COMMUNITY HEALTH WORKERS' PERSPECTIVES OF MOTHER–INFANT BONDING WITHIN THE FIRST 1000 DAYS OF LIFE IN KHAYELITSHA, SOUTH AFRICA

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Keywords: community health worker, home visitor, early childhood development, first 1000 days of life, mother–infant bonding, attachment, Khayelitsha, South Africa

DECLARATION

I declare that **COMMUNITY HEALTH WORKERS' PERSPECTIVES OF MOTHER–INFANT BONDING WITHIN THE FIRST 1000 DAYS OF LIFE IN KHAYELITSHA, SOUTH AFRICA** is my own work, that all the sources used have been completely cited and referenced in accordance with the American Psychological Association (7th edition) referencing style.

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DEFINITION OF TERMS

Attachment: Attachment theory asserts that infants form a strong connection with one primary caregiver. There are four categories of attachment styles between infants and caregivers: secure, insecure, non-attached, and disorganized (Ainsworth et al., 1978).

Community health workers: Lay workers who provide a range of health-related services to individuals within a community, often through home-visiting programmes (Schneider et al., 2008).

Early childhood development: The physical, psychological, cognitive and social development that children undergo between birth and school-going age (Ashley-Cooper et al., 2019).

First 1000 days of life: The period of a child's life from conception until two years of age (Thurow, 2016).

Maternal responsiveness: "The mother's ability to be warm, affectionate, and soothing during times of infant distress, as well as providing the infant with interesting and creative play and interaction" (Johnson, 2013, p. 18)

Maternal sensitivity: "A mother's ability to recognize, accurately interpret, and respond in a timely manner to infant cues" (Johnson, 2013, p. 18).

Mother–infant bonding: "The special, close relationship between the mother and her child that occurs during the sensitive period. This is a unique experience which ties the mother to her child" (Altaweli & Roberts, 2010, p. 558).

ABSTRACT

While community health workers possess valuable insight into health care delivery in South Africa, their voices and experiences are seldom sought in the acquisition of knowledge surrounding relevant social concerns. This research aimed to explore community health workers' perspectives of mother–infant bonding within the first 1000 days of life. The first 1000 days of a child's life are a delicate yet highly consequential period affecting future physical, cognitive, and socio-emotional growth. The bond between mother and infant within the first 1000 days is especially critical as it is within the bounds of this relationship that a child is fed, cared for, and kept safe. Furthermore, mother–infant bonding lays an essential foundation for future development. However, there is a paucity of contextualized literature, particularly regarding mother–infant bonding in the first 1000 days. In practice, mother–infant interventions are often delivered by community health workers. Through their work, community health workers gain a wealth of knowledge and information about the experiences and practices of bonding within their community. Their insights are a potentially untapped resource which could be used to supplement research and interventions with local, contextualized wisdom. The aim of this research was to explore community health workers' perspectives of mother–infant bonding within the first 1000 days in Khayelitsha, South Africa. The study utilized a qualitative methodological framework and an exploratory research design. Semi-structured individual interviews were conducted with 15 experienced community health workers, who were purposively selected from a non-governmental organization located in Khayelitsha, South Africa. Data were thematically analysed, and five primary themes emerged from the analysis, namely: (1) the importance of the first 1000 days; (2) the centrality of mother–infant bonding within the first 1000 days; (3) effective approaches to bonding are simple, natural, and free; (4) the

inhibitors of mother–infant bonding; and (5) the need for support. Trustworthiness and researcher reflexivity practices were integrated throughout the research process. Ethics considerations were prioritized, and included providing informed consent, ensuring confidentiality and anonymity, and informing participants of their rights as stipulated by the University of the Western Cape Biomedical Research Ethics Committee.

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LIST OF ACRONYMS AND ABBREVIATIONS

ANC: Antenatal clinic

BMREC: Biomedical Research Ethics Committee

CHW: Community health worker

ECD: Early childhood development

HIV/AIDS: Human immunodeficiency virus/acquired immunodeficiency syndrome

NGO: Non-governmental organization

NIECDP: National Integrated Early Childhood Development Policy, 2015

UNICEF: United Nations Children's Fund

UWC: University of the Western Cape

CHAPTER 1: INTRODUCTION

1.1 Background

In 2004, the South African Government introduced the term “community health workers” to refer to lay health workers providing social and health-related support to people within their communities (Schneider et al., 2008). Community health workers (CHWs) are essential to the provision of health care services in South Africa (Cooper et al., 2009; Mitchell et al., 2005; Suri et al., 2008). They provide support within various health-related areas, often through home-visiting programmes or interventions. CHWs visit ‘clients’ in their homes on a regular basis, providing them with pertinent information, educational activities, and counselling support depending on the focus of the programme and the needs of the client. A body of evidence verifies the efficacy of services and interventions provided by CHWs, from HIV/AIDS-focused interventions to interventions aimed at supporting mothers and infants (Le Roux et al., 2010; Mitchell et al., 2005; Schneider et al., 2008; Tomlinson, 2013).

Through their work, CHWs acquire on-the-ground experience about the practical realities, customs, challenges, and strengths of the communities in which they work (Mitchell et al., 2005). Suri et al. (2008) write that “as the primary link between the formal health care sector (clinics, physicians, and nurses) and the household level in South Africa, CHWs provide a critical perspective on barriers that exist in health care delivery” (p. S505). One area in which CHWs can provide support is to mothers and infants within the first 1000 days of life, which is the period from a child’s conception to two years of age (Republic of South Africa, 2015). The first 1000 days of a child’s life are the most profound and consequential for their future development (Bellieni, 2016; Shung-King et al., 2019; Thurow, 2016). Extensive international research indicates that sound early development may benefit a multitude of later outcomes

including improvements in socio-emotional adjustment, mental health, brain development, physical health, and interpersonal relationships (Bellieni, 2016; Silver et al., 2018). Preliminary South African research (Fearon et al., 2017; Rochat et al., 2016; Vorster & Kruger, 2007) supports international literature, finding that factors occurring during the first few years of life, and even during pregnancy, are associated with later cognitive functioning, the development of conduct disorder, the risk of cardiovascular disease, and the regulation of the stress hormone cortisol.

In light of the mounting evidence, the importance of the first 1000 days is becoming increasingly recognized and emphasized in South African governmental and non-governmental institutions alike (Republic of South Africa, 2015; Shung-King et al., 2019). The National and Western Cape governments support the first 1000 days initiative, and are working to implement relevant programmes across the province and country (Republic of South Africa, 2015; Western Cape Government, 2019). The National Integrated Early Childhood Development Policy (NIECDP) states that "the first 1000 days thus offer a unique and invaluable window of opportunity to secure the optimal development of the child, and by extension, the positive developmental trajectory of a country" (Republic of South Africa, 2015, p. 19).

Bonding is a particularly important component of the first 1000 days of life as it is in the context of the mother–infant relationship that a baby is fed, cared for, and kept healthy (Persico et al., 2017; Tomlinson & Landman, 2007). Mother–infant bonding can be understood as the relationship a mother has with her baby, both during pregnancy and after birth (Kennell & McGrath, 2005). Bonding occurs through numerous daily interactions between the mother and child, including talking or singing to an unborn baby, and after birth through talking, singing, reading, playing, cuddling, making eye-contact, breastfeeding, spending time, and many other

day-to-day activities (Persico et al., 2017; Tichelman et al., 2019). Bonding is critical, as a strong mother–infant relationship holds the potential to protect against a multitude of social adversities that are so often faced in South Africa (Tomlinson & Landman, 2007).

1.2 Rationale

The significance of a child's first 1000 days of life has substantial evidence, and as such has received significant and active support from the South African Government (Republic of South Africa, 2015). Yet, the topic is under researched within the South African context (Scharfe & Black, 2019). Moreover mother-infant bonding is often overlooked among current first 1000 days research and practice (Murray et al., 2016; Tomlinson & Landman, 2007; Wynn et al., 2017). Research and emphasis tend to focus on tangible, measurable outcomes such as nutrition, physical growth, and health status. These indicators are widely used, clear-cut, and relatively precise markers of infant development; however, they by no means offer a comprehensive picture of infant well-being (Scharfe & Black, 2019; Tomlinson & Landman, 2007). As such, there is a growing call to understand and emphasize the more tacit elements of early childhood development, particularly mother–infant bonding (Tomlinson & Landman, 2007).

Indeed, it is the mother–infant relationship which acts as the best protective factor against adversity (Fearon et al., 2017; Shung-King et al., 2019; Tomlinson, 2013) and is moreover positively related to a multitude of future developmental outcomes (Cooper et al., 2009; Farré-Sender et al., 2018; Persico et al., 2017; Scharfe & Black, 2019; Wright et al., 2018). Thus, given the shortage of current South African literature, in conjunction with the importance of the topic, the proposed research intends to explore mother–infant bonding in South Africa.

The term "mother–infant bonding", as opposed to "caregiver–infant bonding", was selected for several reasons. The majority of primary caregivers in South Africa, and in

Khayelitsha in particular, are mothers (Mkhwanazi et al., 2018; Nyatsanza et al., 2016). Moreover, the term "mother–infant bonding" permits simplicity and focus and aligns with much of the current local and international literature on the topic. However, it is important to note that bonding may occur between infants and many forms of primary caregivers, including fathers, extended family, or adoptive caregivers (Ilifa Labantwana et al., 2019; Mkhwanazi et al., 2018). For the purposes of this research, however, the focus remains primarily on the relationship between infants and their mothers.

CHWs have access to the intimacies of the early mother–infant relationship (Tomlinson, 2013). Through their work, they acquire experience, insight, and a wealth of information about mother–infant bonding practices in their communities (Tomlinson, 2013). CHWs possess knowledge about the concerns and capacities of mothers that stem from the local context and thus hold the potential to greatly supplement research and interventions which are currently based largely on external theories (Mitchell, et al., 2005; Suri, et al., 2007). Consequently, this research proposes that CHWs would be ideal sources of localized and contextualized knowledge and insight.

1.3 Theoretical framework

The development of African children has predominantly been studied within the bounds of Western ideologies or frameworks, a practice which gives way to an array of both conceptual and practical concerns (Nsamenang, 1995; Oppong, 2018). Development inherently occurs within a socio-cultural context, and yet Western development frameworks overwhelmingly do not consider contextual influences (Oppong, 2018). Oppong (2018) notes that "the outcome variables (such as cognitive ability, academic performance, personality, and behavioural patterns) have been measured as if Western childhood developmental trajectories and ideals are

universal" (p. 23). Many authors argue that investigating South African development using Western frameworks is both impractical and injurious to South African parents and children (Nsamenang, 1995; Oppong, 2018; Phenice, Griffore, Hakoyama, & Silvey, 2009; Rothbaum, Weisz, Pott, Miyake, & Morelli, 2000; Weisner, 2002).

As an alternative, Nsamenang (1995) proposes the eco-cultural model, which takes into account the contextually situated nature of development and socialization. Nsamenang (1995) notes that "the seminal concept of the eco-cultural model is contextual nicheness or embeddedness; every developmental phenomenon is embedded in a specific ecological setting, primed by particular socio-cultural ethos" (p. 10–11). The eco-cultural model postulates that developmental phenomena should be explored and theorized from local conceptualizations, thereby deterring unnecessary scientific assimilation (Nsamenang, 1995; Weisner, 2002). This research is guided by the eco-cultural model as it aims to draw knowledge as understanding from local, contextually situated sources.

1.4 Research questions

In light of the background and rationale, the research has endeavoured to answer the research question: what are CHWs' perspectives of mother–infant bonding within the first 1000 days of life in Khayelitsha, South Africa?

1.5 Aim and objectives

The aim of the research was to explore community health workers' perspectives of mother–infant bonding within the first 1000 days of life in Khayelitsha, South Africa.

The research was guided by the following objectives:

1. to explore community health workers' understanding of the first 1000 days of life

2. to explore community health workers' understanding and knowledge of mother–infant bonding in the first 1000 days of life
3. to explore what information and support community health workers provide to mothers regarding mother–infant bonding
4. to explore the mother–infant bonding practices community health workers observe in the homes they visit.

1.6 Significance of the study

It is difficult to overstate the importance of the first 1000 days of life, as this delicate period lays the foundation for all future development. Given that prevalent South African social adversities and hardships endanger the quality of early development, relevant and contextualized research regarding the first 1000 days of life is essential. The mother–infant relationship within the first 1000 days warrants particular consideration as it is within the bounds of this relationship that a child is cared for, fed, and kept healthy. In acquiring knowledge regarding mother–infant bonding within the first 1000 days, it is both essential and beneficial to foreground the insight of those who possess real-world, on-the-ground experiences: community health workers. Not to do so runs the risk of excluding a valuable source of contextual knowledge.

The findings of this research contribute to current literature and provide valuable insight which may benefit interventions and policy relating to the first 1000 days of life. The importance of bonding within the first 1000 days of life, as highlighted by the CHWs, provides contextual, real-world evidence that this need is felt in Khayelitsha and perhaps other communities in South Africa, and is thus worth prioritizing. The most effective methods of bonding, as stipulated by the CHWs, could inform or substantiate current or future community-based interventions. The inhibitors to bonding disclosed by the CHWs pinpoint areas for future intervention and policy.

The need for support for mothers, emphasized by the CHWs, provides motivation for amplified initiatives and funding which provide such support. Finally, given the exploratory nature of the research, the findings indicate meaningful avenues for further research.

1.7 Chapter overview

This thesis comprises five chapters, each describing a different facet of the research process.

Chapter 1, the introduction, provides the background and rationale for the research, which substantiate the need for the research question, aims, and objectives. The underlying theoretical framework, significance of the study, and chapter overview are also outlined in the introduction.

Chapter 2, the literature review, comprises literature and research pertinent to CHWs, the first 1000 days of life, and mother–infant bonding. These subjects are explored and discussed with reference to both international and local literature.

Chapter 3, the methodology, includes descriptions of the research design, research context, participants and sampling, data collection and procedure, data analysis, trustworthiness, reflexivity, and ethics considerations.

Chapter 4, the presentation and discussion of results, encompasses the reporting, exploration, and contextualization of each of the five themes abstracted from the data.

Chapter 5, the conclusion, includes the synopsis of the thesis, a discussion of the limitations, and recommendations.

CHAPTER 2: LITERATURE REVIEW

The importance of the first 1000 days of life has received much national and international recognition. However, there is a paucity of literature regarding mother–infant bonding within the first 1000 days in South Africa, particularly from the perspective of CHWs. The literature review comprises relevant research and authorship regarding CHWs, the first 1000 days, and mother–infant bonding. Literature was searched using Google Scholar and the University of the Western Cape's digital library as databases. Search keywords that were used include mother-infant bonding, maternal-infant bonding, maternal-foetal bonding, attachment, the first 1000 days, South Africa, and Khayelitsha. Associations between each topic are described throughout.

In accordance with the tenets of the eco-cultural model, literature pertinent to the South African and Khayelitsha contexts are incorporated wherever possible. Where international theories are referenced, their applicability within the South African context is discussed and debated. This is done to foreground local, contextually situated knowledge and explicate the potential dissonance of external theories.

2.1 Community health workers

In 2004, the South African Government introduced the term "community health worker" to refer to lay workers providing social and health-related support to people within their communities (Schneider et al., 2008). CHWs provide a host of health-related support and services across South Africa, including HIV/AIDS prevention and care, facilitating access to social services, raising awareness and providing information, and support for maternal and infant health (Mitchell et al., 2005; Suri et al., 2008; Wadler et al., 2011). Most often, these services are delivered door-to-door through home-visiting programmes (Azzi-Lessing & Schmidt, 2019; Le Roux et al., 2010; Mitchell et al., 2005; Wadler et al., 2011). CHWs are often women who grew

up in the community in which they work, and who have received between three and six months' training in a variety of skills, including maternity and childcare, lay counselling, and health education (Wadler et al., 2011).

Given the intersectionality of the many social and health-related concerns in South Africa, most interventions delivered by CHWs are multifaceted (Tomlinson et al., 2016). Maternal and infant programmes delivered by CHWs often focus on nutrition, physical growth, health, cognitive development, and the mother–infant relationship simultaneously (Le Roux et al., 2010; Tomlinson, 2013). Some CHWs work directly for the Government, while others work for NGOs (Azzi-Lessing & Schmidt, 2019). At NGOs, CHWs might operate under different titles, such as the Family and Community Motivators (FCMs) at the Early Learning Resource Unit or the Mentor Mothers at Philani (Ilifa Labantwana et al., 2019). Both the FCM and Mentor Mother programmes deliver support and services to expectant and new mothers and infants through door-to-door home visiting (Ilifa Labantwana et al., 2019). Despite their different titles, these workers function and provide services in much the same way as CHWs who work directly for the Government (Ilifa Labantwana et al., 2019; Suri et al., 2008).

2.1.1 The efficacy of community health worker interventions

A substantial body of literature evinces the efficacy of mother–infant interventions delivered by CHWs (Cooper et al., 2009; Le Roux et al., 2014, 2018; Murray et al., 2016; Nyatsanza et al., 2016; Peacock et al., 2013; Tomlinson, 2013). An international systematic review of the effects of home visiting programmes delivered by CHWs on child outcomes found significant improvement in cognition and behavioural problems, language skills, the prevention of child abuse, low birth weights, health concerns in older children, and appropriate weight gain in early childhood (Peacock et al., 2013).

In South Africa specifically, a number of CHW-delivered interventions demonstrate significant improvements to child and maternal well-being. A randomized control trial conducted in Khayelitsha found that three months into a malnutrition intervention delivered by CHWs, children in the intervention condition were five times more likely to rehabilitate (i.e. reach a healthy weight for their age) than children in the control condition (Le Roux et al., 2010). In another randomized control trial, Murray et al. (2016) found that infants in Khayelitsha whose mothers had received a home-visiting intervention delivered by CHWs had significantly better cognitive development scores than those who had not, provided that the mothers had relatively lower socio-economic risk. Again in Khayelitsha, a randomized control trial found that a CHW-delivered intervention aimed at improving the mother–infant relationship saw significant improvements in maternal sensitivity and secure attachment in the intervention group (Cooper et al., 2009).

