autonomy, which rests on her age, work, parity, proximity to relatives, and status in the household."[71] **K.** "I suffered a lot. Maybe, at home, it would have been better. My husband did not let that. I thought it would be more comfortable at home. I insisted a lot, but he did not want. I said we might arrange a midwife to come home, but he did not want. So, I delivered at the hospital."[80]
	• Evil spirituality	Spiritual beliefs of evil or negative outcomes.	7	16	**L.** "... This state of feeling sad as if grieved (kusononeka) is due to being irritated when there is no cause. It is the result of a bad bug that is 'jini mahaba'. It makes a man or woman sulk for no reason and the two can split up... because the jinni wants an exclusive relationship with the woman, and can also ruin the pregnancy."[81] **M.** "There is a fear of offending one's family members: 'if you insult people who are witches, they can plot against you during your [pregnancy] and they can fight at your birth.' Jealousy specifically may be an issue: 'if somebody is your enemy or somebody envies you and that person is not spiritually good, she or he can give it [a spiritual disease] to you.' Witches may curse the mother, the unborn child, or both. One mother said that there is a woman who visits the clinic: '[She] is also a witch, so when she sees your child she can transfer some of the disease to you. And sometimes even if you are pregnant . . . if there is some of your nakedness or you eat outside, the person can transfer [a spiritual disease to your child].'"[70]
Physical symptoms of present pregnancy		The first events that turned WPPE's attention towards the idea that 'something may be wrong.' WPPE's first Indicators of their MM experience.	9	18	**N.** "I was having headache for over more than a week and I used Panadol (a pain reliever). Later on the headache became very serious and I began to have swollen feet and poor vision. It was then I went to the comprehensive health center at Iloko Ijesa where I had registered for antenatal care. The nurses told me my blood pressure was very high so they referred me here."[63] **O.** "When I was 3 months' pregnant, I started bleeding and after 4 days I went to a clinic. I was given drugs but they did not work. I had severe abdominal pains so we decided to go to Kisoro hospital where I was immediately admitted, put on drips and I was washed [uterine evacuation] in the stomach. To control the blood, I was given an injection and drugs. I spent 7 days in the hospital as my condition was very bad."[76] **P.** "For some businesswomen, pregnancy coincided with a busy time of the year, such as the Christmas season, when sales are highest and the workload heaviest. Some could not leave their workplace even when they developed early signs of pregnancy complications, such as headache, swelling of the body, and vomiting."[72] (researcher)
Previous adverse experience or	• Physical • Psychological	Previous pregnancy- or non-pregnancy-related adverse experiences that	10	15	**Q.** "Because I had a cesarean section for my first birth, I was delivered by operation this time again. Nothing pleased me."[73]

pre-existing condition		occurred prior to but impact the present pregnancy experience.			**R.** "When I think about my delivery there is pain, fear. I thought about the women that I had known. . . . But it's when they cut me. That reminded me of the excision. I told myself that I had been excised twice in fact . . . I said that to myself. That if it wasn't for the well-being of the child, in order that the baby is born, they wouldn't have cut me like that! The fact also that they sewed me. . . . I didn't ask not to be cut."[74] **S.** "[. . .]Sarah was diagnosed with PTSD prior to pregnancy due to a previous sexual assault"[82] (researcher)
Lack of support		A perceived lack of social support from WPPE's partner or family, or feeling overburdened with responsibilities.	7	10	**T.** "She told us that she had felt much more tired during this pregnancy than during her first two pregnancies. Unlike her first pregnancies, this one was not planned. Also, with two small children and two elderly parents-in-law to take care of, alongside her work running the café, [the participant] had to work very hard during this pregnancy."[75] (researcher) **U.** "I told my husband but he didn't care as we had fought a week back. The pains got stronger and the bleeding persisted... By then, I had become very weak. At the clinic, the health worker put a cannula on my hand, but I refused the drip [intravenous drip] because I had no money. Since my husband didn't care, I also decided to let the pregnancy go."[76] **V.** "Recollected distress due to poor support included bitterness in the heart/soul ("kujihisi uchungu moyoni/rohoni"), feeling sad as if in grief or mourning ("kusononeka"), or its converse, being unable to feel happy ("kuacha kucheka na kufurahi")."[81] (researcher)
Lack of information		A lack of pregnancy-related knowledge or lack of access to pregnancy-related information.	4	9	**W.** "My mother says to me, 'I don't know, you must walk, walk, walk, I don't know what will happen, I can't help you, my daughter, you are excised, I am not, I don't know. I hear women say that excised women suffer more than the others to have babies, more than the women who are not excised. Around here, nobody says anything, people are ashamed, they are ashamed to talk about it, and me, I don't know how to help you.' Poor thing, she cried. 'I can't do anything, I gave birth to you and it's like that. I don't understand, I can't help you.' I kept that in mind and I was scared. It scared me."[74] **X.** "One saj fanm (skilled birth attendant) noted the importance of 'let them [mothers] know what kind of sign they see of preeclampsia or eclampsia and that preeclampsia requires referral to a clinic rather than interventions for bad spirits.'"[68] **Y.** "Social capital was an asset that was perceived to worsen survivors' vulnerability in situations where the women's family, friends, peers, or work colleagues gave wrong advice or advice that eventually put the mothers at risk."[72]

Effects of pregnancy on WPPE's life circumstances	• Pre-existing adverse circumstances • Unwanted/ unplanned pregnancy	Pregnancy itself being the cause of adverse experiences (rather than events that occur during pregnancy) or the state of being pregnant worsening a pre-existing condition.	9	16	**Z.** "In addition to documenting an overall notable prevalence of perinatal abuse from in-laws in this postpartum sample recruited from Mumbai, this study also highlights qualitatively and quantitatively greater reports of abuse in pregnancy rather than during the postpartum period, across all forms of abuse from in-laws"[69] (researcher) **AA.** "While at home, I started hurting and I decided to go to Gyaviira clinic. I had a pregnancy test and I was told that I was pregnant yet I was using family planning (contraceptives). I denied and the doctor told me that it was true. At Gyaviira's clinic, the medical personnel also told me that I had urinary tract infections and that is why I was hurting in the stomach. I was given some tablets and sent home. I swallowed the medicine for 4 days but the pain only got worse. It reached a time when I could not handle the pain. My husband decided to take me to Kalisizo hospital where I was taken into the scan and I was told that the pregnancy had grown in the fallopian tubes [ectopic] and that the only option was to terminate it. I was immediately scheduled for an operation and they performed an emergency operation [laparotomy]. I cannot use any family planning method anymore because I believe it is the family planning injection that caused this."[76] **AB.** "When I was 6 months' pregnant, the beating me up, that was the worst because it got to the point where I thought 'I can't let him do this when I have a child inside me'... you know I thought what if I stay here, he is going to end up delivering the baby—you know what I mean. He would say I need a Caesarean and cut me open and stuff, something sick like that."[77]
Lack of resources		A lack of resources at the institutional or regional level.	3	9	**AC.** "In some situations, it is possible to have delays because a [woman] can be referred from a dispensary or health centre to the sub-district hospital then to the district hospital. We are equipped with the common drugs but we lack a theatre and a vehicle for referral. Sometimes, the relatives have to fuel the hospital vehicle because there is no money for fuel. We do cost sharing."[78] **AD.** "They come to me. I help as much as I can, but sometimes I don't have medications. If there is something I can't handle I take her to the medical assistant. If we had a doctor, we would not face such problems." (Trained midwife in Jalhak)"[83] **AE.** "[. . .] one woman was with her husband, sister, and mother- in-law when she arrived at the hospital, but they had to go home before she started pushing. As she did not have anybody to report her changes to the nurse, and the nurse was attending to another woman, she gave birth without the attendance of a caretaker or a health care provider. In this busy facility, having a family member to call the nurse can be very important for the safety of both mother and baby."[73] (researcher)

3.2.3 Attributes

The events and elements WPPE perceived as characterizing MM formed the attributes. Attributes were organized into four subcategories of 'physical', 'social', 'psychological', and 'healthcare-related' attributes (Table 7). These subcategories were formed inductively during data analysis. The 'physical attributes' were formed by the themes of *pain, bleeding* and *adverse infant outcomes*. The 'social attributes' were composed of the *financial distress, lack of support, abuse,* and *mothering* themes. The 'psychological attributes' consisted of *fear* and *psychological distress* themes. Lastly, the 'healthcare-related attributes' contained the *provider-patient relationship* and *healthcare facility interaction* themes. The attribute experiences occurred during pregnancy and the postpartum periods. Postpartum attributes were main MM events as perceived by WPPE, while consequences were postpartum events that resulted from MM events. The following theme descriptions are organized by their subcategories in the order of 'physical,' 'social,' 'psychological,' then 'healthcare-related' attributes.

Pain. The experiences recounted in the 'physical attributes' had the most overlap with conventional, medical MM compared to the other attribute subcategories. However, the 'physical attribute' themes were based on what WPPE perceived as the adverse components of their pregnancy experience rather than the medical diagnoses they may have received. *Pain* arose during labour and childbirth, postpartum, and was related to pregnancy complications and interventions. For example, the participant in quote AF framed her childbirth experience around her worsening pain.[84] Whether WPPE believed pain to be a natural part of childbirth or not, the experience of pain was perceived to be a burden. While the mother in-law in quote AH complained about her daughter-in-law's tolerance for pain and ill health, she explained that she perceived pain to be a burden borne by all mothers. Pain following an intervention was also a

source of MM for WPPE.[71] In quote AJ, the participant felt that the pain that followed her c-section impacted her life in terms of mother duties and self-care.[85] The participant was not concerned about giving birth through c-section, rather her experience of MM began with the pain that followed the intervention.[85] Pain was a salient experience for WPPE during pregnancy complications, childbirth, and postpartum.

Bleeding. Excessive bleeding as an independent event or the symptom of a complication was a source of MM for WPPE. When describing their experiences, WPPE referred to *bleeding* or *blood loss* rather than the clinical term *hemorrhage*. In quote AM, the participant used both terms, referring to the *severe blood loss* she suffered due to a retained placenta and the continuous *bleeding* she experienced throughout the complication.[76] WPPE also associated bleeding with the experience of pain. For example, the participant in quote D explained how both the experiences of bleeding and pain were worsened by the inadequate transportation during the postpartum return home.[79] WPPE perceived the experience of excessive bleeding as MM independent of potentially related complications and tended to report bleeding and pain together.

Adverse infant outcomes. The aim of intended pregnancy is to give birth to a baby whose growth the parent(s) can nurture for years to come. Thus, WPPE feared and suffered from fetal and infant deaths. The participant in quote AR viewed her pregnancy efforts as "pointless" and "in vain" following the deaths of four of her babies, which she described as unforgettable and constantly on her mind.[64] WPPE considered adverse infant outcomes as MM whether the event threatened their physical health or not, and the impact of child loss on WPPE was well-acknowledged. The midwife in quote AP described the immediate and longer-term care provided to families who experienced the loss of an infant.[86] Adverse infant outcomes were feared by WPPE and impacted their lives beyond the period of loss as well.

Financial distress. The 'social attributes' consisted of socioeconomic experiences. The *financial distress* attribute differed from the *financial stress* antecedent by severity and period of occurrence. While the *financial stress* antecedent was a contextual component to WPPE's pre-pregnancy lives, the *financial distress* attribute consisted of a perceived descent towards increased and overwhelming economic hardship due to pregnancy and healthcare costs. Financial distress was especially pronounced when unexpected costs arose, such as the need for emergency care. In quote AS, the *financial stress* antecedent was already a factor in the participant's life when she required emergency care for a near-miss event.[87] The costs of her emergency care and childbirth further burdened her family's economic situation and sent her into *financial distress*.[87] The experience of financial distress during pregnancy and childbirth often led to ongoing economic hardship and *financial stress* consequences after the pregnancy experience.

Lack of support. As an attribute, *lack of support* was perceived to originate or worsen during pregnancy. Strained emotional, financial, and decision-making support, limited physical support with household/work responsibilities and absence during birth were aspects of support that WPPE perceived to be lacking from their social network (partner, in-laws, family) during their pregnancy experience. In quote AW, the participant received limited support from her family and the family of her baby's father throughout pregnancy, after which she was burdened by household work and childcare in postpartum and the beyond postpartum period.[64] The lack of support she received from her family and baby's father made her pregnancy and postpartum periods difficult, and ultimately resulted in the death of her child.[64] The *lack of support* attribute was often preceded by the *lack of support* antecedent, which consisted of a lack of support in the pre-pregnancy period of WPPE's lives. Pregnancy either exasperated the effects of WPPE

lacking support in their lives or brought new opportunities for a lack of support to impact WPPE during times of need during pregnancy and postpartum.

