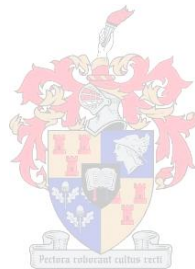


**Outcome of a home-visiting intervention to
improve social withdrawal assessed with the
m-ADBB in six-month old infants in
Khayelitsha, Cape Town:
A cluster randomised controlled trial**

by
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*Thesis presented in fulfilment of the requirements for the degree of
Master of Science (Psychology) in the Faculty of Science at Stellenbosch
University*



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December 2014

Declaration

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December 2014

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Abstract

Pregnant women living in South African peri-urban settlements face many challenges for their health and the health of their infants. Current health care services face many constraints and are not able to meet all the needs of pregnant mothers. Home-visiting programmes implemented by community health workers can alleviate these constraints. The current RCT assessed the effectiveness of the Philani Plus Intervention Program that addressed HIV, alcohol, maternal and child nutrition and mental health. The effectiveness of the intervention was assessed by measuring infant social withdrawal behaviour using the modified Alarm Distress Baby Scale (m-ADBB). A total of 681 cases were randomised into control (N=330) and intervention groups (N=351) and assessed using the m-ADBB. A cut-off score of two and above was used to determine significant social withdrawal behaviour. Data was analysed using descriptive statistics and cross-tabulation initially, followed by analysis of variance and multilevel modelling. Results indicated a prevalence of 46.7% of social withdrawal behaviour; however, no significant differences between groups were found. The current prevalence was substantially higher in comparison to the only other published study using the m-ADBB. Furthermore, the prevalence rate was also significantly higher compared to the majority of other studies using the original Alarm distress Baby Scale (ADBB). The high prevalence of social withdrawal behaviour found in this study indicates an increased risk for suboptimal infant development. Further research regarding social withdrawal behaviour and the casual mechanisms associated with the development of such behaviour is needed. Furthermore, validation of the m-ADBB in different settings is needed.

Key words: Home-visiting intervention, social withdrawal, infant, cluster-randomised controlled trial, m-ADBB, community health worker, South Africa

Opsomming

Swanger vroue wat in Suid-Afrikaanse buitestedelike nedersettings woon staan baie uitdagings in die gesig met betrekking tot hul gesondheid en die gesondheid van hul babas. Huidige gesondheidsdienste is baie beperk en is nie in staat om in al die behoeftes van swanger moeders te voorsien nie. Huis-besoek programme wat deur gemeenskaplike gesondheidswerkers geïmplementeer word, kan hierdie beperkings verlig. Die huidige RCT het die effektiwiteit van die Philani Plus Intervensie Program wat MIV, alkohol, voeding en geestelike gesondheid aanspreek, geassesseer. Die effektiwiteit van die intervensie is geassesseer deur sosiale onttrekkingsgedrag met behulp van die gewysigde Alarm Nood Baba Skaal (m-ADBB) te meet. 'n Totaal van 681 gevalle is lukraak in kontrole (N = 330) en intervensie groepe (N = 351) verdeel en geëvalueer volgens die m-ADBB. 'n Afsnypunt van twee en hoër is gebruik om beduidende sosiale onttrekkingsgedrag te bepaal. Data is aanvanklik ontleed met behulp van beskrywende statistiek en kruis-tabulering, gevolg deur analise van variansie en multi-modelle. Resultate toon 'n 46,7%-voorkoms van sosiale onttrekkingsgedrag, maar het egter geen beduidende verskille tussen groepe getoon nie. Die huidige voorkoms was aansienlik hoër in vergelyking met die enigste ander gepubliseerde studie wat gebruik gemaak het van die m-ADBB. Verder was die voorkomssyfer ook aansienlik hoër in vergelyking met die meerderheid van die ander studies wat gebruik gemaak het van die oorspronklike Alarm Nood Baba Skaal (ADBB). Die hoë voorkoms van sosiale onttrekkingsgedrag dui op 'n verhoogde risiko vir suboptimale baba ontwikkeling. Verdere navorsing oor sosiale onttrekkingsgedrag en die meganismes wat verband hou met die ontwikkeling van sulke gedrag, is nodig. Verder word die bekragtiging van die m-ADBB in verskillende instellings benodig.

Acknowledgements

Thank you to my family and my partner for their love and support throughout this project. Thank you to my supervisor, Prof. Mark Tomlinson for his guidance and support. Also, thank you to the Philani Mentor Mothers Project and the participants who made this study possible.

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List of acronyms

ADBB – Alarm Distress Baby Scale

AIDS – Acquired Immunodeficiency Syndrome

ANOVA – Analyses of variance

ARV - Antiretroviral

ASSA – Academy of Science of South Africa

AUDIT-C – Derived Alcohol Use Disorder Identification Test

AZT – Azidothymidine

CAB – Community Advisory Board

CD4 – Cluster of Differentiation 4

CONT – Control group

CSG – Child Support Grant

CHWs – Community Health Workers

DSMB – Data Safety and Monitoring Board

EPDS – Edinburgh Postnatal Depression Scale

FAS – Fetal Alcohol Syndrome

FASD – Fetal alcohol spectrum disorders

GPS – Global Positioning System

HCT – HIV counselling and testing

HIV – Human immunodeficiency virus

ICC – Intra-cluster correlation coefficient

INTV – Intervention group

LMIC – Low and middle income countries

m-ADBB – Modified Alarm Distress Baby Scale

NGO – Non-governmental organisation

NVP – Nevirapine

PMTCT - Prevention of Mother- to- Child Transmission

PCR - Polymerase chain reaction

SAS – Statistical Analysis System

SADHS – South African Demographic and Health Survey

SD – Standard deviation

SSL – Secure Sockets Layering

SPSS – Statistical package for Social Sciences

RCT – Randomised controlled trial

TB – Tuberculosis

UCLA – University of California, Los Angeles

UN – United Nations

UNAIDS – Joint United Nations Programme on HIV/AIDS

UNICEF – United Nations Children’s Fund

UNDP – United Nations Development Programme

UNPD – United Nations Population Division

WHO – World Health Organisation

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Appendix A – Topics addressed in prenatal and postnatal visits

Appendix B (i) – Baseline Antenatal Assessment Part 1

Appendix B (ii) – Baseline Antenatal Assessment Part 2

Appendix C (i) – Six months Postnatal Assessment Part 1

Appendix C (ii) – Six months Postnatal Assessment Part 2

Appendix D – modified Alarm Distress Baby scale (m-ADBB)

Appendix E – Informed Content Form

CHAPTER 1 - Introduction

Being pregnant and living in a peri-urban settlement in the country of South Africa means facing many challenges with regards to maintaining your own health and the health of your baby. These challenges include HIV¹, TB², drug and alcohol abuse, malnutrition and poor mental health. Furthermore, health care services are not able to meet all the needs of pregnant mothers.

South Africa has the highest number of persons living with HIV (UNAIDS, 2007; UNICEF, 2012a; UNAIDS, 2012) and as many as 30.2% of all pregnant women in South Africa are HIV-infected (South African Department of Health, 2003; South Africa Department of Health, 2011). The Western Cape Province also has the highest percentage of Foetal Alcohol Syndrome (FAS) (De Vries, 2012; Graham, 2012; May, et al., 2000; May, et al., 2004; May, et al., 2005; May, et al., 2007; May, et al., 2009) and South Africa has one of the highest per person alcohol consumption rates in the world (Warren, et al., 2001). Additionally, approximately 12% of children die before their 5th birthday and of these deaths at least 60% is related to malnutrition, dehydration, difficulties related to alcohol use and other infections (South African Department of Health, 2003). Emotional and psychological problems, such as depression, are also very prevalent in peri-urban settlements (Hartley, et al., 2010), especially among HIV-infected mothers (Cooper, et al., 1999).

All of these risk factors may potentially influence the relationship between the parent and the infant (Cho, Holditch-Davis, & Miles, 2008; Murray, Fiori-Cowley, Hooper, & Cooper, 1996; Riordan, Appleby, & Faragher, 1999; Zeanah, Boris, & Larrieu, 1997) and ultimately lead to the display of sustained withdrawal behaviour in infants as a response to recurring dyssynchrony within the mother-infant relationship (Guedeney, 2007).

In response, this randomised controlled trial (RCT) aims to assess the effectiveness of a home-visiting intervention for pregnant mothers facing the risk factors outlined above. Home-visiting

¹ Human immunodeficiency virus

² Tuberculosis

interventions have been put into practice and evaluated for over 30 years and several studies have yielded positive results supporting the application thereof (Gomby, Culcross, & Berhman, 1999; Olds, Henderson, & Kitzman, 2007; Sweet & Appelbaum, 2004). The current home-visiting intervention is based on the existing Philani Intervention Program which uses ‘Mentor Mothers’ to visit pregnant mothers and has been in operation for 30 years in the peri-urban settlements of Cape Town. However, within the current study the programme has been expanded to include the topics HIV, TB and alcohol use during pregnancy and as a result the intervention will be referred to as the Philani Intervention Program Plus.

To assess the effectiveness of this intervention, infant social withdrawal will be evaluated using the modified Alarm Distress Baby Scale (Matthey, Crnsec, & Guedeney, The Modified ADBB Scale (m-ADBB)., 2008). It is hypothesised that infants receiving the intervention will display less social withdrawal behaviour compared to the infants receiving standard care. If this is indeed the case, it is hypothesised that the intervention has been successful.

The current chapter has introduced the background and rationale of the study. Chapter 2 will illustrate the importance of the study by discussing and summarising the relevant literature, the research problem that the study aims to address and specific aims and objectives. Chapter 3 will describe the research design and methodology, whilst Chapter 4 will present the key findings of the study. Chapter 5 will discuss the key findings and provide a conclusion and recommendation for future research.

CHAPTER 2 - Background and Literature Review

2.1 Maternal health and infant health in low and middle income countries

Maternal health³ and child survival go hand in hand (United Nations Children's Fund [UNICEF], 2009). This is because the mother's body is the first environment that the unborn infant is exposed to (Steinberg, Belsky, & Meyer, 1991; Gorksi, 2009) and factors that affect the mother's environment have the potential to affect the unborn infant (Steinberg, Belsky, & Meyer, 1991; Weck, Paulose, & Flaws, 2008; Gorksi, 2009). Having a child continues to be one of the most serious health risks for women (UNICEF, 2009). The majority of maternal deaths are caused by poor maternal health before or during pregnancy, or by insufficient care during or after childbirth (Donnay, Darmstadt, & Starrs, 2013; Family Care International, 2012). Health risks associated with having a child are significantly greater in low and middle income countries (LMIC) compared to high income countries, and are widespread in impoverished communities (UNICEF, 2009; World Health Organisation [WHO], 2014).

The state of global maternal health is poor. This is illustrated by current maternal mortality and morbidity figures. Globally, maternal mortality rates are high (UNICEF, 2012b; WHO, 2014) with 287 000 women who die during pregnancy or childbirth each year (Save the Children, 2013). The inequalities with regards to maternal mortality between LMIC and high income countries are extensive, as 99 % of all maternal deaths take place in LMIC (WHO, 2014). For women living in LMIC the risk of dying during pregnancy or from birth complications is also 15 times higher than the risk that women in high income countries face (WHO, 2012).

Maternal mortality rates are highest in Sub-Saharan Africa where 56 % (245 000) of all maternal deaths occur each year (World Health Organisation, United Nations Children's Fund, United Nations Population Fund, The World Bank [WHO, UNICEF, UNDP & The World Bank],

³ Maternal health refers to the health of women during pregnancy, childbirth and the postpartum period (WHO, 2012 – maternal health definition)

2012). Compared to Europe, where maternal death occurs in only 20 out of 100 000 live births, the rates in this African region is the highest in the world, with 500 maternal deaths per 100 000 live births (WHO, UNICEF, UNDP & The World Bank, 2012).

Morbidity associated with maternal undernutrition, substance and alcohol use, HIV/AIDS⁴ and maternal mental disorders further contributes to the poor state of maternal health in LMIC (UNICEF, 2012a; Walker, et al., 2011). High prevalence figures of maternal undernutrition have been recorded in sub-Saharan Africa and Asia (Walker, et al., 2011). The consequences of substance and alcohol use have been considerable, especially in LMIC like South Africa where the highest prevalence of FAS has been recorded (De Vries, 2012; Graham, 2012; May, et al., 2000; May, et al., 2004; May, et al., 2005; May, et al., 2007; May, et al., 2009). Furthermore, sub-Saharan Africa and especially Southern Africa continue to be the regions that are the most severely affected by HIV (UNICEF, 2012a). Also, the prevalence of maternal mental disorders is greater in LMIC (Wachs, Black, & Engle, 2009; Walker, et al., 2007).

The global state of child health is equally poor. Of the 2.2 billion children in the world (Shah, 2013), an estimated 1.9 billion live in LMIC (Engle, 2010; Shah, 2013) and approximately 1 billion currently live in poverty (Shah, 2013). Worldwide, an estimated 6.9 million children under five years of age die each year (United Nations Children's Fund, World Health Organisation, World Bank, United Nations Population Division [UNICEF, WHO, World Bank & UNPD], 2012). Of these under-five deaths, it is estimated that 44% take place during the first 28 days of life (i.e. neonatal period) and 74% take place during the first year (UNICEF, 2013).

Significantly, 98% of under-five deaths occur in LMIC (United Nations Children's Fund, World Health Organisation, World Bank & United Nations [UNICEF, WHO, World Bank & UN], 2013). The highest under-five mortality rate has been recorded in Sub-Saharan Africa with 98 child deaths per 1000 live births (UNICEF, WHO, World Bank & UN, 2013). The under-five mortality rate of

⁴ Acquired Immunodeficiency Syndrome

this African region is 15 times higher than the average rate for high-income countries (UNICEF, WHO, World Bank & UN, 2013).

The leading causes of under-five mortality are infectious diseases (including pneumonia, diarrhoea, HIV/AIDS and malaria), undernutrition and neonatal complications (UNICEF, WHO, World Bank & UN, 2013). Nearly all of these causes are preventable (UNICEF, WHO, World Bank & UN, 2013). Worldwide more than 45% of deaths before the age of five can be attributed to undernutrition (UNICEF, WHO, World Bank & UN, 2013). In the majority of cases this is caused by poverty, insufficient levels of education and insufficient access to health services (UNICEF, 2012b). Furthermore, an estimated 43% of deaths before the age of five can be attributed to pneumonia, diarrhoea, birth complications and malaria (UNICEF, WHO, World Bank & UN, 2013). In LMIC, the foremost cause of under-five deaths is preventable infectious diseases (UNICEF, WHO, World Bank & UN, 2013).

From these findings it is clear that the state of maternal and child health in LMIC is poor as nearly all maternal and child deaths occur in LMIC. Moreover, these findings show that living in LMIC poses great risk for the health and survival of mothers and children and the already vulnerable state of child development in LMIC.

In the following section the relationship between infant health and development, and developmental risk in LMIC will be discussed. Developmental risk presented by maternal substance and alcohol use, nutritional deficiency, postnatal depression and HIV/AIDS will be discussed specifically. Furthermore, developmental risk in the context of South Africa will be discussed.

2.2 Infant health and development, and developmental risk in LMIC

Compared to high income countries, children living in LMIC face a greater array of environmental risk factors (Engle, 2010), such as abuse or neglect, non-responsive parenting, poor housing conditions, lack of services, poverty, exposure to violence, and disruption of families (Engle, 2010). However, children from LMIC are affected by not only the risk factors affecting children in high income countries, but also poor nutrition, low birth weight, exposure to toxins (e.g. alcohol and nicotine), infection (e.g. TB and the HIV infection), lack of stimulation and learning opportunities, lack of maternal responsiveness, and maternal depression (Engle, 2010).

As poverty rates are significantly higher in LMIC it is also no surprise that research has shown that children who grow up in impoverished conditions are exposed to numerous risks (Engle, 2010) and as these risks increase in number, development is progressively more compromised (Walker, et al., 2007).