2.1.2 Exploring the perspectives of community health workers

While the effectiveness of CHW-delivered interventions is apparent, negligible research focuses on the real-world knowledge of CHWs themselves. One recent study has explored the experiences of bachelor's-level home visitors rendering early childhood development (ECD) services in the Eastern Cape, finding four themes which emerged as prominent: "(1) encountering the effects of extreme family poverty, (2) identifying high rates and multiple aspects of child maltreatment, (3) encountering scarce resources in high-need areas and (4) finding rewards and maintaining a desire to continue serving challenging populations" (Azzi-Lessing & Schmidt, 2019, p. 1). The study offers valuable insight into the contextual challenges CHWs face working in places of extreme poverty in the Eastern Cape. Moreover, the findings reveal the resourcefulness, tenacity and dedication CHWs demonstrate in overcoming the

challenges they face, as well as the rewarding nature of their work (Azzi-Lessing & Schmidt, 2019).

Despite limited research exploring the perspectives of CHWs working with children in South Africa, Azzi-Lessing and Schmidt's (2019) study demonstrates the utility and value of documenting on-the-ground, contextual perspectives. This is because the study reveals the essential services CHWs provide, often going well beyond what is expected to support the children and families they serve. Furthermore, the study provides constructive insight into contextual challenges faced by CHWs in the Eastern Cape, indicating ideas and avenues through which these challenges might be addressed (Azzi-Lessing & Schmidt, 2019). Thus, CHWs could provide essential contextual insight into the first 1000 days of life.

2.2 The first 1000 days of life

The term "the first 1000 days" first gained momentum when the *Lancet* published its series on maternal and child undernutrition in 2008, recommending that nutrition interventions be focused on the period during pregnancy and the first two years of a child's life (Pentecost & Ross, 2019). In the last few decades, the importance of the first 1000 days has received growing international recognition (Pentecost & Ross, 2019; Thurow, 2016). The first 1000 days movement originated from a body of research which demonstrates the importance of quality nutrition in the first 1000 days (Biesalski et al., 2016). Growth and development occur more rapidly during gestation and infancy than any other period of life, making the first 1000 days a particularly vulnerable time for the effects of malnutrition (Martorell, 2017). Maternal and infant nutrition within the first 1000 days has been shown to be linked with infants' later physical growth, muscle mass development, brain development, cognitive functioning, socio-emotional adjustment, risk-taking behaviour, earning capacity, and a multitude of health-related concerns

(Biesalski et al., 2016; Cusick & Georgieff, 2016; Martorell, 2017; Scharfe & Black, 2019; Schwarzenberg & Georgieff, 2018; Silver et al., 2018; Wrottesley et al., 2015).

While first 1000 days research began with a focus on early nutrition, researchers have come to recognize the significance of a multitude of factors within this period. Cognitive stimulation during the first 1000 days has been shown to be linked to language development, mental disorders, mathematical and problem-solving capacity and earning capacity (Einziger et al., 2019; Fagan, 2017; Vallotton et al., 2016). Maternal sensitivity during the first 1000 days has been shown to affects infants' later emotional regulation, capacity for wealth creation, behavioural problems, health, and cognitive development (Firk et al., 2018; Nichols et al., 2019; Thomas et al., 2017; Wright et al., 2018; Zhou et al., 2017). The care infants receive within the first 1000 days of their lives either enables or curtails their capacity as they grow into children, adolescents, and adults.

2.2.1 The South African first 1000 days initiative

The importance of the first 1000 days initiative is becoming increasingly recognized in South Africa (Pentecost & Ross, 2019; UNICEF, 2017). This is particularly true in the Western Cape, where a "First 1000 Days" campaign was launched in 2016 (Pentecost & Ross, 2019). The Western Cape Government recognizes the importance of nutrition, a safe and nurturing environment, stimulating play, and mother–infant bonding during this period (Western Cape Government, 2019). The NIECDP provides national policy-level support to the initiative (Republic of South Africa, 2015).

Despite the policy initiative of the South African Government, there are a vast number of social and environmental factors faced in South Africa which impair healthy development in the first 1000 days, including poverty, crime, violence, an inadequate public education system, and

the HIV/AIDS epidemic, among others (Donald, 2013; Tomlinson, 2013). Donald (2013) identifies five major biological risk factors for loss of developmental potential among South African children in the first 1000 days: malnutrition (particularly stunting and anaemia), HIV infection and exposure, alcohol exposure, methamphetamine exposure, and traumatic brain injury. These factors are likely to contribute to school drop-out and unemployment later in life (Donald, 2013). As such, while the South African Government, and the Western Cape Government in particular, place considerable emphasis on the importance of the first 1000 days of life, social hardships faced by many South Africans inhibit the development of their youngest citizens and predisposes them to negative developmental outcomes.

2.2.2 The applicability of first 1000 days research in South Africa

While there is a large body of research related to the first 1000 days initiative, most studies have been conducted outside South Africa, and within Western scientific frameworks (Wrottesley et al., 2015). The application of external research to local contexts contravenes the principals of the eco-cultural model, which emphasizes the importance of contextually situated knowledge and understanding (Nsamenang, 1995). Thus, it becomes imperative to explore the applicability of research relating to the first 1000 days within the South African context.

Wrottesley et al. (2015) conducted a systematic review of the importance of maternal nutrition during the first 1000 day among African women (Wrottesley et al., 2015). The review included 26 studies, and found that maternal body mass index and greater gestational weight gain were positively associated with birth weight, maternal overweight and obesity were associated with increased risk of macrosomia and intrauterine growth restriction, and maternal anaemia was associated with lower birth weight (Wrottesley et al., 2015). Macro- and micronutrient supplementation during pregnancy were associated with improvements in birth weight and

mortality risk (Wrottesley et al., 2015). The findings suggest that the status of maternal nutrition in Africa is poor and confirm the importance of nutrition within the first 1000 days for African infants (Wrottesley et al., 2015).

In South Africa specifically, evidence from the Birth to Twenty Cohort study verifies the importance of nutrition during the first 1000 days (Casale & Desmond, 2015). The study, which sampled children born in 1990 in South Africa, found that children who were stunted at age 2 but had recovered at age 5 still performed worse on cognitive tests than their counterparts who had never been stunted (Casale & Desmond, 2015). Their findings suggest that proper nutrition within the first 1000 days is essential, as inadequate nutrition can negatively affect cognitive function (Casale & Desmond, 2015). Both Wrottesley et al.'s (2015) and Casale and Desmond's (2015) research indicate that, as is the case for their international counterparts, nutrition within the first 1000 days is critical for South African children.

Yet, while scientific evidence indicates that empirical research related to the first 1000 days is applicable within the South African context, several authors argue that the research does not align with traditional African beliefs (Nsamenang, 2007). For example, Okwany (2016) suggests that, to be responsive and respective, early childhood development narratives in Africa must build upon and support local beliefs and that Africa's early childhood development policies are built on the back of "extrapolated evidence" from Western theories (p. 2). However, this argument overlooks the valuable contribution of African researchers towards knowledge about early childhood, and the first 1000 days in particular (Richter et al., 2019). Despite the potentially profound consequences of this debate, little is known about common understandings of early childhood and the first 1000 days in South Africa (Richter et al., 2019).

2.2.3 Perceptions of the first 1000 days in Khayelitsha, South Africa

One of the few studies exploring perceptions of the first 1000 days in South Africa was conducted in Khayelitsha (Worthman et al., 2016). The authors note that, given the compelling evidence in support of the first 1000 days initiative, "related initiatives may assume that rationale for this orientation and the agency of parents during this period is self-evident and widely shared among parents and communities" (Worthman et al., 2016, p. 1). The authors explored this assumption among 38 Khayelitsha residents by asking the question: "At what age or stage can a parent or caregiver have the most influence on a child's development?" (Worthman et al., 2016, p. 1). Using a formal cultural consensus analysis, is was determined that the period during which parenting has the greatest impact on a child's development is adolescence, around 12 years (Worthman et al., 2016). Reasons articulated for this view included the protection of developmental potential and protection against dangerous context-specific risks (early pregnancy, substance ab/use, violence, and gangs) that emerge during adolescence (Worthman et al., 2016). These risks where considered to present greater threats to development than risks during pregnancy and early childhood, which were seen as more manageable by comparison (Worthman et al., 2016).

Worthman et al. (2016) found the results of the study "surprising" (p. 9), especially in light of overwhelming scientific evidence for the significant and enduring effects of adversity within the first 1000 days on later developmental outcomes. Their findings suggest a potential conflict between Western empirical science and local, indigenous knowledge. While empirical evidence demonstrates the importance of the first 1000 days, and South African policies promote the first 1000 days initiative, local beliefs might conflict with scientific findings. It is because of

this conflict that it becomes pertinent to explore the knowledge and understanding of CHWs who offer local and expert insight into the first 1000 days within the South African context.

2.2.4 The first 1000 days of life and mother–infant bonding

While the first 1000 days movement originated from nutrition-focused research, bonding is increasingly recognized as a critical factor to healthy early childhood development. Tomlinson and Landman (2007) assert that the relationship between nutritional-intake and growth "is by no means a simple causal one, but rather a complex interaction between various factors – related in turn to food; mother–infant interaction; family factors such as parental control, infant and child temperament and disposition; environmental and cultural factors; and genetic factors" (p. 294). The mother–infant bond, some authors contend, is the central component around which all other areas of development occur (Kennell & McGrath, 2005; Persico et al., 2017; Tomlinson & Landman, 2007; Zuma et al., 2016). It is imperative to incorporate mother–infant bonding as a key element within the broader first 1000 days initiative (Thurow, 2016).

2.3 Mother–infant bonding

Mother–infant bonding is inherently complex, and as such its definition has tended to be oversimplified or misunderstood (Johnson, 2013). Through a thorough concept analysis of mother–infant bonding, Altaweli and Roberts (2010) came to define it "as the special, close relationship between the mother and her child that occurs during the sensitive period. This is a unique experience which ties the mother to her child" (p. 558). Bonds, or special connections, between mothers and infants have been observed in communities and cultures across the world (Altaweli & Roberts, 2010). This is true in African and South African societies (Akujobi, 2011; Willcocks et al., 2016).

The bond between a mother and her infant is built through an array of daily interactions such as talking, singing, reading, playing, skin-to-skin contact, or simply spending time (Kennell & McGrath, 2005; Persico et al., 2017). Mother–infant bonding begins before birth, during pregnancy, where the mother may talk, sing, or feel the kicks of her unborn child (Persico et al., 2017; Rossen et al., 2016; Thomas et al., 2017). In academic literature, the concept of mother–infant bonding is closely related to the concept of maternal sensitivity, which is defined as "a mother's ability to recognize, accurately interpret, and respond in a timely manner to infant cues" (Johnson, 2013, p. 18). Similarly, it is closely linked to maternal responsiveness, which refers to "the mother's ability to be warm, affectionate, and soothing during times of infant distress, as well as providing the infant with interesting and creative play and interaction" (Johnson, 2013, p. 18).

2.3.1 The benefits of mother–infant bonding

The process of bonding can provide substantial benefits to both the infant and mother. These benefits begin before birth, during pregnancy. A systematic review of 31 studies found that over half reported significant associations between maternal-foetal bonding and maternal anxiety (Göbel et al., 2018). The association was particularly strong for certain dimensions of maternal-foetal bonding, especially the quality of the mother's perceived emotional proximity to the foetus (Göbel et al., 2018). The benefits of mother–infant bonding for mothers continue after birth. Illustratively, Bicking Kinsey et al. (2014) found that maternal-infant bonding showed a significant negative association with maternal stress, maternal pain, and postpartum depression.

Moreover, a substantial body of literature evidences the relationship between mother–infant bonding and the child's developmental outcomes (Johnson, 2013; Kennell & McGrath, 2005; Mäntymaa et al., 2003). These include improved cognitive, neurological, behavioural, and

socio-emotional outcomes (Bicking Kinsey & Hupcey, 2013; Johnson, 2013). Illustratively, Persico et al. (2017) found that in comparison to mother–infant dyads in the control group, mothers who sang lullabies to their infants demonstrated significantly greater bonding and had less perceived stress. Moreover, their infants showed significantly lower incidence of crying episodes, colic, and nightly awakening (Persico et al., 2017). On the other hand, poor mother–infant relationships during the first 1000 days have been shown to negatively affect the child's cognitive development and physical health, as well as socio-emotional development and interpersonal relationships (Bellieni, 2016; Johnson, 2013; Thurow, 2016). These effects have been demonstrated in both the short and the long term (Johnson, 2013).

2.3.2 Mother–infant bonding and maternal well-being

The mother's well-being is linked to her ability to bond with and care for her infant. Several studies demonstrate an association between both antenatal and post-natal depressive symptoms and poor mother–infant bonding after delivery (Borschmann et al., 2019; Rossen et al., 2016; Tichelman et al., 2019). Similarly, research studying the relationship between mothers' pregnancy anxiety and mother–infant bonding at birth found that greater anxiety was associated with poorer mother–infant bonding (Farré-Sender et al., 2018; Thomas et al., 2017). Farré-Sender et al. (2018) found that if a mother had a history of emotional abuse in childhood, family psychiatric diagnoses, previous psychiatric hospitalization, or anxiety during pregnancy, these were significant predictors of mother–infant bonding disturbances. Evidently, the mothers' socio-emotional, mental, and physical health impact on her capacity to form a connection with her infant.

2.3.3 The contextual applicability of attachment theory

Various theories conceptualize the mother–infant bond and the processes of mother–infant bonding within diverse frameworks and ideologies. They encapsulate a range of ideas regarding what constitutes a mother–infant bond and how it should be formed. However, underlying these theories are often Westernized constructions of “good” and “bad” bonding practices (Moore, 2013; Phoenix & Woollett, 1991). The applicability of various Euro-American mother–infant theories within other contexts has been widely debated among scholars (Mesman et al., 2016; Rothbaum et al., 2000). Perhaps the most widely recognized theory related to mother–infant bonding is attachment theory (Benoit, 2004; Fitton, 2012).

The terms “bonding” and “attachment” are often mistakenly used interchangeably; however, it is important to differentiate between the two (Bicking Kinsey & Hupcey, 2013). While attachment theory describes a systematic set of infant behaviours, mother–infant bonding refers more holistically to the connection and relationship between mother and child (Bicking Kinsey & Hupcey, 2013; Johnson, 2013). Attachment theory was developed by John Bowlby and Mary Ainsworth in the mid-to-late twentieth century (Fitton, 2012). Attachment theory asserts that infants form a strong connection with one primary caregiver (Minde et al., 2006).

The nature of an infant’s attachment to their mother is assessed using the Strange Situation Test, where an infant’s behaviour is observed when their mother leaves the room and then subsequently when she returns (Ainsworth et al., 1978). If the infant cries when the mother exits the room but is then consoled when the mother re-enters, the infant displays secure attachment. A secure attachment is created when the primary caregiver consistently responds to the infant’s needs (Fitton, 2012). Secure attachment is considered ideal and is most prevalent globally (Minde et al., 2006).

Apart from secure attachment, three other, less desirable styles of insecure attachment are described, namely anxious-ambivalent, avoidant, and disorganized attachment (Ainsworth et al., 1978; Weiten, 2014). Anxious-ambivalent attachment is denoted when infants display excessive distress when their mother leaves but are not consoled upon their return (Weiten, 2014). Infants display avoidant attachment when they exhibit no distress when their mother leaves (Weiten, 2014). Disorganized attachment is denoted when infants display confusion as to whether they should approach or avoid their mothers (Weiten, 2014). All forms of insecure attachment are associated with inconsistent care, neglect, or abuse from the primary caregiver (Baer & Martinez, 2006).

There exists widespread scholarly debate regarding the universality of attachment theory. Bowlby, the theory's originator, asserted that the mechanisms for attachment are biological, and thus universal (Minde, et al., 2006). Moreover, Ainsworth progressed attachment theory through close observation of Ugandan mother–infant dyads, ultimately developing the four categories of attachment styles based on these observations (Ainsworth et al., 1978; Mesman et al., 2016). Nevertheless, the theory was conceptualized and developed by Western authors, and thus is inherently influenced by Western ideology (Minde et al., 2006).

In support of the universality of attachment, the theory has been tested and verified repeatedly in a multitude of countries (Cassidy & Shaver, 2016). Mesman et al. (2016) cite several researchers who, while researching African hunter-gatherer tribes, observed secure attachment behaviours indistinguishable from those described in Ainsworth's attachment theory. Moreover, despite being raised in multi-caregiver societies – as is the case in many African communities – infants in the tribes tended to prefer care from their mothers (Mesman et al.,

2016). Mesman et al. (2016) argue that if secure attachment is observable even in the most remote tribes, that attachment is likely a universal phenomenon.

On the other hand, Rothbaum et al. (2000) argue that attachment is culture-specific. From a comparison between American and Japanense attachment studies, the authors highlight flaws in three major tenets of attachment theory. The tenets they challenge are "that caregiver sensitivity leads to secure attachment, that secure attachment leads to later social competence, and that children who are securely attached use the primary caregiver as a secure base for exploring the external world" (p. 1093). The authors demonstrate how Western and Japanese measures of caregiver sensitivity, social competence, and secure bases differ significantly, calling into question the universal applicability of the three tenets. Attachment theory emphasizes autonomy, individuation, and exploration, which are not widely held cultural values in Japan. Rothbaum et al. (2000) argue that attachment theory is not applicaple in Japan, and thus cannot be viewed as universal.

While not definitive, the debate around the universality of attachment theory highlights the importance of contextual considerations when exploring mother–infant bonding. Attachment theory was developed largely within Western frameworks, and consequently its application and use within South Africa require caution and consideration (Bain & Baradon, 2018). While the fundamental mechanism of attachment may be universal, attachment inevitably occurs within a cultural context, inevitably affecting how attachment takes place and how it is understood (Mesman et al., 2016).

Thus, this thesis deliberately precludes the use of specific theories about mother–infant relationships such as attachment theory. Instead, the term mother–infant bonding is used as it

refers more generally to the connection between a mother and her infant, and is not necessarily imbued with specific, prescribed standards (Altaweli & Roberts, 2010).

Chapter 2, the literature review, has explored literature and research pertinent to the research topic. It began by examining literature relating to CHWs, providing evidence that the exploration of their subjective experiences can offer valuable insight into the communities which they serve. Research evincing the importance of the first 1000 days was discussed and contextualized within the South African milieu. The concept of mother–infant bonding was investigated and differentiated from attachment theory. The contextual applicability of mother–infant bonding was considered, and accordingly, the concept was discussed within the context of Khayelitsha.

Chapter 3, methodology, will include the methodological and procedural aspects of the thesis.

CHAPTER 3: METHODOLOGY

This chapter will articulate the methods utilized to conduct the research. It comprises the research design, description of research context, sampling methods and overview of participants. Furthermore, the data collection method, procedure, and data analysis method are conveyed. Finally, trustworthiness, reflexivity, and ethics considerations are discussed.