Abuse. The theme of abuse consisted of physical, emotional, financial, or other means of control used to manipulate and humiliate WPPE and that caused their wellbeing to deteriorate. Physical domestic violence was one form of abuse that WPPE experienced. For example, the physical violence the participant in quote I endured from her in-laws worsened during pregnancy.[69] When abuse was part of WPPE's pre-pregnancy lives, the abuse either worsened during pregnancy or became more of a challenge for WPPE to manage given their pregnant state. Other forms of abuse were a source of MM for WPPE as well. In quote BA, the participant recounted an event where her husband and mother-in-law were verbally and emotionally abusive towards her.[75] WPPE protecting their child during pregnancy and managing childcare after giving birth increased their vulnerability to impact of abuse on their health and wellbeing.

Mothering. Mothering was a source of MM when WPPE perceived a heavier burden of prioritizing their role as a new mother due to their life circumstances or sacrificed their wellbeing for their mothering role. Some WPPE experienced difficulties during postpartum related to mothering while others avoided pregnancy and the potential burden of mothering altogether. For example, the participant in quote BC was entrusted with the unexpected care responsibility of her sister's two children in addition to her own.[88] She found her mothering role particularly stressful and demanding that she sacrifice her time for self-care.[88] The participant in quote BD found the prospect of mothering to be too burdening, given her existing and ongoing responsibilities to manage her own chronic condition each day.[67] The responsibility of childrearing and the role of being a mother can be especially challenging for WPPE who have other circumstances that complicate their role.

Fear. WPPE experienced fear of adverse pregnancy-related events they perceived to be likely. The participant in quote A was *labelled high-risk* for complications, which opposed her self-view as fit and healthy and led to her fear of adverse outcomes for her and her baby.[62] In this way, WPPE experienced fear during their pregnancy after healthcare providers introduced them to the potential of adverse medical outcomes. While uncertainty played a role in WPPE's fear of potential adverse outcomes, a lack of information or guidance could also result in WPPE feeling afraid during their pregnancy. For example, the *lack of information* the mother in quote W had to support the participant through her atypical childbirth was antecedent to the participant feeling fearful.[74] The potential for adverse pregnancy-related experiences became a realistic and frightening possibility for WPPE once introduced by their healthcare provider. Fear of the unknown was also a factor for WPPE facing new pregnancy experiences.

Psychological distress. Overwhelming emotions of sadness, pain, anger, disbelief, dread, and related sentiments characterized the experience of psychological distress. For instance, the participant in quote BH recounted her experience of feeling emotionally distressed right after giving childbirth and feeling unable to bring herself to advocate for her needs.[82] Another WPPE experienced psychological distress throughout her pregnancy. The participant in quote BI believed that she may have experienced depression during her pregnancy as she felt less psychologically resilient in the face of her husband's aggression and her feelings of loneliness.[75] Psychological distress was a memorable experience of MM for many WPPE when experienced alone or along with physical MM.

Provider-patient relationship. The main problems concerning poor interpersonal interactions between healthcare providers and WPPE were delayed care and inadequate communication. Feeling unheard or unseen was a barrier to WPPE getting their needs addressed

by healthcare providers. The participant in quote BJ felt that her needs were obvious but went unobserved by too many healthcare providers.[89] Her family doctor identified her need for further care after the delay in her maternal healthcare team identifying her needs.[89] Provider-patient interactions that did not satisfy WPPE's needs shaped their entire pregnancy perception. For example, the participant in quote BK said that her experience of feeling unguided through her pregnancy and postpartum period left wary of a future pregnancy.[90] The provider-patient relationship was important for WPPE to access care and have their needs met throughout and after pregnancy.

Healthcare facility interactions. The experience of receiving care at healthcare facilities lacking resources, understaffed or difficult to access with transportation was a source of MM for WPPE. The participant in quote BM described her distressing experience giving birth at an overcrowded and understaffed facility without privacy and comfort.[88] In quote BO, another participant explained how her care was delayed when the first facility she sought could not care for the severity of her condition.[63] WPPE's reliance on healthcare facilities for medical care and the convention for a hospital childbirth meant that the use of healthcare facilities was a core part of the pregnancy experience. Interactions with unsatisfactory healthcare facilities reflected in WPPE's perceptions of their pregnancy experiences.

Table 7. Attribute themes and example quotes

Theme	Subtheme(s)	Description	Number of articles	Number of quotes	Quote example(s)
Physical					
Pain	• During labour and delivery • From intervention and care	WPPE's perception of physical pain during pregnancy-related periods.	21	51	**AF.** "I knew it was time for the birth when I had more pain, 48 hours between when the pain got worse and my waters broke, I couldn't sleep this whole time."[84] **AG.** "Another mother explained, 'the time that you deliver, the pain is so severe that if God hasn't intervened, you will die at the spot.'[70] **AH.** "Sometimes I think it's just [that women nowadays are] stuck up, because they don't want to just put up with it (referring to her pregnant daughter-in-law's complaints). Then again I think that maybe it really does hurt her. Nevertheless, I tell her, 'Couldn't it be that you're just very stuck up and spoiled? That's why you get sick…. Who is going to help you anyway? No one. Even if your husband loves you a lot, that's not going to help alleviate your pain, it's your burden.' And that's what happened to us. We're old. We're all women. We all have children.'"[71] **AI.** "I've never had that before I don't even know what it is, my down below hurt me so much when I try to move or sit down. I can't explain. Horrendous shooting pains in my vagina."[90] **AJ.** "I think pain control after a c-section could be better...If you haven't spent four days in excruciating pain, then you're in better mental condition to go home, basically, to do whatever you're doing...I mean it's very hard to get out of bed and feed the baby in the middle of the night after having a c-section. And if you're more comfortable – I mean it lends to your self-worth and your image. If taking a shower is a lot easier you feel better about yourself, you know?"[85]
Bleeding		Excessive bleeding as an independent event or the symptom of a complication.	18	41	**AK.** "After I had delivered my baby at home, the placenta wouldn't come out and I also started bleeding. I was taken to a private clinic, but they refused to take me into the facility because of the seriousness of the bleeding."[63] **AL.** "I was bleeding the whole time, and they didn't do anything, and it hurt me. The Dr. was very mad with me. Dr. xxxxxx told me to put the baby back in my stomach if it hurt so much! He was mestizo. I stayed 3 days after the birth of the boy. I was still bleeding for 5 days after the birth."[84] **D.** "Women said they feared that the travel to a clinic would pose problems to them that might either jeopardize their birth or impede a speedy recovery. One woman said, 'There was more pain and bleeding after delivery on the roads home than during the delivery.'"[79] (researcher) **AM.** "After delivery, there was severe blood loss so I was given two injections to reduce the bleeding but it did not reduce because of the retained

					placenta. The health workers tried by massaging the abdomen and putting their hands to remove the placenta but they could not remove it. I was put on drip too but after one hour, we were referred to Rakai hospital, where it was removed within a short time. I was put on drip and given two more injections to stop the bleeding. Within something like forty minutes, the placenta was manually removed by pulling it out. The bleeding reduced but I was feeling so dizzy so I was admitted for 2 days."[76] **AN.** "It was annoying...your vagina, it was so swollen...And then you see you keep bleeding, keep bleeding, they give you an ice pack. I don't want an ice pack, I want the swelling to go down and I want the period to be a regular period and I don't want all these big lumps of things falling out of me."[85]
Adverse infant outcomes		Adverse outcomes for the fetus, newborn or young infant.	18	38	**AO.** "One of the informants experienced prolonged labor, and she was told that she would lose her child if the birth took much longer. She later said, '[When the nurse said that], I thought I had toiled in vain and all the difficulties I had passed through had been a waste.'"[70] **AP.** "When a baby dies in our country, the focus is not on responsibility or blame, it's on feelings. A mother and father can stay as long as they want at the hospital. There is no litigation, and a midwife loses her job only if there was negligence. After discharge, a midwife or doctor visits the home . . . to talk, counsel, start the healing."[86] **AQ.** "[W]hen I look back now, I don't know how I got through it. ... I was a nervous wreck before the baby was born. . . . It took a long while for me to forget that so many things could go wrong. . . . I remember thinking when he was born, 'Phew, that worked, now I've just got to keep him [prevent him from dying]!' I went through this terrible worry about SIDS. I would check him a hundred times between feeds . . . and even things went through my mind, like what on earth if I die? I didn't expect to go through the sort of anxiety I went through. ... I talked to my sister a lot, 'cause we've always been really close, and that helped me a lot. She had her children when she was very young, and she sort of could see that what I was doing was because I was older and because of the IVF and thinking I'd never get through it [get through the pregnancy without miscarrying]. . . . I think with that support and Kevin, I guess growing and becoming what I perceived as stronger and not feeling as wobbly [better neck control], like you've got to be really careful in the beginning."[62] **AR.** "Solange was in her late thirties when she experienced the 'near-miss'. Her arranged marriage was failing and her husband was living away. She had two children, but she had lost another four around the time of their birth: 'the ones that did not survive, I cannot forget. I think about them all the time, even now, I can never stop. You suffer and it's all in vain. Pointless suffering after

					much effort, suffering for nothing.' With this pregnancy, she had a uterine rupture, losing her baby and her fertility. Her husband came home only to bury the child. [. . .]"[64]
Social					
Financial distress		Debilitating financial difficulties stemming from or worsened by the pregnancy experience or pregnancy-related care.	9	24	**AS.** "Natou, an adolescent mother who had recently moved from her native village to live with her sister and brother-in-law in the city in the hope of finding employment, explained how her emergency care and the birth of her child had contributed to depleting the family's finances. Several months after her delivery, Natou often went hungry and felt weakened and unable to work, worried about obtaining food and agonised that rather than contributing to alleviating the family's problems – as had been her intention when arriving in the city – she had rather worsened the problems by adding not only one, but two mouths to feed. Many other unmarried women reported similar experiences, often suffering both emotional and physical violence as a result."[87] (researcher) **AT.** "He only gives you money if he feels like doing so, and these things were painful for me to handle."[91] **AU.** "After my delivery, my mother-in-law asked us to leave the house (where my husband and I were living)... (We moved to) such a bad place... it was only a plastic shed (hut). But we lived there for one month... That time was a very bad time for us, because of my health issues and my husband being unable to go to work... We didn't have money to buy food."[69] **AV.** "Giving birth to this baby has made us go through a lot of hardship. My husband and I are going through financial problems."[70]
Lack of support		A lack of emotional, financial, decision-making, or physical (pertaining to support with household/work responsibilities or presence during birth) support from social network (i.e., partner, in-laws, family).	11	38	**AW.** "At fourteen, Assetou became pregnant, reportedly after a forced sexual encounter with a young male neighbour. Pregnancy brought stigma and further exacerbated her powerlessness in her household. When she developed severe pregnancy-induced hypertension, Assetou experienced a brief respite due to the customary obligations of paternal responsibility. 'My child's father paid for everything. He has the prescriptions, I don't know how much he paid, he never told me.' Thanks to this, both Assetou and her baby survived. But after the birth, the paternal family's sense of obligation to her waned. With little rest after hospitalisation, Assetou returned to her domestic labours and to work in the family kiosk. Still a child herself, she struggled to care for her baby with little support or interest. At two years old her daughter fell ill. 'They told me to go to take little Aicha to my relatives, so that they could care for her and she wouldn't die here, with them. [. . .]'"[64] **AX.** "I did all the household work... My mother-in-law is not fit to do any kind of work... I do all the work, like washing clothes and cleaning the house; sometimes I do farming also. For the whole day I did household work only...