Therefore, children living in LMIC face much greater hardship due to exposure to more developmental risk factors than children living in high income countries. The following section will review the developmental risk presented by maternal alcohol use, nutritional deficiency, maternal depression and HIV/AIDS in more detail.

2.2.1 Maternal alcohol and substance use during pregnancy

Particular exposures to a wide range of substances early in pregnancy or regularly throughout the pregnancy can cause disturbances in brain developmental processes and have mental and behavioural consequences (DeRegnier & Desai, 2010). Substances that are most commonly consumed are tobacco and alcohol (Leppert & Allen, 2009). During pregnancy, these substances cross the placenta where they influence and interfere with the normal development of the foetus (Leppert & Allen, 2009).

Children of mothers who are alcohol dependent or demonstrate dangerous drinking behaviour are affected in many ways. These effects include changes in the body, changes in the structure and form of the brain, and deficits in many areas of development including cognitive functioning, verbal fluency, executive functioning, motor development, school achievement and emotional and behavioural problems (Kodituwakku, Kalberg, & May, 2001; Kodituwakku, May, Clericuzio, & Weers, 2001; May P. A., et al., 2004; O'Connor & Kasari, 2000; Riley & McGee, 2005; Robles & Sabria, 2011). The consumption of alcohol during pregnancy is also deemed to be one of the foremost causes of impaired cognitive functioning (Robles & Sabria, 2011).

The disorders that are related to maternal alcohol consumption are described within a spectrum of disorders termed foetal alcohol spectrum disorders (FASD) that occur in approximately 1% of all births (Leppert & Allen, 2009). Infants born to mothers suffering from alcohol use disorders or who are heavy drinkers are at risk of developing FAS (DeRegnier & Desai, 2010) which is the most common FASD (Leppert & Allen, 2009). FAS is characterised by prenatal and/or postnatal growth retardation, facial malformations and neurodevelopmental deficits (Jones & Smith, 1973).

It is, however, important to note that the impact of prenatal exposure to substances on the postnatal life of the infant is a complex process that is dependent on a number of factors, most importantly the severity of the mother's exposure and the chronicity of the exposure (Steinberg, Belsky, & Meyer, 1991; Berk, 1994; Henretig, 2009; Robles & Sabria, 2011). Therefore, not all infants of substance-dependent mothers are born with FAS as the effects of heavy maternal drinking can range from little or no damage, to death of the foetus (Niccols, 2007). Conversely, research has shown that even the intake of small amounts of alcohol can have negative developmental effects (Sood, et al., 2001). Additionally, smoking during pregnancy has been linked to having underweight babies (May, et al., 2005).

Women who use substances such as alcohol during pregnancy may also be poor, and suffer from prolonged stress, poor nutrition and other mental health problems (DeRegnier & Desai, 2010;

Henretig, 2009) such as depression. Therefore, substance use by pregnant women may go hand in hand with complex mental health problems and social factors that may individually affect foetal and infant development (DeRegnier & Desai, 2010; Henretig, 2009). Therefore, it is evident that exposure to alcohol and other substances during pregnancy can affect the development of the foetus and the foetal brain, which may have short-term or long-term effects on neurobehavioural development (DeRegnier & Desai, 2010).

Another developmental risk factor that affects the development of the foetus and later development of the infant is nutritional deficiency which will be discussed in the following section.

2.2.2 Nutritional deficiency

Maternal health and nutritional status greatly influence growth and development during pregnancy and early infancy (Academy of Science of South Africa [ASSA], 2007). Adequate nutrition is essential as it ensures healthy growth, correct formation and proper function of organs, healthy immune system development, as well as healthy neurological and cognitive development (United Nations Children's Fund, World Health Organisation, The World Bank [UNICEF,WHO & The World Bank], 2012).

During pregnancy and infancy the optimal development of the child's brain and body greatly depends on the provision of essential nutrients (DeRegnier & Desai, 2010). Nutritional needs are also high during these periods because significant growth and development, and changes in body composition, take place (Stevenson & Krebs, 2009). Deficiencies in nutrition may have severe consequences for foetal and infant development (DeRegnier & Desai, 2010). Furthermore, undernutrition and the consequences associated with undernutrition pose serious consequences for infant development and developmental outcomes (Walker et al., 2007). For example, poor maternal nutrition or maternal malnutrition can lead to intrauterine growth restriction (Walker et al., 2007), low birth weight (ASSA, 2007) and prematurity.

Poor nutrition affects foetal development (Save the Children, 2012), and the majority of undernourished mothers give birth to undernourished children (Save the Children, 2012). Undernutrition is also aggravated by circumstances of poverty. Children from poor communities are more susceptible to the effects of undernutrition (Walker et al., 2007) because it increases the risk of death due to everyday infections, heightens the frequency and severity of diseases and impedes disease recovery (Save the Children, 2012).

Statistics surrounding maternal and child undernutrition illustrates the serious effects of undernutrition and stresses the importance of improving nutrition for women before and during pregnancy. Maternal undernutrition⁵ occurs in 10-19% of women in LMIC (Walker et al., 2011). In sub-Saharan Africa and Asia the prevalence is even higher (Walker et al., 2011). It is estimated that 15 % of all births are low birth weight⁶ infants (United Nations Children's Fund [UNICEF], 2013b). In LMIC, 16 % of births are low birth weight, which is mainly caused by intrauterine growth restriction (Walker et al., 2011). Prevalence of malnutrition is also high among children under the age of five, as 26% of children from this age bracket suffer from stunting⁷, 16% of children are underweight⁸ and 8 % of children suffer from wasting⁹ (Save the Children, 2012). In LMIC, stunting affects approximately 34 % of children younger than 5 years of age (Walker et al., 2011). In Africa 36 % of children suffer from stunting (Save the Children, 2012).

Another developmental risk factor that affects the development of the infant is maternal depression which will be discussed in the following section.

⁵Maternal undernutrition is defined as a body-mass index of less than 18.5 kg/m²

⁶Weight at birth of < 2500 grams (WHO, 2010)

⁷Height for age < -2 SD of the WHO Child Growth Standards median (WHO, 2010)

⁸Weight for age < -2 standard deviations (SD) of the WHO Child Growth Standards median (WHO, 2010)

⁹Weight for height < -2 SD of the WHO Child Growth Standards median (WHO, 2010)

2.2.3 Maternal depression

Maternal mental disorders have been negatively associated with early child developmental outcomes. The most common occurring maternal mental health condition amid women of childbearing age is depression, where approximately 8% of women are diagnosed with depression at any point in time (Weissman, Wickramaratne, & Prusoff, 1988), and between 10 and 15 % of women suffer from postnatal depression in the period after giving birth (Gavin, et al., 2005; O'Hara & Swain, 1996). According to Wachs, Black, & Engle, (2009) this number is much higher in LMIC. Research indicates that maternal mental disorders are almost three times more prevalent in LMIC compared to high-income countries (Walker et al., 2007). Risk factors strongly associated with postnatal depression include a history of the disorder, a lack of social support or supporting relationships (Murray, Halligan, & Cooper, 2010), being socially separated from others or being disadvantaged economically (Boyce, 2003).

Maternal depressive symptoms have been negatively associated with early child development and quality of parenting across different cultures and economic groups (Wachs, Black, & Engle, 2009). During the perinatal period, depression has been linked to a variety of foetal and obstetric problems and adverse child developmental outcomes (Alder, Fink, Bitzer, Hosli, & Holzgreve, 2007). More specifically, postnatal depression has been linked to physical growth impairments, impairments in cognitive functioning, and impaired emotional development (Cooper, et al., 1999). However, evidence suggests that the impact of maternal depression on child development extends beyond delays in psycho-social development (WHO, 2009).

Studies that have investigated the effects of postnatal depression on the relationship between mother and infant have shown that early problems may have long-term effects on the interaction between mother and infant (Murray, Halligan, & Cooper, 2010). This might be particularly true in areas where mothers and their children experience poor conditions as depression in these areas are more likely to be long-lasting. In addition, instances of postnatal depression, where mothers are not

particularly sensitive or responsive to their infants, may also have long-term consequences for the mother-infant interaction (Murray, Halligan, & Cooper, 2010).

Studies conducted in South African peri-urban settlement samples have also shown that depressed mothers and their infants interact considerably less with each other compared to non-depressed controls (Cooper, et al., 1999; Tomlinson, Cooper, & Murray, 2005). Furthermore, the combination of substance use and mental health problems during pregnancy may also affect the parenting skills of these mothers after birth (DeRegnier & Desai, 2010; Henretig, 2009).

Maternal postnatal depression has a negative impact on the interactions between mother and infant. In turn, this has the potential to negatively affect infant development (e.g. sustained withdrawal behaviour) (Guedeney, 1997; Matthey, Guedeney, Starakis, & Barnett, 2005) and have severe developmental consequences that lead to poor infant outcomes.

Another developmental risk factor that impacts on infant development is HIV infection which will be discussed in the following section.

2.2.4 HIV/AIDS

An emergent risk for all children is HIV infection (Engle, 2010). An estimated 16.7 million women and 3.3 million children under the age of 15 years are currently living with HIV (UNICEF, 2012a). In LMIC, the regions of Sub-Saharan Africa and especially Southern Africa account for an estimated 69 % of people living with HIV and 90 % of HIV-infected children (UNICEF, 2012b).

HIV infection in children is most commonly acquired by mother-to-child transmission (Engle, 2010; Nichols & Farley, 2009). Transmission of HIV from mother to child during the perinatal period may occur in utero, near to or during delivery, or after birth during breastfeeding (Nichols & Farley, 2009). This infection affects the development of the infant on numerous levels leading to severe physical, neurodevelopmental, behavioural and emotional consequences (Nichols & Farley, 2009). More specifically, HIV can have a serious impact on the physical development of the infant as it affects growth, nutrition and metabolism leading to poor growth during infancy and childhood

(Nichols & Farley, 2009). HIV infection is also associated with high rates of psychiatric disorders in children and adolescents who were infected during the perinatal period (Nichols & Farley, 2009). Possible contributing factors to the high rate of psychiatric disorders include factors associated with the environment and the mother, genetic factors, stress associated with living with a potentially terminal illness, stigma and loss and disruption in the family (Nichols & Farley, 2009).

Numerous risk factors can affect disease advancement and developmental outcomes. These issues include poverty, substance abuse, lack of education, side effects associated with medication, prenatal substance exposure, prematurity, low birth weight and various emotional issues such as fear of death, loss of caregivers, and isolation (Nichols & Farley, 2009).

Furthermore, mothers infected with HIV are at high risk of developing a variety of emotional and psychiatric problems that may influence their immunity and HIV disease advancement (Hartley, et al., 2010). This creates a substantial problem for infant development as it can have negative effects on mother-infant interactions and can lead to sustained withdrawal behaviour in infants (Guedeney, 1997; Matthey, Guedeney, Starakis, & Barnett, 2005).

HIV infection is also associated with high rates of psychiatric disorders in children and adolescents who were infected during the perinatal period (Nichols & Farley, 2009). Possible contributing factors to the high rate of psychiatric disorders include factors associated with the environment and the mother, genetic factors, stress associated with living with a potentially terminal illness, stigma and loss and disruption in the family (Nichols & Farley, 2009).

In conclusion, it is clear that HIV infection can have adverse effects on infant development and lead to poor developmental outcomes.

In summary, this section has illustrated that both prenatal and postnatal risk factors can clearly affect the health and development of the infant. The following section will discuss developmental risk factors in South Africa.

2.2.5 Infant development and developmental risk in South Africa

Compared to children from high-income countries, children living in South Africa face greater hardship due to exposure to a larger array of developmental risk factors compromising their health, development and survival. South Africa is an upper-middle income country characterised by high poverty and extreme inequality (O'Connor, et al., 2011; The World Bank, 2012). Approximately two-thirds of 18.5 million South African children (37% of the total population) are currently living in poverty (Children Count, 2010; Statistics South Africa [SSA], 2011; UNICEF, 2009).

The effects of poverty and inequality within South Africa are apparent throughout all stages of child development and are highly prevalent in the high rates of infant mortality and stunted growth (South African Department of Health, 2003). Roughly 12% of children die before their fifth birthday and of these deaths at least 60% are linked to malnutrition, dehydration, difficulties related to alcohol use and infections (South African Department of Health, 2003). More specifically, the health of South African children is affected by overlapping epidemics of alcohol, TB, HIV and malnutrition which are responsible for life-threatening levels of infant morbidity and mortality, poor mental health among infants and parents, poor quality of life and breaking-up of the family.

The effects of alcohol use during pregnancy are significant as the highest recognised percentage of FAS has been recorded in South Africa. An FAS prevalence rate of 68.0-89.2 cases per 1000 births was found in a high risk community in the Western Cape (De Vries, 2012; Graham, 2012; May, et al., 2000; May, et al., 2004; May, et al., 2005; May, et al., 2007; May, et al., 2009). South Africa also has one of the highest rates of alcohol consumption per person in the world (Peltzer & Ramlagan, 2009; Warren, et al., 2001). Furthermore, 75 % of alcohol users also smoke cigarettes during pregnancy (May, et al., 2005).

The highest number of people living with HIV has been recorded in South Africa (UNAIDS, 2007; UNICEF, 2012a; UNAIDS, 2012). This poses risks for maternal and child health as 30.2% of

all South African women who are pregnant are also HIV-infected (South African Department of Health, 2003; South Africa Department of Health, 2011).

Postnatal depression prevalence in peri-urban settlements is greater than 30% and is also significantly associated with alcohol use and unplanned pregnancy (Cooper, et al., 1999; Rochat, et al., 2006). Co-morbid alcohol use and depression has been shown to negatively impact infants' developmental outcomes (Kelly, et al., 2002), specifically infant malnutrition and stunting in the South African context.

The consequences of malnutrition has also been significant as stunted growth and wasting among children younger than five years of age amounted to 24.5% and 8.9% respectively, and low birth weights were present in a total of 17% of all new-born babies (Zere & McIntyre, 2003).

In summary, this section has discussed the major developmental risk factors in South Africa. From this discussion it is evident that these risk factors clearly affect the development of the infant. The following section will discuss infant social withdrawal behaviour during mother-infant interactions and consider how this phenomenon relates to developmental risk and infant developmental outcomes.

2.3 Infant development and social withdrawal behaviour

Optimal social-emotional development during infancy is important for all functioning throughout the individual's lifespan (Guedeney, 2000; Guedeney, Matthey, & Puura, 2013). Infants are born with biologically determined skills and the need to take part in social interactions (Trevvarthen & Aitken, 2001) and from a young age parents and their infants are in constant interaction (Bornstein & Tamis-Lemonda, 2010). These biologically determined skills support the infant to engage and interact with the caregiver (Parsons, Young, Murray, Stein, & Kringelbach, 2010) and include the skill to start and uphold eye contact with others, to make sounds and use facial expressions and body and head movements to interact with others (Trevvarthen & Aitken, 2001). When infants are developing normally these skills emerge in the two months after birth (Guedeney, Marchand-Martin, Cote, & Larroque, 2012) and although infants vary in the way that they respond to stimuli, they are still responsive to interaction (Fox, 2004).

The ability of infants to connect to, and comprehend the social world, develops within the intimate, constant interactions between mother and infant (Guedeney, et al., 2011). However during early development infants are particularly vulnerable to perturbations such as parental depression (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000).

The following section will illustrate the importance of the mother-infant relationship in relation to infant developmental risk and developmental outcomes.

2.3.1 The mother-infant relationship and developmental risk

The mother-infant relationship is an important precursor of later development and well-being of the infant (Guedeney, et al., 2011) and optimal development is supported by synchronicity within this relationship (McGrath, Records, & Rice, 2008). Synchronicity of this relationship is a fundamental component in early infant development and important determinant of developmental outcomes, especially during the first 18 months of life (Feldman, 2007).