This study utilized a qualitative methodological framework. Qualitative research encompasses a wide range of methodologies which primarily incorporate unstructured data and non-numerical analysis methods (Creswell & Poth, 2018). Qualitative research methods generate rigorous, in-depth research while still permitting flexibility and acknowledging the influence of subjectivity and context (Madill & Gough, 2008). Thus, a qualitative methodological framework is well-suited to this research as its aim is to explore the personal perceptions and subjective experiences of CHWs (Creswell & Poth, 2018). The research did not intend to provide empirical, generalizable results; rather, it endeavoured to offer rich, in-depth findings in a rigorous, systematic, and ethical manner.

3.1 Research design

The research design was exploratory as the topic of CHWs' perceptions of the mother–infant relationship in the first 1000 days is relatively unexplored within the South African context. The purpose of exploratory research is to gain insight into new or not-yet-investigated subjects rather than to provide concrete answers, making it well suited to the research aim (Babbie, 2014). Therefore, using the exploratory research design permitted the acquisition of understanding and insight into this relatively unexplored topic.

3.2 Research context

The research took place in Khayelitsha, a township located in Cape Town, South Africa. Khayelitsha is a vibrant, densely populated, and integrated community plagued by high levels of poverty, unemployment, and poor service provision (Nyatsanza et al., 2016). Townships such as Khayelitsha were established under apartheid law to house black African populations, and have since burgeoned to accommodate rapidly urbanizing populations (Worthman et al., 2016). As per the 2011 census data, Khayelitsha comprised a population of almost 400 000 living in approximately 120 000 households with an average of 3.3 people per household (Statistics South Africa, 2013). The population is almost entirely black African (99%) (Statistics South Africa, 2013).

The population of Khayelitsha is young, with 49% of its residents under age 25 years and 12% under the age of five (Worthman et al., 2016). Approximately a third of adults have matriculated (36%), and levels of employment are relatively high (62%) (Statistics South Africa, 2013). Three quarters of households have monthly incomes of R3 200 or less (Statistics South Africa, 2013). Less than half of the residents live in formal dwellings (45%) (Statistics South Africa, 2013). Although a growing refugee population has recently shifted the demographic make-up of Khayelitsha, the majority of residents are still isiXhosa speaking (Nyatsanza et al., 2016). While service delivery in Khayelitsha is generally poor, various health services and non-governmental organizations (NGOs) serve the area (Worthman et al., 2016).

3.2.1 Motherhood in Khayelitsha

Almost half (42%) of Khayelitsha mothers report being unmarried or not living with a partner (Worthman et al., 2016). This contributes to a reliance on grandmothers and other family members for support with childcare (Worthman et al., 2016). Most residents of Khayelitsha

originate from the Eastern Cape, and familial ties to this area remain strong (Worthman et al., 2016). On average, families tend to visit rural relatives two to three times a year, and many children are left in the care of rural relatives (around 25% by age three years) (Worthman et al., 2016).

The prevalence of both antenatal and postpartum depression in Khayelitsha is high, around three times that of Western samples (Tomlinson et al., 2005). An estimated 32 to 47% of pregnant women living in Khayelitsha could be diagnosed with antenatal depression, and between 16 and 35% of new Khayelitsha mothers could be diagnosed with postnatal depression (Tsai & Tomlinson, 2012). Hartley et al. (2011) found that factors that contributed to a depressed mood among mothers in Khayelitsha included a lack of partner support, intimate partner violence, having a household income below R2 000 per month, and younger age. Moreover, BeLue et al. (2014) found that many mothers in Khayelitsha had high perceived levels of stress. Factors associated with high perceived stress included chronic urban-poverty stressors (having to access water outside the dwelling) and a lack of partner support (having a husband/partner who had other wives, having a husband/partner who was working, and having a husband/partner who did not provide practical help) (BeLue et al., 2014).

Some realities of daily life in Khayelitsha have been associated with stronger mother–infant bonds. Homes in Khayelitsha often consist of one room, which means that mothers in Khayelitsha are able to be present and responsive to their child (Cooper et al., 2009; Tomlinson et al., 2005). Small homes also mean that mothers are more able than their counterparts with larger homes to practise on-demand feeding with their infants, which is a prevalent practice in Khayelitsha. Responsive parenting and on-demand feeding have both been associated with stronger mother–infant bonds (Johnson, 2013; Tichelman et al., 2019).

Additionally, a study of attachment in Khayelitsha found that 61.9% of infants were securely attached, which is in line with international figures (Tomlinson et al., 2005). This finding contradicted the hypothesis, which predicted that that given the high levels of poverty, adversity, and maternal depression among women in Khayelitsha, secure attachment levels would be low. The authors note that "one possible explanation for the high rate of secure attachments in Khayelitsha is the protective contribution of isiXhosa social and cultural organization (even in the midst of extreme poverty)" (p. 1051). Despite the adversity many Khayelitsha residents face, there exists a compassion for fellow community members (Tomlinson et al., 2005). Childcare is seen, to some extent, as the collective responsibility of the community (Tomlinson et al., 2005). Social cohesion and the communal nature of isiXhosa culture may protect Khayelitsha's mother–infant dyads against the worst effects of social hardship (Tomlinson et al., 2005). Thus, responsive parenting, living in close quarters, and a culture of community support offer benefits for Khayelitsha mothers, infants, and their relationships.

However, some prevalent parenting styles may negatively impact mother–infant bonding in Khayelitsha. Maternal behaviours in Khayelitsha have been found to be intrusive – controlling, inhibiting, manipulative, and invasive – which are associated with negative consequences for child development (Cooper et al., 2009; Tomlinson et al., 2005). Moreover, Tomlinson et al. (2005) also found that disorganized attachment was 25.8%, significantly higher than international levels, yet in line with other developing contexts. Disorganized attachment occurs most commonly when mothers are exposed to trauma or adversity (Mesman et al., 2016). Given the prevalence of violence and extreme poverty in Khayelitsha, this is perhaps

unsurprising. Thus, while protective factors exist for mother–infant relationships in Khayelitsha, these relationships may also be harmed by adverse social realities.

3.2.2 Philani

The research took place at Philani, an NGO based in Khayelitsha. Philani primarily utilizes home-visiting interventions to support pregnant women and new mothers in disadvantaged areas around Cape Town, including Khayelitsha. The intervention is delivered by Mentor Mothers, who are essentially CHWs trained and employed by Philani. Mentor Mothers are trained to be able to provide information and support with regard to nutrition, pregnancy, breastfeeding, health, physical development, cognitive development, safety, hygiene, socio-emotional development, and early childhood stimulation, as well as to facilitate access to other maternal and child services such as antenatal clinic visits and the Child Support Grant. However, the primary focus of Philani is nutrition and health.

The Mentor Mothers are all women between the ages of 20 and 60 years. Some have attained a matric-level education, and others have not. Almost all have children of their own. The work of Mentor Mothers is to identify pregnant women in their communities, invite mothers to be part of the programme, and thereafter conduct home visits periodically until the child reaches six year of age or moves to another area. Severely underweight or at-risk children may be referred to the Mentor Mother programme by clinics or hospitals. The interventions delivered during home visits are tailored to the developmental and environmental needs of the mother and child. During each visit, Mentor Mothers weigh the child, and the weight is recorded in a different file for each child, along with notes about each session. A randomized control trial found that three months into a malnutrition intervention delivered by Mentor Mothers, children

in the intervention condition were five times more likely to rehabilitate (i.e. reach a healthy weight for their age) than children in the control condition (Le Roux et al., 2010).

3.3 Participants and sampling

Participants were sampled from CHWs (Mentor Mothers) working at Philani. Participants were selected using purposive sampling, “a type of nonprobability sampling in which the units to be observed are selected on the basis of the researcher’s judgement about which ones will be most useful or representative” (Babbie, 2014, p. 530). Initially, it was intended that two inclusion criteria be applied to those who indicated interest: firstly, that participants must have had at least one year experience working as a CHW, with the purpose of ensuring knowledge, involvement, and insight, and secondly, that participants must live and work in Khayelitsha. However, due to the small number of interested participants, it was decided that participants need only have one year of experience. All CHWs working at Philani are women, and as such, all participants were female.

Table 3.1

Participant profile

Participant	Pseudonym	Age	Years working at Philani	Own children (No.)	Use of isiXhosa translator in interview
1	Nonkqubela	44	1	Yes (6)	No
2	Siyasanga	39	2	Yes (4)	No
3	Thandiwe	37	2	No	No
4	Nombuyiselo	40	1	Yes (2)	Yes
5	Nonceba	42	4	Yes (4)	No
6	Asive	47	4	Yes (3)	Yes
7	Nosipho	34	2	Yes (2)	Yes
8	Bongeka	33	5	Yes (2)	Yes
9	Nosiseko	46	3	Yes (1)	No
10	Busisiwe	43	2	Yes (1)	No
11	Vuyokazi	36	3	Yes (3)	No
12	Ayanda	37	2	Yes (2)	No
13	Nomvuyo	38	5	Yes (4)	Yes
14	Lelethu	34	4	Yes (3)	Yes
15	Nomsa	32	5	Yes (1)	No

Table 1 summarizes the profile of participants. Pseudonyms are assigned to each participant to provide anonymity. Participants' ages ranged from 32 to 47 years with an average age of 38.8 years (*SD* = 4.8). Years of experience at Philani ranged from one to five years with an average of three years' experience. All but one of the participants had children of their own. An isiXhosa translator was used in 6 of the 15 interviews.

3.4 Data collection

The data were collected using semi-structured individual interviews – a flexible interview structure which is ideal for the exploratory and qualitative nature of this research (Creswell & Poth, 2018). The interview schedule used to guide the interviews was developed in accordance with pertinent literature and the aim and objectives of this research (see Appendix E). Section A of the interview schedule requested demographic information intended to ascertain the participant's experience and exposure to mother–infant bonding processes within the first 1000

days of life (from conception to two years old). Section B comprised open-ended questions designed to explore participants' experiences and perceptions in relation to the research aim and objectives.

3.5 Procedure

Ethics approval was obtained from the Biomedical Research Ethics Committee (BMREC) at the University of the Western Cape, and permission to conduct the research was obtained from Philani's Board of Executives. To invite CHWs (Mentor Mothers) to participate, I visited Philani at a month-end meeting and gave a short presentation covering the aims and benefits of the research, what participation would entail, participant rights, and confidentiality procedures. A bilingual CHW translated my English presentation into isiXhosa as I spoke. Information sheets in both English (Appendix A) and isiXhosa (Appendix B) were passed around. Interested CHWs filled out their names and contact details on a sign-up sheet.

A total of 24 CHWs indicated their interest, all of whom were then contacted, provided with further details, asked if they had further questions and invited to participate. Participants were informed that all transport costs for their interviews would be provided by the researcher, and presented with the option of using an isiXhosa translator during the interviews. Interviews were then scheduled at convenient times for those who indicated interest. A total of 15 interviews were conducted in August and September 2019. All CHWs' transport costs to and from the interviews were provided by the researcher.

Before the interviews began, participants were again provided with information about the study and asked to sign a consent form in either English (Appendix C) or isiXhosa (Appendix D). Interviews lasted between 25 and 45 minutes. Nine interviews were conducted by only me, the primary researcher, and six were conducted by myself and an isiXhosa translator at the

request of the participant. All interviews were audio-recorded with the permission of the participants.

Interviews were conducted at Philani's headquarters in Khayelitsha, in a small, secluded office that was not in use. If the translator was absent, the participant and I sat facing each other, and if the translator was present, we formed a small circle with our chairs. Initially, many of the participants appeared nervous, and some expressed concern that they would not be able to provide enough useful information. I explained that the research was about personal perceptions and experience, and that the participant should just try to tell her story from her perspective without concern about providing "correct" responses.

We began each interview by discussing the participant's interest in the research topic. Most participants expressed their enthusiasm for the topic and conveyed their hope that information regarding mother–infant bonding would become more widely available. While some participants were initially hesitant, as the interview progressed, they appeared more comfortable and became more open. The tone of the interviews was generally cordial and friendly, with some even becoming personal, intimate, and warm.

Once interviews had been conducted, collected documents were stored securely in a locked filing cabinet, and audio-recordings were stored in password-protected files. These were only accessed by me and, if she had been present during that particular interview, the isiXhosa translator. Interviews were arranged and conducted until I (after discussion with peers), the translator, and my supervisor felt data saturation had been reached (Creswell & Poth, 2018). Data saturation was determined to have been reached when there appeared to be informational redundancy (Creswell & Poth, 2018). That is, participants were reiterating information provided by earlier participants, and no new information was being collected.

Once the data analysis had been performed, member checking was conducted through a focus group. Member checking is the process of returning the results to participants to ascertain their accuracy and resonance with their experiences (Birt et al., 2016). This is done to explore the credibility and trustworthiness of the findings (Birt et al., 2016). All participants were invited to participate in the member checking focus group, provided with information about what participation would entail and the purpose of the meeting, and informed that the meeting would occur with other participants present. Six participants agreed to participate in the member checking, and a suitable time was arranged. All participants' transport costs to and from the member checking session were covered.

The six participants and I met at an eatery in Khayelitsha and refreshments were provided. One participant, who is fluent in English and isiXhosa, agreed to translate where necessary. Each theme was described and explained with the aid of printed summaries of each theme. The participants nodded and agreed with the main points of each theme, at times emphasizing aspects which they felt were important. When participants highlighted a particular finding, this was noted. Participants were asked to indicate if they believed anything had been omitted from each theme, and a few minor points were noted.

In concluding the member checking, participants were asked if they felt the findings accurately represented their perceptions and experiences. All participants agreed with the themes and expressed the importance of sharing the findings. I explained my intentions to publish the findings, share them with relevant organizations, and present at pertinent conferences. Many expressed their enthusiasm for these processes. Feedback from member checking was integrated, and the final results are reported in Chapter 4.

3.6 Data analysis

The data were analysed using Braun and Clarke's (2006, 2012) thematic analysis method, which they describe as "a method for identifying, analysing, and reporting patterns (themes) within data" (2012, p. 63). Thematic analysis is well-suited to this research as it allows the researcher to draw themes, patterns, and commonalities from across a qualitative data set (Braun & Clarke, 2006, 2012). Thematic analysis procedure is adaptive, yet structured, and follows six systematic steps.

3.6.1 Step 1. The first step was for the researcher to develop familiarity with the data. In this phase, the researcher immerses him- or herself in the data by listening to, reading, and re-reading interviews, transcripts, and documents (Braun & Clarke, 2012). To develop familiarity, the researchers transcribed all sections of the interviews which were in English. As this was done, notes were recorded about patterns and links within the interviews. The isiXhosa sections of the interviews were translated and transcribed by the same person who acted as the isiXhosa translator during the interviews. After the researcher received the translations, they were read and re-read while making notes about patterns and links. The insights and perceptions of the isiXhosa translator were considered and incorporated, as she possessed intimate insight into the research.

3.6.2 Step 2. The second step of thematic analysis is for the researcher to develop initial codes and assign them to relevant sections of the transcriptions (Braun & Clarke, 2012). Codes provide a succinct summary of potential relevant features of the data, which are then assigned to sections of the data (Braun & Clarke, 2012). The initial codes were developed with references to the notes about themes and patterns in the data.

Coding was done using Atlas.ti, a software package designed to facilitate qualitative data analysis (Friese, 2019). The programme allows researchers to code and annotate unstructured data such as text or media. Researchers are then able to discover underlying patterns, systematically analyse intricate findings, and visually depict complicated interrelationships between facets of the data. Essentially, Atlas.ti can be used to organize, integrate, and analyse complex, non-numerical data sets (Friese, 2019). Using Atlas.ti, the initial codes were then assigned, line by line, to the interview transcriptions.

3.6.3 Step 3. Third, the researcher searches for themes, which involves collating the codes into groups based on relatedness (Braun & Clarke, 2012). To complete this step, the researcher noted which codes occurred most frequently across the interviews. The researcher then began to postulate broader concepts or patterns around which the codes could be grouped. Given the overlap and interconnectedness of the interviews, formulating individual themes was a complex, iterative process. During this process, the researcher endeavoured to abstract themes which represented the essence of the participants' narratives and made active efforts to avoid injecting personal biases. Again, this process was completed using Atlas.ti as the software allows for frequency and co-occurrence analysis as well as the development of inter-code networks (Friese, 2019).

3.6.4 Step 4. The fourth step is for the researcher to revise and perhaps regroup initial codes, and to review initial themes (Braun & Clarke, 2012). This was done by examining the initial themes' comprehensiveness, verifiability, and validity in relation the entire data set. This required some themes to be combined and reorganized in an adjusted format which the researcher believed better represented the data. This was not, however, a particularly challenging or contentious process, as many of the CHWs had reiterated similar experiences, perceptions,

and understandings. Ultimately, five themes were constructed to represent the data, some with several sub-themes.

3.6.5 Step 5. In the fifth step, themes are defined and named to capture and convey the essence of an individual theme, which was completed by the researcher (Braun & Clarke, 2012). Themes were named in conjunction with a small quote from a CHW, foregrounding their voices within the research process. To verify the accuracy and representativeness of the themes, member checking was completed (Creswell & Poth, 2018). Member checking is the process of returning analysis findings to participants to confirm their accuracy and resonance, which is completed to enhance the trustworthiness of the research (Birt et al., 2016). Member checking was arranged and conducted with six participants. With minor notes, the participants confirmed the preliminary findings. Notes from the member checking process where incorporated into the final analysis.

3.6.6 Step 6. In the final step, the codes are reported in a manner that evinces the validity and quality of research (Braun & Clarke, 2012). This step is articulated in Chapter 4. While the results are presented in a linear format as five separate themes, in practice, there are many overlaps and interconnections between the themes, and as such they are intended to be read holistically as one. Direct quotations are heavily used throughout the presentation of the findings so as to, firstly, foreground the voices of the participants, and, secondly, ground the findings in the direct narratives, perceptions, and experiences of the CHWs.

3.7 Trustworthiness

The process of ensuring the trustworthiness, or rigour, of the research was guided by Guba's (1981) four trustworthiness criteria: credibility, transferability, dependability, and confirmability. Credibility refers to the congruency, plausibility, and truthfulness of research

(Cope, 2009). It was established, firstly through regular debriefing with the supervisor and with peers, and secondly through "development of an early familiarity with the culture of participating organizations" (Shenton, 2004, p. 65), as the researcher had been volunteering at the intended organization since the previous year (Cope, 2009). Transferability denotes the degree to which findings can be applied to other contexts or persons, and has been established by providing thick descriptions of the research context, and by purposively sampling a diverse, representative participant group (Guba, 1981). Dependability, referring to the stability and repeatability of research, was established through the use of a detailed audit trail (Guba, 1981). Extensive notes were taken throughout the research process, recording events, decisions, and reflections. Confirmability refers to the degree to which research is free of the influence of the researcher's bias or values, and was established through reflexive praxis and member checking (Cope, 2009).