					There was no different in situation during pregnancy. My whole body was swollen (with discomfort from heavy domestic labor in pregnancy)"[69] **AY.** "The man that impregnated her lives close to us; we did not realize she was pregnant for quite some time. Although he did not deny the pregnancy, he has not provided funds for her care. When she fell into labor, we took her to the primary health center here (in our community) where she was in labor for 3 days without progress. [. . .]"[63]
Abuse	• Physical • Psychological	Physical, emotional, financial, or other means of exerting control over, manipulating, humiliating, or worsening the wellbeing of WPPE.	5	18	**I.** "My in-laws treated me very badly during my pregnancy. They always (physically) hurt me, and when I became pregnant, they treated me more inhumanely. They thought, 'Now there is an increase of one more person in the family and automatically expenses will increase, as well.' They could not afford it."[69] **AZ.** "My mum died... and I were pregnant and 2 days after she died he did a rocky on me, right on my stomach when I was pregnant hitting either side and ended up the baby died and I had to have it removed (pause) I was 16 weeks."[77] **BA.** "One day when I was nursing my baby, my mother-inlaw was shouting a lot at me and I had a really bad headache. She went out and came back with some medicine and asked me to take it. I agreed, but I also said that her shouting made me feel worse. Then she got really angry, scolding me in a loud voice and telling me how rude I was. Then she told me to leave the house and let the baby stay. When I told my husband the story, he scolded me in a rude language, saying things such as 'Go and fuck your mother,' and shouted, 'Shut up, if you don't want me to beat you right now.'"[75]
Mothering		A heavier burden of prioritizing the mothering role due to WPPE's personal circumstances.	3	3	**BB.** "The interviewer asked, 'Now, a lot of people will call what is happening to you abuse. Do you think of yourself as being abused?' One woman who identified herself as Puerto Rican-American, said, 'If I haven't left the situation then it doesn't bother me that bad.' The woman went on to supply reasoning that suggested her motivation. The woman 'never had a family . . . was bounced from home to home"; she wanted her kids to have what she never had.'"[92] **BC.** "Because she [the sister of this participant] was in the process of . . . getting out of her house, and her boyfriend kicked her out, and so I had to take her to my house, and she had two kids, and I was taking care of them 24-7 . . .. It was real stressful for me . . . Because I was worried about her kids, because I had my two kids, and I had hers, so I was always just after them, you know, feeding them, bath . . . and putting them to bed. I was always doing stuff to them, so I didn't have time for me."[88] **BD.** "I know for me the ability to care for children was a concern for me… just getting up and dealing with diabetes for 35 years in a row is just

					exhausting and I just could not imagine having to get up in the morning and have somebody else to have to take care of on top of myself."[67]
Psychological					
Fear		The fear of pregnancy-related dangers that WPPE perceive to have a high likelihood.	11	34	**A.** "Before I had the baby I was very fit. I worked out at the gym and went to yoga and swimming regularly. I thought I would be pretty okay during pregnancy, especially since no one in my family had ever had any problems [having babies]. Then I went to see the doctor and he painted a very different picture. He said because of my age and all that, that he would need to see me more often and I would have to go to Clayton [tertiary facility] in case I needed an emergency delivery. He said I was more at risk. I walked out of there thinking, 'Oh my God, the baby could die, I could die.'"[62] **BE.** "Generally, the women focused the feeling of fear on their own lives and the lives of their babies. Women expressed fear for the perinatal outcomes, more so in the cases of premature birth. Ten women who had a fatalistic view talked about their fear of undergoing surgery. One woman even feared seeing nurses and doctors"[65] (researcher) **W.** "My mother says to me, 'I don't know, you must walk, walk, walk, I don't know what will happen, I can't help you, my daughter, you are excised, I am not, I don't know. I hear women say that excised women suffer more than the others to have babies, more than the women who are not excised. Around here, nobody says anything, people are ashamed, they are ashamed to talk about it, and me, I don't know how to help you.' Poor thing, she cried. 'I can't do anything, I gave birth to you and it's like that. I don't understand, I can't help you.' I kept that in mind and I was scared. It scared me."[74] **BF.** "Once pregnant, many hypertensive women with children reported being scared, largely due to the messages their doctors conveyed about potential complications."[67] (researcher)
Psychological distress		Negative emotions including emotional pain, sadness, anger, disbelief, and other emotional experiences that overcome the woman.	10	35	**BG.** "Many of the women mentioned the sense of death at the time they experienced the maternal near miss. This feeling was reinforced by the occurrence of bleeding, shortness of breath, cold extremities and pain. Obstetric care, such as emergency caesarean section, laparotomy and admission to the ICU, also influenced the perceptions of the women regarding the severity of their illnesses. With the perception of approaching death, some women asked for forgiveness from relatives and left messages regarding care for the children they would be leaving behind (A0260). Although death was in their thoughts, a few expressed that were not ready to face it yet (A0219). The perception of death was the most striking experience for most of the women with maternal near miss."[65] (researcher) **BH.** "A different midwife walked back in, plonked him on me and said, 'You decided to have this baby, you need to deal with him'. I wasn't angry at her, I

					was ashamed at myself because I was dumb enough at that point to think that what she said was gospel and yeah, I'd decided to have my baby, he's my responsibility. I was crying my eyes out and she offered me nothing, no support whatsoever."[82] **BI.** "Before, I never used to cry. But I started to cry when I got pregnant. I cried about my husband's anger or his scolding me. Perhaps I suffer from depression. I think depression is the feeling of not having anyone to confide in, anyone to share with… I read some articles about pregnant women who suffered from depression because they could not share family controversies with anyone. According to these articles, pregnant women are more prone than others to depression."[75]
Healthcare-Related					
Provider-patient-relationship	• Delayed care • Lack of communication/ information	Unsatisfactory relations between healthcare providers and WPPE.	21		**BJ.** "I obviously needed some help. . . . I think there should be more awareness because if it took the doctor to come round twice, the midwife everyday and the paramedics to not even spot it, I just think its quite sad really that so many professionals couldn't spot it and I went to see an emergency doctor as well at NHS Direct ... so it was a bit of an ordeal to get me into hospital really, in the end it was my mum's doctor, the family doctor who came out after surgery to see me and he admitted me straight away because he knew I wasn't like that normally."[89] **BK.** "When asked for clarification as to whether the birth, or any issues afterwards, had put her off having another baby, participant 009 said: 'both, the after as well...not having any support or guidance or anything like that puts me off. It would be nice to have that support and I didn't have it with either children. My friends that have had children—I speak to them about it but they didn't have the traumas that I had. They just had normal deliveries, no stitches, normal.'"[90] **BL.** "One of my main negative feelings about that was I didn't feel anybody was actually talking to me directly. It was like I wasn't in the room, everyone was talking about me or about the situation rather than talking to me saying this is what's happening and this is what we're going to do."[82]
Healthcare facility interactions	• Lack of resources • Understaffed	Healthcare facility experiences that did inadequately met WPPE's needs.	10		**BM.** "They took me to the delivery room. There were five people having babies at the same time. What I saw really ruined me! But I had no choice. I had to deliver, I was there. They prepared me, gave me injections, and there I was waiting. I was lonely."[80] **BN.** "One postpartum mother noted, 'sometimes some Moms come to hospital to deliver and there's no clothes, no medication. If the midwife have some, they give to the mothers, but if there's not any, they don't have any ... medicine for pain, IV bags, vitamins.'"[68]

					BO. "I was taken to a private clinic, but they refused to take me into the facility because of the seriousness of the bleeding."[63]
Protective Factors					
Good support		The social support WPPE receive. This support may include from her husband, family, healthcare provider, and community.	11	23	**BP.** "'I had been feeling weak and dizzy for some time now, but I thought it was because I was pregnant. My husband and I decided to travel home to be cared for by my Mum in Ilesa. When we arrived home, she insisted I had to come to the hospital. Here I was told I have anemia.' (26- year-old primigravida from Abuja, who had severe anemia secondary to HIV/AIDS. She was unaware of her HIV status until she got to the hospital. Her husband also tested HIV positive.)"[63] **BQ.** "At first, her neighbours lent her essentials, but as Solange became more 'needy' and depressed, they began to avoid her and to comment that she was crazy. For income, her two remaining children tried to sell small items in the neighbourhood streets. Eventually, the family was evicted for defaulting on rent. For Solange, a religious network gave her a new opportunity. A pastor helped her to find new accommodation. Her new neighbours were welcoming and supportive: 'If people devote time to me I say they are offering me riches. I tried to take pills to put an end to my life... people stopped me, saying I could not do that.' Although still fatigued, her connections with social life began to return. A local baker gave her credit so that she could sell baguettes in the neighbourhood; 'it is selling the bread ..that saves me'"[64] **AQ.** "[W]hen I look back now, I don't know how I got through it. ... I was a nervous wreck before the baby was born. . . . It took a long while for me to forget that so many things could go wrong. . . . I remember thinking when he was born, 'Phew, that worked, now I've just got to keep him [prevent him from dying]!' I went through this terrible worry about SIDS. I would check him a hundred times between feeds . . . and even things went through my mind, like what on earth if I die? I didn't expect to go through the sort of anxiety I went through. ... I talked to my sister a lot, 'cause we've always been really close, and that helped me a lot. She had her children when she was very young, and she sort of could see that what I was doing was because I was older and because of the IVF and thinking I'd never get through it [get through the pregnancy without miscarrying]. . . . I think with that support and Kevin, I guess growing and becoming what I perceived as stronger and not feeling as wobbly [better neck control], like you've got to be really careful in the beginning."[62]
Having faith		The belief in God or a higher power that has control over events beyond WPPE's control.	7	15	**BR.** "Occasionally, despite the mother's best efforts and faith, a child may still die, which was considered as Divine Will, 'I think God actually called that baby home. It was God who called that baby.' Another mother explained, 'God gives and at the same time He takes.'"[70]

					BS. "I had to undergo operation (elective caesarean hysterectomy). The uterus was to be removed. Let God help us. We have tried. The rest of the effort is from God. We have to be sincere to rely on God."[65] **BT.** "An African American midwife practicing in the United States described African American women as more resilient in the face of loss as a function of maternal–child health disparities, decreased expectations for a 'perfect birth,' and faith-based coping mechanisms: 'Infant mortality is higher among African American women. We tend to deal with loss in an internal way, or within the family. The church and spirituality [are] what sustain the Black woman; historically, faith is the cornerstone that gets us through. In addition, the cultures with which I have worked don't expect the perfect birth. If it doesn't happen, they accept it more readily.'"[86]

3.2.4 Consequences

The experiences that followed WPPE's perceived MM events formed the consequence themes in Table 8. Consequences occurred during postpartum and in the periods beyond postpartum, with long-lasting impacts on different aspects of WPPE's lives including their relationships, self-image, and potential future pregnancies. Some WPPE focused on the positive outcomes of their pregnancy, which contributed to their experiences navigating postpartum. Consequence themes included *continued morbidity, inability or reluctance to conceive again, changes to bodily functioning, strained relationship with husband/partner, financial stress,* and *positive pregnancy and health outcomes.*

Continued morbidity. The *continued morbidity* theme consisted of subsequent morbidity events that resulted from WPPE's perceived MM experiences. In quote BU, the participant's incapacitating postpartum symptoms of hypertension and weakness arose from and persisted after her MM experiences of eclampsia and stillbirth.[87] *Continued morbidity* impacted WPPE's lives as a source of pain or discomfort, by disrupting routines and by rendering the completion of responsibilities more challenging. The *continued morbidity* consequence followed the present pregnancy experience while pregnancy-related *previous adverse experience* antecedents occurred in a past pregnancy preceding the one of present. *Continued morbidity* impacted WPPE's lives long-term and had the potential to impact future pregnancies.

Inability or reluctance to conceive again. The inability or decreased likelihood for successful childbearing followed experiences of medical MM. For example, the participant in quote AR experienced a uterine rupture following the loss of four infants.[64] The experience of MM also discouraged WPPE from planning future pregnancies. In quote BY, the participant felt pessimistic about future childbirths due to her MM experience characterized by the *provider-*

patient relationship attribute.[73] The *inability or reluctance to conceive again* consequence followed experiences of both medical and non-medical MM.

Changes in bodily functioning. Changes in bodily functions and how WPPE interacted with their bodies following MM comprised this theme. For example, the participant in quote BZ came to regard the state of her body and its functionality negatively following the wound she incurred during her MM experience.[87] In another example in quote CA, the participant's cousin became indifferent towards her body after multiple MM experiences.[80] MM experiences resulted in physical changes to WPPE's bodies and impacted the relationships they had with their bodies.