The interactions between mother and infant serve many functions within the context of social-emotional development (Bornstein & Tamis-LeMonda, 2010). This relationship functions as the framework that infants need for development in social interactions (Guedeney, Marchand-Martin, Cote, & Larroque, 2012; Puura, Guedeney, Mantymaa, & Tamminen, 2007) and it plays an important role in the development of attachment, communication and language development, and emotional development (Bornstein & Tamis-LeMonda, 2010; Guedeney, et al., 2011).

The interaction between mother and infant is also a bi-directional process which means that both parent and infant contribute to these interactions and through these interactions the parent affects the infant and vice versa (Bornstein & Tamis-LeMonda, 2010). Similarly, both mother and infant contribute to the synchronicity of the mother-infant relationship (Guedeney, Matthey, & Puura, 2013).

Therefore, factors that have the ability to change the behaviour of the mother and/or the infant within these interactions can affect the quality of the interactions and disrupt the synchronicity of the relationship. For example, pain, disease and psychological distress experienced by an infant have the ability to change the interaction behaviour of the infant (Guedeney & Fermanian, 2001). This could decrease the infant's ability to engage with the parent and sustain the interaction (Guedeney & Fermanian, 2001). Similarly, factors affecting the parent such as physical illness, psychological distress, mental illness, and drug and alcohol abuse have been shown to damage the ability of parents to interact positively (Augustyn, Frank, & Zuckermann, 2009; Murray, Fiori-Cowley, Hooper, & Cooper, 1996; Riordan, Appleby, & Faragher, 1999; Zeanah, Boris, & Larrieu, 1997) and may cause mothers to struggle to respond in a warm and consistent manner to the needs of the infant (Augustyn, Frank, & Zuckermann, 2009).

From this discussion it is evident that changes or deviations in developmental processes, caused by various risk factors and environmental influences, can lead to poor mother-infant interactions. For example, traumatic biological or psychological conditions can disrupt the process

of foetal development as well as the development of the primary mother-infant interaction (Gorksi, 2009). Furthermore, asynchronicity within the mother-infant relationship predisposes the infant to long-term negative consequences (McGrath, Records, & Rice, 2008).

2.3.2 The theory of infant social withdrawal behaviour

Within the clinical study of infants, the ‘withdrawal’ concept has not been clearly defined regardless of its frequent use in clinical practice and assessment (Guedeney & Fermanian, 2001; Guedeney, 2007). In the context of the mother-infant interaction social withdrawal behaviour is described as few or no positive interactive actions (e.g. making eye contact, smiling, vocalisations) or negative interactive actions (e.g. vocal protestations like crying) (Matthey, Guedeney, Starakis, & Barnett, 2005; Guedeney, Foucalt, Bougen, Larroque, & Mentre, 2008).

Withdrawal is a normal element which has an important role in the regulation of relationships (Hartley, et al., 2010; Matthey, Crncec, Hales, & Guedeney, 2013) and can be referred to as ‘brief’ withdrawal (Guedeney & Fermanian, 2001; Guedeney, Matthey, & Puura, 2013). Within normal mother-infant interactions, it is normal for infants to display brief social withdrawal behaviour such as closing of the eyes, turning the head and looking away when interacting with a parent, as this type of behaviour plays a regulatory role during interactions (Guedeney, 2007; Hartley, et al., 2010).

However, displays of sustained social withdrawal behaviour are not normal and occur considerably less within the parent-infant interaction (Guedeney, 2007). Infants demonstrating sustained social withdrawal behaviour make less eye contact, smile less and vocalise less during interactions with their parents. The appearance of withdrawal serves as a defensive tactic where there is lack of synchronicity in the mother-infant relationship (Fox, 2004). In the majority of cases, such behaviour is observed in parent-infant interactions which are inadequate or poor (Mantymaa et al., 2008); for example between a mother suffering from substance-dependence and her infant (Savonlahti, et al., 2005) or between a mother who suffers from depression and her infant (Field, 1984; Mantymaa et al., 2008). Social withdrawal behaviour is also more associated with a state of

learned helplessness and serves as indication of the possibility that the infant is not displaying emotional or social behavior appropriate for its age (Matthey, Guedeney, Starakis, & Barnett, 2005).

Many studies have shown sustained social withdrawal to be associated with serious pathological and developmental disorders (Guedeney & Fermanian, 2001; Guedeney, Foucault, Bougen, Larroque, & Mentre, 2008). These disorders include conditions affecting the physical condition of the infant such as tiredness, fever, dehydration, hearing or visual impairment (Matthey, Crnsec, & Guedeney, 2008), as well as conditions affecting the mental status of the infant (Guedeney, 1997; 2000) and where infants suffer from severe and chronic pain (Gauvain-Piquard, Rodary, Rezvani, & Serbouti, 1999).

Infant withdrawal is a key symptom of infant depression. However, it also seems to cover a much larger scope of disorders which includes disorders of attachment, pain, autistic disorders, post-traumatic stress disorder and anxiety (Guedeney, 2007) as well as pervasive developmental disorders and infants who suffer from attachment disorders such as insecure and disorganised attachments (Dollberg, Feldman, Keren, & Guedeney, 2006). With relation to pain, the reaction of sustained withdrawal has been observed in many acute and chronic pain disorders. Serious withdrawal reaction is strongly linked with the intensity of the pain in chronic pain disorders specifically (Gauvain-Piquard, Rodary, Rezvani, & Serbouti, 1999). In addition, infants suffering from attention problems, infantile failure to thrive (FTT) and other behaviour problems have also been shown to display sustained withdrawal behaviour (Guedeney, 1997; Guedeney & Fermanian, 2001; Milne, Greenway, Guedeney, & Larroque). This refers specifically to infants suffering from protein-energy malnutrition (PEM) and/or kwashiorkor (Guedeney, 1995; 2000).

Sustained withdrawal in infants may also be associated with other developmental risk including maternal alcohol use, TB, HIV and malnutrition. This is because these risk factors also have the potential to influence the parent-infant relationship (Cho, Holditch-Davis, & Miles, 2008;

Hartley, et al., 2010; Murray, Fiori-Cowley, Hooper, & Cooper, 1996; Riordan, Appleby, & Faragher, 1999; Zeanah, Boris, & Larrieu, 1997).

The display of sustained withdrawal behaviour can also be regarded as a chronic breakdown of the attachment system which progressively generalises into reduced engagement and decreased reactivity to the environment (Dollberg, Feldman, Keren, & Guedeney, 2006). Research has shown that the display of social withdrawal behaviour occurs commonly among insecure-avoidant children (Ainsworth, Blehar, Waters, & Wall, 1978) as well as among children whose mothers are depressed (Field, 1984; Field, 1992; Dollberg, Feldman, Keren, & Guedeney, 2006).

Depressed mothers are more inclined to display decreased levels of sensitivity and accessibility towards their infants and in such cases infants may be more inclined to detach themselves from their mothers. Results of a study by Dollberg, Feldman, Keren & Guedeney (2006) have shown that maternal behaviour within interactions characterised by depressed mood, negative facial expressions and apathy, decreased sense of parental efficacy and sensitivity, and increased intrusiveness to be associated with higher levels of sustained withdrawal in infants. In cases where infants have unpredictable temperaments and display decreased social involvement they were found to be associated with a greater tendency to rely on sustained withdrawal behaviour (Dollberg, Feldman, Keren, & Guedeney, 2006).

In addition, adverse life events as well as the susceptibility to the distress caused by these events have also been found to impact on the quality of mother-infant interaction (Murray, Fiori-Cowley, Hooper, & Cooper, 1996). Sustained withdrawal reaction has the potential to serve as ideal target behaviour for early screening (Guedeney, 2007) because ‘withdrawal’ is a key component of infants’ behavioural responses to stress and disorders in relationships (Guedeney, 2000).

In light of these findings, it is evident that the appearance of infant social withdrawal indicates infant distress regardless of whether it is caused by problems associated with the infant or problems associated with the parents, or both (Keren, Feldman, & Tyano, 2001; Mantymaa M. , Puura,

Luoma, Salmelin, & Tamminen, 2004; Matthey, Guedeney, Starakis, & Barnett, 2005). In conclusion, the appearance of infant social withdrawal behaviour serves as an important indicator of abnormalities in the health and development of the infant (Ironsides, 1975). Therefore, detecting infant social withdrawal behaviour as early as possible is crucial to improve the developmental outcomes of the child through appropriate interventions (Puura, Guedeney, Mantymaa, & Tamminen, 2007).

This section has discussed the mother-infant interaction and illustrated its importance to the development of the infant. Furthermore, infant social withdrawal behaviour within the mother-infant interaction was discussed and scope was given to the relationship between social withdrawal behaviour, developmental risk factors and developmental outcomes. The following section will discuss the theoretical framework of this study.

2.4 Theoretical framework: Bronfenbrenner's Ecological Systems Theory

The current study is located within the multilevel systems framework of Bronfenbrenner's Ecological Systems Theory (Bronfenbrenner, 1979; Bronfenbrenner, 1993) because this framework permits us to explain the independent and interdependent functions of these different sources of influence on mother-infant interaction (Bornstein & Tamis-LeMonda, 2010).

The general ecological model is based on two propositions that specify the defining properties of the model (Bronfenbrenner, 1993). The first proposition maintains that human development takes place through increasingly more complex reciprocal interaction processes that take place between an active, evolving person and the individuals, objects and symbols in the immediate environment (Bronfenbrenner, 1993). These interactions must occur on a moderately regular basis over extended periods of time to be deemed effective. Types of these interactions in the immediate environment are referred to as proximal processes (for example, mother-infant interactions) (Bronfenbrenner, 1993). The second proposition maintains that the forces of the proximal processes (form, power, content and direction) that affect development vary systematically as a joint function of 1) the characteristics of the developing individual, 2) both the immediate and remote environment, and 3) the nature of the developmental outcomes under consideration (Bronfenbrenner, 1993).

It was Bronfenbrenner's belief that all levels of organisation in human life are linked in an integrative manner (Leu, 2008). Within this belief, Bronfenbrenner outlines levels of the environment which consists of multiple elements that each impact on the development of an individual or in the context of this study, an infant (Bronfenbrenner, 1979; Leu, 2008). This theory goes on to recognise that we as human beings do not develop in isolation but rather in relation to our 'environments' (i.e. our family, our home, our school, our community and our society) (Leu, 2008).

According to Ecological Systems Theory, each of our environments and the interactions within and between them are critical to human development (Leu, 2008). Bronfenbrenner (1979) suggests

that the ecological environment can be regarded as “a set of nested structures, each inside the next, like a set of Russian dolls” (Bronfenbrenner, 1979; p.3). In essence, this means that changes that occur on one level will have an effect throughout all the layers. In the following sections, each of the levels will be discussed within the context of the current study.

2.4.1 Microsystem

The innermost level, termed the microsystem, can be defined as the single or direct environment in which the infant experiences everyday life such as the home or nursery (Leu, 2008). In other words, this level is closest to the infant and constitutes the relationships and interactions within the immediate surroundings. In the beginning of life, the microsystem of the infant is small and involves interactions between the infant and only one or two other individuals at a time (Leu, 2008). These relationships impact on the infant in two directions namely, away from and towards the infant.

Within the current study, interactions within the microsystem of the infant involve the mother-infant interaction specifically. This interaction serves as the basis for social interactions and is influenced by the behaviour and qualities of both the mother and the child (Puura, Guedeney, Mantymaa, & Tamminen, 2007). Factors that negatively affect these interactions lead to the display of sustained social withdrawal behaviour and thus, poor interactions pose long-term consequences for infant development (Puura, Guedeney, Mantymaa, & Tamminen, 2007). At this level, these bi-directional interactions have the maximum impact on the infant; however, the inner level and its structures can still be affected by the outer levels as well.

2.4.2 Mesosystem

The second level or system is the mesosystem (Bronfenbrenner, 1979; Bronfenbrenner, 1993; Leu, 2008). This level extends beyond single environments (i.e. microsystems) and instead focuses on the interactions between them (Leu, 2008). More specifically, this level represents the

connections between the infant's main microsystem contexts which in the majority of cases are the home, nursery or clinic environment (Leu, 2008).

Within the current study, the mesosystem plays a particularly significant role, as this level represents the connection between the mother-infant dyad and the antenatal clinic and/or the intervention. At this level health-related behaviours are vulnerable to influences from the clinic environment and/or the pre- and postnatal visits from mentor mothers. In the case of the intervention group specifically, the relationship between the mother and the mentor mother can also impact on health-related behaviours.

2.4.3 Exosystem

The third level or system within the theory is the exosystem and this level includes the wider social system (i.e. the infant's society) or in other words the environments in which development is greatly affected even if the child is absent from the particular environment (Leu, 2008). The particular structures of this level influence the child's development through its interactions with elements within the child's microsystem (Leu, 2008). The workplace of the mother, social networks and neighbourhood-community contexts are all exosystems that are likely to affect the development of the child indirectly through their influence on the mother, family, nursery and peer groups. Within the context of the current study, social networks of mothers can impact on the development of the infant, as opinions from friends and family have the potential to influence maternal health-related behaviours as well as lend support to mothers.

2.4.4 Macrosystem

The last and also the outermost system is the macrosystem (Leu, 2008). This system is related to elements of all three levels and consists of cultural values, customs and laws (Leu, 2008). Furthermore, societal values, policies, and financial resources provided by our society create the

context wherein families function and, therefore, affect how children are raised, which in turn affects their development (Bronfenbrenner, 1979; Leu, 2008)

This system refers specifically to the belief systems, bodies of knowledge, material resources, opportunity structures, risks and life course options rooted in each of the broader systems (Bronfenbrenner, Ecological models of human development, 1993). Within the context of this study, the physical environment of the infant plays a significant role in maternal health-related behaviours and in turn infant developmental outcomes. The Khayelitsha area is a peri-urban settlement where adequate basic services are limited and the population faces severe socio-economic hardship. These circumstances predisposes mothers to negative health-related outcomes, as severe socio-economic adversity can negatively affect the physical and mental health of mothers and, by extension, the health of their infants.

Furthermore, belief systems and cultural laws and customs can have a significant impact on maternal health-related behaviours in terms of taking care of an infant. It can influence beliefs regarding nutrition, alcohol use and HIV-related behaviours which may have negative developmental outcomes for infants. Policies regarding health-related behaviours such as alcohol use and HIV, and financial resources provided by the government (or lack thereof) can also impact on the health behaviours of mothers and ultimately have severe developmental consequences.

In conclusion, the Ecological systems theory can be applied to this context as it is apparent that the development of individuals is embedded in all levels of the environment. Therefore, factors affecting optimal development must be addressed on multiple levels as this theory suggests. In response to this, an increasing need for evidence-based, cost-effective interventions in South African peri-urban settlements exists. The purpose of these interventions should be to reduce the occurrence and spread of epidemics such as HIV, TB, malnutrition and FAS among South African children and ultimately children around the world. In the following section, the Philani Intervention Program Plus will be discussed.

2.5 Philani Plus Intervention Program

To address this increasing need for cost-effective, community-based interventions, the present RCT aims to develop and evaluate a home-visiting intervention that addresses interconnecting epidemics of HIV, TB, FAS and malnutrition in South African peri-urban settlements.

The existing Philani Intervention Program is a non-governmental organisation (NGO) that focuses specifically on improving child nutrition in an operational area of 150 township neighbourhoods. Mothers who are seen as positive role models because their children are thriving within the community are selected and trained as paraprofessional community health workers (CHWs) referred to as ‘Mentor Mother’ CHWs. The function of the ‘Mentor Mother’ CHWs is to make home visits during which they monitor and support the nutritional status and development of infants and children, refer to clinic care when necessary and provide continuous social support. The existing program has successfully been in operation for 30 years in the peri-urban settlements of Cape Town where it has provided non-stigmatising and sustainable support for women during pregnancy and children who are malnourished (Rotheram-Borus, et al., 2011).