3.8 Reflexivity

As the researcher, I am committed to reflexivity throughout the research process. I recognize that I am not a mother, and thus cannot speak to the experience of having a child. I am white and come from a background of socio-economic privilege, and as such have not experienced the hardships of social disadvantage that the participants have faced. I have been socialized and educated within Western frameworks. My standpoint generated a difference between myself and the participants, one in which a power differential was inherent. Moreover, I was concerned that the difference could potentially lead to bias and misinterpretation on my part. To ensure that the power differential would not be abused, and that partiality did not impact the findings, I was committed to consistent journaling and active reflection with the supervisor and peers. It was my intention to use this research, not to impose personal viewpoints or values, but

as a platform to showcase the voices, experiences, understandings, and knowledge of the participants.

During reflexive practices such as journaling and debriefing with peers, I identified several concerns about how my social location and perspectives may be impacting the research. I noticed that, perhaps due to my being white and from a university, some participants believed I was in a position of authority and were accordingly anxious around me. Some felt that their answers to the interview questions needed to be correct and were worried when they thought their answers were "wrong". I also noticed that the cultural and language barriers between myself and the participants, in some cases, hindered the transparency and comprehensiveness of their narratives. This was apparent in the differences between the interviews conducted by just me and those conducted with the help of a translator. I noticed that participants generally felt more comfortable and spoke more openly when the translator was present. In debriefing discussions, the translator and I both felt this was likely due to a combination of factors including participants speaking in their second language, socio-cultural differences, and power differentials.

I tried to limit the impact of these concerns in several ways. To encourage equal participation and ownership, I began the interviews by asking why the participants chose to be a part of the research and what they felt should be done with it. If the participants expressed concern about giving the "wrong" answers, I explicitly explained that there were no right or wrong answers and encouraged them to focus on their own experiences and narratives. It was reiterated that they were the experts with regard to mother–infant bonding, and that that was why their voices were needed. Of course, I do not believe these actions entirely rectified the effects of

the language and socio-cultural differences and inherent power differential between us, but they were an attempt to mitigate at least some of the negative effects.

Journaling and debriefing with peers helped me to identify some of my pre-existing values, opinions and biases about mother–infant bonding, as well as to explore opportunities to mitigate the effects of researcher partiality. Before the research process began, I identified my core beliefs about mother–infant bonding, principally that I believed mother–infant bonding was essential and beneficial. I also noted my assumptions about mother–infant bonding in Khayelitsha, which were primarily that the circumstances faced by mothers in Khayelitsha would likely make mother–infant bonding a challenging task. Throughout the interview and analysis process, I was aware of these presumptions and tried to keep them from influencing the various research processes.

Despite that difficulties that arose due to the differences between myself and the participants, I found my position as an "outsider" benefitted the research in several ways. Firstly, having never been through the process of having a child myself, I feel I had more loosely held beliefs about how mothers and infants should bond. Moreover, having never experienced the realities of working, living, or raising a child in Khayelitsha or any other informal settlement, I feel I was able to maintain a more impartial perspective throughout the research process.

3.9 Ethics

The research adhered fully to the University of the Western Cape's (n.d.) Policy on Research Ethics. As such, the research was guided by the principles of honesty and integrity, by the use of safe and responsible methods, and by fairness and equity for all participants and stakeholders, as delineated by the Policy. The research commenced only once ethics approval had been obtained from the BMREC (Reference number: BM19/4/16) and institutional

permission had been obtained from Philani. I was committed to acting in the best interest of the participants, placing their well-being, safety, confidentiality, and dignity above all other interests.

Informed consent was sought from each participant through apprising participants of the nature of the study, the potential risks and rewards of participation, and their rights, including their right to leave at any point without any negative repercussions. The information shared by the participants has been held private and confidential. To ensure anonymity, pseudonyms have been used to protect the participants' identity. All hard-copy documents have been stored in a locked filing cabinet. Audio recordings and transcriptions have been securely stored with the use of a password-protected computer file to which only I and the translator have had access. The data stored on the computer will be deleted and physical documentation will be shredded after five years. The participants were informed that should they need the services of a psychological counsellor, one would be provided without cost. However, no participants indicated that they required this service. With the aim of producing socially beneficial and empowering research, the findings of the study will be shared with Philani and other health organizations that may request them. The information will further be disseminated through publication, and through submissions to present at relevant conferences.

Chapter 3, methodology, has described the research methods and procedures used to conduct this study. The study used a qualitative methodological framework and exploratory research design. The research took place at Philani, an NGO based in Khayelitsha. Purposive sampling was used to select 15 participants, all of whom are Mentor Mothers working at Philani. Data were collected using semi-structured interviews and thematically analysed. Steps were taken to ensure the trustworthiness of the data, and reflexivity was practised throughout. Ethics considerations guided the research process, and were executed through obtaining ethics approval,

providing informed consent, maintaining confidentiality and anonymity, securely storing data, and disseminating findings.

In the following chapter, the results from the thematic analysis will be presented and discussed.

CHAPTER 4: PRESENTATION AND DISCUSSION OF RESULTS

In this chapter, the themes abstracted from the data are presented and discussed. The results address the original purpose of the study, which was to explore CHWs' understanding and knowledge of mother–infant bonding within the first 1000 days of life in Khayelitsha, South Africa. Moreover, the results address the objectives of the research, which were, firstly, to explore CHWs' understanding of the first 1000 days of life; secondly, to explore CHWs' understanding and knowledge of mother–infant bonding in the first 1000 days of life; thirdly, to explore what information and support CHWs provide to mothers regarding mother–infant bonding; and finally, to explore the mother–infant bonding practices CHWs observe in the homes they visit.

Five broad themes were extracted from the data. Three of the five themes comprise sub-themes. The titles of each theme and associated subthemes are summarized in Table 2. Within the framework of the eco-cultural model, the results are presented in a manner that foregrounds the voices of the CHWs and emphasizes contextuality. Verbatim quotations are incorporated extensively throughout with the intention of imbuing the findings with rich, contextualized narrative. Additionally, the titles make use of quotes from the participants that typify the essence of each theme.

Table 2

Themes and sub-themes

	Theme	Sub-themes
1	The importance of the first 1000 days *"Your baby's life depends on those first 1000 days"*	The first 1000 days of life are fundamental
		Key needs within the first 1000 days
2	The centrality of mother–infant bonding within the first 1000 days of life "*Because if you don't have a bond, how can you care for your child?*"	Bonding strengthens the mother–infant connection
		The wide-reaching benefits of mother–infant bonding
3	Effective approaches to bonding are simple, intuitive, and free *"When you bond with your baby it's when you give them love"*	
4	The inhibitors of mother–infant bonding *"So then they cannot bond because they are always stressed"*	
5	The need for support "*The mother need a support, love, all of these stuff, so that she can bond with the baby"*	Support is vital for mother–infant bonding
		CHWs provide comprehensive, holistic support

4.1 Theme 1: The importance of the first 1000 days of life – *"Your baby's life depends on those first 1000 days"*

The first theme that emerged was that the first 1000 days were viewed as an important and consequential period. Comprised were two sub-themes: the first 1000 days are fundamental, and key needs within the first 1000 days.

4.1.1 Sub-theme 1.1: The first 1000 days of life are fundamental. To the CHWs, the first 1000 days were viewed as fundamental and foundational to the rest of a child's life. The presentation of the findings and discussion for this sub-theme follow.

4.1.1.1 Findings. The participating CHWs were knowledgeable about early childhood development, and in particular about the first 1000 days of life. Almost all CHWs were familiar with the term "the first 1000 days", and many provided accurate, in-depth definitions. Illustratively, Lelethu[14] noted, *"First 1000 days, it started when you conceive, when you conceive, neh. And then you pregnant that nine month, then give birth, the child is turning 1 and 2. You are counting that as the first 1000 days, neh. But for us, first 1000 days it is very important."* This knowledgeability reflects the extensive and up-to-date training the CHWs receive at Philani. It also reflects the commitment of the CHWs to understanding and learning more about early childhood development so that they are better able to support the mothers and infants in their care.

Beyond their knowledgeability about the first 1000 days of life, the CHWs consistently emphasized their importance. The first 1000 days were viewed as fundamental and foundational to the rest of a child's development. Reflecting this view, Thandiwe[3] stated, *"That's very critical 1000 days of your baby's life. So your baby's life depends on those first 1000 days.*" The importance of the first 1000 days was ascribed to the delicate development that occurs during this period. In particular, the CHWs highlighted the significance of rapid brain development within the first 1000 days. Lelethu[14] stated that the first 1000 days were important *"because the brain of the child, it's moving fast, it's learning fast, on that period, see, from conceive to two years."*

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[14] 34 years old, 4 years working as a CHW, 3 children, isiXhosa translator present
[3] 37 years old, 2 years working as a CHW, no children, isiXhosa translator present

Experiences and environment during the first 1000 days were seen as highly consequential for all areas of development, both in the short and the long term. A quote from Nosipho[7] illustrates this, describing the detrimental long-term effects of consuming harmful substances during pregnancy: "*And also, some of the things that you [the mother] used to do; you need to limit, such as alcohol. You should not drink while you are pregnant. Secondly, you should not smoke during the pregnancy because it's one of the things that affect the baby. You find that you are giving birth and the baby's lungs are blocked due to the cigarettes that you were smoking, and then you find that your baby is very hyper because of the alcohol you were drinking. So those are the most important things that you shouldn't do."* Children's physical, cognitive, and socio-emotional development were seen to be significantly affected by infant experiences during the first 1000 days.

4.1.1.2 Discussion. The fundamental and foundational nature of the first 1000 days, as articulated by the CHWs, is well supported by a substantial body of literature (Bellieni, 2016; Cusick & Georgieff, 2016; Martorell, 2017; Pentecost & Ross, 2019; Thurow, 2016). Aligned with many of the CHWs' statements, the brain develops most rapidly, and has the highest level of plasticity, during the last trimester of pregnancy and the first two years of life (Cusick & Georgieff, 2015). Moreover, the CHWs' articulation of the profound and substantial impact of the first 1000 days on a multitude of developmental domains across the lifetime is empirically supported, as a plethora of research shows that infant experiences during the first 1000 days affect cognitive, physical, psychological, and socio-emotional development (Bellieni, 2016;

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[7] 34 years old, 2 years working as a CHW, 2 children, isiXhosa translator present

Martorell, 2017; Rochat et al., 2016; Cusick & Georgieff, 2016; Silver et al., 2018; Thomas et al., 2017; Thurow, 2016; Valenzuela, 1997).

Many of the CHWs conveyed extensive and contemporary scientific knowledge about the first 1000 days of life. This finding exhibits the comprehensive and informed training the CHWs receive at Philani. It also highlights the complexity of attempting to understand local contextual perspectives in present-day South Africa, where so many perspectives are now informed by international science and culture. However, the overlap between local and international knowledge conveyed in the CHWs' narratives reflects their current realities, where there is no longer a clear line between the two.

The CHWs' narratives provide supporting evidence that local and international knowledge sources regarding the first 1000 days coexist compatibly. This finding somewhat contradicts the research conducted by Worthman et al. (2016), which found that caregivers in Khayelitsha believed the age at which they could most influence a child's development was around 12 years. While the CHWs' knowledge regarding the first 1000 days may have been obtained through training, they had experienced the validity of this knowledge in their contexts through their day-to-day work. They bear first-hand witness to the substantial developmental impact of the first 1000 days within their context. Their insight provides contextual grounding for the first 1000 days within their experience working in Khayelitsha.

4.1.2 Sub-theme 1.2: Key needs within the first 1000 days of life. The CHWs identified the key needs of mothers and infants during the first 1000 days within their context. These included meeting their basic needs, health, nutrition, cognitive stimulation, and love and care. These needs were seen to support optimal development during this period. The presentation of the findings and discussion for this sub-theme follow.

4.1.2.1 Findings. The CHWs identified the critical needs of foetuses, infants, and their mothers within the first 1000 days of life in their context in Khayelitsha. These needs are interrelated and are often dependant on one another. Foundationally, optimal development was viewed as requiring that pregnant women, new mothers, and infants to have their basic needs met. As Nonkqubela[1] expressed, *"First of all, when the mum is pregnant, you must make sure you have all the needs of the baby. They must have their food, shelter, and clothing."* In addition to food, shelter, and clothing, CHWs also stressed the need for safety, warmth, and a hygienic environment.

Closely related to the importance of meeting basic needs was the need for mothers and infants to be healthy. To CHWs, maternal and infant health during the first 1000 days began during pregnancy, were the mother's nutrition was viewed as critical. As stated by Busisiwe[10], *"The client [mother] is supposed to eat nice food and veg and fruit. You drink juice or 'drinksy' [sic] or whatever. Eat healthy food."* Similarly, CHWs asserted that it was important for pregnant mothers to avoid harmful substances such as alcohol, cigarettes, and drugs. The need for health during the first 1000 days extends beyond pregnancy and continues after birth. Asive[6] highlighted some important health-related concerns, stating that it was important for her, as a CHW, to *"make sure that she [the mother] goes to immunization and is up to date. Everything is important. His/her [the infant's] health is important. Everything, even if, for example the baby is sick, she [the mother] must take him/her to the clinic immediately."*

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[1] 44 years old, 1 year working as a CHW, 6 children, isiXhosa translator not present
[10] 43 years old, 2 years working as a CHW, 1 child, isiXhosa translator not present
[6] 47 years old, 4 years working as a CHW, 3 children, isiXhosa translator present

Healthy infant development is supported by healthy nutrition. All CHWs highlighted the value of breastfeeding for providing nutrition during the first 1000 days, as well as a host of other benefits. Illustrating this, Nomsa[15] stated that *"breastfeeding the baby is important in the sense that a baby must grow – to develop the baby's brain, develops his/her sense of self and it decreases money for the baby, and you as a parent."* As highlighted in this statement, breastfeeding was seen to support physical, cognitive, and psychological development, as well as being economical. Several CHWs also spoke of breastmilk's capacity to deliver infants' *"first immunization"* (Lelethu[14]).

Exclusive breastfeeding for the first six months is a fundamental tenet of Philani's training, a view that was echoed by the CHWs. Many had witnessed first-hand the comparative effectiveness of mixed or formula feeding and observed noticeable differences in infant development. Thandiwe[3] highlighted the difference between breastfed and formula-fed children, stating, *"If you take a child that has been breastfed, and you take a child that is formula-fed, you can see the difference very easily. And it's very nice to breastfeed because you bond with the child. And your child cannot… can never get sick. If your child got flu, we gonna [sic] tell you, give that baby breast milk, you see."* To the CHWs, breastfeeding is a central need for mothers and infants during the first 1000 days as it provides healthy nutrition, supports development and health, and facilitates bonding, all in a natural and cost-effective manner.

In addition to nutrition, CHWs also highlighted cognitive stimulation and emotional care as important needs during the first 1000 days. Cognitive stimulation could be facilitated through

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[15] 32 years old, 5 years working as a CHW, 1 child, isiXhosa translator not present
[14] 34 years old, 4 years working as a CHW, 3 children, isiXhosa translator present
[3] 37 years old, 2 years working as a CHW, no children, isiXhosa translator not present

talking, singing, reading, play, or, as Vuyokazi[11] stated, *"Speaking to them [infants], giving them new words, learning colours, learning everything."* Moreover, providing love, care, and a nurturing environment to infants both before and after birth was viewed as fundamental and foundational. Nonceba[5] epitomizes this understanding in her statement: "*What makes it [the first 1000 days] important is because if the child doesn't get the love, if you don't bond with your baby on that first 1000 days then there's no love for the child."*

4.1.2.2 Discussion. The factors highlighted by the CHWs as contextual needs for mothers and infants within the first 1000 days align with relevant literature. The CHWs highlight the requirement for mothers and infants to have their basic needs met, which is supported by several pieces of research (Bradley & Putnick, 2013; Evans et al., 2001). Evans et al. (2001) found that children residing in poorer quality housing (structural quality, privacy, indoor climate, hazards, cleanliness/clutter, and children's resources) have more negative psychological symptoms and less task persistence than their counterparts living in better quality housing, even after controlling for household income. Moreover, Bradley and Putnick (2013) found that in low- and middle-income countries, the quality of housing (drinking water, toilet facilities, household flooring, cooking, and refrigeration) and availability of material resources (presence of a radio, television, telephone, non-human-powered transportation, and electricity) at home were consistently tied to life expectancy, education, and gross domestic product. Literature supports the importance the CHWs placed on meeting basic needs, including shelter, safety, warmth, and hygiene.

The need for quality nutrition and exclusive breastfeeding within the first 1000 days, as underscored by the CHWs, is likewise substantiated by literature (Bellieni, 2016; Cusick &

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[11] 36 years old, 3 years working as a CHW, 3 children, isiXhosa translator not present
[5] 42 years old, 4 years working as a CHW, 4 children, isiXhosa translator not present

Georgieff, 2017; Martorell, 2017; Pentecost & Ross, 2019; Thurow, 2016). Indeed, it was nutrition-related literature which launched the first 1000 days movement. As Schwarzenberg and Georgieff (2018) found, "failure to provide adequate macronutrients or key micronutrients at critical periods in brain development [during the first 1000 days] can have lifelong effects on a child" (p. 3). This pertains to both maternal and infant nutrition (Schwarzenberg & Georgieff, 2018).

Similarly, exclusive breastfeeding for six months has been associated with a host of positive developmental outcomes (Bigelow et al., 2014; Thurow, 2016; Turck et al., 2013). In a meta-analysis, Turck et al. (2013) found exclusive breastfeeding for at least three months to be associated with lower rates and severity of diarrhoea, otitis media, and respiratory infection. Exclusive breastfeeding for at least six months was found to be associated with lower incidence of allergic disease (Turck et al., 2013). In general, breastfeeding was found to be associated with lower incidence of obesity, hypertension and high cholesterol, as well as slightly higher performance on cognitive tests (Turck et al., 2013). The CHWs' narratives provide contextual support for this literature, many having witnessed first-hand the harmful effects of mixed-feeding practices or poor nutrition.

The CHWs emphasized the need for early cognitive stimulation and play during the first 1000 days, a need which is again substantiated by a sizeable body of literature (Brockmeyer Cates et al., 2012; Cook et al., 2011; Firk et al., 2018). Early cognitive stimulation is associated with improved maths, reading, and language abilities in later childhood, and is associated with improved memory and protection against cognitive decline throughout life (Brockmeyer Cates et al., 2012; Cook et al., 2011).