Strained relationship with husband/partner consisted of a perceived breakdown in pre-MM relationship dynamics, relationship strain or divorce following WPPE's MM experiences. The changed relationship was either initiated by WPPE or their partner. In quote CD, the participant's partner started acting unfaithfully after her MM experience.[93] In contrast, the loss of intimacy between the participant and her partner in quote CF was due to how the participant felt about her MM.[90] A changed relationship between WPPE and their partner was a consequence of MM.

Financial stress. The *financial stress* consequence described WPPE's perceived new and ongoing state of economic hardship following their MM experience and care expenses. *Financial stress* was often antecedent to and a consequence of the financial distress attribute. In quote CG, the researcher described how participants who already lived in poverty were further impoverished by unexpected treatment and care costs.[87] WPPE incurred ongoing debt to manage financial distress during their pregnancy, which contributed to the consequence of long-term financial stress. Another source of *financial stress* was limited employment or unemployment. For example, a limited return to work or complete loss of independent income were considered

as potential MM consequences to the participants in quote CI.[72] *Financial stress* was the development or continuance of economic hardship following MM relating to both debt and income.

Positive pregnancy and health outcomes. At times, WPPE focused on their *positive pregnancy and health* outcomes to shape the view of their MM and recovery. The main positive outcomes following MM were gratitude for surviving MM, no longer being at risk for adverse outcomes, and having a healthy baby. A positive outcome became the most salient part of their pregnancy experience for some WPPE. For example, the participant in quote CJ felt that returning home with her baby "freed" her from some of the pains she experienced.[70] Positive outcomes aided WPPE to accept or move on from their pregnancy-related challenges. In quote CL, the participant overcame her distressing experiences of anxiety by focusing on her baby's state of good health.[62] Positive outcomes demonstrated that while MM consisted of adverse pregnancy-related events, the experiences that followed were not all adverse.

Table 8. Consequence themes and example quotes

Theme	Subtheme(s)	Description	Number of articles	Number of quotes	Quote example(s)
Continued morbidity		Physical conditions/ symptoms arising from and persisting after an MM experience.	11	14	**BU.** "For instance, Awa, a 27-year-old rural woman who delivered a stillborn baby following a life-threatening eclamptic fit, continued to report that she felt weak and ill during the year that followed. When we visited her around six months after her discharge from hospital she and her husband explained that the delivery and stillbirth had left her extremely depleted. She continued to suffer from 'tension' (hypertension) that made her dizzy, making it intermittently impossible for her to do her domestic tasks and to contribute to the household's subsistence agricultural production as she did before the delivery. Awa's husband was only able to afford her prescribed medicine at two-weekly intervals, meaning that for two out of every four weeks she suffered incapacitating symptoms, and had to rely on her husband or co-wife to substitute for her at home and in the fields."[87] (researcher) **BV.** "Another major concern for mothers is the fear of a Cesarean birth. A mother shared, 'when they do [an] operation, it is very painful and sometimes after operation, some people, they get some stomach problems.'"[70] **BW.** "I suffer from headaches all the time. I think too much, so the blood cannot come to the brain. I think about my husband and thinking about him makes me feel so depressed. Then I do not want to eat anymore. Sometimes I just eat twice in two or three days, sometimes I don't even have breakfast… I cannot sleep, and I'm easily frightened. This thinking is always on my mind. It stresses me."[75]
Inability or reluctance to conceive again		Inability or lost desire to bear children.	9	14	**BX.** "Participant 008 was asked if she would like more children, she replied: 'Obviously with this urine thing I feel like I am already damaged, what would another baby do?'"[90] **AR.** "Solange was in her late thirties when she experienced the 'near-miss'. Her arranged marriage was failing and her husband was living away. She had two children, but she had lost another four around the time of their birth: 'the ones that did not survive, I cannot forget. I think about them all the time, even now, I can never stop. You suffer and it's all in vain. pointless suffering after much effort, suffering for nothing.' With this pregnancy, she had a uterine rupture, losing her baby and her fertility. Her husband came home only to bury the child. [. . .]"[64] **BY.** "I was calling the nurse, but she was not listening. I was calling her to help me because the contractions were very strong. The nurse told me to wait until she finished with her responsibilities to other patients. By

					chance, a woman was standing near me. She looked at me and alerted the nurse that my baby's head was about to come out. Then the nurse came, took scissors, and gave me episiotomy. When I was pushing, she told me that if I didn't push, she would slap me. From this, what upset me was the habit of nurses passing me by and not stopping for me when I was calling for help (low voice). . . . Maybe it will be better to go to another hospital for the next pregnancy. I just don't know. I don't even want to have a baby again because nobody will help me"[73]
Changes in bodily functioning	• Physical changes • Changes in relationship with body	Changes in bodily functions and how WPPE interacted with their bodies.	7	14	**BZ. "**In a particularly poignant case Mariam, a 22 year-old woman who had been hospitalised for 11 days after her delivery, reported that midwives at the health centre she presented at for delivery had 'mutilated' her genitals (presumably attempting an episiotomy or defibulation) as they tried to speed up the delivery, before eventually referring her on to the hospital. In the year after this had occurred she described symptoms consistent with vesico-vaginal fistula and reported that she felt so disgusted with her own body that she refrained from any sexual activity. 'The doctor told me that when he did the operation, he was surprised to see that everything was torn. He said he didn't know how I was going to be able to go to the toilet. Everything was mixed up. The urine and the faeces. That's why they gave it to me [the catheter]. When they removed it, they were worried about how I was going to get along, but they didn't say anything about it to me even though I kept on asking. Maybe they were worried that I would be scared. When I saw my wound later on I was scared.'"[87] **CA.** "My cousin had two difficult births, and also had some miscarriages. Her womb was damaged; she did not want any other babies. They asked her if she wanted to be sterilized. She was worried that her husband may want other babies, and could divorce her to have new children. And the husband did not allow sterilization. A few years later, she got pregnant again and had to have an abortion. In a few days, while she is having a bath, suddenly she sees streams of blood running. She was so indifferent to her own body that I was shocked! I took her to the hospital and she had to have the second abortion in a week. Her womb was badly damaged."[80] **CB.** "I wouldn't show my legs and I wouldn't show a bit of my body... I'm all horrible with all the scars on me basically from the violent relationship. There's just so many I wish they would just go really. It's the contact and touching. At the time I had him [baby] I couldn't let anyone touch me I would just rather keep me to myself in my own"[77]

					CC. "I only just make it sometimes, bit embarrassing...often my pants smell a bit of urine as well which isn't very pleasant. That makes me feel really self-conscious."[90]
Strained relationship with husband/partner		Relationship strain, divorce, or a breakdown in pre-MM relationship dynamics (e.g. intimacy).	6	14	**CD.** ". . . The cost of the delivery was 200 Dirhams ($ 21) (for medicines), which is more than we can afford with our (budget). I have marital problems. I am in the process of getting divorced because of my husband's infidelity, and this is because of my problem after childbirth. [. . .]"[93] **CE.** "Kadidia, for example, was ill throughout her second pregnancy and had a late miscarriage at seven months, followed by life-threatening sepsis. Her story was dominated by cumulative animosity and competition with a co-wife who she feared might replace her in her husband's affections. 'We often don't communicate for days, and this is getting more frequent. Day before yesterday, I was ill and incapable to cook. Instead of my co-wife taking her place in the kitchen and me repaying her when I am feeling better, oh no! she stayed there without helping to prepare the breakfast. Our husband had to go out and buy something to eat because there wasn't anything!'"[64] **CF.** "I won't even go near him at the moment because I'm too scared having had the stitches."[90]
Financial stress		Continued or increased economic hardship following an MM experience.	5	10	**CG.** "Women who had survived near-miss events generally described living in severely impoverished conditions and told of being further impoverished by the catastrophic costs of treatment. In short, the impact of these costs was especially dramatic because they were unexpected. Women, their partners and their family members often saved money for the basic supplies and user fees associated with hospital delivery, but few were prepared for the cost incurred by a complication, which can be ten or twenty times higher than this. Relatives incurred debts from family members, neighbours and money-lenders and sold property, including clothing, crockery and bicycles, to pay the fees. While on the one hand, they expressed that these high costs are trivial compared to the importance of saving the woman's life, the debt that many households had incurred resulted in not only economic difficulties, but also in long-term anxiety and social tensions."[87] (researcher) **CH.** "For these women, it was not only the perinatal death that caused tensions, financial difficulties that their husbands and families had to pay for prescriptions and for the post-partum follow-up led to friction, irritation and tension among the family members."[93] (researcher) **CI.** "Women felt that obstetric complications put them at a greater disadvantage, and expressed fears that men might take this as an excuse

					to limit or stop them from participation in income-generating activities from which they got independent income."[72] (researcher)
Positive pregnancy and health outcomes	• Gratitude for surviving • No longer being at risk for adverse outcomes • Good health of baby	The outcomes WPPE perceived favourably following their MM experiences.	6	8	**CJ.** "One woman who walked back home after giving birth on a path that weaves uphill through the forest to the clinic said, 'after you have been able to bring forth a child, you will become free – you may not get some pains again.'"[70] **CK.** "The majority of the women we interviewed who had survived a clinically defined near-miss event reported having experienced fear that they and/or their baby would not survive the event. They recounted the intense confusion and dread that surrounded the management of the emergency, from arranging transport and referral to hospital, gathering money and waiting to receive treatment. Many vividly described the loss of blood and fluids, and also the initial elation when they realised that they would not die, or, for some, that their baby was beyond immediate danger."[87] (researcher) **CL.** "You know the first few months I used to bring her to the doctors probably every week, and I used to worry so much about SIDS and about her dying. . . . You know, it was risk, risk, risk and then nothing [no follow up]. You don't sort of realize how nervous you've become. . . . I suppose for me the big turnaround came when she started smiling and, you know, she was glad to see me. ... It made me realize sort of that she was a person ... and that there was really no reason why she would just get sick. . . . I tried to remind myself that my mother raised all of us without hardly ever going to the doctor. . . . I mean, I still worry, but not anything like as much as at first. ..."[62]

Chapter 4: Discussion

This thesis involved a concept analysis of MM from WPPE's perspectives. I conducted a review of the qualitative literature and analyzed WPPE's adverse pregnancy-related experiences to describe the events and experiences that they conceptualized as MM (Figure 8). My results suggest that WPPE's perceptions of MM are more diverse and related to longer periods of their lives than clinical definitions consider. Generally, clinical definitions and criteria common in the literature reflect a medical approach and solely consider physiological conditions as MM which overlap only with the 'physical' attributes of WPPE's MM experiences.[11,94] 'Social,' 'psychological' and 'healthcare-related' attributes that were identified in the concept analysis (e.g., *lack of support, emotional distress and provider-patient relationship*), were largely missing from conventional MM criteria (e.g., eclampsia, blood transfusion and hysterectomy).[17] The exception is the attention towards severe 'psychological' conditions that can lead to maternal and infant mortality, such as the psychiatric disorders a French national study on SMM included among their list of conventional physiological criteria.[95] While clinical MM definitions overlap with some aspects of the present concept model, my findings align with more comprehensive definitions that view WPPE's MM experiences as broad and multifaceted, such as the WHO's.[6]

Most institutions and organizations traditionally consider MM as occurring from the start of pregnancy until six weeks postpartum.[10,13,94] The result of this timeframe is that factors from pre-pregnancy periods that may contribute to MM and adverse pregnancy-related events that may continue beyond postpartum are excluded when measuring MM. While WPPE's MM experiences occurred during the traditional timeframe, my study identified that various antecedents, attributes, and consequences extended beyond this period as well. Further, the current concept suggests that non-medical factors influence how WPPE perceive the severity of

their MM experiences. There is a need to encompass non-traditionally medical MM and expand the MM concept to a larger timeframe to reflect WPPE's holistic perspectives of MM.