The current home-visiting intervention is based on the existing Philani Intervention Program. However, where the Philani Intervention Program has mainly focussed on nutrition and low-birth weight, the current study expanded the programme to include HIV, TB and alcohol use during pregnancy and as a result the intervention is referred to as the Philani Plus Intervention Program. The current program aims to deliver a series of home visits to improve the use of clinic services and provide mothers with knowledge and support regarding HIV, alcohol use, mental health and healthy daily routines to better protect the overall health and well-being of their infants. The connection with the Philani Intervention Program is used to prevent any stigmatisation linked with HIV and AIDS.

2.6 Research aims and hypotheses

The Philani RCT aims to assess the effectiveness of the Philani Plus home-visiting intervention programme by measuring infant social withdrawal behaviour. It is hypothesised that infants in the intervention condition will display less social withdrawal behaviour compared to the infants in the standard care condition. Furthermore, infants of mothers of high risk groups who exhibit high risk behaviour in the intervention condition will display less social withdrawal behaviour compared to infants of mothers in high risk groups in the standard care condition. If this is indeed the case, it is hypothesised that the intervention has been successful.

The aims of the current study are as follows:

- 1) To identify sustained withdrawal behaviour in six-month old infants in both the intervention and control groups.
- 2) To examine whether six-month old infants receiving the intervention (Philani Plus Intervention Program), display more or less social withdrawal behaviour than the infants receiving standard care (control condition).
- 3) To identify risk factors associated with social withdrawal behaviour in this population.

CHAPTER 3 - Method

3.1 Study design

The study was a matched cluster randomised controlled trial conducted in two Cape Town peri-urban settlements (Khayelitsha and Mfuleni).

3.2 Study setting

There are five major peri-urban settlements with formal and informal basic housing within the Cape Town area. The estimated rate of unemployment in Cape Town peri-urban settlements is between 25% and 50% (City of Cape Town official website, 2011). Furthermore, 60% to 80% of the population survive on less than R800 per month. The population of Khayelitsha is predominantly black (Strategic Development Information and GIS Department, 2013) and consists of mostly young people. The majority of women live less than 5km from a prenatal clinic. Khayelitsha consists of government-subsidised cost-effective formal housing and large areas of informal housing. Most peri-urban settlements in Khayelitsha are supplied with basic services which include water, mast lighting, tarred roads, water-borne sewerage services and limited access to electricity and telephones. There is considerable migration both into and within Khayelitsha and in some peri-urban settlements provision of services is still pending. Within these areas services are restricted to communal water outlets and bucket toilets. In addition, there are numerous government-provided services, NGOs, schools and health care facilities within Khayelitsha (City of Cape Town official website, 2011).

3.3 Selection, matching and randomisation

To identify comparable sites, formal and peri-urban settlements were identified by using government obtained aerial maps and plotting the existing Philani intervention neighbourhoods. This ensured that none of the selected sites were adjacent to the organisation's existing intervention areas. Furthermore, several assessors who were both acquainted and not acquainted with the site,

visited each neighbourhood numerous times to select comparable sites. Between each site buffers (e.g. natural barriers such as rivers) were identified to minimise possible contamination.

Forty neighbourhoods not provided with Philani services were identified and matched into 10 community clusters consisting of 4 neighbourhoods each. Within matching clusters, neighbourhoods were comparable in size (within 50 households), distance to resident health centres (within 5km or not within 5km), water access on or off the premises, ethnic affiliation (majority Black or Coloured), and formal or peri-urban settlements. Based on the matching criteria, the potential neighbourhoods were reduced to 28 and assigned to groups of four.

To ensure that participants from each neighbourhood were from similar areas in the Eastern Cape, to establish the length of occupancy in the neighbourhood, and to examine housing and living conditions, 20 interviews were conducted in each neighbourhood by resident Xhosa-speaking women. In addition, the number of formal and informal houses, liquor stores, shebeens¹⁰ and clinics were counted in each neighbourhood by a data collector. This data was found to be consistent with estimations drawn from census data (City of Cape Town official website, 2010) as well as satellite photography from 2007. The analysis also confirmed a large number of the interim matches in neighbourhoods formed before fieldwork was initiated. Two pairs of neighbourhoods were excluded from the study as one pair was not similar enough and the other pair of neighbourhoods had been vacated before data collection commenced.

Twenty four neighbourhoods consisting of 12 matched pairs were finally selected for participation. Each of the 24 sites consisted of 450 to 600 households that were non-adjacent and separated enough to avert cross-site contamination (for example by natural barriers such as rivers roads, or waste disposal sites). Preliminary assessments found that the number of women of child-bearing age averaged per household at 1.4 which was lower than the projected 2 per household. To compensate for this and ensure there was a sufficient number of households per neighbourhood to

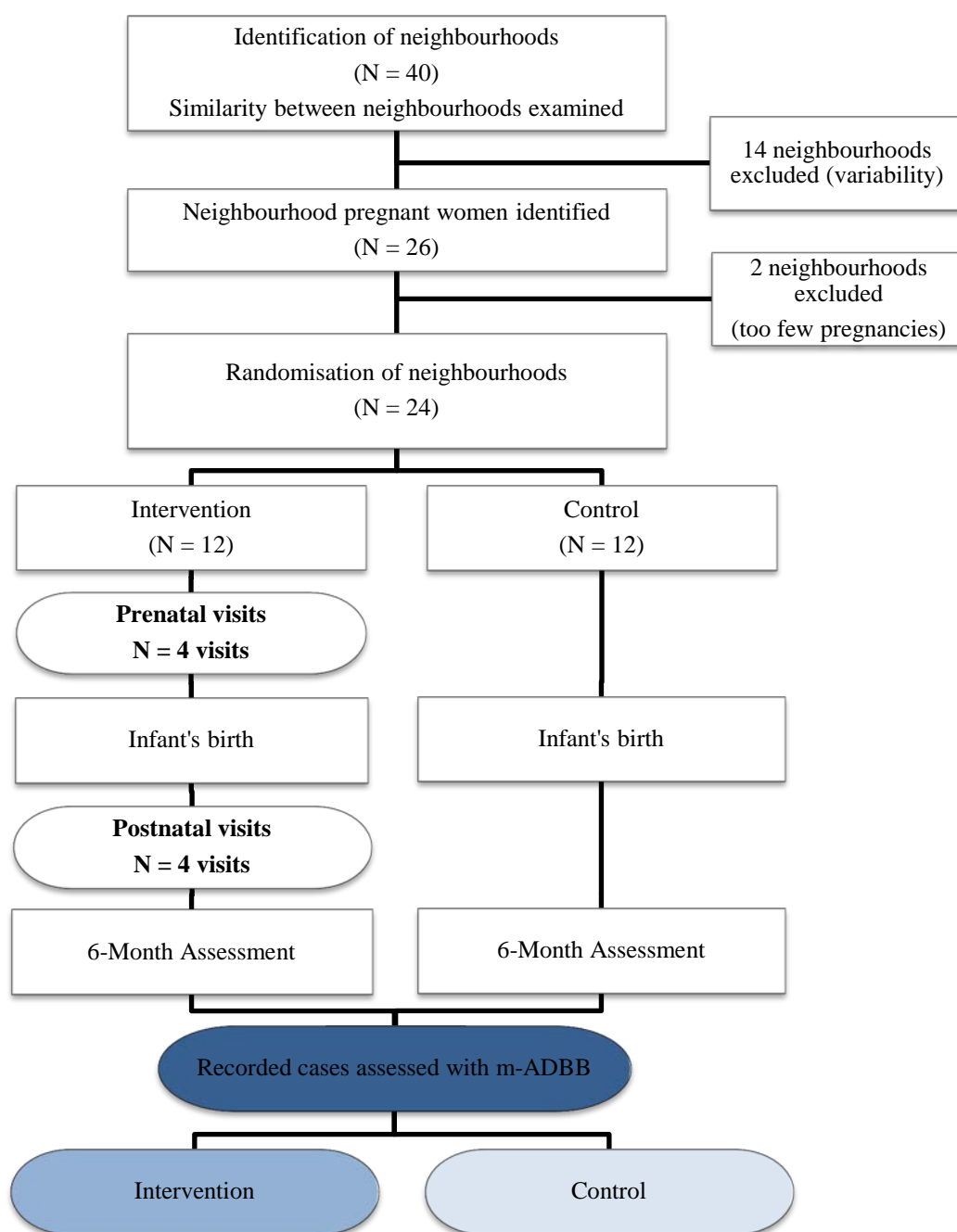
¹⁰ A place where alcoholic drinks are sold, usually illegally (Hornbury, 2010).

generate the sample of pregnant women for the study in one year, the borders of each neighbourhood were marginally extended. All neighbourhoods were randomised to the intervention condition (n=12 neighbourhoods) or standard-care control condition (n=12 neighbourhoods) by the University of California, Los Angeles (UCLA). Simple randomisation was used. This type of randomisation is founded upon a sole sequence of random assignments and with this technique complete randomness of the assignment of a subject to a certain group is upheld.

3.3.1 Sampling

The sample of participants from 24 neighbourhoods of 12 matched pairs was recruited and assessed during pregnancy, and post birth at one week, six months, 18 months, three year and five year intervals. Data collection at the five year interval commenced in June 2014. However, for the purpose of my study, only data collected during pregnancy and at six-months will be included. Neighbourhood identification and visit schedule at each major time point of my study is summarised in Figure 1.

Figure 1. Neighbourhood identification and visit schedule



3.3.2 Participant description

To be included in the study participants had to be 18 years of age or older, no more than 34 weeks pregnant at entry, residing within the selected neighbourhood and capable of giving consent. The ability to give consent was assessed by the interviewer based on the participants' apparent understanding of questions, absence of active hallucinations or acting inappropriately during the interview.

3.3.3 Participant recruitment

In each of the selected neighbourhoods a mother currently living in the area who was familiar with the residents was employed as a recruiter for the study. It was the responsibility of each recruiter to cover one neighbourhood in the intervention area and one neighbourhood in the control area. Recruiters were required to go from house to house in their particular neighbourhood on a continuous basis to identify and acquire consent to contact from pregnant women and to direct them to the assessment team. At a later point, potential participants were transported by a driver to a centralised assessment centre which was located at Site E of Khayelitsha, Cape Town. Recruitment was conducted from May 2009 to September 2010.

The group condition assignments (i.e. intervention or control) were never discussed with recruiters, yet it was impossible for them not to recognise in which neighbourhoods the intervention was set up. Potential distortion of data by recruiters was addressed by monitoring the daily progress of each recruiter through the neighbourhood on a continuous basis. No data was collected by recruiters except for the GPS¹¹ location of a potential participant's home collected with a mobile phone issued within the study.

¹¹ Global Positioning System

3.3.4 Sample power calculation

The sample power was determined in three steps. The first and second step corrected for the three-level hierarchical study design. The three-levels consisted of repeated observations embedded within mothers and mothers embedded within neighbourhoods. Analyses mainly aimed to identify intervention effects in the whole sample. However, analyses were also outlined for each of the high-risk subgroups (e.g. HIV-positive participants). Consequently, the third step divided the determined sample size by the percentage of participants estimated to be part of the smallest high-risk subgroup. This was estimated to be 30% of participants.

Firstly, the sample size per intervention arm needed ($N^*=156$) to detect a medium standardised effect size of 0.40 (Cohen, 1988) at 18 months with a power of 80% was determined. RMASS2 software (Hedeker, Gibbons, & Waternaux, 1999) was used to determine these calculations. This software assumed: 1) a Type 1 error equal to 0.05 for a two-sided test, 2) three repeated measurements, 3) attrition of 5% between time points, and 4) an autocorrelation¹² equal to 0.50. The rate of attrition and the autocorrelation were approximated from previous studies.

Secondly, the sample size per arm ($N=177.5$) was determined as the product of N^* and the inflation factor. This was calculated using the following equation: $N = N^* \times [1 + (m-1)ICC]$, where m represented the average number of women per neighbourhood and the intra-cluster correlation was equal to 0.1. The intra-cluster correlation is approximated from other behavioural studies (e.g. Todd et al, 2003).

In the last step, it was estimated that 591.7 participants from the high-risk subgroup were required per intervention arm. This was determined by dividing the determined sample size per arm ($N=177.5$) by 30%. The total sample size required was thus 1184 ($=591.7 \times 2$).

¹² The correlation between adjacent repeated observations.

3.4 Philani Plus Intervention

The intervention was a structured home-visiting programme conducted by paraprofessional Mentor Mother CHWs. Mentor Mothers were identified and trained to conduct home-visits based on existing evidence-based HIV and alcohol-related interventions (O'Connor & Whaley, 2007; Rotheram-Borus & Duan, 2003; Rotheram-Borus, Lee, Lin, & Leser, 2004a; Rotheram-Borus, et al., 2004b; Teasdale & Besser, 2008) adapted to fit the cultural context of South Africa (South African Department of Health, 2008). Identification and training procedures will be discussed in more detail in the following section.

3.4.1 Identification and training of Mentor Mother CHWs

Initially, 40 women were identified as potential Mentor Mothers. The identification of 'Mentor Mothers' was a three-phase process. Mentor Mothers were identified based on: 1) recommendations from community leaders; 2) observations made of trainees by CHWs during training as well as observations made of trainees' homes; and 3) trainees' performance during training.

Subsequently, thirteen women were hired as Mentor Mothers from the initial 40 women admitted to training. Training was received in four phases and took place over a two-month period. Firstly, Mentor Mothers observed skilled Mentor Mothers implement the intervention in an encouraging manner. This provided them with the skills to approach families and build trust more effectively. Secondly, Mentor Mothers attended one month of training. The training included basic child healthcare (including HIV and TB); nutrition; how to weigh babies and complete growth charts; how to identify indications of abuse and crisis circumstances and how to support mothers suffering from depression to be more active and involved with their infants. Thirdly, Mentor Mothers were trained to assist mothers in bonding with their infants and to increase the regularity of healthy daily routines. Lastly, Mentor Mothers executed their first series of intervention visits independently. Furthermore, an exhaustive intervention manual was developed.

Each Mentor Mother was issued with a Nokia 2630 mobile phone with a study-specific application loaded onto it. This application served as a support system that provided Mentor Mothers with intervention delivery, monitoring and supervision support. A text-messaging system was used by Mentor Mothers for intervention monitoring because limited training was required as all were accustomed to using text-messaging. In the following section the protocol of the intervention will be discussed in detail.

3.4.2 Intervention protocol

Participants received four antenatal visits and four postnatal visits. Prenatal visits were conducted once every two weeks over a two-month period. Similarly, after birth postnatal visits were conducted once every two weeks over a two-month period. Thereafter, Mentor Mothers checked in with participants once a month to provide support when necessary. If there was a crisis within the family, participants were visited more regularly.

In each intervention neighbourhood, one Mentor Mother consecutively visited every home within their designated neighbourhood. The typical duration of home-visits was 20 minutes but in cases where the family experienced several stressors or the family was in crisis, sessions could be up to 60 minutes long.

During home-visits, Mentor Mothers weighed all children under 5 years of age and made use of growth charts to identify malnourished children. Mentor Mothers encouraged all pregnant women to comply to the following: 1) attend a minimum of 4 clinic prenatal sessions; 2) drink clinic-provided prenatal vitamins and folic acid; 3) breastfeed their infants exclusively and postpone introducing solid food until infants are six months old; and 4) withhold from smoking and using alcohol during pregnancy. Participants were also encouraged to adhere to healthy living routines which include: steer clear of smoking and using alcohol; eating healthy; getting regular exercise; and taking all vitamins and other medication prescribed by clinic prenatal services. Participants also had access to standard Prevention of Mother to Child Transmission (PMTCT) programs provided at all clinics.

3.4.3 Prenatal and postnatal visits

Specific topics were addressed during home-visits. These topics included living with HIV, use of alcohol, nutrition, the child assistance grant, self-care and social support. With the first topic, “Living with HIV”, preventative strategies (e.g. regular condom use) and precautionary measures were discussed. Coping strategies with regards to a partner’s alcohol use and multiple relationships were also provided along with active support to disclose participants’ serostatus. Further focus points included demonstrating the administration of Nevirapine (NVP) and promoting adherence to Azidothymidine (AZT)¹³ before and after birth. Furthermore, participants were encouraged to choose a singular feeding method and to steer clear of formula feeding.