Likewise, the need for love and care within the first 1000 days is empirically supported (Deans, 2018; Nichols et al., 2019; Wright et al., 2018). Maternal love and care, as described by the CHWs, is closely associated with the scholastic concept of maternal sensitivity, which describes a mother's capacity to recognize and interpret her infant's behaviour, and to respond appropriately in a time-sensitive manner. In a meta-analysis, Deans (2018) found maternal sensitivity to be associated with children's language acquisition, cognitive development, obesity, sleep, behavioural problems, social competence, emotionality, and temperament.

The CHWs' comprehensive knowledge of maternal and infant needs within the first 1000 days demonstrates their knowledgeability and training. Moreover, it indicates the relevance of international research within the local Khayelitsha context. The CHWs' narratives highlight the most important needs within their context. For example, the importance of meeting basic needs in the first 1000 days is likely more salient in the relatively resource-poor environment of Khayelitsha than it would be in resource-rich contexts. Similarly, the inexpensive nature of breastmilk is likely more significant in Khayelitsha than other contexts given the high level of poverty. The low-cost methods described for providing cognitive stimulation and care reflect the circumstantial constraints the CHWs and other Khayelitsha residents face while raising children, as well as their resourcefulness.

4.2 Theme 2: The centrality of mother–infant bonding within the first 1000 days of life – "*Because if you don't have a bond, how can you care for your child?*"

While many aspects of the first 1000 days were considered to be important, the CHWs viewed mother–infant bonding as a central component. All CHWs highlighted the importance of bonding within the first 1000 days as it was seen to facilitate a multitude of benefits for both mother and child. The CHWs also all reported prioritizing bonding in their sessions with their

clients (mothers). When Nosiseko[9] was asked if she spoke to her clients about bonding, she responded, *"Yes, every time. It's the first thing."*

Mother–infant bonding was viewed as a central component of the first 1000 days for two primary reasons: firstly, because bonding strengthens the mother–infant connection, and secondly, because of the wide-reaching benefits bonding facilitates. These reasons are unpacked in sub-theme 2.1 and sub-theme 2.2, respectively.

4.2.1 Sub-theme 2.1: Bonding strengthens the mother–infant connection. The CHWs viewed mother–infant bonding as central to development within the first 1000 days, primarily due to its capacity to strengthen the connection between mothers and infants. The presentation of the findings and discussion for this sub-theme follow.

4.2.1.1 Findings. The centrality of mother–infant bonding within the first 1000 days was ascribed by CHWs to its propensity to strengthen the connection between a mother and her child. Within a strong mother–infant relationship, a child is better cared for, nurtured, and tended to. Ayanda[12] describes how early bonding develops a strong, trusting mother–infant relationship, stating, *"Because when you start bonding at an early age, you will see you build a great relationship with your child. Your child will trust you more than anyone else because you bond with her."* To the CHWs, it is important to begin building this connection during pregnancy. As Bongeka[8] explains, *"When you are pregnant you can rub your stomach, listen, and the more you rub the baby will kick, and then you have that connection between the two of you."*

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[9] 46 years old, 3 years working as a CHW, 1 child, isiXhosa translator not present
[12] 37 years old, 2 years working as a CHW, 2 children, isiXhosa translator not present
[8] 33 years old, 5 years working as a CHW, 2 children, isiXhosa translator present

The CHWs viewed bonding as a process through which mothers got to know their children, and in turn, children got to know their mothers. Siyasanga[2] advises mothers who wish to bond with their children to, *"Spend a lot of time with your child so that the child can know you better, and even so you can know your child."* Knowing and understanding between mother and infant was a key component of how some CHWs defined bonding. Illustratively, Lelethu[14] provided the following definition: *"Bonding, it's you and your child, to understand your child, your child can understand you, recognize your voice, everything. The child will recognize you, and you can know everything of the child. That is bonding."*

Within a strong mother–infant relationship, typified by understanding, connection, and trust, mothers are more likely and able to be aware of the needs of her child. Bonding enables mothers to notice and pay attention to events within her child's environment. Siyasanga[2] illustrates this, contending, *"Because if you don't have a bond, how can you care for your child? That's how you see, 'Ya, there is something wrong with my child.' She is not kicking, or she is not eating, or something."* Similarly, when Nosipho[7] was asked if she thought it was important for a mother to bond with her baby, she responded, *"Yes, it's very important because if you [the mother] notice, you know your baby's voice… even if you are sleeping inside the house and the baby is playing outside, once they start crying you jump first because you… like they [children] are playing there and there are many of them but your will know your baby's voice, 'Who is beating my baby?' So even the baby has that feeling that my mother is going to come."* In this passage, the participant illustrates how a strong mother–infant bond allows mothers to be attuned

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[2] 39 years old, 2 years working as a CHW, 4 children, isiXhosa translator not present
[14] 34 years old, 4 years working as a CHW, 3 children, isiXhosa translator present
[7] 34 years old, 2 years working as a CHW, 2 children, isiXhosa translator present

to concerns or threats within child's environment. Moreover, she elucidates the enhanced sense of safety infants experience within a strong mother–infant relationship.

Additionally, some CHWs noted that the process of breastfeeding was particularly valuable in facilitating connection between mothers and infants. This is because, as Vuyokazi[11] explained, *"You [the mother] have to look at your baby, then you bond. Your baby also looking at you. Touch head, you touch the toes, and that is where the relationship also starts."* During breastfeeding, mothers have the opportunity to pay attention and connect to their infants. Lelethu[14] illustrates the benefits of paying attention while breastfeeding, explaining, *"Even if the child is getting sick, you [the mother] know, 'My child is sick now because she's not latching well.' Or your child… When you notice something, I don't know, like, okay, high temperature, you can say, 'Yo [sic], my child is not feeling well now.' And you can notice that, if you are bonding with your child. You can notice that, 'No, my child, she has a high temperature.'"* This quote illustrates how a close mother–infant connection facilitates better care for the infant.

Many of the CHWs emphasized that one of the great benefits of a close connection between mother and child was open, honest communication as the child grows older. Asive[6] noted that this is *"Because when the baby has a problem, he/she knows… and they had bonded with their mother… once they are grown and at a certain age and they have a problem, they know to go to their mother and tell they have this certain problem. They know that their mother is approachable because they had formed that bond with them. So they won't be able to hide a problem they have and be scared to share with you as a parent."*

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[11] 36 years old, 3 years working as a CHW, 3 children, isiXhosa translator not present
[14] 34 years old, 4 years working as a CHW, 3 children, isiXhosa translator present
[6] 47 years old, 4 years working as a CHW, 3 children, isiXhosa translator present

Within a strong mother–infant bond, children can share concerns with their mothers, and mothers can share important concerns with their children. Mothers can explain financial, familial, or social concerns to their children with more ease, allowing their children a greater sense of security and understanding in difficult times. Busisiwe[10] illustrates this, explaining, *"If your baby, she need something… Suppose if you don't have a money, you're supposed to sit down with the baby, 'My baby, my children, I don't have a money now, my money is coming maybe end of month.'"*

Open communication was viewed as a protective agent against many potential threats, particularly sexual abuse. As Nosipho[7] expresses, *"The moment you talk to your child, the child feels free. They are able to tell you that, 'Mom, so-and-so had touched my privates.' So the things happening out there, the child is willing to tell you, they are not afraid of anything because you also share with them. So it [bonding] helps us in such things."* Bonding, connection, trust, and communication were viewed as central components of safe, nurturing, and holistic development.

4.2.1.2 Discussion. To the CHWs, bonding plays a central role within the first 1000 days because it serves to strengthen the mother–infant relationship. In turn, this connected relationship helps the mother to better care for and tend to her child, and to be more aware of any potential dangers or concerns. The association between mother–infant bonding and maternal sensitivity – the mother's ability to recognize, interpret, and respond – has received empirical support (Johnson, 2013). For example, in their study, Pearson et al. (2011) demonstrated a significant

[10] 43 years old, 2 years working as a CHW, 1 child, isiXhosa translator not present
[7] 34 years old, 2 years working as a CHW, 2 children, isiXhosa translator present

relationship between mothers' sensitive responses to infant distress and successful mother–infant relationships.

The CHWs foregrounded the role of breastfeeding in fostering the mother–infant relationship and improving a mother's responsiveness to her child. In support, an empirical association has been demonstrated between mothers who breastfeed and maternal sensitivity (Kim et al., 2011; Pearson et al., 2011). Pearson et al. (2011) found attentional bias towards infant distress was significantly higher in breastfeeding compared to formula-feeding mothers. Moreover, there is an association between breastfeeding and greater response to infant cues in brain regions implicated in mother–infant bonding (Kim et al., 2011). Thus, there is substantial scientific research supporting the CHWs' belief that mother–infant bonding processes strengthen the mother–infant connection.

Beyond the empirical support of international literature, the CHWs' experiences and perceptions provide important insight into mother–infant relationships within their context. A strong connection between mother and infant within the first 1000 days was viewed as a protective factor against the potential dangers of the day-to-day realities of their clients. The dangers highlighted included health-related concerns, violence, financial difficulty, sexual abuse, rape, and other difficult life circumstances. This suggests that mother–infant bonding has the ability to protect children in the crime- and poverty-stricken context of Khayelitsha (Schneider et al., 2018).

The value of breastfeeding was emphasized as an important avenue for developing a mother–infant connection, which echoes a common and central tenet across the interviews. Breastfeeding was lauded by all CHWs, not just because it facilitates mother–infant connection, but also for its ability to promote health, contribute to infant growth, and provide quality

nutrition free of cost. To the CHWs, breastfeeding is clearly important within their context, and closely interwoven with mother–infant bonding.

4.2.2 Sub-theme 2.2: The wide-reaching benefits of mother–infant bonding. The CHWs attributed a wealth of wide-reaching benefits to mother–infant bonding within the first 1000 days. These benefits were cited as the reason CHWs perceived mother–infant bonding to be central within the first 1000 days. The presentation of the findings and discussion for this sub-theme follow.

4.2.2.1 Findings. Bonding was described as an intimate and special experience for both mothers and infants. In sessions with her clients, Busisiwe[10] says, *"I tell mothers, you supposed to bonding because the children deserve, and because you deserve the bonding."* The benefits of mother–infant bonding were enabled primarily through a strong connection and sense of love between mother and child. To some CHWs, bonding was viewed as an inherently joyful and profound process. Thandiwe[3] exemplifies this view, stating, *"I think it's a nice thing, man, bonding with your child. And I think that's priceless. Nothing can, like, take that away."*

The CHWs expressed that the benefits of mother–infant bonding began before birth. Antenatal bonding was viewed as a calming and relaxing process for both the mother and her unborn child, facilitating love and connection. Nomvuyo[13] highlights the relaxing effects for mothers, advising that, *"Even if you're [the mother is] stressed out you can talk to your baby and you will start to feel relaxed."* Ayanda[12] alludes to a similar calming effect for unborn infants. Here, she is describing the advice she gives to mothers with restless foetuses: *"Because*

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[10] 43 years old, 2 years working as a CHW, 1 child, isiXhosa translator not present
[3] 37 years old, 2 years working as a CHW, no children, isiXhosa translator not present
[13] 38 years old, 5 years working as a CHW, 4 children, isiXhosa translator present
[12] 37 years old, 2 years working as a CHW, 2 children, isiXhosa translator not present

they [mothers] say, 'Yo, this baby. Yo, this baby.' I say, 'Yo, you must rub your stomach, talk to your baby, then you will know or she will know. Then the baby will calm.'"

After birth, the CHWs described an amplification of bonding-related benefits which persist well into a child's future. Early mother–infant bonding has cognitive and physical benefits for infants, as Siyasanga[2] describes: *"Because that love, that mother-love, is also helpful for the baby to grow. It's also helpful to the mind of the baby. The baby can grow very active. Because if the mother doesn't love her baby, doesn't have the bonding with the baby, the baby is just sitting there, and the mother is just sitting there. So the baby won't grow with the mind, she won't be active, even at school. The toddlers also. If she can see my mommy is happy, she can also be happy. So, it is very important to bond."* Contrasting with the benefits Siyasanga describes, she also alludes to the dangers of not developing a bond. Moreover, she highlights that the benefits of bonding extend well beyond infancy into the schooling years.

While the cognitive and physical benefits were noted, the socio-emotional benefits of bonding featured most prominently. To the CHWs, a strong mother–infant bond helps children to feel safe, secure, and loved within their homes and within their larger worlds. Lelethu[14] emphasizes this, stating, *"The child, they are feeling safe if they are bonding."* Within a secure bond, children are able to develop a sense of self-worth and self-assurance. Nonkqubela[1] describes this protective capacity of the mother–infant bond, stating, *"But if you hug your child, even when he's coming from school, you talk to her, she won't care when somebody else is doing hurt."*

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[2] 39 years old, 2 years working as a CHW, 4 children, isiXhosa translator not present
[14] 34 years old, 4 years working as a CHW, 3 children, isiXhosa translator present
[1] 44 years old, 1 year working as a CHW, 6 children, isiXhosa translator not present

To the CHWs, the socio-emotional benefits of bonding are enduring. Some CHWs highlighted the benefits early bonding might have for relationships much later in life. For example, Nonceba[5] explained that, *"If you bond with your child at an early stage, I can say, at an early stage, it makes your child to give. Even when she is old or he old, she can be able to have a stable relationship, I can say that."* Others emphasized that bonding during infancy helped children to develop a better sense of morality, and to make better decisions throughout their lives. Nombuyiselo[4] explained how this might work, stating, *"Because in the way I see it, it helps us in the world, having that bond with the baby. Because even if they want to do something, they think, 'What will mom say?', because they have that bond with the mother."*

To garner the full benefits of mother–infant bonding, the CHWs emphasized that it was important to begin early, within the first 1000 days. As Ayanda[12] contends, *"Because if you don't start to bond with your baby while it's still young, I think you lose everything. So that's important to bond."* If early bonding does not occur, it is difficult to repair the damage in later childhood. Illustratively, Nombuyiselo[4] explains that not connecting with your child is *"something that you might not be able to help when the baby is all grown."*

The CHWs described many dangers of not forming a close mother–infant bond. A lack of mother–infant bonding could have long-term emotional consequences for the child. As Nombuyiselo[4] describes, *"The baby grows, and something build inside and that affects them*

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[5] 42 years old, 4 years working as a CHW, 4 children, isiXhosa translator not present
[4] 40 years old, 1 year working as a CHW, 2 children, isiXhosa translator present
[12] 37 years old, 2 years working as a CHW, 2 children, isiXhosa translator not present
[4] 40 years old, 1 year working as a CHW, 2 children, isiXhosa translator present

when they are old." The emotional and psychological consequences of not forming an early bond are perhaps best illustrated by Vuyokazi[11] in the following exchange:

Ella:	*What do you think happens to babies that don't bond with their mothers?*
Vuyokazi:	*No, they get so aggressive.*
Ella:	*Get aggressive?*
Vuyokazi:	*They cry a lot, they feel rejected, no self-esteem, they always cry, they always begging, they always like unhappy, so unhappy.*

To the CHWs, the emotional distress of not forming an early mother–infant bond can cause cognitive and behavioural problems, which in turn may negatively impact both the child and those around him or her. Vuyokazi[11] posited that children who do not bond are "*violent, some, violent. And some they don't listen in the school. Some they take time to think, yes, in education, like, they don't know how to write."* Here, she highlights how a lack of mother–infant bonding may be associated with aggressive behaviour and learning difficulties. Other CHWs, like Busisiwe[10], warned that *"the baby go to alcohol and smoke and drugs because it's not loved, the baby."* Turning to substance abuse later in life was a commonly described consequence of not bonding within the first 1000 days.

Several of the CHWs suggested that not forming a mother–infant bond might cause a child to look for love in other, unhealthy places. For example, Nomvuyo[13] contended that

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[11] 36 years old, 3 years working as a CHW, 3 children, isiXhosa translator not present
[10] 43 years old, 2 years working as a CHW, 1 child, isiXhosa translator not present
[13] 38 years old, 5 years working as a CHW, 4 children, isiXhosa translator present

children who do not bond with their mothers *"will have a lot of questions, and, um, tend to do love towards other kids because they don't know that love and bond from their mother."* Some CHWs even described the wide-reaching social consequences of poor mother–infant bonding. Nombuyiselo[4] reported that, *"If you look in the world, it's full of corruption and so on. Most of the time it's mothers, the mother did not bond with the baby, and now they grab everything because they did not get that love."*

4.2.2.2 Discussion. The CHWs described profound and extensive benefits to mother–infant bonding within the first 1000 days, as well as far-reaching consequences of not bonding. Beginning during pregnancy, they described the calming effects of bonding for mothers and their unborn children. In relation to maternal anxiety, a systematic review of 31 studies found that over half reported significant associations between maternal-foetal bonding and maternal anxiety (Göbel et al., 2018). The association was particularly strong for certain dimensions of maternal-foetal bonding, especially the quality of the mother's perceived emotional proximity to the foetus. Interestingly, the literature conceptualizes levels of maternal-foetal bonding as a function of maternal anxiety. The CHWs, on the other hand, explain a mother's anxiety as a function of the relationship between herself and the foetus. This raises concerns about assumptions of causality in empirical research, and emphasizes the need for contextual, on-the-ground wisdom. To the CHWs, maternal–foetal bonding was viewed as a remedy to maternal worry and anxiety, rather than a potentially problematic consequence.

A substantial body of literature evidences the relationship between mother–infant bonding and the child's developmental outcomes, as articulated by the CHWs (Johnson, 2013;

[4] 40 years old, 1 years working as a CHW, 2 children, isiXhosa translator present

Kennell & McGrath, 2005; Mäntymaa et al., 2003). Poor mother–infant relationships during the first 1000 days have been shown to affect the child's cognitive development and physical health, as well as socio-emotional development and interpersonal relationships (Bellieni, 2016; Johnson, 2013; Thurow, 2016). These effects have been demonstrated in both the short and the long term (Johnson, 2013).

The CHWs offer important insight into how the effects of mother–infant bonding may manifest within their contexts. In Khayelitsha, stunting rates are high, and infants who are small for their gestational age are common (Le Roux et al., 2010). The CHWs highlight how mother–infant bonding might protect against this. Cognitive and educational development are also context-specific concerns which, according to the CHWs, are improved within strong mother–infant bonds (Tsai & Tomlinson, 2012). Similarly, violence, aggression, and substance abuse are all prevalent social concerns in Khayelitsha, and likewise, according to the CHWs, are all curtailed within a close mother–infant relationship (Schneider et al., 2018). Mother–infant bonding within the first 1000 days has wide-reaching benefits and may serve to alleviate a wide variety of personal and social ills.