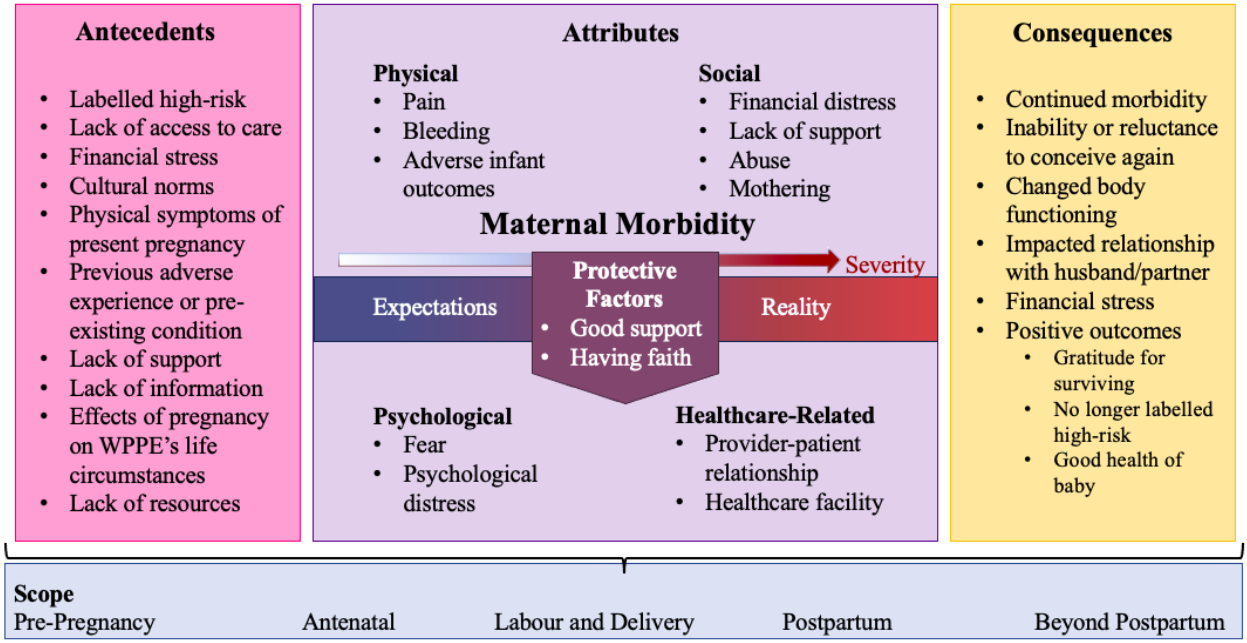

Figure 8. A copy of the maternal morbidity concept model from this study's findings for reference throughout the discussion.

Concept Overview

My concept analysis findings describe the main attributes of MM as perceived by WPPE and situates them between the antecedents that give context to MM events and the consequences that result from them. WPPE neither perceived MM to be an entirely medical or social experience. Instead, various components of health are represented across the attributes, pointing to WPPE's holistic experience of MM. Further, MM events within these attributes can differ by severity (Figure 8). The related antecedents and consequences similarly correspond to multiple components of health and contribute to the perceived severity of MM events. WPPE's perceptions of severity differ from conventional, medically defined SMM as well. These findings are important because examining the similarities and differences between WPPE's and clinical

perspectives of MM gives insight to the strengths and potential of current maternal health approaches.

The medical approach to maternal health has guided global progress in recent decades towards reducing SMM, one part of WPPE's MM experiences. Worldwide, advances in measuring and preventing medical MM follow historical efforts to decrease maternal mortality, which became a global priority during the 1980s to 1990s and was the central focus for maternal health interventions in the following decades.[96] In line with decreasing maternal mortality, attention towards MM was first given to conditions likely to lead to maternal death without healthcare intervention then broadened to include the more frequently occurring SMM. Preventing hemorrhage, a leading cause of maternal death, is an ongoing global priority and perceived by WPPE to be a salient adverse pregnancy experience as evidenced by the *bleeding* theme.[97] This example demonstrates how medical priorities, such as oxytocin administration to prevent intrapartum hemorrhage, align with WPPE's needs concerning SMM.[98] *Adverse infant outcomes*, another prominent theme from WPPE's perspectives, are also a global priority. Neonatal mortality and stillbirths are monitored globally, with reduced neonatal mortality being an indicator for the third sustainable development goal.[98,99]

Different MM definitions are used across the literature, including studies that describe MM as a single condition, near-miss or SMM cases, and loosely as any pregnancy-related discomfort felt.[7] However, I identified that WPPE do not describe their perceptions according to one set of criteria. Instead, WPPE describe MM according to what adversely stood out to them during their pregnancy. One MM event alone is salient for some WPPE, while others describe multiple MM events as bring impactful. A severe event for one woman or person was not always perceived as severe by another. The wide-ranging experiences WPPE describe, including SMM,

less medically severe MM, and non-medical MM, necessitate a holistic approach that considers all components of WPPE's health and wellbeing. My concept analysis identified common themes from WPPE's experiences that compose the antecedents, attributes and consequences of MM. I then discuss the scope of their experiences and make further connections between the concept and maternal health.

Antecedents

The events and factors that WPPE described as contextual or leading up to their perceived MM experiences comprised the antecedent themes and related to diverse components of health. Themes related to economic health (*financial stress*), physical health (*physical symptoms of present pregnancy*), social health (*access to care, cultural norms, lack of information, lack of resources*), healthcare (*labelled high-risk*), and emotional health (*lack of support*). Some themes related to multiple components, including physical and psychological health (*previous adverse experience or pre-existing condition*) and social and emotional health (*effects of pregnancy on life circumstances*). Various components of health are represented among the attributes that these antecedents precede, demonstrating that WPPE's holistic perspectives of MM are not limited to the MM events themselves. This highlights that multiple aspects of WPPE's health and wellbeing are relevant before the main events of their perceived MM even take place. Extending the MM concept to include non-medical events and the pre-pregnancy period as part of the scope offers an opportunity for holistic approaches to provide care before and in early pregnancy.

Attributes

My findings indicate that severe and life-threatening MM cases continue to be perceived as significant sources of affliction by WPPE, as represented by the 'physical' attributes and

relevant antecedent and consequence themes in Figure 8. However, they are one component of WPPE's MM experiences. Severe cases of psychological MM that may result in mortality have been increasingly prioritized alongside physical MM conditions in the efforts to reduce maternal mortality.[100] The inclusion of psychological MM as a maternal health indicator would represent progress towards a more holistic approach to caring for WPPE, but the sole focus on medically severe conditions remains an obstacle to addressing the entirety of their experiences. Social, psychological and healthcare-related MM are rarely prioritized and often overlooked in the MM narrative. While non-physical pregnancy experiences may also be perceived as significant MM by WPPE, they receive little research and institutional attention due to their lack of medical severity. My concept analysis demonstrates how severity as perceived by WPPE can be determined by non-medical factors, such as *culture, beliefs, previous experiences*, and *social circumstances*, that shape WPPE's pregnancy and childbirth preparedness and expectations.

The non-physical attributes such as *financial distress, fear* and *healthcare facility interactions* that do not fit within traditional MM definitions are often not prioritized in care. However, 'social,' 'psychological' and 'healthcare-related' attributes are significant components of WPPE's MM experiences and vary in their perceived severity similar to 'physical' attributes. Lange et al.'s thematic analysis of WPPE's MM experiences similarly found overarching themes indicative of a heterogeneous MM experience.[35] Their themes relating to psychological health, physical conditions and cultural and economic factors fit into my categories of 'physical,' 'social' and 'psychological' attributes.[35] My model's healthcare-related attributes provide a difference between my conceptualization and Lange et al.'s by considering WPPE's interactions with healthcare resources, including professionals and facilities, beyond their capability to access these resources. Unlike the *access to care* antecedent where WPPE experience delays to care and

care-seeking due to indirect healthcare-related factors, 'healthcare-related' attributes exist entirely within the healthcare system and describe WPPE's interactions with healthcare providers and facilities. Rather than impacting or being impacted by pregnancy, 'healthcare-related' attributes are pregnancy-related events on their own and a source of MM as perceived by WPPE. In Furuta et al.'s meta-ethnography of WPPE's SMM experiences, which only included studies of WPPE with medically severe conditions such as haemorrhage and eclampsia, WPPE's perceptions of SMM were still multifaceted.[34] Physical, psychological and healthcare-related events were evident from the findings, with social factors noted as shaping WPPE's SMM experiences in the same way as certain antecedents, such as *lack of support*.[34] Therefore, the present findings of 'physical,' 'social,' 'healthcare-related,' and 'psychological' attributes of WPPE's MM experiences corroborate the qualitative literature on MM demonstrating that WPPE's perceptions of MM are not medically-unidimensional.

Consequences

The events and realities that followed WPPE's perceived MM experiences related to various components of health as well. Themes pertained to physical (*continued morbidity*), social (*strained relationship with husband/partner*) and economic health (*financial stress*). Multiple components including psychological, physical and social health were also relevant for some themes (*changed body functioning and inability or reluctance to conceive again*). WPPE's perceived consequences show that the impact of MM on WPPE's lives, health and wellbeing can extend beyond the clinical periods of pregnancy and postpartum. Together, WPPE perceived medical and non-medical events across the antecedents, attributes, and consequences as comprising their MM experiences. The difference in how WPPE perceive MM compared to the medical perspective extends to the perception of severity of MM events as well.

Independent of medical criteria, WPPE's expectations and preparation for their pregnancy and MM experiences were significant to how they perceived the severity of their MM. A systematic review by Nelson et al. found stronger associations between unintended pregnancies in the United States and MM outcomes when compared with intended pregnancies.[101] The present findings described a tendency of worse perceptions of MM reported the more WPPE's pregnancy experiences differed from their expectations, which demonstrates the significance of preparedness and expectations on the perceived pregnancy experience. When pregnancy itself is unexpected, the rift between WPPE's expectations and reality is greater and may lend to more adverse pregnancy experiences. Minimizing the expectation-reality gap where possible, such as through planned pregnancy, is safer for WPPE with antecedents that may worsen with pregnancy, including pre-existing conditions.[102] In addition to 'protective factors' serving as buffers for the relationship between WPPE's expectations and pregnancy experiences, focusing on positive pregnancy and health outcomes after MM also appeared to help WPPE's resilience. Having *good support* to navigate a difficult reality that contrasted with initial expectations, using *faith* to accept an unexpected experience, and focusing on *positive pregnancy and health outcomes* that may have initially been expected but became uncertain due to adverse events that arose help reconcile WPPE's pre-pregnancy expectations with their post-pregnancy realities. WPPE perceive the severity of MM through the impact of MM on their lives, which is shaped by the expectations WPPE hold and the reality of the experiences they live.

Scope

Defining the timeframe during which MM can occur is another important component for its measurement and management. A narrower timeframe limits the experiences that may constitute MM, including the antecedents and consequences that are often relevant before

pregnancy and beyond postpartum. The upper limit of the MM timeframe is commonly at the beginning of pregnancy, with pre-existing medical conditions and social determinants of health falling out of the scope of MM. Between six weeks to one-year postpartum are common lower limits of the MM timeframe, which results in the exclusion of later MM experiences and longer-lasting consequences. The MM Measurement Framework by Firoz and colleagues provides an example that views the scope of MM as inclusive of the pre-pregnancy and beyond postpartum periods similar to what is depicted in the present concept model.[103] By describing both the extensive reach MM may have across WPPE's lives and the cyclic nature of multiple pregnancy experiences,[103] they illustrate how the consequences of a past childbirth becomes the antecedents for a subsequent pregnancy. While the medical approach functions to address the most physiologically severe pregnancy outcomes, physical attributes constitute only one aspect of MM. WPPE perceive the MM experience as multifaceted and would benefit from multifaceted approaches that may begin prior to pregnancy and incorporate medical solutions with other relevant resources.

The Concept in View of Maternal Health

MM is an increasingly prioritized maternal health indicator. Maternal health as a topic of global and public health is represented by the third sustainable development goal stipulating good health for all.[99] The pregnancy-related targets for the third goal include reducing the global maternal mortality ratio and increasing the proportion of births attended by skilled birth attendants.[99] Reducing SMM is relevant to these targets since cases can be life-threatening and lead to death without healthcare intervention, which lends to the status of SMM as a common global maternal health indicator and medical priority. In relation to my model, medical priorities facilitate progress in reducing and managing the most severe conditions contributing to WPPE's

physical MM attributes and select antecedents, such as access to care. Whether SMM, near-miss, life-threatening obstetric event, or another variant, severe pregnancy-related outcomes are well-researched and are given due importance. There is less healthcare system focus on moderate physical attributes and other non-medical components of the MM concept model. Limited primary care resources provide one likely contributor to the de-emphasis of non-medically severe MM. The broad and widely differing understandings of non-severe MM provide another probable cause. Continued conceptualization of MM is necessary to draw further attention to overlooked moderate and non-medical experiences and better incorporate marginalized WPPE to MM models and care approaches.