With the second topic, “Alcohol use”, the features and long-term effects of alcohol on infants were discussed. Participants were also screened for alcohol use and a brief intervention regarding the reduction of alcohol use was provided if necessary. With the third topic, “Nutrition”, infant nutritional status was checked and problem-solving skills with regards to getting food were provided.

With regards to the fourth topic, “Child Financial Assistance Grant”, barriers to receiving the grant were discussed and participants were aided in overcoming these barriers. With the last topic, “Self-care and social support”, participants were encouraged to make time for themselves and find joy in caring for their infants. For a detailed description of the prenatal and postnatal visits, see Appendix A.

3.5 Standard Care Control condition

The control condition in the current study entailed the standard care provided to women living in peri-urban settlements. These services included antenatal clinics, hospitals where the infant could be delivered, primary care clinics for postnatal care and well-baby care, postnatal clinics committed to HIV positive (HIV+) women and infants as well as independent sites for testing male partners for

¹³ A nucleoside analogue antiviral drug that inhibits the replication of retroviruses (e.g. HIV) by interfering with the enzyme reverse transcriptase.

HIV. Similar to participants in the intervention condition, participants receiving standard care also had access to standard PMTCT programs that were provided in all clinics.

Standard care that women living with HIV received at clinics in South Africa included dual therapy for PMTCT and referral to Antiretroviral (ARV) treatment for those with CD4 counts below 200 (i.e. Option A) (WHO stage 4 disease). However, from 2013 onwards the standard care protocol changed to Option B+¹⁴(pregnant and breastfeeding women receive life-long ARV). (Stinson, et al., 2014). Standard care for exposed infants included the return of polymerase chain reaction (PCR) test results by six weeks of age and provision of co-trimoxazole commencing at six weeks of age (WHO & UNICEF 2009). Furthermore, protocol at clinics in Cape Town was to provide free milk powder when an infant was born and free milk for all HIV+ mothers (even if bottle feeding was not the preferred behaviour).

3.6 Assessments

Trained assessment interviewers conducted assessments with participants during pregnancy and postpartum. In-person interviews were conducted by an independent assessment team from Stellenbosch University at the assessment centre. During these assessments the health and mental health of participants were evaluated.

3.6.1 Data collection procedure and storage

All assessments were conducted in Xhosa by a trained data collector using a mobile phone interview application (Tomlinson, et al., 2009). The duration of the baseline assessment was approximately between one hour and one and a half hours, while the six month interview took between 90 and 120 minutes. To maintain contact with participants over the period of the study an electronic tracking system was used. Participants were phoned or approached to make an appointment for each assessment interview. At the antenatal baseline assessment and six-month time

¹⁴ This protocol included: 1) fixed-dose combinations, 2) a new counselling model to aid same-day commencement, and 3) more attention to viral load monitoring during pregnancy by using viral load as the predictor of transmission

points, a study driver collected the participant for their appointment and transported them to the assessment centre.

Assessment training included basic phone navigation, checking for software updates, software use and uploading to the central server. Thereafter, interviewers acquainted themselves with the surveys for a two-week period. During this period, multiple tests were conducted to ensure that all entered data was uploaded and that all responses entered matched to values stored on the database. Throughout the study medical record reviews data, in-person interview assessment data and intervention dose and content monitoring data were monitored on a consistent basis.

It is important to note that all assessments were kept confidential. No data was associated with personal identifiers and responses were only identifiable by a participant identification number.

3.6.2 Training of data collectors

Training was conducted for the duration of two weeks. Each data collector was provided with a comprehensive manual regarding data collection procedures and all other specific aspects of the study. This document served as a supporting document, both during training and during actual data collection.

The manual covered simple research topics (e.g. the purpose of data collection, and the significance of informed consent) and more complex research topics (e.g. research ethics). The technical procedures regarding data collection via mobile phones were also outlined. Other aspects of the study that were outlined in the manual included diagrammatic flowcharts illustrating participants' involvement from recruitment through to being taken home after the assessment. More specifically, the manual outlined specific terminology regarding data collection as well as interviewing skills. The specific questionnaires and other documents used during assessments were also included within the manual.

Training was conducted via PowerPoint presentations, role-playing exercises and discussions, and feedback sessions. Thereafter, a pilot process was launched where data collectors were provided

with the opportunity to practise new acquired skills. All of these sessions were observed and filmed. After these sessions, team feedback sessions were held where data collectors were provided with the opportunity to learn from others' struggles and successes. The data from the pilot sessions coming through on mobiles were also checked for accuracy. If data collectors were deemed competent by the trainers, data collection commenced. Sessions were recorded and data was checked meticulously throughout the data collection process. Specific training workshops were provided to resolve any inconsistencies. At each data point, data collectors were provided with a refresher training course that included all the above training as well as ethics training. Data collection at each data point only commenced after the refresher training course was completed and data collectors were deemed competent to continue.

3.6.3 Mobile phone data collection

Data was collected using mobile phones running a software survey package ("Mobile Researcher") (Tomlinson et al., 2009). A partnership with a local for-profit company Clyral¹⁵ implemented the "Mobile Researcher". This survey software package could assimilate a range of question types including multiple choice questions, free text questions, numerical questions, and date and time questions (Tomlinson, et al., 2009).

The assessment team made use of Nokia E6li mobile phones. The use of cellular technology in data collection allowed the interviewer to input answers by hand, directly onto a mobile handset using a full QWERTY keyboard. This platform allowed interviewers to collect and upload numeric, voice and text data. Mobile phones were used because they were less expensive and posed a lower risk of being stolen compared to laptop computers. In addition, they provided instantaneous data transfer as well as managerial and project managing information on the time and location of activities taking place during assessments. This generated data collection which was of a high quality.

¹⁵ A Private digital solutions company.

The software was developed to perform simple logic and range validation which further improved data quality as information was entered by the data collector. The software also automated the skip patterns embedded within the questionnaire (Tomlinson, et al., 2009). This minimised the time taken by the data collector to administer the survey as all irrelevant questions were removed without human intervention. Furthermore, completed surveys were automatically uploaded and when no signal was available, all data was retained and uploaded automatically when the signal returned (Tomlinson, et al., 2009).

A number of steps were followed to ensure the protection and security of data. Firstly, Secure Sockets Layering (SSL) was used to ensure the encryption of all data transferred between the device and the server. Secondly, only senior investigators were able to access any of the uploaded data that was available for appraisal, management and export. Lastly, the servers holding the data located in Cape Town, South Africa, offered full security.

3.7 Measurement

Measurement instruments included: 1) baseline antenatal questionnaire; 2) six-month postnatal questionnaire; 3) the Derived Alcohol Use Disorder Identification Test (Derived AUDIT-C), 4) the Edinburgh Postnatal Depression Scale (EPDS), and, 5) the modified Alarm Distress Baby Scale (mADBB). The following section will discuss each of the measurement instruments in more detail.

3.7.1 Baseline Antenatal Questionnaire

The baseline assessment dealt with participants' background and demographics, general and mental health, antenatal and delivery health, sexual behaviour and relationships, use of alcohol, tobacco and other substances, traditional medicine use, HIV serostatus, other HIV related issues, feeding strategies and daily routines. As this assessment was conducted during pregnancy, data was collected from pregnant women only. A copy of the questionnaire is added as Appendix B (i) and (ii).

3.7.2 Six months Postnatal Questionnaire

The maternal six months questionnaire dealt with participants' demographic information, general and mental health, social support, use of alcohol, tobacco and other substances, traditional medicine use, sexual behaviour and relationships, maternal knowledge concerning nutrition, alcohol and bonding, infant and maternal HIV status and treatment, violence and current relationships, family planning and daily routines.

The infant six months questionnaire dealt with infant demographics (e.g. gender, weight, and length), general health status, feeding methods, vaccinations, hospitalisations and clinic treatments, child governmental grants, and infant and maternal HIV status and treatment. A copy of the questionnaires is added as Appendix C (i) and (ii).

3.7.3 The Derived Alcohol Use Disorder Identification Test (Derived AUDIT-C)

The Derived Alcohol Use Identification Test (AUDIT-C) from the National Epidemiological Survey on Alcohol and Related Conditions (Dawson, Grant, & Stinson, 2005) was used to screen for prenatal and postnatal alcohol use. It consists of three items that are based on, and highly correlates with, the original 10-item AUDIT (Dawson, Grant, & Stinson, 2005; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). The three items are: 1) days of any alcohol use; 2) typical number of drinks per day, and, 3) binge drinking episodes of five or more drinks per day. However, it includes adaptations to the first three questions of the original AUDIT that focuses exclusively on alcohol intake. For the purpose of this study the third question was adapted to define binge drinking episodes as four or more drinks per day.

The Derived AUDIT-C was developed to be brief and easy to use in clinics where time is constrained. It shows good sensitivity and specificity for identifying risk drinking behaviour in pregnant women and research has indicated that it is appropriate for ethnic and cross-cultural use in the United States (US) (Dawson, Grant, & Stinson, 2005). Furthermore, this measure has been used

at length to screen for alcohol use in both male and female samples from Cape Town, South Africa (Kalichman, et al., 2008)

For the purpose of this study, participants were asked about their use of alcohol for the periods: after conception but before the participant became aware of the pregnancy; after the participant was aware of the pregnancy; and after birth for the first six month. Risky drinking behaviour is defined as all scores above two on the AUDIT-C. The items of the derived AUDIT-C are embedded in part 2 of Baseline Antenatal questionnaire under section 4 and in part 1 of the Six-month questionnaire under section 13 (see Appendix B (ii) and C (i) for more information).

3.7.4 The Edinburgh Postnatal Depression Scale (EPDS)

The Edinburgh Postnatal Depression Scale (EPDS) was used to screen for maternal depressive symptoms at baseline and six-months after birth. This measure is a 10-item self-report scale developed to be used during the postnatal period. Items are scored on a four-point scale from zero to three (Cox, Holden, & Sagovsky, 1987). The sums of the scores on each item equal the total score for each participant and total scores range from 0 to 30. Higher scores indicate the presence of more depressive symptoms with a cut-off point of 12 to 13, indicating a probable depressive disorder (Cox, Holden, & Sagovsky, 1987).

This measure is most frequently used to measure postnatal depression across different countries (Halbreich & Karkun, 2006; Oates, et al., 2004). The first validation of the EPDS was conducted on a sample of British women (Cox, Holden, & Sagovsky, 1987). The initial validation indicated that a threshold of 12/13 was most suitable to identify major depressive symptoms (Cox, Holden, & Sagovsky, 1987). This measure showed acceptable validity and split-half reliability (reliability = 0.88, standardised α coefficient = 0.87) as well as sensitivity (86%) to changes in the severity of depression over time and specificity (78%). (Cox, Holden, & Sagovsky, 1987). Two studies have validated the EPDS in community samples in South Africa (Lawrie, Hofmeyr, de Jager, & Berk,

1998; Rochat, Tomlinson, Newell, & Stein, 2013). However, these studies found different optimal thresholds indicating significant depressive symptoms.

Therefore, in the current study, maternal mental state is measured at two different thresholds (i.e. cut-off points): (1) scores above 18 and (2) scores above 12. As the EPDS is a screening tool, the possibility of having numerous false positives (i.e. a large number of women scoring above 12) is high. Therefore, the cut-off point was increased to 18 to reduce the number of false positives. The cut-off of 18 was used for no other reason than to decrease the number of false positives. Furthermore, it is important to note that a high score on the EPDS does not necessarily confirm a diagnosis of depression, but scores above cut-off points are highly indicative of a probable depressive disorder.

The items of the EPDS are embedded in part 1 of the Baseline Antenatal questionnaire under section 10 and in part 1 of the Six-month questionnaire under section 9 (see appendix B (i) and C (i) for more information).

3.7.5 The modified Alarm Distress Baby scale (m-ADBB)

The modified Alarm Distress Baby scale (m-ADBB) is an observer-rated scale, derived from the Alarm Distress Baby Scale, consisting of five items (ADBB; Guedeney & Fermanian, 2001; m-ADBB; Matthey, Crncec, Guedeney, 2008, Matthey, Crncec, Hales, & Guedeney, 2013). The modified version is only appropriate for use with infants aged three to 18 months (Matthey, CrnCec, & Guedeney, 2008; Matthey, Crncec, Hales, & Guedeney, 2013). While the ADBB can be used from two months of age, it is recommended that the m-ADBB be used from three months of age. This is to ensure that a lack of facial expression in a two-month-old infant is a definite indication of social withdrawal and not just due to not having fully developed certain expressions yet. (Matthey, CrnCec, & Guedeney, 2008; Matthey, Crncec, Hales, & Guedeney, 2013). The modified version was developed to be easier to use and score to increase inter-rater reliability (Matthey, CrnCec, &

Guedeney, 2008; Matthey, Crncec, Hales, & Guedeney, 2013). A copy of the modified version of the ADBB is added as Appendix D.

3.7.5.1 *The observational setting*

The social behaviour of infants can be assessed during any standard examination. The standard paediatric examination is the most appropriate setting because these examinations are well structured and incorporate moderately strong stimulation of the infant. Other appropriate settings include developmental testing settings and structured interactions (Matthey, CrnCec, & Guedeney, 2008).

During the examination, it is critical for the data collector (i.e. the person conducting the assessment of the infant) to attempt to socially engage with the infant (e.g. talking, smiling and touching). It is also imperative that infants should be given the opportunity to become familiar with the setting. Therefore, examinations should last for 10 to 15 minutes at least. It is also critical that infants are fully awake, nursed, not excessively distressed and pacifiers are not used during the examination. This is to ensure that infants are provided with the opportunity to display a variety of social behaviours. Furthermore, infants should be assessed within their relational environment. Therefore, mothers should be present during the assessment because any assessment of social withdrawal behaviour should be made within the context of the mother-infant relationship. In addition, ratings using the m-ADBB can be made in-vivo (live) or from video recordings at a later point in time (Matthey, CrnCec, & Guedeney, 2008).

Consequently, there is no “standardised interaction procedure” for using the m-ADBB which makes it easy to use in various settings. For the purpose of this study, the six-month assessment was recorded to be assessed with the m-ADBB. The infant was placed on the examination table between the mother and the data collector. The infant was positioned to face the video recorder which was positioned in front of the examination table. Data collectors were required to measure the height and head circumference and to socially engage with the infant by talking, smiling and playing with them.

Social interaction was aided by study-provided toys. The duration of assessments was 10 to 13 minutes. Ratings were made from video recordings. It is important to note that during the assessment, data collectors were blind to the group condition (i.e. intervention or control). Furthermore, ratings were also made blind to group condition.

3.7.5.2 *The m-ADBB items*

The five items of the m-ADBB include ‘Facial expression’, ‘Eye contact’, ‘General level of activity’, ‘Vocalisations’ and ‘Ability to engage in a relationship’ (Matthey, CrnCec, & Guedeney, 2008; Matthey, Crncec, Hales, & Guedeney, 2013). The items ‘Facial expression’, ‘Vocalisation’ and ‘Activity’ are evaluated based on the infant’s interactions with the parent and the data collector. On the other hand, the items ‘Eye contact’ and ‘Relationship’ are evaluated based on the interaction with the data collector only (Matthey, CrnCec, & Guedeney, 2008; Matthey, Crncec, Hales, & Guedeney, 2013).

The first item that is evaluated is ‘Facial expression’. During the assessment, any facial expressiveness that the infant directs towards anyone near him/her is evaluated. However, any facial expressions displayed as a result of crying or negative/painful procedures, are not included as an indication of facial expressiveness (Matthey, CrnCec, & Guedeney, 2008).