4.3 Theme 3: Effective approaches to bonding are simple, intuitive, and free – *"When you bond with your baby it's when you give them love"*

The CHWs suggested an array of methods, techniques and approaches to mother–infant bonding which were simple, intuitive, and free. The presentation of the findings and discussion for this theme follow.

4.3.1 Findings. When asked about the best ways for mothers to bond with their infants, some CHWs seemed confused about why the question was being asked, surprised that the answer was not intuitive. While their responses to this question varied, there was generally a

discernible level of consistency and similarity in the approaches they described. The approaches the CHWs described were never overly complicated or ostentatious. Instead, they described instinctive approaches which were simultaneously simple and effectual. Moreover, effective approaches to bonding did not necessitate expense. Nombuyiselo[4] explains that, *"Even if you have no money, you have nothing, money does not make love. You can love your baby without money."*

Consistently, the CHWs emphasized that bonding should begin during pregnancy. Forming a bond should begin as soon as the mother realizes she is pregnant, as Nosiseko[9] explains: *"In three months' time, it's by now I realize that I'm pregnant. It's whereby you must start bonding with your child, neh."* Prenatal bonding processes may include talking, communicating, singing, listening to music, reading, or rubbing the pregnant stomach. As with most of the CHWs, Nonceba[5] emphasizes that, *"It is important to talk to your child while you are pregnant, sing while you are pregnant, say everything."*

Some CHWs recommended that mothers explain everyday events to their unborn children so that they understand and are calmed. Nonceba[5] provides an example of this, narrating in the voice of the mother: *"'My child, today I am going to do shopping so take it easy. We'll be back at…' Just say that time. 'We'll be back at 2:00,' if you will be back at 2:00."* It was emphasized that mothers show love, care, and affection towards foetuses. Illustratively,

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[4] 40 years old, 1 year working as a CHW, 2 children, isiXhosa translator present
[9] 46 years old, 3 years working as a CHW, 1 child, isiXhosa translator not present
[5] 42 years old, 4 years working as a CHW, 4 children, isiXhosa translator not present

Busisiwe[10] advises that, *"You supposed to say [mimes rubbing pregnant stomach] 'I love you, my baby. I am waiting for you.'"*

Once the child has been born, mothers and infants simply continue to develop the relationship that has already been forming. Ayanda[12] illustrates this, explaining, *"You start it [bonding] when he [the child] was inside, then you just do what you just started when he's outside."* Some CHWs indicated that one of the first ways for mothers to bond with newborns is through skin-to-skin contact, particularly if the child is premature or has a low birth weight. Nonceba[5] describes the benefits of skin-to-skin contact, saying, *"Skin-to-skin helps the mother and the child to bond, to give warmth to the child, and also helps the child to gain the weight."*

The importance of breastfeeding for mother–infant bonding was emphatically underscored by all CHWs. Nonkqubela[1] encapsulates this sentiment, saying, *"The most important thing is that you have to breastfeed your child. It is very important, for bonding, it is very important. I think it is the foundation, maybe."* Breastfeeding was described as a natural and readily accessible approach to bonding. Nombuyiselo[4] discloses that, *"What I like as a mother is breastfeeding from the first day. Even if you cannot afford, it's free."* Breastfeeding was seen to foster closeness and connection between mother and infant.

Highlighting breastfeeding's appeal, some CHWs described the comparatively poor quality of bonding that bottle-feeding might produce. Nonceba[5] explains why, saying, *"The people who bond the most with their child are those who are breastfeeding. They are the most*

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[10] 43 years old, 2 years working as a CHW, 1 child, isiXhosa translator not present
[12] 37 years old, 2 years working as a CHW, 2 children, isiXhosa translator not present
[1] 44 years old, 1 year working as a CHW, 6 children, isiXhosa translator not present
[4] 40 years old, 1 year working as a CHW, 2 children, isiXhosa translator present
[5] 42 years old, 4 years working as a CHW, 4 children, isiXhosa translator not present

bonded with their child because every time, when you hold your baby, your baby always look at you while you breastfeed. Those who are using bottle they don't bond much. They bond, but not like the one who is one breastfeeding." The CHWs did, however, recognize that some mothers may not be able to breastfeed. In this case, they suggested that during bottle-feeding mothers should mimic the breastfeeding process. Ayanda[12] explains: "*It's the way you bottle-feed. You must not let the baby lie down then you bottle-feed the baby. You must take your baby also like you are also breastfeeding the baby. Carry the baby, look at the baby, at their eyes, bottle-feed the baby, talk to the baby while you still bottle feed. That makes you bond with the baby even if you are bottle-feeding."*

The CHWs noted that it was important for mothers to pay attention to their children. Siyasanga[2] maintains that to foster mother–infant bonding, a mother should *"look at her baby, think about her baby."* One way to pay attention is through eye-contact. In her sessions with clients, Thandiwe[3] ensures *"that they [the mother and infant] make eye-contact together so that they can bond."* Making eye-contact is particularly accessible during breastfeeding, and Asive[6] recommends that *"When you breastfeed them you must look them in the eye."*

Another uncomplicated yet powerful approach to bonding suggested by the CHWs was simply spending time together. When asked how mothers should approach bonding with their children, Nomsa[15] responded, *"Most, most important is to spend time every day."* When asked the same question, Bongeka[8] responded similarly, saying, *"Spending time, firstly."* She

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[12] 37 years old, 2 years working as a CHW, 2 children, isiXhosa translator not present
[2] 39 years old, 2 years working as a CHW, 4 children, isiXhosa translator not present
[3] 37 years old, 2 years working as a CHW, no children, isiXhosa translator not present
[6] 47 years old, 4 years working as a CHW, 3 children, isiXhosa translator present
[15] 32 years old, 5 years working as a CHW, 1 child, isiXhosa translator not present
[8] 33 years old, 5 years working as a CHW, 2 children, isiXhosa translator present

elaborated further by saying, *"Spending time is not about stopping whatever you were doing. You can spend time with your baby no matter how old they are and do whatever."* She emphasizes that spending time does not have to be a deliberate or elaborate event, it can take place simply as the mother and infant go about their daily activities.

Many CHWs expressed that when it comes to spending time, a little goes a long way. This was particularly pertinent for mothers who may be pressed for time due to work, household, or familial commitments. Ayanda[12] advises that, *"Every time you get, you must bond with your baby. I think that's the best, even if it's little, just to bond with your baby, just that moment you stay with your baby, it's the best. Even if its five minutes of your time, you bond with your baby."* Many CHWs expressed that *"even five minutes"* would make a difference.

The CHWs suggested various activities which mothers and infants could do together to facilitate bonding, including talking, singing, playing, reading, telling stories, bathing, and learning. These activities were viewed as natural, intuitive, and perhaps even obvious. When Asive[6] was asked for any additional insight about bonding, she responded, *"There is no other thing that's special besides this one: that you can play, make time for your kids, tell them… read them stories."* Bonding occurs through simple, intuitive activities. It can transpire during activities as ordinary as bathing the child, as Nomvuyo[13] explains: *"So, even if you're going to give them a bath, you need to talk to them, you need to communicate with them, you need to tell them what you're going to be doing."* Nonceba[5] elucidates that to bond with their children, mothers simply need *"To stay with your child, to give that love, every day, to make them laugh*

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[12] 37 years old, 2 years working as a CHW, 2 children, isiXhosa translator not present
[6] 47 years old, 4 years working as a CHW, 3 children, isiXhosa translator present
[13] 38 years old, 5 years working as a CHW, 4 children, isiXhosa translator present
[5] 42 years old, 4 years working as a CHW, 4 children, isiXhosa translator not present

any time, to take them out, sing for them. If you have that chance, tell them some stories, old stories.

The CHWs highlighted that bonding activities need not be ostentatious or expensive. In resource-poor households, bonding simply requires some creativity. As Vuyokazi[11] affirms, *"Must be a good mother and be creative."* Numerous examples of creative approaches to bonding were described by the CHWs. For example, Asive[6] explains that, *"Even you can do toys with your hands, you don't have to buy toys. We [CHWs] show them how to do toys. You take the bottle and you cut papers. Everything, we show them."* With some ingenuity and support from a CHW, mothers are able to craft their own homemade toys.

Importantly to the CHWs, mothers (and fathers) need to be interested and involved in their children's lives. Asive[6] conveys this, providing an example from her own life: *"A parent must be involved in their baby's life, no matter what is happening. Like…I am involved in my children's life, because I want to…even when they get back from school I ask them how their day was, and when they are about to write, I wish them good luck; you see such things. You should want to know if your child is fine, sit down and chat with them, be involved and be approachable to them."* Asking questions and being interested are important components of mother–infant bonding. Illustratively, Bongeka[8] offers the following advice: *"You can ask them some questions, just a few questions and not questions that will put pressure, and you find that the child will struggle to answer, just something general. So in that time you get to know your child."*

[11] 36 years old, 3 years working as a CHW, 3 children, isiXhosa translator not present
[6] 47 years old, 4 years working as a CHW, 3 children, isiXhosa translator present
[8] 33 years old, 5 years working as a CHW, 2 children, isiXhosa translator present

Another innate yet impactful approach to mother–infant bonding described by the CHWs was for mothers simply to offer love and nurturing care to their infants. Love and care were viewed as essential and foundational to mother–infant bonding, as Nombuyiselo[4] expresses: *"I think the thing first the child need is love. Take care of your child."* Showing love was even described as synonymous with bonding, as Asive[6] explains, *"when you bond with your baby it's when you give them love."* Love and care should infuse the daily interactions of mothers and infants. Siyasanga[2] illustrates this, describing mother–infant interactions where there is a lack of care: *"Like for instance I'm just carrying the baby, but I don't have that feeling of caring. I'm just carrying because I have to carry. Baby can cry, I don't care."*

Some CHWs maintained that love towards infants should be shown by all those around them, not just mothers. For example, Nomvuyo[13] contends that children need *"More love from the parents, both the father and the mother."* Love and care can be expressed verbally by, as Nomsa[15] advises, saying *"I love you, my child. I love you, my baby. I always take care of you."* They might also be expressed through affection, kissing, and cuddling. Busisiwe[10] advises that, *"If you're with the baby, you supposed to give hug, first, and then you kiss the baby, second."*

4.3.2 Discussion. Many of the approaches to bonding described by the CHWs receive substantial empirical support, including antenatal bonding, singing, skin-to-skin contact, and breastfeeding (Bigelow et al., 2014; Chan et al., 2016; Göbel et al., 2018; Maas et al., 2016; Persico et al., 2017; Turck et al., 2013). Research supports the CHWs' assertion that mother–

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[4] 40 years old, 1 year working as a CHW, 2 children, isiXhosa translator present
[6] 47 years old, 4 years working as a CHW, 3 children, isiXhosa translator present
[2] 39 years old, 2 years working as a CHW, 4 children, isiXhosa translator not present
[13] 38 years old, 5 years working as a CHW, 4 children, isiXhosa translator present
[15] 32 years old, 5 years working as a CHW, 1 child, isiXhosa translator not present
[10] 43 years old, 2 years working as a CHW, 1 child, isiXhosa translator not present

infant bonding should begin during pregnancy, and then continue to develop after birth (Alhusen et al., 2012; Maas et al., 2016; Rossen et al., 2016). Several studies demonstrate that higher levels of antenatal bonding predict higher levels of postnatal bonding (Farré-Sender et al., 2018; Rossen et al., 2016; Tichelman et al., 2019). Skin-to-skin contact, another suggestion of the CHWs, has been shown to be associated with more positive maternal-infant interactions, longer periods of breastfeeding, and lower risk of mortality for preterm and low birth weight infants (Bigelow et al., 2014; Chan et al., 2016).

Singing lullabies has been shown to improve mother–infant bonding (Persico et al., 2017), as well as being beneficial for mothers as singing has been associated with a host of benefits, including the release of endorphins, decreased stress levels, better cognitive performance, and lower blood pressure (Gick, 2011; Kreutz et al., 2003). Moreover, as described by the CHWs, research has shown that breastfeeding influences mothers' attentional sensitivity towards infant distress (Pearson et al., 2011).

Beyond receiving empirical support, the mother–infant bonding approaches described by the CHWs offer valuable contextual insight and information. They encapsulate bonding approaches which are suitable within the Khayelitsha context, and perhaps many other resource-poor communities across South Africa. The approaches the CHWs describe are inexpensive, a necessary feature in an area with high levels of poverty. The CHWs emphasize that mother–infant bonding need not be time-consuming, which is important in a context where many mothers work full-time or perform laborious household or familial duties. Moreover, the approaches they describe are not overly complex or high-brow, which is advantageous in a locale where many mothers' highest level of education is matric or below.

While the mother–infant bonding approaches described by the CHWs are simple, they are also, according to the CHWs, effective in facilitating sound development and guarding against a wide range of individual and social ills. (The benefits of bonding – and the harms of not bonding – as described by the CHWs, are summarized in sub-theme 2.2.) The value of mother–infant bonding, then, lies in its simultaneously uncomplicated and deeply impactful nature. According to the CHWs, it is an essential component of helping every child to reach his or her developmental potential. The benefits of this are far-reaching, extending to the child's family, community, and larger society.

4.4 Theme 4: Inhibitors of mother–infant bonding – "*So then they cannot bond because they are always stressed*"

The CHWs identified a multitude of challenges mothers face within their context that inhibit the development of a mother–infant bond. The presentation of the findings and discussion for this theme follow.

4.4.1 Findings. The CHWs identified a multitude of challenges faced by mothers which inhibit mother–infant bonding. The inhibiting factors were not present in isolation; rather, the CHWs described them as interlinked and contributing to one another. Stress was a frequently highlighted challenge to mother–infant bonding. Illustratively, when Nonkqubela[1] was asked what she thought made it difficult for mothers to bond with their infants, she responded, *"Ooh, when you're stressing. When you don't have money for food. When the husband is doing something else outside. She [the mother] don't, eh, support the children. That's when there's no bond. When you have that time to think for your baby, you only thinking about worries or*

[1] 44 years old, 1 year working as a CHW, 6 children, isiXhosa translator not present

problems." Here, she describes how stress might detract from a mother's capacity to bond with her child.

In the above quotation, Nonkqubela also emphasizes that stress might be due to a number of forces within the mother's environment. Many CHWs described how a strained relationship with a boyfriend or husband might inhibit mother–infant bonding. Asive[6] illustrated this, saying, *"Maybe someone is married and there are problems at home, so then they cannot bond because they are always stressed. Maybe she is arguing with her husband and when the baby is here, the father ... the husband is a drinker and abusive, so under that pressure you cannot bond with your children."* Tense or even abusive relationships contribute to mothers' stress and infiltrate the space in which bonding can occur.

Another cause of stress described by the CHWs was financial hardship, which likewise reduces a mother's bonding capacity. When Vuyokazi[11] was asked what she thought might make mother–infant bonding difficult, she responded, *"Financial strain. So if mother... or there is no one working in the household, that can also make it harder to bond because of that stress."* Financial concerns also meant mothers might have to leave their young infants while they work. Nonkqubela[1] articulates that, *"Because of their socio-economic issues, moms leave their children in maybe two weeks' time. She must go back to work because there is no one else."*

Work obligations, along with other household duties, mean that many mothers do not have the time or are too fatigued to bond with their children. When asked why some mothers do not bond with their children, Vuyokazi[11] explained that, *"It's those who come home late because*

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[6] 47 years old, 4 years working as a CHW, 3 children, isiXhosa translator present
[11] 36 years old, 3 years working as a CHW, 3 children, isiXhosa translator not present
[1] 44 years old, 1 year working as a CHW, 6 children, isiXhosa translator not present

they will complain about tired. 'I'm tired. It's late. I can't make this. I have to cook. I have to go to sleep early to preparing for the next day.' So you know the baby bonds with the granny and not the mother, ya. And the baby spend most of time in crèche, or those attending preschool." The demands and stress of daily life make it difficult for mothers to find time and energy to spend with their infants.

Many CHWs described logistical barriers to mother–infant bonding, such as when the child has to be cared for in a day-care centre or by an extended family member. Nomvuyo[13] explains that, *"Especially because in black communities, we normally just take the kids to their grandparents or whatever. So that kind of like feeds a gap between the parent and the child."* Some CHWs also emphasized that logistical barriers to mother–infant bonding were particularly challenging when the child was being raised in the Eastern Cape.

Another frequently emphasized inhibitor of mother–infant bond was depression, particularly postnatal depression. When asked about what might make mother–infant bonding difficult, Vuyokazi[11] responded, *"According what I'm seeing, the very very very thing is that they… when they… postnatal depression. They don't bond to their baby because they're depressed."* Depression was linked to stress, and to various other contextual inhibitors of mother–infant bonding. Illustratively, Thandiwe[3] explains that, *"If you are depressed, there are lots of things that you can't do right. Some of them is, eh, financial problems. Some of them are teenagers. They are not even thinking about having a child. The child was not in their plans. And the boyfriend is still in school. And she's sitting at home. The parents don't accept that the child*

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[13] 38 years old, 5 years working as a CHW, 4 children, isiXhosa translator present
[11] 36 years old, 3 years working as a CHW, 3 children, isiXhosa translator not present
[3] 37 years old, 2 years working as a CHW, no children, isiXhosa translator not present

is pregnant. So there's stress in the house. All of those things. All of those things they can cause depression. And when you're depressed, you can't breastfeed."

Many of the CHWs explained that difficulty accepting a pregnancy inhibited the forming of a strong mother–infant bond. When Nomvuyo[13] was asked what might make it difficult for mothers and infants to bond, she responded, *"The situation that you got pregnant in. So, for example, if someone was raped or the boyfriend left that could make it harder for someone to accept the child. And I have a client who actually went through that process of being left by the baby's father. And she struggled to accept the child, to a point that she wanted to leave the baby in the hospital."* Here, Nomvuyo touches on a number of reasons mothers might struggle to accept a child, and illustrates the potentially devastating consequences.