While most of the non-medical components that WPPE perceived as MM were not life-threatening, they were significant to their health and wellbeing. Person-centred maternal care involves striving for a state of optimal wellness that encompasses and goes beyond surviving SMM.[25] In this way, a more holistic approach to MM should consider WPPE's pre-pregnancy conditions and the interactions these conditions may have with pregnancy as potential antecedents to MM. Long-term health beyond the postpartum period should also be accounted for considering the enduring consequences MM experiences may incur and potential impact they may have on future pregnancies. Beyond medical care, WPPE's health and wellbeing can benefit from social interventions. Social prescribing is a psychosocial approach bringing together healthcare and community systems to support various aspects of the health and wellbeing of individuals.[104] Examples of social prescribing models include arts, literature, education, nature, exercise, and volunteering-related interventions that are evidenced to have physical, mental, social, spiritual, and economic benefits while building resilience and self-esteem in individuals.[105] The resilience-building and support individuals gain through community

engagement would situate social prescribing as a protective factor if I applied it to the present concept model. Protective factors buffer the rift created between WPPE's expectations of a normal, uncomplicated childbirth and the realities of adverse pregnancy-related experiences. Combining community resources with medical interventions extends WPPE's continuity of care beyond a six-week postpartum checkup and gives equal importance to all components of their perceived MM experience. Firoz and colleagues described pregnancy as a window of opportunity for managing various aspects of WPPE's health including chronic or pre-existing conditions that worsen with pregnancy, the various attributes of MM, and consequences that outlast the postpartum period.[106] The tools necessary to take advantage of this window lie in holistic approaches combining medical and social interventions for optimal person-centred maternal care. However, global approaches to health also require global health equity. Social prescribing is established in multiple countries around the world, excluding those on the African or South American continents.[104] In addition to maternal health interventions lacking for certain populations, a gap persists for populations of WPPE underrepresented in the MM literature.

4.1 Strengths and Limitations of the Study

My conceptualization of MM encompasses conventional meanings of MM but goes further to highlight many overlooked experiences. The outcome was a model of MM from WPPE's perspectives that illustrated the diverse aspects of their experiences and described the impact of MM across their lives beyond the pregnancy timeframe. The methods used in conceptualizing MM were a strength of the study. Concept analysis is an innovative method in the medical and health fields that originated in nursing. Systematic scoping methods were used to search the MM literature for WPPE's perspectives, from which themes comprising MM were identified using thematic methods. Structuring MM using qualitative findings from WPPE meant

putting WPPE, or "the person" at the "centre" of the concept, for a WPPE-centred model of MM. The use of the concept analysis method for a concept as quickly evolving as MM is another strength. Pregnancy experiences can differ greatly across populations and between individuals of different socioeconomic factors. More details about diverse pregnancy experiences and their similarities and differences can help shape care, improve research, and advance management of adverse pregnancy-related experiences.

There are several potential limitations to discuss. Various terms for adverse pregnancy-related experiences exist and are used across the literature. While I applied my knowledge and conducted background readings on the topic of MM to determine the search terms for the literature review, additional terms were discovered during data extraction. Expanding the search terms in future literature reviews would aid in procuring additional studies that may have fit the inclusion criteria. WPPE's perspectives of specific MM conditions may also benefit future conceptual work that incorporates the perspectives of different stakeholders interested in MM and maternal health. While specific conditions were outside the scope of my conceptualization of the general MM experience, qualitative articles investigating specific MM may provide further details on WPPE's perspectives. Subconscious bias may have impacted the screening process as another potential limitation. For this reason, two reviewers independently screened the studies from the literature search for inclusion and conferred with the supervisory committee to solve conflicts. Word limits for published articles may have limited the data that researchers published in their results. Researchers with less participants may have included more data from each participant in their publication while researchers with more participants may highlighted select data for space in their paper. A more detailed account of smaller participant samples and omitted details from larger samples (i.e., allowing researchers to adequately discuss the larger volume of

perspectives they may have from their sample) may have resulted in more comprehensive data about participants from smaller study samples in my work. Lastly, Table 5 in Chapter 3 displayed the racial and ethnic groups represented among the participant samples of included studies. My MM concept may not fully encompass the perspectives of populations that lacked representation in the samples of the included studies (e.g., South American). Therefore, future research including the perspectives of underrepresented populations of WPPE can continue to evolve the MM concept.

4.2 Implications for Future Research

Conceptualization advances the theoretical understanding of health topics, which can then be used as the foundation for further research and the development of interventions for related health problems. Expanding MM to be more inclusive of WPPE's diverse experiences requires mirrored efforts to expand maternal care between the healthcare system and community to be more inclusive of WPPE's diverse needs. Once interventions are developed based on WPPE-centred MM models, more data can then be collected to investigate WPPE's perceptions of these interventions and how their concept of MM may have evolved. In this way, conceptualization lends itself to re-defining MM and using WPPE-conceptualized MM indicators in research studies to ensure that research is aimed at improving outcomes important to patients and families. To address the limitation of the lack of perspectives from certain populations in the concept, future work needs to include underrepresented groups. Further research to determine how underrepresented populations of WPPE conceptualize MM and whether their conceptualization differs from the perspectives of populations already represented in studies can help elaborate the concept. A diverse and inclusive understanding of MM will be a more robust

representation of MM as perceived by WPPE and offer opportunities to meet the needs of greater WPPE populations.

4.3 Conclusion

This study conceptualized MM from WPPE's perspectives and produced a MM model consisting of physical, social, psychological, and healthcare-related attributes, exemplifying the holistic definition proposed by the WHO. The antecedents and consequences WPPE perceived as part of their experiences extended beyond the conventional timeframes of pregnancy and postpartum that medical perspectives use to define MM. MM from WPPE's perspectives is a health problem affected by and impacting different areas of their lives and necessitating comprehensive solutions. Employing social prescribing models that combine health and community care to support individuals' wellbeing may offer a complementary approach to healthcare facility-based care to help WPPE through from pre-pregnancy to beyond the postpartum period. MM is an evolving concept dependent on the context in which it occurs, which can translate to different perceptions of MM for multiple populations of WPPE. Future directions for research include employing more qualitative and mixed methods to further conceptualize MM from the perspectives of underrepresented and marginalized individuals. Deeper and more diverse understandings of MM as perceived by WPPE will help inform holistic approaches to MM interventions that support health and wellbeing in all populations of WPPE. By identifying the concept's antecedents, attributes and consequences, this study demonstrated that MM as perceived by WPPE encompasses more than physical attributes, which largely form the basis of current classification systems. Incorporating these findings into clinical definitions can help inform health and community care approaches to increasingly meet WPPE's needs.

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Appendices

Appendix 1. Search strategy for qualitative articles about MM

Platforms and Databases Searched:

Platform	Database	Coverage Dates	# Rec.	Search Date	Notes
OvidSP	MEDLINE ® and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions ®	1946 – Current	133	06-May-22	
OvidSP	Classic Embase + Embase	1947 – Current	207	06-May-22	
EBSCO	CINAHL	1981 – Current	1169	06-May-22	
VHL	LILACS	1986 – Current	0	06-May-22	

Total # of records prior to duplicate removal: 1509

Total # of records after removing duplicates:

Original Searches:

MEDLINE® and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions®

Database: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions <1946 to May 05, 2022> Search Strategy:

---

1 exp Morbidity/ (626513)

2 (severe maternal morbidity or SMM or severe acute morbidity or SAM or severe acute maternal morbidity or SAMM).mp. (18607)

3 (adverse pregnancy outcome* or maternal near miss or near?miss or near miss morbidity or maternal near death or maternal morbidity or perinatal morbidity or f?tal maternal morbidity or obstetric outcome* or life?threatening or serious untoward incident or serious untoward event or (serious adj3 event) or (severe adj3 event)).mp. (25323)

4 (maternal mortality or MMM or maternal death or (fatal* adj3 event)).mp. (22621)

5 or/1-4 (686093)
6 exp Terminology as Topic/ (62250)
7 ((medical or clinical) adj1 (terminology or definition* or indicator* or outcome* or condition* or characteristic* or criteri* or guideline* or classification*)).mp. (414962)
8 ((medical or health) adj1 (organization* or association)).mp. (123221)
9 or/6-8 (595044)
10 exp Pregnancy/ (967428)
11 pregnancy.mp. (1039818)
12 10 or 11 (1056025)
13 5 and 9 and 12 (3090)
14 (("semi-structured" or semistructured or unstructured or informal or "in-depth" or indepth or "face-to-face" or structured or guide) adj3 (interview* or discussion* or questionnaire*)).ti,ab. (155715)
15 (focus group* or qualitative or ethnograph* or fieldwork or "field work" or "key informant").ti,ab. (321801)
16 Interviews as Topic/ or Focus Groups/ or Narration/ or Qualitative Research/ or Anthropology/ or Anthropological/ (157430)
17 or/14-16 (470498)
18 13 and 17 (133)
****

Embase

Database: Embase Classic+Embase <1947 to 2022 Week 17> Search Strategy:
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1 exp maternal morbidity/ or exp morbidity/ or exp perinatal morbidity/ (413707)
2 (severe maternal morbidity or SMM or severe acute maternal morbidity or SAMM).mp. (5030)
3 (adverse pregnancy outcome* or maternal near miss or near?miss or near miss morbidity or f?tal maternal morbidity or obstetric outcome* or life?threatening or serious untoward incident or serious untoward event or (serious adj3 event) or (severe adj3 event)).mp. (30197)
4 (maternal mortality or MMM or maternal death or (fatal* adj3 event)).mp. (37881)
5 or/1-4 (475990)
6 exp nomenclature/ (66778)
7 ((medical or clinical) adj1 (terminology or definition* or indicator* or outcome* or condition* or characteristic* or crtieri* or guideline* or classification*)).mp. (760756)
8 ((medical or health) adj1 (organization* or association*)).mp. (249765)
9 or/6-8 (1063597)
10 exp pregnancy/ (862894)
11 pregnancy.mp. (1087223)
12 10 or 11 (1088391)
13 5 and 9 and 12 (4089)
14 (("semi-structured" or semistructured or unstructured or informal or "in-depth" or indepth or "face-to-face" or structured or guide) adj3 (interview* or discussion* or questionnaire*)).ti,ab. (197602)
15 (focus group* or qualitative or ethnograph* or fieldwork or "field work" or "key informant").ti,ab. (405071)
16 interview/ or information processing/ or verbal communication/ or qualitative research/ or anthropology/ (573583)
17 or/14-16 (927007)
18 13 and 17 (207)
****

CINAHL

Search ID#	Search Terms	Search Options	Last Run Via	Results
S18	S13 AND S17	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL with Full Text	1,169
S17	S14 OR S15 OR S16	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL with Full Text	402,496
S16	(MH "Focus Groups") OR (MH "Qualitative Studies") OR (MH "Anthropology") OR (MH "Narratives") OR (MH "Interviews+")	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL with Full Text	319,874
S15	TI (focus group* or qualitative or ethnograph* or fieldwork or "field work" or "key informant") OR AB (focus group* or qualitative or ethnograph* or fieldwork or "field work" or "key informant")	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL with Full Text	185,355

S14	TI (("semi-structured" or semistructured or unstructured or "in-depth" ir indepth or "face-to-face" or structured or guide) N3 (interview* or discussion* or questionnaire*)) OR AB (("semi-structured" or semistructured or unstructured or "in-depth" ir indepth or "face-to-face" or structured or guide) N3 (interview* or discussion* or questionnaire*))	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL with Full Text	83,477
S13	S5 AND S9 AND S12	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL with Full Text	8,863
S12	S10 OR S11	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL with Full Text	319,417
S11	TX (pregnancy)	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL with Full Text	308,997

S10	(MH "Pregnancy+")	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL with Full Text	234,795
S9	S6 OR S7 OR S8	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL with Full Text	652,909
S8	TX ((medical or health) N1 (organization* or association*))	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL with Full Text	399,040
S7	TX ((medical or clinical) N1 (terminology or definition* or indicator* or outcome* or condition* or characteristic* or criteri* or guideline* or classification*))	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL with Full Text	275,545
S6	(MH "Nomenclature+")	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database -	19,762