The second item that is evaluated is ‘Eye contact’. During the assessment, the nature of eye contact towards the data collector or another person near the infant is evaluated. The length of eye contact is categorized as moderate (approximately two seconds), brief (approximately one second) or elusive/vague (less than one second) (Matthey, CrnCec, & Guedeney, 2008).

The third item that is evaluated is ‘Vocalisations’. During the assessment of this item, the amount of sounds (i.e. vocalisations, crying or whimpering) the infant makes throughout the examination is evaluated (Matthey, CrnCec, & Guedeney, 2008).

The forth item to be evaluated is ‘Activity’. During the assessment of this item, any movement of the head, upper body and limbs both spontaneous and in response to stimulation is evaluated. This does not include any movement of the hand or fingers (Matthey, CrnCec, & Guedeney, 2008).

The last item to be evaluated is ‘Relationship’. During the assessment of this item, the infant’s ability to engage in a relationship with the data collector or with any other unfamiliar person is evaluated. This item is also evaluated through the infant’s eye contact and interaction with the data collector and is, therefore, not separate from the previous four items (Matthey, CrnCec, & Guedeney, 2008).

3.7.5.3 Modifications

The m-ADBB was modified to include only five items of the original eight items of the ADDB. The items were reduced from eight to five based upon an item-analysis conducted by Matthey, Guedeney, Starakis and Barnet (2005). The items that were removed were ‘Self-stimulating gestures’, ‘Briskness of response to stimulation’, and ‘Ability to attract and maintain attention’ (Matthey, CrnCec, & Guedeney, 2008; Matthey, Crncec, Hales, & Guedeney, 2013).

The ‘self-stimulating gestures’ item was removed because after recurrent attempts, acceptable inter-rater reliability was unsuccessful as raters found it difficult to correctly score this item (Matthey, CrnCec, & Guedeney, 2008; Matthey, Crncec, Hales, & Guedeney, 2013). The item ‘Briskness of response to stimulation’ was removed because correlation between this item and ‘General Level of Activity’ was relatively high (>0.6) and therefore elements of this item were combined into the Activity item on the m-ADBB (Matthey, CrnCec, & Guedeney, 2008; Matthey, Crncec, Hales, & Guedeney, 2013). The last item that was removed, ‘Ability to attract and maintain attention’ was removed because this item had high correlations (>0.7) with Facial Expression and Relationship items and, therefore, was not adding a noteworthy amount of new information not already included by these other two items (Matthey, CrnCec, & Guedeney, 2008; Matthey, Crncec, Hales, & Guedeney, 2013).

3.7.5.4 *Scoring format and scoring considerations*

All of the items (except for the item ‘vocalisation’) are rated as ‘Satisfactory’, ‘Possible Problem’ or ‘Definite Problem’ (Matthey, Crnec, & Guedeney, 2008; Matthey, Crnec, Hales, & Guedeney, 2013). The item ‘Vocalisation’ is rated only as ‘Satisfactory’ or ‘Possible problem’ because infants do not always get the opportunity to vocalise in the relatively short time frame and unique context of the examination (Matthey, Crnec, & Guedeney, 2008; Matthey, Crnec, Hales, & Guedeney, 2013).

Where an infant is rated as having a possible or definite problem, there should also be specified, where appropriate, if the behaviour displayed towards the data collector was different than the behaviour displayed towards the parent and vice versa (Matthey, Crnec, & Guedeney, 2008; Matthey, Crnec, Hales, & Guedeney, 2013). In addition, the m-ADBB also examines the level of the data collector’s social engagement (i.e. good, fair or limited) and other infant characteristics (e.g. infant appears tired or distressed) as these variables may have important influence on the infant’s social behaviour (Matthey, Crnec, & Guedeney, 2008; Matthey, Crnec, Hales, & Guedeney, 2013). This allows the rater to take these variables into consideration in cases where an infant appears withdrawn when the data collector has not tried to engage the infant or when the infant becomes upset (Matthey, Crnec, & Guedeney, 2008; Matthey, Crnec, Hales, & Guedeney, 2013).

In the current study, categorical descriptors (satisfactory, possible problem, definite problem) were converted to numerical scores (0, 1, 2) to calculate total m-ADBB scores (Guedeney, et al., 2013). This was based on a simple algorithm used by one of the authors of the m-ADBB in Guedeney et al (2013). Numerical scores were calculated as follows: 1) a score of ‘satisfactory’ on any item was equal to 0; 2) a score of ‘possible problem’ on any item was equal to 1; and 3) a score of a definite problem on any item was equal to 2 (Guedeney, et al., 2013). The individual scores of each item were summed to calculate the total m-ADBB score for each participant. A total score of 2 or more indicated the prevalence of social withdrawal behaviour (Guedeney, et al., 2013).

3.7.5.5 *Psychometric properties*

Based on the first validation study of the ADBB, the measure had good psychometric properties (Guedeney & Fermanian, 2001; Matthey, CrnCec, & Guedeney, 2008). The receiver operating characteristics of the m-ADBB were investigated by comparing infants scoring five or more on the full ADBB with infants scoring four or less (Matthey, CrnCec, & Guedeney, 2008).

Analysis showed that a cut-off score of two or more (i.e. one definite problem or two possible problems or more) was ideal. Sensitivity was 80% while specificity was 92% (Matthey, CrnCec, & Guedeney, 2008). Furthermore, the positive predictive value was 89% while the negative predictive value was 85%, with only 14% of the sample being wrongly classified using a two or more cut-off point. The cut-off rate of two or more with a sensitivity of 80% and a specificity of 92% were defined as ideal for screening purposes (Matthey, CrnCec, & Guedeney, 2008).

To determine the concordance between the m-ADBB and the full ADBB, the categorical descriptors of the m-ADBB were converted into numerical scores (Satisfactory = 0; Possible Problem = 1; Definite Problem = 2). The correlation between the two scales yielded an r equal to 0.72 which suggests that in spite of the modifications in the m-ADBB, both scales measure the same constructs (Matthey, CrnCec, & Guedeney, 2008).

Preliminary inter-rater reliability for the m-ADBB was derived from investigating the independent ratings of the three raters. After rating all 22 clips, all three of the raters rated 89% identically while at least two of the raters rated 99% identically. Furthermore, the percentage of individual items rated identically by all three of the raters ranged from 77% for Relationship to 95% for Eye contact, Vocalisation, and Activity (Matthey, CrnCec, & Guedeney, 2008).

To date there has been no validations of the m-ADBB in different South African populations (Hartley C. , et al., 2010). However, several studies regarding the ADBB indicate that this measure has consistent validity across different cultures and cut-off scores have shown similar sensitivity and

specificity values across different countries (Facuri-Lopez, Ricas, & Cotta Mancini, 2008; Guedeney & Fermanian, 2001; Matthey, Guedeney, Starakis, & Barnett, 2005).

3.7.5.6 Training

Training to use the m-ADBB was done via one of two training packages: 1) a face-to-face workshop (usual duration is 1 day) or 2) a distance education package (Matthey, Crncec, Hales, & Guedeney, 2013). To achieve accreditation in the use of the instrument, trainees must rate infant video clips and demonstrate a high correlation with the developers of the instrument (Matthey, Crncec, Hales, & Guedeney, 2013). Training with the m-ADBB must be completed to ensure accurate infant assessment. In the current study, training was done using the distance education package and I have been accredited in the use of the m-ADBB. Inter-rater reliability was assessed with another accredited m-ADBB rater at two points during the course of the coding. The assessments yielded reliabilities of 0.88 and 0.92 illustrating that inter-rater reliability was high.

3.8 Ethical aspects

In the following section the ethical aspects of the study will be discussed in more detail. The section will focus specifically on ethical approval, outlining of vulnerable subjects, potential risks and benefits and, support and how to minimise risk. Support was provided by Professor Tomlinson (co-principal investigator) and Dr le Roux (head of Philani Nutrition and Development Project).

3.8.1 Ethical approval

Ethical approval for this study has been obtained by the Institutional Review Board of the University of California, Los Angeles (UCLA, G07-02-022-04) and the Research Ethics Committee of the University of Stellenbosch, South Africa (N08/08/218). These institutions were also responsible for monitoring the study over time.

3.8.2 Vulnerable subjects

During this study participants were pregnant (at baseline) or six months post-birth. Furthermore, participants were HIV+ and/or TB+ and also some participants may have exhibited problematic alcohol use.

3.8.3 Risks and benefits

3.8.3.1 Potential risks to participants

Certain content and questions from the home visits and assessments could have caused participants emotional distress. In such cases, data collectors provided referral contact information to participants.

3.8.3.2 Potential benefits to participants and society

There were no direct benefits to participants in the control neighbourhoods participating in this study. Participants in the intervention neighbourhoods were, however, likely to benefit in terms of improvements in their own health and the health of their children. The potential benefit to society is substantial. Should this study achieve its aims, it will create a scientifically validated, cost effective, and scalable community based intervention which could be adopted by the South African government and implemented broadly in South Africa. The impact this could make in addressing interconnecting epidemics of HIV, TB, FAS and malnutrition in South African peri-urban settlements is significant.

3.8.3.3 Risk/benefit ratio

There were few risks other than possible affective discomfort associated with this study, while the future potential benefits to society are substantial.

3.8.4 Minimising risk

Certain structures and procedures were put into place to minimise potential risk associated with the study. These will be discussed in more detail in the following sections.

3.8.4.1 Data Safety and Monitoring Board and Community Advisory Board

To minimise risk, a Data Safety and Monitoring Board (DSMB), consisting of four members of national and international experts, and a Community Advisory Board (CAB), which included resident shareholders, was formed. The DSMB was responsible for monitoring the implementation of the study whilst the CAB functioned as the link between the community and research team and advised on study guidelines. The CAB was informed on the progress of the study on a continuous basis. Furthermore, the study and the study protocol were approved by health authorities on national, provincial, district and municipal levels.

3.8.4.2 Emergency protocols and procedures

In the event of a crisis situation, such as an assessment interviewer or Mentor Mother coming across a critically ill infant, child or family member, a suicidal household member and/or abused child while they were in the field, an emergency protocol was developed which data collectors were trained to follow. Transport was also available to transport any critically ill/injured family member to a hospital in an emergency situation.

3.8.4.3 Confidentiality

All information received from participants remained strictly confidential. To protect confidentiality, all participants received a participant identification number which was used for all interviews. A separate tracking form was also acquired and secured at a different computer and on paper at each local clinic. The South African investigator team was provided with a copy of each neighbourhood's list of participants; however, the UCLA team was never provided with such information. Data was also kept without serostatus identification in double locked cabinets at the

offices of Stellenbosch University. Only the consent form, tracker form and tracker computer linked the participant's name to the identification number. In addition, the use of assessment centres also contributed to confidentiality and privacy.

3.8.4.4 *Informed consent*

The informed consent process took place before any data collection began in a private room of the Assessment Centre. Consent for participation in the full study was conducted before the first assessment and thereafter before every assessment as the study progressed. The informed consent forms were available in the local language of the participants as well as in English. Each potential participant was assured that his/her participation or refusal to participate in the study was completely voluntary.

In the first process of consent, the study activities, which included all future assessments and possible Mentor Mother home visits in the intervention neighbourhoods, were explained. The research team member read the informed consent form to the participant while the participant followed along reading silently. At the end of every section and after the information sheet had been completed, the participant was given an opportunity to ask questions. An English copy of the informed consent form is added as Appendix E.

3.9 Data analysis

Data analyses were performed using the Statistical package for Social Sciences (SPSS), version 21.0 and Statistical Analysis System (SAS), with alpha set to .05. Specific data analysis procedures are outlined in the following sections.

3.9.1 Sample descriptive data analysis

Descriptive data on the total sample was initially investigated by means of frequency analyses where data was described using frequencies and percentages. Thereafter, independent analysis of associations between the intervention and control group were examined by means of cross-tabulation and Chi-square or Fisher's exact test (when appropriate) were reported.

Subsequently, six month descriptive data of intervention and control groups was compared by means of analysis of variance and multilevel modelling to account for intra-cluster correlation. Variance of continuous variables was examined by means of multilevel modelling via a variance estimation and precision procedure while the variance of discrete (i.e. categorical) variables was examined by means of analyses of variance (one-way ANOVA). The neighbourhoods (i.e. clusters), not individual participants, were the experimental units during multilevel analysis. One-way ANOVA was conducted to test for significant differences in mean prevalence between control and intervention clusters and prevalence data (e.g. diabetes) were expressed as percentages per cluster. Mixed model analyses were conducted with intervention (yes/no) as fixed factor and cluster nested within treatment (intervention/control) as random factor. This took the multilevel modelling into account as well as the fact that clusters were randomly assigned to the intervention (and not households).

3.9.2 Social withdrawal data analysis

Social withdrawal data collected from the m-ADBB was investigated by the means of frequency analyses and cross-tabulation. Firstly, data was described using frequencies and percentages and the distribution of m-ADBB scores were plotted on a histogram. Infants were classified as socially withdrawn based on a threshold of two or more on the m-ADBB (Guedeney, et al., 2013) and subsequent results were described using frequencies and percentages.

Thereafter, independent analysis of social withdrawal between the intervention and control group was examined by means of cross-tabulation and Chi-square or Fisher's exact test (when appropriate) were reported. Following independent analysis, social withdrawal in the intervention and control groups were compared by means of multilevel modelling to account for intra-cluster correlation. Variance of social withdrawal was examined by means of a variance estimation and precision model. The neighbourhoods, not individual participants, were the experimental units during multilevel analysis. Mixed model analyses were conducted with intervention (yes/no) as fixed factor and cluster nested within treatment (intervention/control) as random factor. This took the multilevel modelling into account as well as the fact that clusters were randomly assigned to the intervention (and not households).

The cut-off score of two used to indicate social withdrawal behaviour was the same as the cut-off score used in the only other South African study that measured social withdrawal behaviour using the m-ADBB. However, the m-ADBB has not been validated in different South African cultures or in conjunction with other infant behavioural scales. Therefore, the cut-off score used in the current study could potentially influence the outcome of analysis. To investigate this potential influence of cut-off scores, a threshold of three or more was also investigated by means of frequency analysis and cross-tabulation and presented accordingly. Social withdrawal in the intervention and control groups at this threshold were also compared by means of multilevel modelling to account for intra-cluster correlation. Variance between groups was examined by means of analyses of variance (one-way ANOVA). The neighbourhoods (i.e. clusters), not individual participants, were the experimental units during multilevel analysis. One-way ANOVA was conducted to test for significant differences in mean prevalence between control and intervention clusters and prevalence data (e.g. diabetes) were expressed as percentages per cluster.

Lastly, the association between social withdrawal and other variables was investigated by means of cross-tabulation and Pearson's Chi-square was reported.

3.9.3 The intra-cluster correlation coefficient (ICC)

As participants were randomised into clusters, the intra-cluster correlation coefficient (ICC) was taken into consideration when calculating the sample size and analysing the data. The ICC is the proportion of the total variance of the outcome that can be explained by the variation between clusters. The ICC must be taken into account because as clusters, individuals are no longer uncorrelated and will, therefore, not have the same statistical power as individually randomised trials.

With regards to analysis of data, the ICC represents the amount of dependency in the data that is detectable as a result of the clustering (Hedeker, Gibbons, & Flay, 1994; Sashegyi, Brown, & Farrell, 2000). The value of the ICC should approach 0 to limit the effect of clustering within neighbourhoods on the outcome data.

CHAPTER 4 - Results

The results are presented in 3 sections: (1) Sample characteristics; (2) Prevalence of social withdrawal; (3) Social withdrawal behaviour and the association with other variables.