The CHWs described various reasons why mothers might avoid the reality of their pregnancy. A frequently cited reason was being left by the infant's father, in itself a stress or depression-inducing experience. In the voice of her clients, Siyasanga[2] explains that, *"'I don't want this baby because my husband or my boyfriend left me.' That is, that is the thing that makes them [mothers] not want the baby."* Teenage pregnancy was another reason mothers might struggle to acknowledge their pregnancy. Bongeka[8] illustrates the challenges put forth by teenage pregnancy, saying, *"You are a young child. At home you do not get support. You are pregnant and a child."* If infants are unplanned or unwanted, mother–infant bonding becomes

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[13] 38 years old, 5 years working as a CHW, 4 children, isiXhosa translator present
[2] 39 years old, 2 years working as a CHW, 4 children, isiXhosa translator not present
[8] 33 years old, 5 years working as a CHW, 2 children, isiXhosa translator present

increasingly challenging. Nosiseko[9] illustrates this, saying, *"Sometimes you didn't need this pregnancy, but by mistake you get this one. So maybe sometimes you can't connect."*

Alcohol abuse among mothers was one of the most frequently cited inhibitors of mother–infant bonding. Nomsa[15] describes how alcohol abuse might affect the mother–infant bond, saying, *"Like mothers that make it hard, nè [sic], to bond are mothers that are like drinking alcohol. They don't have time to breast him, they don't have time to communicate with their child, nè [sic]."* The CHWs witness alcohol abuse often among their clients, with harmful consequences to the mother–infant bond. Nonceba[5] explains that, *"If you are taking drugs, you can't bond with your child. Any kind of drugs, alcohol, smoking, whatever, but there is no time for you to bond with your child. I think so because I see most of the mothers… most of my clients they are taking alcohol so they don't have that much time."* From the CHWs' narratives, it is clear that alcohol is a common and dangerous hindrance to mother–infant bonding.

Several CHWs ascribed serious, devastating consequences to alcohol abuse among mothers. They described situations in which alcohol abuse led to child endangerment, child rape, and even death. Describing mothers who abuse alcohol, Vuyokazi[11] said, *"Like, most of them, they leave the children just unattended, no one to look after them. They leave the older one to look for the small ones. Some them they breastfeed, if they breastfeed they drink, but they still breastfeed the child, then they sleep. And then, boom, then the child… lie on top of the child then the child died."* She then recounted an instance when this had happened in her community.

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[9] 46 years old, 3 years working as a CHW, 1 child, isiXhosa translator not present
[15] 32 years old, 5 years working as a CHW, 1 child, isiXhosa translator not present
[5] 42 years old, 4 years working as a CHW, 4 children, isiXhosa translator not present
[11] 36 years old, 3 years working as a CHW, 3 children, isiXhosa translator not present

Moreover, alcohol abuse was associated with other factors that inhibit mother–infant bonding, such depression or intimate partner violence. Bongeka[8] illustrates this, recounting, *"Sometimes we [CHWs] get there and the mother is fine and happy, then when I arrive another day; the mother has a blue eye, the mother is drunk… I was doing fine with this mother from when she was pregnant, but now that she has a baby she is getting drunk and she wasn't a drinking person – which means that there is something in between, for example, maybe someone is being abused."* Her quote illustrates the interrelated nature of alcohol abuse and other contextual challenges such as depression and intimate partner violence.

Finally, the CHWs describes a lack of knowledge and awareness among mothers as a challenge to mother–infant bonding. Illustratively, in describing what mothers need to be able to bond with their infants, Asive[6] says, *"They need information. But we [CHWs] do give them information, but there is not a lot of them who are taking that information."* When asked why she thought mothers were not using the information, she elaborated, *"Maybe, I will say, that it's because we don't believe, we as black people, we take that as a white thing. 'It's a white person thing to do, not for us.'"* As encapsulated by Asive, the belief that mother–infant bonding practices are not a part of black African culture was described by many of the CHWs.

Specifically, the practice of talking to foetuses or infants before they are able to talk themselves is often seen by the CHWs' clients as laughable, preposterous, or a "white people thing". Illustratively, Nomvuyo[13] explains, *"So, like, as black people we didn't think it was*

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[8] 33 years old, 5 years working as a CHW, 2 children, isiXhosa translator present
[6] 47 years old, 4 years working as a CHW, 3 children, isiXhosa translator present
[13] 38 years old, 5 years working as a CHW, 4 children, IsiXhosa translator present

important, or that it was even a thing, for you to speak to the baby while it's still inside you. They only assume it was a white person thing. But, like, they've noticed that since that, like, it works."

Importantly, the CHWs themselves did not subscribe to these beliefs and were emphatic about the importance of mother–infant communication and mother–infant bonding. This is exemplified in the following exchange with Asive[6]:

Asive: *Even if you tell them [mothers], "You can play with the child, or talk with the child", they can hear you, they just laugh at you. They don't believe you.*

Ella: *Cos it's a white person? That's so fascinating. And what do you think about that?*

Asive: *I don't think it's a white person. Me on my own I believe it is true because I can see. Even if a child is still young, one month, he or she can understand you when you play with him.*

4.4.2 Discussion. Many of the challenges to mother–infant bonding described by the CHWs are already well-documented social concerns in Khayelitsha. High rates of postnatal depression, absentee fathers, teenage pregnancy, financial hardship, and alcohol abuse have all been identified in previous research (BeLue et al., 2014; Lesch & Kelapile, 2015; Schneider et al., 2018; Tsai & Tomlinson, 2012). Thus, while the experiences and perspectives of the CHWs do not offer novel insight into the challenges many Khayelitsha residents face, they do offer unique, valuable understanding as to how these challenges affect mother–infant bonding

[6] 47 years old, 4 years working as a CHW, 3 children, isiXhosa translator present

processes. Furthermore, their insight indicates directions for future interventions and policy change.

For many mothers, the stress arising from living within their context potentially jeopardizes their capacity to bond with their infants. Stress is produced by a multitude of interrelated sources, including poverty, relationship, and work-related stress. Mothers who are stressed will likely have less time, energy, and emotional capacity to put towards the care of their children. Thus, quality mother–infant bonding practices necessitate reducing the heavy stress burden placed on mothers in Khayelitsha.

As described by the CHWs, prenatal and postnatal depression are likewise common in Khayelitsha (Hartley et al., 2011). A body of literature demonstrates the harmful impact of maternal depression on mother–infant bonding (Barrett et al., 2012; Kingston & Tough, 2014; Rossen et al., 2016). Over and above this, the CHWs provide a rich contextual description of depression in the everyday lives of their clients. Mothers lose the capacity to care for the infants, and their despondency disturbs the emotional well-being of their children. Furthermore, depression and stress may contribute to excessive alcohol consumption.

Alcohol abuse is a considerable concern in Khayelitsha, and, according to the CHWs, a detriment to mother–infant bonding (Ferrell, 2016; Manaliyo, 2014). Empirical evidence suggests that maternal alcohol abuse is inversely related to the quality of mother–infant bonding (Rossen et al., 2016). Not only does alcohol abuse damage a mother's capacity to connect with her infant, it may also endanger the lives and safety of her young children. Thus, interventions aimed at reducing risky alcohol consumption in Khayelitsha will likely also benefit mothers, infants, and their relationships.

The CHWs described a belief held by their clients that some mother–infant bonding practices were not a part of their African culture. Rather, mother–infant bonding is often seen as a ‘white people thing’. The CHWs identified a common belief among their clients that communicating with children was not necessary until children are able to talk. This belief aligns with the findings of Worthman et al.’s (2016) research, which found that caregivers in Khayelitsha believe that the most important years for a child’s development are during adolescence. Infancy and early childhood development were not emphasized because caregivers believed that development in this period occurs naturally (Worthman et al., 2016). Caregivers “further explained that things you can do to guide outcomes of older children (discussing, instructing, being a role model, instilling moral norms) are not relevant or effective for the very young, who ‘have no sense’ until later cognitive development occurs” (Worthman et al., 2016, p. 10).

The CHWs, however, did not share these beliefs, and strongly emphasized the value of early mother–infant bonding. They described mother–infant bonding within the first 1000 days as essential and foundational to a child’s future development. As before, this contradiction depicts the complex interaction between traditional and international knowledge systems that now inform mother–infant bonding practices in Khayelitsha and across South Africa. The CHWs have come to emphasize the importance of early mother–infant bonding not just through their training, but moreover through witnessing first-hand its impact in the families and communities they serve. Thus, CHWs are invaluable resources for gaining insight and providing informational support.

4.5 Theme 5: The need for support – "*The mother need a support, love, all of these stuff, so that she can bond with the baby"*

To surmount the many inhibitors to mother–infant bonding, the CHWs highlight that mothers and infants require support. Support is vital for facilitating mother–infant bonding processes, as described in Sub-theme 5.1. Moreover, CHWs are able to provide comprehensive multifaceted support, as described in sub-theme 5.2.

4.5.1 Sub-theme 5.1: Support is vital for mother–infant bonding. The CHWs emphasized that many forms of support are necessary to enable strong mother–infant bonds. The presentation of the findings and discussion for this sub-theme follow.

4.5.1.1 Findings. To create a quality mother–infant bond and overcome contextual challenges, the CHWs emphasized that mothers need support. Nosiseko[9] encapsulates this, saying, *"The mother need a support, love, all of these stuff, so that she can bond with the baby."* Mothers need emotional support, social support, support from their families, support from the father, financial support, and informational support, among others.

The necessity for emotional and social support, perhaps from family members, the church, or the child's father, was emphasized by some CHWs. Illustratively, when Lelethu[14] was asked what she thought mothers needed in order to be able to bond with their children, she replied, *"I think, support. Support from their families and from their husband, neh, so they can do other things, so that they can be with their child, or bond with their child. You need support."* Other CHWs highlighted the need for financial support, which might come in the form of a

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[9] 46 years old, 3 years working as a CHW, 1 child, isiXhosa translator not present
[14] 34 years old, 4 years working as a CHW, 3 children, isiXhosa translator present

social support grant, from the father, or other from some other source. Nomvuyo[13] explains why financial support is important, saying, *"If the mother or father is working then it also makes it a lot easier because they don't have to worry that much about the finances. So that makes it a lot easier to bond with the child."* Moreover, still others highlighted the importance of informational support. As Asive[6] synopsizes, *"They need information."* Some even highlighted the need for maternity leave. Lelethu[14] explains that, *"They give you that four months for maternity so you can… I think this is another support."*

Mothers who receive support in any form are better able to care for and bond with their infants. The benefits of support are articulated in this statement from Vuyokazi[11]: *"Some of them [mothers] they do need support like us as Mentor Mothers [CHWs]. If you support them, they change, some of them. They see why they must do, then they change. The need support. Support from families, from us as Mentor Mothers, from church, some of them they go to church. Because some of them they're so hurt they don't want to do that delivery, that they don't want to do it just because of some situations, they need support."* Here, she explicates some of the many sources of support available to mothers, explains the transformative power of support, and highlights the great need for support among the mothers she serves.

4.5.1.2 Discussion. The CHWs systematically highlighted the importance of support for mothers. In support of this assertion, empirical research demonstrates a positive relationship between social support and maternal–infant bonding scores (Bicking Kinsey et al., 2014; Noyman-Veksler et al., 2015). In addition, an association has been shown between support from

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[13] 38 years old, 5 years working as a CHW, 4 children, isiXhosa translator present
[6] 47 years old, 4 years working as a CHW, 3 children, isiXhosa translator present
[11] 36 years old, 3 years working as a CHW, 3 children, isiXhosa translator not present

the father and maternal–infant bonding (Bicking Kinsey et al., 2014). Greater social support has been associated with lower levels of postpartum depression, which in turn may contribute to improved mother–infant bonding (Afolabi et al., 2017; Corrigan et al., 2015).

Beyond being empirically supported, the CHWs' narratives offer contextually situated insight into support for mothers and infants within their communities. They catalogue various sources of support within their communities, including family members, friends, intimate partners, the church, local health services, and even the CHWs themselves. Moreover, the necessary forms of support the CHWs highlight indicate pertinent areas for future interventions. Providing financial, emotional, social, and informational support to mothers in Khayelitsha could greatly improve the quality of mother–infant bonding, and by extension the lives of mothers, infants, families, and the greater community.

4.5.2 Sub-theme 5.2: CHWs provide comprehensive, holistic support. Through the CHWs' narratives, it is evident that they are able to provide comprehensive, holistic support to meet the needs of mothers and their infants. The presentation of the findings and discussion for this sub-theme follow.

4.5.2.1 Findings. The support provided by the CHWs is immensely valuable to new mothers and to mother–infant bonding. Each CHW detailed the different, yet powerful ways they provided support to their clients. Siyasanga[2] explains that, *"I must support her [the mother]. I must tell her that it's not the end of her life. Even if she's studying, let's say she is doing grade 8, I must tell her that, 'Look here, this is the first time maybe that you do this. It is your first mistake. But now, you must learn from your mistake. You must carry on doing this. You must*

[2] 39 years old, 2 years working as a CHW, 4 children, isiXhosa translator not present

carry on with your studies.' And also, you must also try to help her by finding her… Maybe there is an organization that can help her with a stuff like baby food, baby clothes, all those things. That makes her feel comfortable. At least she can see, no, it's not the end of her life. There is someone that is there for me." Siyasanga provides profound emotional, informational, logistical, and motivational support to her young clients.

Some CHWs described supporting clients through the difficult process of accepting a pregnancy after the father has left. To do this, for example, Siyasanga enlists the help of religious support, explaining, *"You tell her [the mother], 'Just listen here. Even if he [the father] can leave you now, he knows that this child belong to him, he will come. But now you must think about your baby. Because your baby is very important and it's a blessing from God. Even if you are sixteen years old, God has a purpose for you. And God trusted you, that she gave you baby at the early age."*

To provide support, the CHWs go above and beyond the call of duty. Nosiseko[9] notes that as CHWs, *"We are friends [with the clients]. When you don't come maybe she call you. 'Where are you? I see something funny, can you please come?' I say, 'No problem. You can go to the clinic and I can come and visit and explain what's going on, you see. If you see something funny, I'm going to come.' So we like friends. Also bonding with each other. [Laughs]"*

Some CHWs described supporting mothers through the difficultly of postpartum depression. Illustratively, Siyasanga[2] explains, *"There's that, ah, baby blues after… Baby blues it lasts for two weeks. After two weeks it's whereby you must start to worry about the mother. Like for instance, first she can forget that, 'I have a baby to feed.' She can sleep, and she have a*

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[9] 46 years old, 3 years working as a CHW, 1 child, isiXhosa translator not present
[2] 39 years old, 2 years working as a CHW, 4 children, isiXhosa translator not present

moods. That is normal things for baby blues. But after two weeks you must started to worry. You must try to find out what is wrong with the mother. Because it's whereby you start to tell her and to educate her, not to educate but to remind her of the importance of bonding." She provides gentle, compassionate support to her clients during dark times.

Many CHWs describe situations in which they offered informational support. Nosiseko[9] recounts that*, "As we go to these houses, house to house, these women, they learn a lot from us. Yes. Yes, there is others who are slow learners. But a lot, I can say 80%, they like it very much. And we teach them."* Here, it is apparent that mothers benefit from the support they receive. Ayanda[12] explains that, *"But as we are educating, ya [sic], they [mothers] take little by little. Then some of them, you will see that they're helping a lot, ya [sic]. I've got clients that say, 'This thing, the outcome of this thing, I can see the outcome.'"* Mothers come to see the benefits of teachings the CHWs share with them.

While the CHWs provide much-needed support to their clients, their work is often arduous and challenging. Nevertheless, the CHWs are driven to improve the lives of children, mothers, families, and their community. Nosiseko[9] explains that, *"We work very hard for that, yes. It's not easy, yes. Because others say, "No man, in older days there is no people like this [CHWs]. We don't know how can we now do this thing. But we try to explain everything is changing. That's why we come. And Philani ask us to go to those houses so that we can teach you about how to be a mother-to-be. About bonding with your baby."* She expresses, as did many of the other CHWs, a deep sense of purpose and dedication to the work she does.

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[9] 46 years old, 3 years working as a CHW, 1 child, isiXhosa translator not present
[12] 37 years old, 2 years working as a CHW, 2 children, isiXhosa translator not present
[9] 46 years old, 3 years working as a CHW, 1 child, isiXhosa translator not present

4.5.2.2 Discussion. Evident in the CHWs' narratives are the myriad of ways in which they provide vital support to the mother–infant dyads in their care. CHWs are an instrumental tool for expanding the social support network of mothers in low-income communities (Becker et al., 2004). The CHWs provide support by offering information, facilitating access to health and social services, and acting as confidants, consolers, and friends to their clients. Indeed, just one CHW is able to offer the multiple forms of support mothers need to be able to form thriving bonds with their infants. Thus, they are an incredible resource in the effort to strengthen the quality of mother–infant bonding.

Empirical evidence demonstrates the efficacy of interventions delivered by CHWs (Peacock et al., 2013; Schneider et al., 2008; Wadler et al., 2011). Various studies of Philani's home visiting programme delivered by its CHWs (Mentor Mothers) demonstrate that the intervention condition is associated with lower rates of hospitalization, stunting, maternal depression, and infant diarrhoea, and higher levels of exclusive breastfeeding and improved vocabularies (Hartley et al., 2011; Le Roux et al., 2014; Tomlinson et al., 2016). Beyond empirical evidence, the CHWs' narratives provide vivid illustrations of the vital support they provide to mothers and infants as a part of their day-to-day work.

The CHWs view their work as a calling, going above and beyond to support mothers, infants, and their communities. This unreserved dedication makes CHWs an instrumental resource for enhancing mother–infant bonding within their communities, over-and-above a multitude of other services and supports they provide. In light of the far-reaching benefits of mother–infant bonding, CHW-delivered interventions are an invaluable approach to enriching families, communities, and even societies.

Chapter 4, the presentation and discussion of the results, conveys the five themes abstracted from the interviews with the participating CHWs. The first theme articulates the importance the CHWs place on the first 1000 days of life. The second theme encapsulates the central role of mother–infant bonding within the first 1000 days of life, as described by the CHWs. The third theme catalogues the simple, intuitive, and free approaches to bonding that the CHWs describe. The fourth theme lists the inhibitors to mother–infant bonding identified by the CHWs. The fifth theme demonstrates the need for support evident in the CHWs' narratives.

The next and final chapter, Chapter 5, provides a conclusion to the thesis. The strengths and limitations, as well as recommendations, are included.

CHAPTER 5: CONCLUSION

Community health workers are an untapped resource for gaining contextual knowledge and insight within the South African milieu. This thesis has endeavoured to utilize their expertise by exploring CHWs' knowledge and understanding of mother–infant bonding within the first 1000 days of life. More specifically, the thesis has addressed four objectives. Firstly, the research has explored CHWs' understanding of the first 1000 days of life. Secondly, it has explored CHWs' understanding and knowledge of mother–infant bonding in the first 1000 days of life. Thirdly, it has explored the information and support CHWs provide to mothers regarding mother–infant bonding. Finally, the thesis has explored the mother–infant bonding practices CHWs observe in the homes they visit.