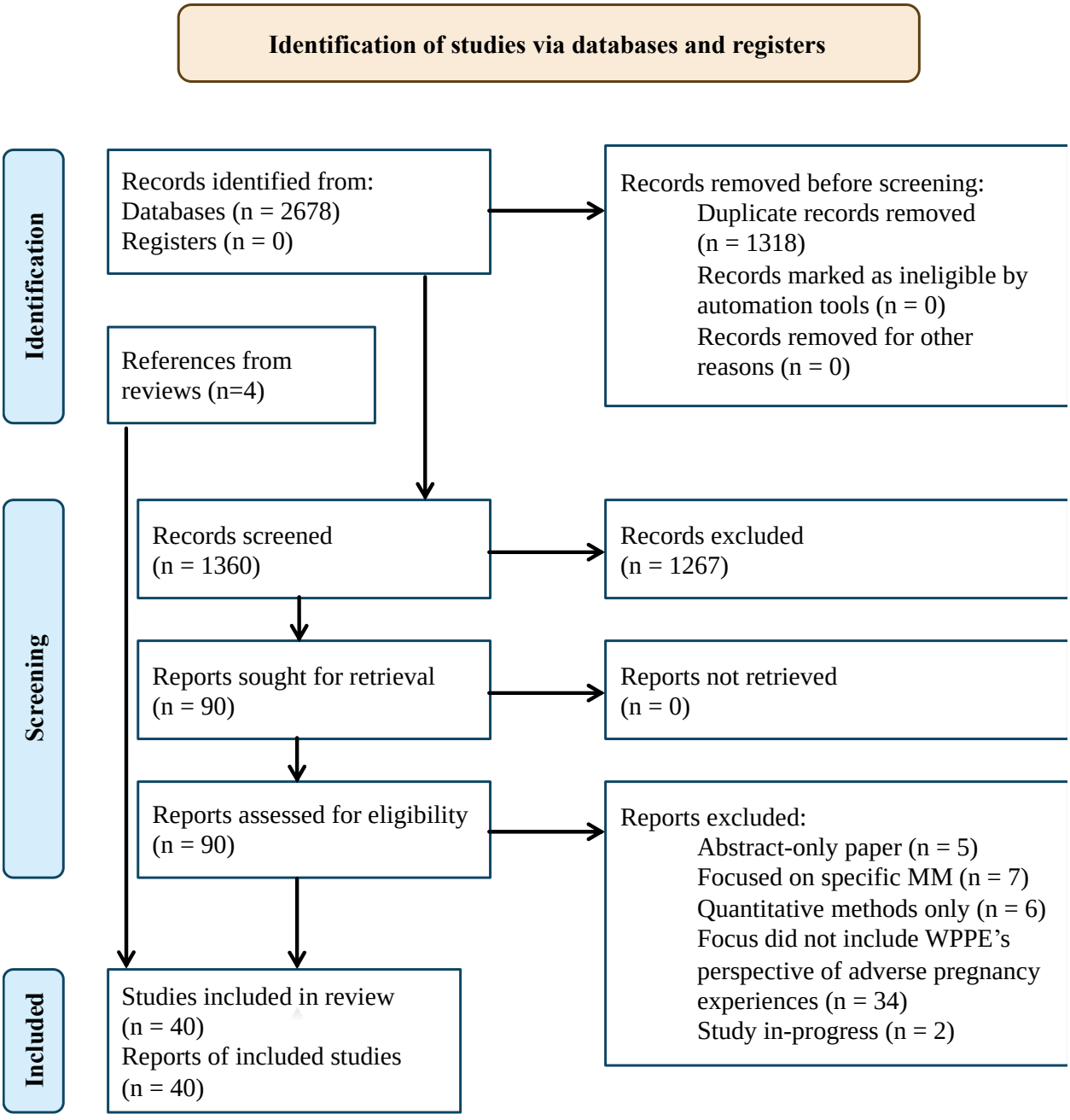
			CINAHL with Full Text	
S5	S1 OR S2 OR S3 OR S4	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL with Full Text	235,283
S4	TX (maternal mortality or MMM or maternal death or (fatal* N3 event))	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL with Full Text	18,884
S3	TX (adverse pregnancy outcome* or maternal near miss or near#miss or near miss morbidity or maternal near death or maternal morbidity or perinatal morbidity or f#tal maternal morbidity or obstetric outcome* or life#threatening or serious untoward incident or serious untoward event or (serious N3 event) or (severe N3 event))	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL with Full Text	34,173
S2	TX (severe maternal morbidity or SMM or severe acute maternal morbidity or SAMM)	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database -	2,260

			CINAHL with Full Text	
S1	(MH "Morbidity+")	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL with Full Text	186,606

LILACS

(((MH: Morbidity) OR (TW: severe maternal morbidity OR TW: SMM OR TW: severe acute maternal morbidity OR TW: SAMM) OR (TW: adverse pregnancy outcome* OR TW: maternal near miss OR TW: near miss OR TW: near-miss OR TW: near miss morbidity OR TW: maternal near death OR TW: maternal morbidity OR TW: perinatal morbidity OR TW: fetal maternal morbidity OR TW: feotal maternal morbidity OR TW: obstetric outcome* OR TW: life-threatening OR TW: life threatening OR TW: serious untoward event OR TW: serious untoward incident OR TW: (serious AND event) OR TW: (severe AND event)) OR (TW: maternal mortality OR TW: MMM OR TW: maternal death OR TW: (fatal AND event))) AND (((MH: Terminology as Topic) OR ((TW: medical OR TW: clinical) AND (TW: terminology OR TW: definition* OR TW: indicator* OR TW: outcome* OR TW: condition* OR TW: characteristic* OR TW: criteri* OR TW: guideline* OR TW: classification*)) OR ((TW: medical OR TW: health) AND (TW: organization* OR TW: association*))) AND (((MH: Pregnancy) OR (TW: pregnancy))) AND (((MH: Interviews as Topic OR MH: Focus Groups OR MH: Narration OR MH: Qualitative Research OR MH: Anthropology OR MH: Anthropological) OR ((TW: "semi-structured" OR TW: semistructured OR TW: unstructured OR TW: informal OR TW: indepth OR TW: "in-depth" OR TW: structured OR TW: guide) AND (TW: interview* OR TW: discussion* OR TW: questionnaire*)) OR (TW: focus group* OR TW: qualitative OR TW: ethnograph* OR TW: fieldwork OR TW: "field work" OR TW: "key informant")))

Appendix 2. PRISMA diagram of screening process



Appendix 3. Methods, description of sample, main interview question and descriptive information of the included studies articles

Title	Author(s) last name	Year	Country	Data Collection	Analysis	Sample	Sample Size	Main Question(s) about MM
Having A "Safe Delivery": Conflicting Views from Tibet	Adams, V; Miller, S; Chertow, J; Craig, S; Samen, A; Varner, M	2005	Tibet (China)	Semi-structured interview, ethnographic methods	Unspecified	Mothers aged 18-40 years.	38	"What, in other words, did rural Tibetan women consider to be a 'safe delivery'?"
Men's Perceptions of Delivery Care in Rural Malawi: Exploring Community Level Barriers to Improving Maternal Health	Aarnio, P; Chipeta, E; Kulmala, T	2013	Malawi	Questionnaire	Content analysis	Men who had a wife aged 15-49 years and pregnant in the last 5 years.	389	Not specified, but the questionnaire "contained closed and open-ended questions on men's perceptions on and involvement in antenatal care, birth preparedness, choice of delivery place, obstetric complications, delivery care, and postpartum care."
What Are the Factors That Interplay From Normal Pregnancy to Near Miss Maternal Morbidity in a Nigerian Tertiary Health Care Facility?	Adeoye, I; Ijarotimi, O; Fatusi, A	2015	Nigeria	In-depth interview	Narrative analysis	Pregnant women who received hospital care between the third trimester and 6 weeks postpartum; uncomplicated pregnant women.	75	"Give a verbatim account of your last experience with this last pregnancy and delivery."
Experiences of pregnancy complications: Voices from central Haiti	Alex, M; Whitty-Rogers, J	2017	Haiti	Semi-structured interview	Hermeneutic phenomenological analysis	Skilled and traditional birth attendants; women older than 18 years between one month-one year postpartum.	21	Not specified, but the research questions were: "How do matwons and saj fanm practicing in the rural villages of central Haiti describe their success stories and challenges? How do postpartum women in central Haiti describe their experiences with pregnancy and childbirth complications?"
Consequences of severe obstetric	Assarag, B; Dujardin, B; Essolbi,	2015	Morocco	In-depth interview	Unspecified	Women who experienced	40	Questions asked "about childbirth, healthcare seeking, economic aspects of

complications on women's health in Morocco: please, listen to me!	A; Cherkaoui, I; De Brouwere, V					near-miss; women who had uncomplicated births.		care-seeking, perceived health, social relationships, and the social and economic impact of childbirth on their families."
The Effectiveness Of The TBA Programme In Reducing Maternal Mortality And Morbidity In Malawi	Bisika, T	2008	Malawi	Focus group discussions, in-depth interview	Content analysis	Women of reproductive age (unspecified) who gave birth to at least once.	Focus groups held with unstated sample size.	Not specified.
First Mothering Over 35 Years: Questioning the Association of Maternal Age and Pregnancy Risk	Carolan, M; Neslon, S	2007	Australia	Secondary analysis of a longitudinal study with in-depth interview	Thematic analysis	First-time mothers with uncomplicated pregnancies, aged 35 years or older.	22	"What might have helped?"
Poor pregnancy outcomes in public health facilities in Kenya	Cheptum, JJ; Oyore, JP; Agina, BMO	2012	Kenya	Key-informant interview	Unspecified	Key informants (leadership of healthcare facilities).	3	Not specified. Key informants' qualitative interviews "gave information regarding the health facility," pre-existing conditions and obstetric emergencies.
Reproductive health in Indigenous Chihuahua: giving birth 'along like the goat'	Chopel, A	2014	Mexico	Focus groups, in-depth interviews, semi-structured interviews	Unspecified	Households; healthcare providers; the community at large.	49	Not specified. "Indigenous leaders and government health authorities were asked about their perceptions of the size and scope of reproductive health problems in indigenous communities. Indigenous leaders were asked additional questions about changing health beliefs, and health authorities were queried about health services and capacities of health facilities. Both groups were asked about perceived barriers to seeking and receiving science-based medical care, while only indigenous leaders were

								asked about traditional, private healers providing health care."
Exploring Knowledge and Attitudes Related to Pregnancy and Preconception Health in Women with Chronic Medical Conditions	Chuang, CH; Velott, DL; Weisman CS	2009	U.S.	Focus groups	Grounded theory	Women with chronic diseases (diabetes, hypertension and obesity).	72	"Do you think that diabetes/hypertension/being overweight makes you any more or less likely to have a difficult pregnancy?"
Medicalization Discourse and Modernity: Contested Meanings Over Childbirth in Contemporary Turkey	Cindoglu, D; Sayan-Cengiz, F	2010	Turkey	Focus groups	Unspecified	Women who had received reproductive healthcare; healthcare providers.	Focus groups held with unstated sample size.	"The participant women were asked to tell their birth experiences, the factors that affected their decisions pertaining to the birth settings, and their perceptions of their birth experiences."
The Sounds of Silence - A Hermeneutic Interpretation of Childbirth Post Excision	D'Entremont, M; Smythe, L; McAra-Couper, J	2013	France	Interview	Hermeneutic phenomenological analysis	Women who had been excised and given vaginal birth post excision.	4	"How does your community treat childbirth?" What are the expectations and responsibilities associated with childbirth?"
A qualitative study of stigma among women suffering postnatal illness	Edwards, E; Timmons, S	2005	U.K.	Semi-structured interview	Unspecified	Women who had given birth and were diagnosed with a severe postnatal mental illness.	6	"What were your personal feelings and emotions about suffering post-natal illness and needing to be admitted to hospital?" "What were the most memorable experiences that you experienced, both positive and negative?"
Patterns and determinants of pathways to reach comprehensive emergency obstetric and neonatal care	Elmusharaf, K; Byrne, E; AbuAgla A; AbdelRahim, A; Manandhar, M; Sondorp, E; O'Donovan, D	2017	South Sudan	Critical Incident Technique (CIT), Interviews	Diagrammatic pathway analysis, thematic inductive analysis	Women who had experienced near-miss; their family; healthcare providers; stakeholders.	8	"What happened?'