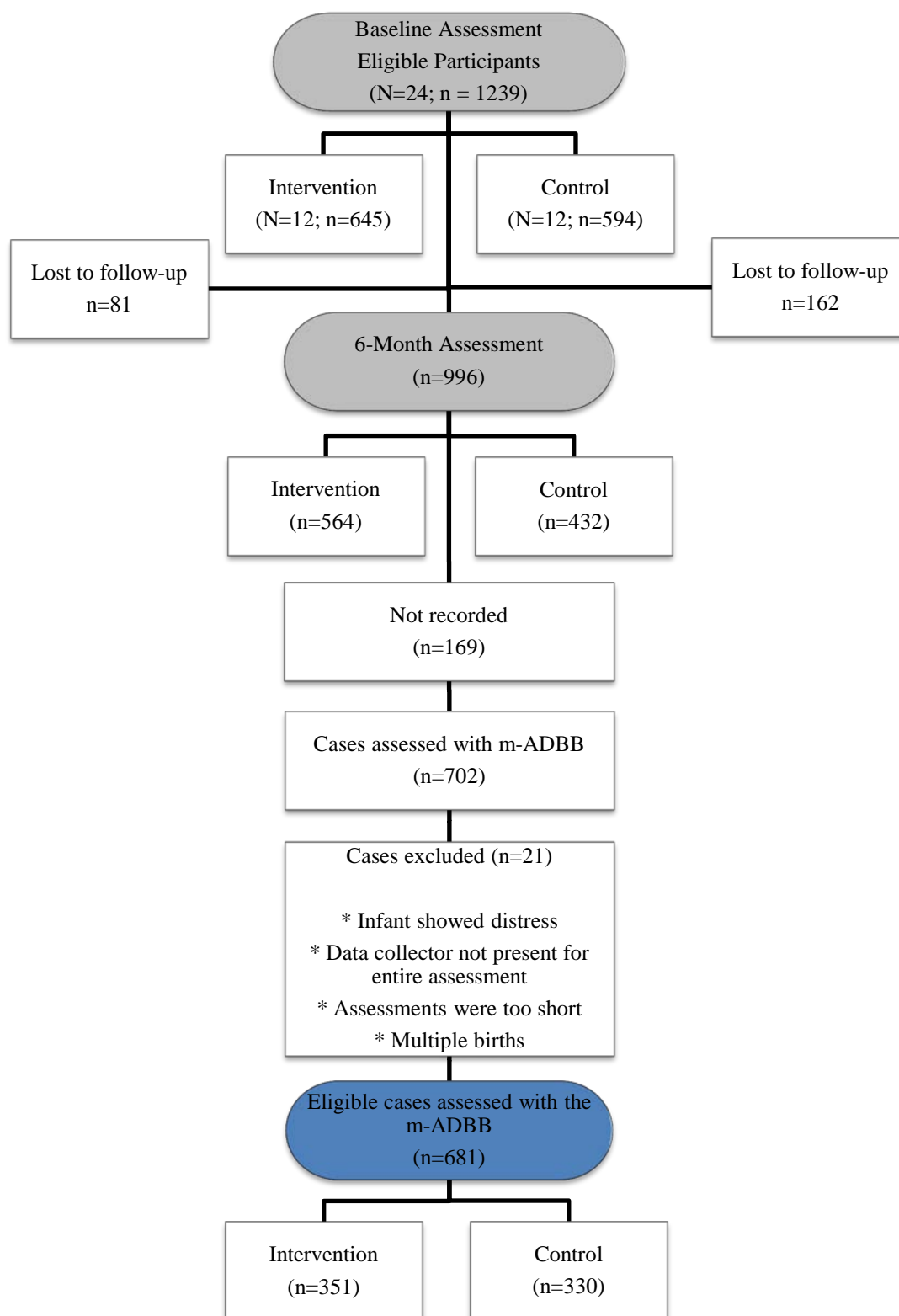
4.1 Sample characteristics

From a total of 1239 participants (N=24 neighbourhoods) eligible for participation at baseline, only 996 participants were retained at six months as 232 participants were lost to follow-up. A further 12 cases were excluded because participants had multiple births (i.e. triplets or twins). Multiple births were included in the main study, but excluded for this study, in order to avoid having two scores per participant.

From the full sample of 996 participants, the first 702 cases were assessed using the m-ADBB. Of the 702 interactions that were filmed 21 cases were excluded from analysis, resulting in a final sample of 681 participants. Cases were excluded if: 1) the infant was distressed, ill or cried for the majority or entire assessment; 2) the data collector was not present for the entire assessment; 3) assessments were too short (i.e. five minutes or less); or 4) participants had multiple births (i.e. triplets or twins). Grouped by the intervention condition, the intervention group consisted of 351 participants and the control group consisted of 330 participants.

Sample characteristics are presented in two sections: (1) Baseline sample characteristics; (2) Post birth and six-month sample characteristics. The flow of participants through my study at each major time point is summarised in Figure 2.

Figure 2. Consort diagram - flow of participants through the study



4.1.1 Baseline sample characteristics

Baseline sample characteristics are presented in Table 1.

Characteristic	INTV (N=351) n (%)	CONT (N=330) n (%)	Total (N= 681) n (%)	p-value
Demographic Characteristics				
Mean age (SD)	26.58 (5.599)	26.07 (5.366)	26.33 (5.489)	0.23
Highest educational level				
Mean highest education level (SD)	10.30 (1.868)	10.30 (1.736)	10.30 (1.804)	0.64
Primary education	15 (4.3)	16 (4.8)	31 (4.6)	0.72
Secondary education	322 (91.7)	303 (91.8)	625 (91.8)	0.97
Tertiary education	14 (4.0)	11 (3.3)	25 (3.7)	0.65
Married or lives with partner	209 (59.5)	189 (57.3)	398 (58.4)	0.55
Lives in formal housing	108 (30.8)	111 (33.6)	219 (32.2)	0.42
Water on site	185 (52.7)	193 (58.5)	378 (55.5)	0.13
Electricity	305 (86.9)	301 (91.2)	606 (89.0)	0.07
Flush toilet	185 (52.7)	190 (57.6)	375 (55.1)	0.20
Employed	73 (20.8)	58 (17.6)	131 (19.2)	0.29
Unemployed	278 (79.2)	272 (82.4)	550 (80.8)	0.29
Monthly household income >2001 Rand	154 (43.9)	152 (46.1)	306 (44.9)	0.73
General Maternal Health				
Antenatal clinic appointment	274 (78.1)	259 (78.5)	533 (78.3)	0.89
Non-primipara	234 (66.7)	221 (67.0)	455 (66.8)	0.93
Previous live births	218 (62.1)	205 (62.1)	423 (62.1)	0.99
Previous miscarriage	16 (4.6)	16 (4.8)	32 (4.7)	0.87
Previous low birth weight infants	34 (9.7)	36 (10.9)	70 (10.3)	0.87
Maternal Mental Health				
EPDS > 18	52 (14.8)	51 (15.5)	103 (15.1)	0.82
EPDS > 12	166 (47.3)	135 (40.9)	301 (44.2)	0.09
Alcohol and other substance use				
Drank alcohol in month prior to pregnancy discovery	85 (24.2)	83 (25.2)	168 (24.7)	0.78
AUDIT-C score > 2 ^a	59 (16.8)	67 (20.3)	126 (18.5)	0.24
Drank alcohol after discovery of pregnancy	34 (9.7)	28 (8.5)	62 (9.1)	0.59
AUDIT-C score > 2 ^b	25 (7.1)	15 (4.5)	40 (5.9)	0.15
Tobacco use	11 (3.1)	10 (3.0)	21 (3.1)	0.94
HIV and Reproductive Health Behaviour				
Ever tested for HIV	325 (92.6)	302 (91.5)	627 (92.1)	0.60
Women living with HIV	87 (24.8)	85 (25.8)	172 (25.3)	0.73

*p<0.1 **p<0.05 ***p<0.01
a. Month prior to pregnancy discovery
b. After pregnancy discovery

The mean age for the total sample was 26.33 years and 26.58 and 26.07 years for the intervention and control group respectively. Of the total sample, 91.8% had completed some or all secondary education (grade 7- grade 12) while 4.6% had not completed any secondary schooling.

The mean level of education completed was grade 10. Only 3.7% completed all tertiary schooling. Over half of all participants were married or living with their partner and the remainder were single.

The rate of unemployment was high with over 80% being unemployed at baseline, and with 44.9% receiving a monthly household income of more than R2000. Only a third of the total sample lived in formal housing, 55.5% had water on site; 55.1% had flush toilets and almost 90% had electricity.

Almost 80% of women had booked an antenatal clinic appointment. Approximately two thirds of all participants had a previous pregnancy and just under two thirds had given birth previously. Of these non-primiparous women, 4.7% had suffered previous miscarriages. Ten percent of births had been low birth weights.

In terms of mental health, 38.8% screened positive for possible depressive symptoms (scored above the cut-off of 12) on the EPDS. Fifteen percent of participants screened positive for significant depressive symptoms (scored above the cut-off of 18) on the EPDS.

In terms of alcohol use, a quarter of participants drank in the month prior to discovering their pregnancy and of these 18.5% exhibited risky drinking behaviour¹⁶. After participants became aware of their pregnancy, 9.1% of the total sample continued to use alcohol and 5.9% of these participants exhibited risky drinking behaviour. Tobacco was used by only 3.1% of participants. Just over 90% of the sample had been tested for HIV and 25.3% were HIV positive.

In conclusion, mothers in the intervention and control groups were similar on all characteristics. No variables yielded a significant difference between groups.

¹⁶ Risky drinking behaviour is defined as all scores above two on the AUDIT-C.

4.1.2 Six-months sample characteristics

Six-month characteristics are presented in four sections: (1) Six-month maternal sample characteristics; (2) Six-month infant sample characteristics; (3) Comparison of the full Philani sample and the current sample; and (4) Analysis of variance and multilevel modelling of six month sample characteristics.

4.1.2.1 Six-month sample characteristics of mothers

Maternal six-month sample characteristics are presented in Table 2.

Table 2 Six-month characteristics of mothers (N= 681) grouped by intervention condition Intervention group (INTV, N=351) vs. Control group (CONT, N=330)				
Characteristic	INTV (N=351) n (%)	CONT (N=330) n (%)	Total (N= 681) n (%)	p-value
General Maternal Health				
Diagnosed with diabetes	4 (1.1)	6 (1.8)	10 (1.5)	0.46
Diagnosed with hypertension	31 (8.8)	31 (9.4)	6 (9.1)	0.80
Any post birth conditions	247 (70.4)	240 (72.7)	487 (71.5)	0.50
Mothers free of post birth conditions	104 (29.6)	90 (27.3)	194 (28.5)	0.50
Maternal Mental Health				
EPDS > 18	67 (19.1)	53 (16.1)	120 (17.6)	0.30
EPDS > 12	96 (27.4)	66 (20.0)	162 (23.8)	0.02**
Alcohol and other substance use				
Drank alcohol since birth	35 (10.0)	38 (11.5)	73 (10.7)	0.52
AUDIT-C score > 2, since birth	30 (8.5)	28 (8.5)	58 (8.5)	0.98
Tobacco use	8 (2.3)	6 (1.8)	14 (2.1)	0.67
HIV and Reproductive Health Behaviour				
Tested for HIV since birth	131 (37.3)	142 (43.0)	273 (40.1)	0.12
Women living with HIV	103 (29.3)	101 (30.6)	204 (30.0)	0.72
Mother ever had a CD4 count	101 (28.8)	96 (29.1)	197 (28.9)	0.46
Receiving treatment for HIV	48 (13.7)	50 (15.2)	98 (14.4)	0.86
Participate in PMTCT programme	78 (22.2)	78 (23.6)	156 (22.9)	0.92
Social Support				
Have applied for child support grant (CSG)	224 (63.8)	206 (62.4)	430 (63.1)	0.71
Receiving child support grant (CSG)	142 (40.5)	129 (39.1)	271 (39.8)	0.87

*p<0.1 **p<0.05 ***p<0.01

Over 70% of mothers experienced post birth conditions¹⁷. Of the total sample, 22.9% screened positive for possible depressive symptoms (scored above the threshold of 12) on the EPDS.

Eighteen percent screened positive for significant depressive symptoms (scored above the threshold

¹⁷ Post birth conditions included heavy vaginal bleeding, malodorous discharge, fever, persistent cough, and breast infection.

of 18) on the EPDS. A significant difference between intervention and control groups was found for mothers who scored above 12. However, no significant differences between the intervention and control groups were found for mothers who scored above the higher cut-off of 18.

In terms of alcohol use, 10.7% of mothers had used alcohol since birth and of these 8.5% exhibited risky drinking behaviour¹⁸ according to their scores on AUDIT-C. Alcohol use and tobacco use had decreased since the baseline assessment.

With regards to reproductive health behaviour, 40.1% of mothers had been tested for HIV since birth and the frequency of women living with HIV had increased to 30.0%. Of the total sample only 28.9% of mothers have ever had a CD4 count and of those already living with HIV only 14.4% were receiving treatment. With regards to financial support, 63.1% of mothers had applied for the Child Support Grant (CSG) but only 39.8% were currently receiving this grant.

In conclusion, mothers in the intervention and control groups were similar on most characteristics; except for the outcome-related variable indicating possible depression (EPDS scores above the threshold of 12) with a higher number of mothers in the intervention group scoring above the threshold of 12. No other variables yielded a significant difference between groups.

4.1.2.2 Six-month sample characteristics of infants

Infant six-month characteristics are presented in Table 3.

¹⁸ Risky drinking behaviour is defined as all scores above two on the AUDIT-C.

Table 3

Six-month characteristics of infants (N= 681) grouped by intervention condition

Intervention group (INTV, N=351) vs. Control group (CONT, N=330)

Characteristic	INTV (N=351) n (%)	CONT (N=330) n (%)	Total (N= 681) n (%)	p-value
Gender				
Male	163 (46.4)	174 (52.7)	337 (49.5)	0.10
Female	188 (53.6)	156 (47.3)	344 (50.5)	0.10
Feeding method				
Only breastfeeding	38 (10.8)	12 (3.6)	50 (7.3)	<0.01***
Only formula feeding	65 (18.5)	43 (13.0)	108 (15.9)	0.05**
Mixed feeding	248 (70.7)	275 (83.3)	523 (76.8)	<0.01***
Ever breastfed	193 (55.0)	210 (63.6)	403 (59.2)	<0.01***
Currently breastfeeding	172 (49.0)	150 (45.5)	322 (47.3)	0.51
Baby is HIV positive	2 (0.6)	3 (0.9)	5 (0.7)	0.91
Receiving treatment for HIV	2 (0.6)	3 (0.9)	5 (0.7)	0.60
Nutritional status*				
Weight-for-age z-score > -2	344 (98.0)	321 (99.1)	665 (97.7)	0.90
Height-for-age z-score > -2	317 (90.3)	279 (84.5)	596 (87.5)	0.04**
Weight-for-length z-score > -2	339 (96.6)	324 (98.2)	663 (97.4)	0.04**
Head-circumference-for-age z-score > -2	345 (98.3)	317 (96.1)	662 (97.2)	0.25

*p<0.1 **p<0.05 ***p<0.01

During the first six-months the majority of mothers made use of mixed feeding methods. Only 7.3% had exclusively breastfed for the whole period. Almost 60% had breastfed their children at least once during this time and 47.3% of women were currently breastfeeding.

There was little evidence of moderate or severe under-nutrition with 97.7% of infants scoring above -2 standard deviations (SD) with regards to weight-for-age; 87.5% scored above -2 SD with regards to height-for-age; 97.4% scored above -2 SD with regards to weight-for-length; and 97.2% scored above -2 SD with regards to head-circumference-for-age.

Significant variance between groups was found with regards to the variables ‘only breastfeeding’ (p <0.01), ‘only formula feeding’ (p < 0.05), ‘mixed feeding’ (p <0.01), ‘ever breastfed’ (p <0.01), height-for-age z-score > -2 at 6 months (p < 0.05) and weight-for-length z-score (p < 0.04). Participants from the intervention group were more prone to use a single feeding method (e.g. breastfeeding or formula feeding) compared to participants from the control group where the prevalence of mixed feeding was found to be higher. However, a higher number of participants from the control group had breastfed their infants at least once. The possible incidence

of stunting was higher in the control group as a lower number of infants had a height-for-age z-score greater than -2. No other variables yielded a significant difference between groups.