The first 1000 days of life

The CHWs view the first 1000 days of life as a fundamental and foundational period, an indicator of the period's pertinence within the Khayelitsha context, and perhaps others like it. Moreover, mother–infant bonding is viewed as a central component of an infant's care during the first 1000 days, signifying the significant role bonding plays in healthy development. The CHWs' perspectives provide contextual grounding for international literature regarding the first 1000 days and mother–infant bonding, a demonstration of international research and local knowledge not only coexisting but reinforcing one another.

Mother-infant bonding as a protective factor

Fostering a strong mother–infant bond is viewed as essential to infants' care, development, and protection. Within a strong mother–infant bond, a mother is better able to be attuned to the needs of her infant and to be aware of any potential dangers. The CHWs associate mother–infant bonding with numerous benefits for both the mother and the child, beginning

during pregnancy and persisting long into a child's future. The benefits include better health, improved physical and cognitive development, and greater socio-emotional well-being. Moreover, mother–infant bonding was seen to serve as a protective factor against an array of social hardships and environmental threats. In light of the wide-reaching benefits and protective capacity of mother–infant bonding described by the CHWs, investment in interventions and policies to enhance mother–infant bonding will undoubtedly yield great social value.

The CHWs delineate simple, yet profoundly effectual approaches to mother–infant bonding which can be incorporated within any intervention. It was emphasized that bonding begins during pregnancy through talking and singing to the unborn child. After birth, bonding processes are continued through talking, singing, playing, breastfeeding, paying attention, spending time together, and infusing daily activities with love and care. These approaches are simple, intuitive, and free, and thus accessible to mothers in even the most poverty-stricken contexts.

Yet, despite the simplicity of the approaches to mother–infant bonding, the CHWs also describe the multitude of challenges mothers face in forming strong mother–infant bonds. These included stress, postnatal depression, alcohol abuse, financial hardship, time-constraints, a strained relationship with the infant's father or the mother's intimate partner, teenage pregnancy, and difficulty accepting the pregnancy. The CHWs' narratives about the challenges mothers face reflect the reality of the context in which they live, and moreover depict the long-lasting, generational impact of the hardships faced by the residents of Khayelitsha. Interventions and policies aimed at supporting mothers through these challenges would serve to break the cycle inflicted by historical, political, and social injustice, and enrich the lives of a new generation.

The critical role of community health workers

To overcome the inhibitors of mother–infant bonding, the CHWs emphasize that mothers and infants need many forms of support, including financial, psychological, socio-emotional, and informational. CHWs are ideal sources of support, as they are able to act as educators, mentors, counsellors, and friends, as well as to provide support in accessing health services or social support grants. They are passionate and dedicated to improving the lives of children, mothers, and their larger communities, often enduring personal hardship to provide much-needed support. CHWs are an invaluable resource for enhancing mother–infant bonding within the first 1000 days of life, and moreover for many other forms of community support.

Strengths and limitations

This thesis has a number of strengths, most notably that it highlights local voices, expertise, and perspectives. It foregrounds local knowledge, and then considers this knowledge in relation to international research and theory. The findings contribute valuable, contextualized knowledge about the critical subjects of the first 1000 days of life and mother–infant bonding. Additionally, the findings are pertinent for future research, intervention, and policy.

This thesis also contains several limitations. I, as the researcher, have a different social standpoint from the participants, which generated linguistic and cultural differences, and an inherent power differential. While active steps were taken to mitigate potentially prejudicial or harmful effects, the difference in social standpoint between myself and the participants shaped the research process, and thus ultimately influenced the findings.

Further, the interview schedule was not pretested, which would have enhanced its effectiveness and provided the researcher with the opportunity to correct any overlapping or confusing questions. Finally, the research was only conducted within one South African

community, and with a unique group of CHWs, and thus cannot be taken to be representative of CHWs working at other organizations, or in other communities.

Recommendations

As articulated by the CHWs, it is imperative that the new mothers and infants receive support. Policies, interventions, and programmes aimed at providing financial, informational, psychological, and socio-emotional support would produce enduring benefits for mothers, infants, and wider communities. In particular, the profound process of mother–infant bonding requires support, as it is this process which empowers mothers to provide better care to their infants.

The CHWs provide holistic, comprehensive support to new mothers and infants. Thus, it is recommended that continued and expanded investment be made into CHW-led programmes. The value of CHWs' knowledge and insight is evident in this research, and accordingly it is recommended that future research explore and incorporate their voices. Furthermore, it is important that future research develop a deeper and more comprehensive understanding of the first 1000 days and mother–infant bonding within local contexts.

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APPENDIX A – INFORMATION SHEET (ENGLISH)

UNIVERSITY OF THE WESTERN CAPE
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INFORMATION SHEET

Project Title: Community health workers' perspectives of mother-infant bonding within the first 1000 days of life in Khayelitsha, South Africa.

What is this study about?
This is a research project being conducted by Ella Bust and Dr Athena Pedro at the University of the Western Cape. You are invited to participate in this research project because of the valuable knowledge and insight about early childhood development you gain through your work as a Mentor Mother. The purpose of this research is to address the lack of research about the bonding processes between a mother and her baby within the first one thousand days life (from conception to two years old) in the South African context. In order to maximise children's developmental potential, this study aims to explore your understanding and experiences of bonding processes between mothers and their babies within the first one thousand days of life in the context of Khayelitsha, South Africa.

What will I be asked to do if I agree to participate?
You will be asked to participate in an interview that will take between 30 and 45 minutes. The interview will be conducted at a time that is most convenient for you. Your permission will be requested to audio-record the interview. The interview questions are aimed at gaining your understanding and experiences of bonding between mothers and babies within the first one thousand days. More specifically, the interview will ask for some demographic information about yourself (age, work experience, training, marital status, and parental status), your understanding of the first one thousand days of life, your understanding of bonding within the first one thousand days of life, what information you share with clients about bonding, and what you observe your clients do to bond with their babies.

Would my participation in this study be kept confidential?
The researcher undertakes to protect your identity and the nature of your contribution. To ensure your anonymity, your name will be replaced with a pseudonym on the collected data. Through the use of this pseudonym the researcher will be able to link your interview to your identity, and only the researcher will have access to the identification key.
To ensure your confidentiality, the recorded audio-files will be stored in a secure space where only the researcher and supervisor will have access. In addition, transcribed transcripts will be secured by password-protected computer files. If we write a report or article about this research project, your identity will be protected.

What are the risks of this research?
All human interactions and talking about self or others carry some amount of risks. As such all research carries some risk. We will nevertheless minimise such risks and act promptly to assist you if you experience any discomfort, psychological or otherwise during the process of your participation in this study. Where necessary, an appropriate referral will be made to a suitable professional for further assistance or intervention.

What are the benefits of this research?
This research is not designed to help you personally, but the results may help the investigators learn more about first time bonding processes between mothers and babies within in the first one thousand days of life in Khayelitsha. We hope that, in the future, other people might benefit from this study through improved understanding of mothers' experiences during this important phase of development, which may also provide insight into improving existing interventions for mothers and children in South Africa.

Do I have to be in this research, and may I stop participating at any time?
Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.

What if I have questions?
This research is being conducted by Ella Bust and Dr. Athena Pedro at the University of the Western Cape. If you have any questions about the research study itself, please contact Athena Pedro at: 021 959 2825 or aspedro@uwc.ac.za or Ella Bust at: 060 577 2390 or 3943531@myuwc.ac.za
Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

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Research Office
Tel: 021 959 4111
Email: research-ethics@uwc.ac.za
This research has been approved by the University of the Western Cape's Humanities and Social Sciences Research Ethics Committee (REFERENCE NUMBER: BM19/4/16)

APPENDIX B - INFORMATION SHEET (ISIXHOSA)

UNIVERSITY OF THE WESTERN CAPE
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Tel: +27 21-959 2825 Fax: 27 21-959 3515
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Isihloko: Imbono zabasebenzi bezempilo zokubambisana phakathi komama kunye nosana lwakhe kwimihla yokuqala yeentsuku ezili-1000 zokuphila eKhayelitsha, eMzantsi Afrika.

Singantoni esi sifundo?
Le projekthi yophando eyenziwa ngu-Ella Bust kunye noDkt. Athena Pedro kwiYunivesithi yeNtshona Koloni. Uyamenywa ukuba uthathe inxaxheba kule projekthi yophando ngenxa yolwazi oluxabisekileyo kunye nokuqonda malunga nokuphuhliswa kwasekuqaleni komntwana okuzuze ngomsebenzi wakho njengoMama ocebisayo. Injongo yoluphando kukujongana nokungabikho kophando malunga neenkqubo zokubambisana phakathi komama kunye nosana lwakhe kwimihla yokuqala yeentsuku ezili-1000 kummandla waseMzantsi Afrika. Ukuze kuphuculwe amandla okuphuhlisa abantwana, esi sifundo sijonge ukuhlolisisa ukuqonda kwakho kunye namava enkqubo yokubambisana phakathi koomama kunye neentsana zabo kwiintsuku zokuqala zee-1000 kwiimeko zaseKhayelitsha, eMzantsi Afrika.

Ndiya kucelwa ukuba ndenze ntoni ukuba ndivuma ukuthatha inxaxheba?
Uya kucelwa ukuba uthathe inxaxheba kwingxoxo-ndlebe eya kuthatha imizuzu engama-30 ukuya kwe-45. Udliwano-ndlebe luya kwenziwa ngexesha elifanelekileyo kakhulu kuwe. Imvume yakho iya kucelwa ukuba irekhodwe udliwano-ndlebe. Imibuzo yodliwano-ndlebe ijoliswe ekufumaneni ukuqonda kwakho kunye namava okubambisana phakathi koomama kunye neentsana ezinsukwini zokuqala eziliwaka. Ngokugqithiseleyo, udliwano-ndlebe uza kucela ulwazi oluthile ngabantu (ubudala, amava omsebenzi, uqeqesho, isimo somtshato kunye nesimo somzali), ukuqonda kwakho kweentsuku ezili-1000 zokuqala zokuphila, Ukuqonda kwakho ukubambisana phakathi kweentsuku ezili-1000 zokuqala zokuphila, yintoni ulwazi olwabelana ngayo nabaxhasi malunga nokubambisana, kwaye oko ukubonayo amaclient akho akwenzayo ukubambisana nabantwana babo.

Ngaba ukuthatha inxaxheba kwam kulesi sifundo kuya kugcinwa kuyimfihlo?
Umphandi uzokwenza ngakokonke ukukhusela ubuni kunye nobume begalelo lakho. Ukuqinisekisa ukungaziwa kwakho, Igama lakho liya kutshintshwa ngegama elidityanisiweyo kwi-data eqokelelweyo, ngokusebenzisa le ngonyameko umphandi uya kukwazi ukudibanisa udliwano-ndlebe lwakho nobunikazi bakho, kwaye kuphela umphandi uza kuba nokufikelela kwinqhosha lokuchonga.
Ukuqinisekisa ukugcinwa kwemfihlo, iifayile ezirekhodiweyo ziya kugcinwa kwindawo ekhuselekileyo apho kuphela umphandi kunye nomphathi banofikelela kuzo. Ukongeza, iinguqu ezibhalwe phantsi ziya kukhuselwa ngamafayile ekhompyutheni ekhuselweyo ngegama. Ukuba sibhala ingxelo okanye inqaku malunga nale projekthi yophando, ubume bakho buya kukhuselwa.

Ziziphi iingozi zoluphando?
Zonke iintsebenziswano zabantu kunye nokuthetha ngawe okanye abanye abantu zinobungozi obuthile. Ngaloo ndlela lonke uphando lunomngcipheko. Kodwa siya kunciphisa ingozi enjalo kwaye senze ngokukhawuleza ukukunceda ukuba udibene nengxaki/ phazamiseko, ngokwasemoyeni okanye ngenye indlela ngexesha lokuthatha inxaxheba kwesisifundo. Xa kuyimfuneko, ukuhanjiswa okufanelekileyo kuya kwenziwa kwicandelo elifanelekileyo lochwepheshe ukuze ufumane uncedo.

Ziziphi iinzuzo zolu phando?
Olo uphando awuklanyelwe ukukunceda wena, kodwa iziphumo zinganceda abaphandi bafunde kabanzi malunga neenkqubo zokudibanisa kuqala phakathi koomama kunye neentsana ngaphakathi kwimihla yokuqala yeentsuku ezili-1000 eKhayelitsha. Siyathemba ukuba, ngokuzayo, abanye abantu banokuzuza kwesisifundo ngokusebenzisa ukuqonda kwamava oomama ngeli nqanaba elibalulekileyo lophuhliso, olunokunika ingqiqo ekuphuculeni ukungenelela okukhoyo koomama nabantwana baseMzantsi Afrika.

Ingaba kufuneka ndibe kuloluphando, kwaye ndingayeka ukuthatha inxaxheba nanini na?
Ukuthatha inxaxheba kwakho kolu phando kuqhutywa ngokuzikhethela. Unokukhetha ukuba ungathathi nxaxheba kukho konke. Ukuba uthatha isigqibo sokuthatha inxaxheba kulo cwaningo, unokuyeka ukuthatha inxaxheba nanini na. Ukuba uthatha isigqibo sokuba ungathathi nxaxheba kulo cwaningo okanye ukuba uyeke ukuthabatha inxaxheba nangaliphi na ixesha, awuyi kuhlawulwa okanye ulahlekelwe nayiphi na inzuzo apho ifanelekileyo.

Kuthekani ukuba ndinemibuzo?
Olu phando luqhutywa ngu-Ella Bust noDkt. Athena Pedro kwiYunivesithi yeNtshona Koloni.
Ukuba unemibuzo malunga nolucwaningo, nceda uqhagamshelane no-Athena Pedro ku: 021 959 2825 okanye aspedro@uwc.ac.za okanye u-Ella Bust kwi: 060 577 2390 okanye 3943531@myuwc.ac.za. Ukuba ngaba unayo nayiphi na imibuzo malunga nesisifundo kunye namalungelo akho njengomncedisi wophando okanye ukuba unqwenela ukubika nayiphi na ingxaki oye wahlangabezana nayo ngokumalunga nophando, nceda uqhagamshelane:

Dr. Maria Florence
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mflorence@uwc.ac.za

Prof Anthea Rhoda
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Private Bag X17
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chs-deansoffice@uwc.ac.za
Olu phando luvunywe yiNyuvesi yeNtshona Koloni yoLuntu kunye neNzululwazi yeeNtlalo zoPhando (REFERENCE NUMBER: BM19/4/16).

APPENDIX C – CONSENT FORM (ENGLISH)

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

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E-mail: 3943531@myuwc.ac.za

CONSENT FORM

Title of Research Project: Community health workers' perspectives of mother-infant bonding within the first 1000 days of life in Khayelitsha, South Africa

The study has been described to me in language that I understand. My questions about the study have been answered. I understand what my participation will involve, and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to anyone. I understand that when I give permission to have the interview audio-recorded it will be stored in a safe place with only the researcher and supervisor having access to the audio-file. I understand that I may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits.

Please tick your answer below.

I hereby agree to have the interview audio-recorded. _____

I hereby disagree to have the interview audio-recorded. _____

Participant's name………………………..

Participant's signature……………………………….

Date………………………

APPENDIX D – CONSENT FORM (ISIXHOSA)

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CONSENT FORM

Isihloko: Imbono zabasebenzi bezempilo zokubambisana phakathi komama kunye nosana lwakhe kwimihla yokuqala yeentsuku ezili-1000 zokuphila eKhayelitsha, eMzantsi Afrika.

Esisifundo sichaziwe kum ngolwimi endiluqondayo. Imibuzo endinayo ngesisfundo iphenduliwe. Ndiyayazi ukuthatha kwam inxaxheba kubandakhanya ntoni, kwaye ndiyavuma ukuthatha inxaxheba ngokhetho lwam kunye nenkululeko yokuzikhethela. Ndiyaqonda ukuba isazisi sam asiyi kutyhilelwa' mntu.Ndiyaqonda ukuba xa ndinika imvume yokuba irekhodi yodliwano-ndlebe igcinwe kwindawo ekhuselekileyo apho umphenyi kunye nomphathi kuphela abanokufikelela kwi-fayile. Ndiyaqonda ukuba ndinokurhoxisa kwisifundo nanini na ngaphandle kokunika isizathu kwaye ndingenalo ukoyika imiphumo emibi okanye ukulahleka kweenzuzo.

Pawula impendulo yakho ngezantsi

Ndiyavuma ukuba udliwano-ndlebe linga rekhodwa _____

Andivumelani nanjalo ukuba udliwano-ndlebe lirekhodwa._____

Igama lomthathi-nxaxheba ………………………..

Isayinwe yomthathi-nxaxheba ……………………………….

Umhla………………………

APPENDIX E – INTERVIEW SCHEDULE

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INTERVIEW SCHEDULE

Section A: Demographic information

Age:	
Years working at Philani:	
Other relevant work experience:	
Training:	
Current number of clients:	
Marital status:	
Own Children:	Yes / No
If yes: How many:	
Ages:	

Section B: Interview questions

1. **To explore community health workers' understanding of the first 1000 days of life**
    - Have you heard of the First 1000 Days of Life?
    - If yes, what do you know about the First 1000 Days of Life (from conception to two years old)?
    - What do you think are the important things that babies need from the time they are conceived until two years old?
2. **To explore community health workers' perspectives of mother-infant bonding in the first 1000 days of life**
    - What do you understand about the relationship between a mother and her baby?
    - What do you understand by the term bonding, or bonding between a mother and baby?
    - Do you think that it is important for mothers to bond with their baby?
        - If yes/no why do you think so?
    - From your perspective, what things can make it difficult for mothers to bond with their babies?
    - From your perspective, what are the best ways for mothers to bond with their babies?
    - From your perspective, what do mothers need in order to be able to bond with their babies?
3. **To explore what information and support community health workers provide to mothers regarding mother-infant bonding.**
    - Do you talk with your clients about bonding?
    - If yes, what information do you share with your clients?
    - If no, why do you not talk to your clients about bonding?
    - What have you learnt from your training at Philani about bonding?
    - From your perspective, is there anything else you think is important to know about bonding?

4. To explore the mother-infant bonding practices community health workers observe in the homes they visit.

- Do you think your clients spend time bonding with their babies?
- If yes, what do you see your clients do to bond with their babies?
- If no, why do you think they do not spend time bonding with their babies?