(CEmONC) in South Sudan: qualitative diagrammatic pathway analysis								
Maternal Birth Outcomes: Processes and Challenges in Anambra State, Nigeria	Ezeonwu, M	2011	Nigeria	Semi-structured interview	Content analysis	Healthcare providers (nurses).	12	"What are common maternal complications of delivery in Anambra State, Nigeria?"
Childbearing and Contraceptive Decision Making Amongst Afghan Men and Women: A Qualitative Analysis	Haider, S; Todd, C; Ahmadzai, M; Rahimi, S; Azfar, P; Morris, JL; Miller, S	2009	Afghanistan	Focus groups, in-depth interview	Unspecified	Individuals from couples where the woman was postpartum (women recruited from postpartum wards; men from the hospital waiting area).	39	Not specified. "Topics explored included personal experiences of and perspectives on childbirth … The team also questioned participants about their perceptions of maternal morbidity and mortality"
Understanding women's experiences of distress during pregnancy in Dar es Salaam, Tanzania	Kaaya, SF; Mbwambo, JK; Smith Fawzi, MC; Van Den Borne, H; Schaalma, H; Leshabari, MT	2010	Tanzania	Unstructured interview	Axial coding	Women who received pregnancy care in the last 5 years and presented with mental health concerns.	26	"Interviews with [women], probed recollected experiences of distress during pregnancy, idioms of distress and sources of support."
Survivors' understanding of vulnerability and resilience to maternal near-miss obstetric events in Uganda	Kaye, DK; Kakaire, O; Nakimuli, A; Mbalinda, SN; Osinde, MO; Kakande, N	2014	Uganda	In-depth interview	Phenomenological analysis	Women who experienced near-miss.	36	"The questions explored: self-rated health; anticipated social, sexual, and reproductive health challenges; and mitigating factors."
Exploring women's experiences of	Keeling, J	2012	U.K.	Narrative interview	Thematic analysis	Women at a refuge for domestic	6	There were no predetermined questions. Participants were allowed to speak about

domestic violence: Injury, impact and infant feeding						violence survivors who had given birth at least once.		that they wanted during the interview time.
Primigravidae's knowledge about «bstetric complications in an urban health centre in Malawi	Kumbani, LC; McInerney, P	2006	Malawi	Interview	Descriptive & Inferential statistics	Women 28-42 weeks pregnant with their first pregnancy.	45	"The participants were asked to name problems which might occur during pregnancy, labour and the puerperium."
Views of Womoen and Clinicians on Postpartum Preparation and Recovery	Martin, A; Horowitz, C; Balbierz, A; Howell, E	2014	U.S.	Focus groups	Grounded theory	Women 2-12 months postpartum who had an uncomplicated birth; healthcare providers.	58	"What were the biggest problems you faced?"
The Pain That Binds Us: Midwives' Experiences of Loss and Adverse Outcomes Around the World	McCool, W; Guidera, M; Stenson, M; Dauphinee, L	2009	Multiple Countries	Interview	Phenomenol ogical analysis	Midwives who had experience with adverse maternal outcomes.	22	"What was the adverse outcome? Tell the story of what happened."
Just another ordinary bad birth? A narrative analysis of first time mothers' traumatic birth experiences	Murphy, H; Strong, J	2018	England	Semi-structured interview	Narrative analysis	Women who had given birth and self-identified as having had a traumatic birth experience.	4	"What did you find traumatic?" "What effect did this have on you?" "How did your experience impact on you and your baby?"
Capitals diminished, denied, mustered and deployed. A qualitative longitudinal	Murray, SF; Akoumb, MS; Storengc, KT	2012	Burkina Faso	Interviews, qualitative fieldwork	Thematic analysis	Women who had been treated for near-miss.	16	"The [interview] material is wide ranging and encompasses women's narratives about their sense of self, their attitudes to their past and their future, experiences with work, spouses, parents, children,

study of women's four year trajectories after acute health crisis, Burkina Faso								households, pregnancy, illness and healthcare."
Prevalence of maternal near miss and community-based risk factors in Central Uganda	Nansubuga, E; Ayiga, N; Moyer, CA	2016	Uganda	In-depth interview	Content analysis	Women aged 15-49 years who had been pregnant in the last 3 years.	40	Not specified
Emotional violence and maternal mental health: a qualitative study among women in northern Vietnam	Nhi, TT; Hanh, NTT; Gammeltoft, TM	2018	Vietnam	In-depth interview	Content analysis	Pregnant women who experienced emotional violence during pregnancy and scored highly on a depression scale.	20	Women were encouraged to tell their "love stories" and "asked about instances of partner violence and the mental health states that that were reported during the quantitative interviews."
The experiences of women with maternal near miss and their perception of quality of care in Kelantan, Malaysia: a qualitative study	Norhayati MN; Nik Hazlina NH; Asrenee AR; Sulaiman Z	2017	Malaysia	In-depth interview	Thematic analysis	Women who experienced near-miss and were aged 18 years or older.	30	"Can you tell me about your experience on attending the antenatal care services?" "Can you tell me about your experience on reaching the hospital?" "How is the treatment?" "How is your physical ability during the recovery process?" "Can you accept what had happened?"
Maternal Health-Seeking Behavior and Associated Factors in a Rural Nigerian Community	Osubor, KM; Fatusi, AO; Chiwuzie, JC	2006	Nigeria	Focus group discussions	Unspecified	Women aged 15-49 years who had been previously pregnant.	~48	Not specified. "Information on common health problems that were being experienced during pregnancy was sought during the FGD sessions."
Abuse from In-Laws during	Raj, A; Sabarwal, S; Decker, MR; Nair,	2010	India	In-depth interview	Grounded theory	Postpartum women (up to 6	32	Not specified: "In-depth interviews explored women's experiences of abuse

Pregnancy and Post-Partum: Qualitative and Quatitative Findings from Low-income Mothers of Infants in Mumbai, India	S; Jethva, M; Krishnan, S; Donta, B; Saggurti, N; Silverman, JG					months) and reported domestic abuse from their husband during/around their pregnancy.		by husbands and other family members and their perceived health consequences of these abuse experiences.”
Fateful moments and the categorisation of risk: Midwifery practice and the ever-narrowing window of normality during childbirth	Scamella, M; Alaszewski, A	2012	U.K.	Ethnographic interviews, participant observation, non-participant observation, text analysis	Content analysis	Healthcare providers (midwives).	27	Not specified. “In this study, we used methodological tools that could make explicit midwives’ tacit knowledge, their common-sense understandings about risk and normality."
Women's Perceptions of Childbirth Experience at a Hospital in Rural Tanzania	Shimpuku, Y; Patil, C; Norr, K; Hill, P	2013	Tanzania	Semi-structured interview	Descriptive coding	Postpartum women (up to 24 hours) aged 16 years or older who had an uncomplicated childbirth.	25	"I asked women to describe the support they received over the course of their labor and delivery and to comment on what they would like to receive as in-hospital childbirth support. I developed a series of interview questions that would allow me to reconstruct the details of each phase of the childbirth experience starting with when contractions began through the early postpartum period."
Ethnic-Specific Perceptions of Altered Control Among American Women: Implications for Health Promotion Programs After Pregnancy	Sterling, B; Fowles, E; Kim, S; Latimer, L; Walker, LO	2011	U.S.	Focus groups	Content analysis	Women aged 18 years or older who had a high BMI and scored highly on a depression scale at one year postpartum.	25	"What were some situations that caused you stress during your postpartum period?"

Beyond body counts: A qualitative study of lives and loss in Burkina Faso after 'near-miss' obstetric complications	Storeng, KT; Murray, SF; Akoum, MS; Ouattara, F; Filippi, V	2010	Burkina Faso	In-depth interview	Thematic analysis	Women who experienced near-miss; husband and family.	64	The authors "explored women's reproductive histories, healthcare seeking, economic aspects of care-seeking, perceived health and recovery, social relationships, livelihoods and everyday lives."
Male Involvement and Accommodation During Obstetric Emergencies in Rural Ghana: A Qualitative Analysis	Story, WT; Barrington, C; Fordham, C; Sodzi-Tettey, SP; Barker, M; Singh, K	2016	Ghana	In-depth interview, focus groups	Inductive analysis	Mothers and fathers (not from the same couple) who had experienced a severe childbirth complication.	97	"We elicited birth narratives—in-depth descriptions of participants' personal experiences with childbirth, and in particular birth complications—in an attempt to situate the experiences in their social and structural context."
Risk screening, emergency care, and lay concepts of complications during pregnancy in Chiapas, Mexico	Tinoco-Ojanguren, R; Glantz, NM; Martinez-Hernandez, I; Ovando-Meza, I	2008	Mexico	Open-ended interview	Descriptive & interpretive analysis	Women aged 17 to 47 years who had given childbirth; husband and family.	45	"What is a problematic or complicated pregnancy?" "How might a problematic pregnancy or complication during pregnancy be identified?" "What do you do in such cases?"
Postpartum Mothers' Disclosure of Abuse, Role, and Conflict	Ulrich, YC; McKenna, LS; King, C; Campbell, DW; Ryan, J; Torres, S; Lea, PP; Medina, M; Garza, MA; Johnson-Mallard, V; Landenberger, K; Campbell, JC	2006	U.S.	Interview	Unspecified	Postpartum women who experienced abuse.	30	"'Tell me a little bit about your relationship with your partner.' … [and] whether she was abused during pregnancy"
Do women who have encountered vaginal childbirth experience long term incontinence or perineal pain?	Whapples, E	2014	U.K.	Semi-structured interview	Thematic analysis	Postpartum women (three-six months).	9	Not specified. "Semi-structured interviews were used to determine the women's own personal perceptions."

Health Seeking Behavior Among Pregnant Women in Rural Haiti	White, K; Small, M; Frederic, R; Joseph, G; Bateau, R; Kershaw, T	2006	Haiti	Semi-structured interview	Unspecified	Women who sought prenatal care.	82	"Participants were asked about reasons women in Haiti die during pregnancy, reasons for seeking care during pregnancy, experiences of not seeking or delaying seeking care during times of illness in previous pregnancies, and how they managed their health during times when they did not seek care in the formal health care sector."
Giving Birth: The Voices of Ghanaian Women	Wilkinson, SE; Callister, LC	2010	Ghana	Interview, focused ethnography	Content analysis	Women who sought prenatal care; healthcare providers (midwives).	34	Not specified
Maternal Morbidity in Rural Upper Egypt: Levels, Determinants, and Care Seeking	Yassin, K; Laaser, U; Kraemer, A	2003	Egypt	Focus group discussions	Unspecified	Postpartum women (less than one year).	231	Focus group discussion were used "to elaborate on [women's] ideas about the cause, seriousness, and personal responsibility for health problems encountered in pregnancy."

Appendix 4. Extraction tool used to collect data from included studies

General Study Information		
RefID		
Author(s)		
Year		
Study type		
Setting	Country/City	
	Facility/Environment	
Objective(s)		
Methods	How were MM cases identified?	
	How many cases/participants?	
	What question(s) did the author use to ask about MM? What type of question(s) were these (open-ended, leading, etc.)?	
	Qualitative data collection and analysis	
	Date of data collection	
	Inclusion/Exclusion criteria	
Strengths/limitations of the study relating my objectives (of describing the conditions and events that WPPE conceptualize as MM)		
Concept Information (include n=[# of participants who said a statement] when possible)		
Whose voice (WPPE, family, HCP)? □ Include relevant demographic information		
Surrogate terms (MM term[s] used) □ Medical/By Author □ By WPPE		
Related terms		
Scope	How are WPPE described and by whom/how do they describe themselves?	
	During what timeframe did MM occur/last for? (pre-conceptual; pregnancy; intrapartum; ≤6 weeks, ≤1 year, >1 year postpartum period)	
	Who was involved in the MM description? (only WPPE, baby, partner, HCP, etc)	
Antecedents (what occurred before/leading up to MM?) □ Summarize themes then list specific examples underneath		
Attributes (how is MM described? by whom? what are the features of MM?) □ Notes related antecedents & consequences □ Summarize themes then list specific examples underneath		
Consequences (what resulted from the MM experience[s]?) □ Summarize themes then list specific examples underneath		
Key themes of MM experience(s)		
Other Notes		