4.1.2.1 Comparison of full Philani sample and the current sub-sample

The sample in my study is a sub-sample of the larger Philani Plus sample (N=1239). To illustrate that these samples were similar, the post birth characteristics were compared. Post birth characteristics of the initial Philani Plus sample are presented alongside characteristics of the current sample in Table 4.

Table 4 Comparison of six-month characteristics of full sample (N=996) to six-month characteristics of study sample (N=681) grouped by intervention condition			
Maternal characteristic	Study sample (N= 681) n (%)	Larger sample (N= 996) n (%)	p-values
General Maternal Health			
Diagnosed with diabetes	10 (1.5)	11.(1.1)	0.33
Diagnosed with hypertension	6 (9.1)	82 (8.2)	0.30
Any post birth conditions	487 (71.5)	708 (71.1)	0.45
Mothers free of post birth conditions	194 (28.5)	288 (28.9)	0.45
Maternal Mental Health			
EPDS > 18	120 (17.6)	167 (16.8)	0.35
EPDS > 12	162 (23.8)	218 (21.9)	0.20
Alcohol and other substance use			
Drank alcohol since birth	73 (10.7)	102 (10.2)	0.41
AUDIT-C score > 2, since birth	58 (8.5)	83 (8.3)	0.48
Tobacco use	14 (2.1)	22 (2.2)	0.49
HIV and Reproductive Health Behaviour			
Tested for HIV since birth	273 (40.1)	409 (41.1)	0.31
Women living with HIV	204 (30.0)	288 (28.9)	0.30
Mother ever had a CD4 count	197 (28.9)	281 (28.2)	0.32
Receiving treatment for HIV	98 (14.4)	125 (12.6)	0.34
Participate in PMTCT programme	156 (22.9)	228 (22.9)	0.33
Social Support			
Have applied for child support grant (CSG)	430 (63.1)	617 (61.9)	0.33
Receiving child support grant (CSG)	271 (39.8)	399 (40.1)	0.32
Infant characteristics	Study sample (N= 681) n (%)	Larger sample (N= 996) n (%)	p-values
Gender			
Male	337 (49.5)	500 (50.2)	0.41
Female	344 (50.5)	496 (49.8)	0.41
Feeding method			
Only breastfeeding	50 (7.3)	72 (7.2)	0.50
Only formula feeding	108 (15.9)	155 (15.6)	0.46
Mixed feeding	523 (76.8)	769 (77.2)	0.45
Ever breastfed	403 (59.2)	605 (60.7)	0.39
Currently breastfeeding	322 (47.3)	451 (45.3)	0.30
Baby is HIV positive	5 (0.7)	6 (0.6)	0.33
Receiving treatment for HIV	5 (0.7)	6 (0.6)	0.48
Health status			
Had any vaccinations	679 (99.1)	994 (99.8)	0.54
Treated at clinic	295 (43.3)	414 (41.6)	0.25
Weight-for-age z-score > -2 at 6 months	665 (97.7)	946 (95.0)	0.37
Height-for-age z-score > -2 at 6 months	596 (87.5)	915 (91.9)	0.29
Weight-for-length z-score > -2 at 6 months	663 (97.4)	939 (94.3)	0.21
Head-circumference-for-age z-score > -2 at 6 months	662 (97.2)	946 (95.0)	0.36

*p<0.1 **p<0.05 ***p<0.01

As can be seen from Table 4, six-month characteristics of my sub-sample were highly similar to the six-month characteristics of the larger Philani(+) sample with no significant differences between any of the variables.

4.1.2.2 Analysis of variance and Multilevel modelling of six month sample characteristics

This section examined the variability in six month descriptive data between intervention and control groups via Analysis of variance and multilevel modelling. Analysis was conducted on a cluster level and for each cluster the proportion of cases was calculated. Thereafter, the mean proportions of 12 control clusters and 12 interventions clusters were compared. Results are presented in Table 5 & 6.

Table 5 Analysis of variance of six-month characteristics (N= 12)				
Maternal Variables	Mean	SD	F (df)	p-value
General Maternal Health				
Diagnosed with diabetes	0.017	0.029	0.549 (1, 22)	0.47
Diagnosed with hypertension	0.092	0.054	0.030 (1, 22)	0.86
Any post birth conditions	0.282	0.081	0.189 (1, 22)	0.67
Mothers free of post birth conditions	0.718	0.081	0.189 (1, 22)	0.67
Alcohol and other substance use				
Drank alcohol since birth	0.118	0.079	0.795 (1, 22)	0.38
Tobacco use	0.021	0.027	0.003 (1, 22)	0.96
HIV and Reproductive Health Behaviour				
Tested for HIV since birth	0.401	0.094	1.331 (1, 22)	0.26
Women living with HIV	0.294	0.110	0.486 (1, 22)	0.49
Mother ever had a CD4 count	0.281	0.113	0.130 (1, 22)	0.72
Receiving treatment for HIV	0.143	0.067	0.819 (1, 22)	0.38
Participate in PMTCT programme	0.222	0.100	0.281 (1, 22)	0.60
Social Support				
Have applied for child support grant (CSG)	0.635	0.094	0.161 (1, 22)	0.69
Receiving child support grant (CSG)	0.625	0.067	0.307 (1, 22)	0.59
Infant variables	Mean	SD	F (df)	p-value
Gender				
Male	0.498	0.132	1.377 (1, 22)	0.25
Female	0.502	0.132	1.377 (1, 22)	0.25
Feeding method				
Only breastfeeding	0.077	0.078	7.140 (1, 22)	0.01**
Only formula feeding	0.153	0.089	1.225 (1, 22)	0.28
Mixed feeding	0.769	0.115	7.887 (1, 22)	0.01**
Ever breastfed	0.595	0.124	2.359 (1, 22)	0.14
Currently breastfeeding	0.476	0.122	1.173 (1, 22)	0.29
Baby is HIV positive	0.006	0.013	0.444 (1, 22)	0.51
Receiving treatment for HIV	0.006	0.013	0.444 (1, 22)	0.51
Nutritional status*				
Weight-for-age z-score > -2	0.974	0.029	0.693 (1, 22)	0.41
Height-for-age z-score > -2	0.871	0.060	9.009 (1, 22)	<0.01***
Weight-for-length z-score > -2	0.974	0.023	2.151 (1, 22)	0.16
Head-circumference-for-age z-score > -2	0.968	0.042	1.621 (1, 22)	0.22

*p<0.1 **p<0.05 ***p<0.01

Table 6
Multilevel modelling of six-month characteristics (N= 681)

Variables	Mean	SD	F (df)	p-value
Depressive Mood (EPDS scores)	7.913	8.016	1.963 (1, 22)	0.18
Risky drinking (AUDIT-C scores)	0.604	1.972	0.172 (1, 22)	0.68

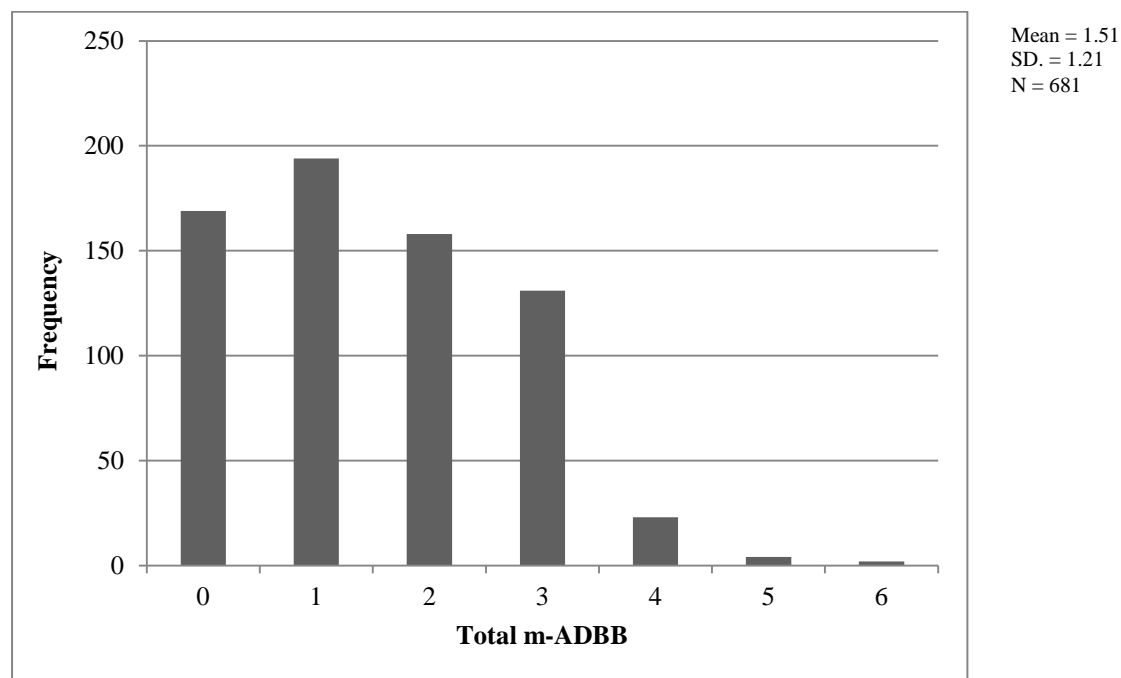
*p<0.1 **p<0.05 ***p<0.01

As can be seen from Table 5, significant variance between groups was found with regards to the variables ‘only breastfeeding’ ($p < 0.05$), ‘mixed feeding’ ($p < 0.05$), and ‘height-for-age z-score > -2 at 6 months ($p < 0.01$). Participants from the intervention group were more prone to use a single feeding method (e.g. breastfeeding) compared to participants from the control group where the prevalence of mixed feeding was found to be higher. The possible incidence of stunting was higher in the control group as a lower number of infants had a height-for-age z-score greater than -2 . This was highly similar to the results from the Chi-square analysis with the exception of the variables ‘only formula feeding’, ‘ever breastfed’ and ‘weight-for-length z-score’. No other variables yielded a significant difference between groups. The mixed model analysis also revealed that the variance of the random effect (cluster nested in treatment) was equal to zero, which meant that the intra-cluster correlation was negligible.

4.2 Prevalence of social withdrawal

The distribution of m-ADBB scores for all infants in the study is presented in Figure 3. This distribution has a mean of 1.51 and a standard deviation of 1.21.

Figure 3. Distribution of m-ADBB scores



The frequency of m-ADBB scores equal to and above two for all infants in the study is presented in Table 7. As can be seen, 46.7% of infants scored above this threshold indicating a high prevalence of social withdrawal within the total sample.

Table 7

Prevalence of m-ADBB scores ≥ 2 (N=681)

m-ADBB scores	Frequency	Percentage %	Cumulative %
0-1	363	53.3	53.3
2-6	318	46.7	100.0
Total	681	100.0	100.0

The prevalence of social withdrawal grouped by intervention condition is presented in Table 8.

Table 8 Prevalence of social withdrawal behaviour (scores ≥ 2) (N= 681) grouped by intervention condition Intervention group (INTV, N=351) vs. Control group (CONT, N=330)				
	INTV (N=351) n (%)	CONT (N=330) n (%)	Total (N= 681) n (%)	p-value
Normal infants	187 (53.3)	176 (53.3)	363 (53.3)	0.99
Withdrawn infants	164 (46.7)	154 (46.7)	318 (46.7)	
	351 (100)	330 (100)	681 (100)	

*p<0.1 **p<0.05 ***p<0.01

As can be seen in Table 8, no significant difference between intervention and the control groups was found.

4.2.1 Multilevel analysis of social withdrawal behaviour

This section examined the variability in social withdrawal behaviour between intervention and control groups. No significant difference between groups with regards to social withdrawal behaviour was found ($F(1,22) = 0.273$; $p > 0.05$). The mixed model analysis also revealed that the variance of the random effect (cluster nested in treatment) was equal to zero, which meant that the intra-cluster correlation was negligible.

4.2.2 Analysis of m-ADBB cut-off scores

The frequency of m-ADBB scores equal to and above three for all infants in the study is presented in Table 9. As can be seen, the frequency of social withdrawal decreases to 23.5% when this cut-off is used.

Table 9 Prevalence of m-ADBB scores ≥ 3 (N=681)			
m-ADBB scores	Frequency	Percentage %	Cumulative %
0-2	521	76.5	76.5
3-6	160	23.5	100.0
Total	681	100.0	100.0

Based on the threshold of three or more, the prevalence of social withdrawal grouped by intervention condition is presented in Table 10.

Table 10 Prevalence of social withdrawal behaviour(scores ≥ 3) (N= 681) grouped by intervention condition Intervention group (INTV, N=351) vs. Control group (CONT, N=330)				
	INTV (N=351) n (%)	CONT (N=330) n (%)	Total (N= 681) n (%)	p-value
Normal infants	265 (75.5)	256 (77.6)	521 (76.5)	
Withdrawn infants	86 (24.5)	74 (22.4)	160 (23.5)	
	351 (100)	330 (100)	681 (100)	0.22

*p<0.1 **p<0.05 ***p<0.01

As can be seen, no significant difference between intervention and the control groups at this threshold were found ($p=0.292$). The analysis of variance also revealed that no significant differences between groups at this threshold was found ($F(1,22) = 0.469$; $p > 0.05$) and the variance of the random effect (cluster nested in treatment) was equal to zero, which meant that the intra-cluster correlation was negligible.

4.3 Associations between social withdrawal behaviour and socio-demographic variables

The relationship between social withdrawal behaviour and socio-demographic factors were examined. Results are presented in Table 11.

Table 11

Comparisons between social withdrawal behaviour and socio-demographic factors (N=681)

	m-ADBB scores < 2 n (%)	m-ADBB scores ≥ 2 n (%)	χ^2	p-value
Education				
No schooling – Grade 6	20 (2.9)	11 (1.6)	4.76	0.09
Grade 7-Grade 12	326 (47.9)	299 (43.9)		
Diploma/Degree	17 (2.5)	8 (1.2)		
Marital status				
Single	174 (21.6)	136 (20.0)	0.36	0.55
Married/living together	216 (31.7)	182 (26.7)		
Housing type				
Formal	115 (16.9)	104 (15.3)	0.08	0.78
Informal	248 (36.4)	214 (31.4)		
Employment				
Unemployed	79 (11.6)	52 (7.6)	3.22	0.07
Employed	284 (41.7)	266 (39.1)		
Household income				
R0-R2000	183 (27.7)	171 (25.9)	0.82	0.36
R2000+	169 (25.6)	137 (20.8)		
Smoking				
During pregnancy				
No	352 (51.7)	308 (45.2)	0.01	0.93
Yes	11 (1.6)	10 (1.5)		
After birth				
No	355 (52.1)	312 (45.8)	0.09	0.77
Yes	8 (1.2)	6 (0.9)		
Alcohol use				
Prior to pregnancy discovery				
No	269 (39.5)	244 (35.8)	0.63	0.43
Yes	94 (13.8)	74 (10.9)		
After pregnancy discovery				
No	327 (48.1)	291 (42.8)	0.28	0.59
Yes	35 (5.1)	27 (4.0)		
After birth				
No	322 (47.3)	286 (42.0)	0.27	0.60
Yes	41 (6.0)	32 (4.7)		
Risky drinking ¹				
Prior to pregnancy discovery				
No	291 (42.7)	264 (38.8)	0.92	0.34
Yes	72 (10.6)	54 (7.9)		
After pregnancy discovery				
No	339 (49.9)	301 (44.3)	0.31	0.58
Yes	23 (3.4)	17 (2.5)		
After birth				
No	333 (48.9)	290 (42.6)	0.06	0.80
Yes	30 (4.4)	28 (4.1)		
Mother living with HIV (N=623)				
During pregnancy				
No	255 (40.9)	196 (31.5)	3.44	0.06
Yes	83 (13.3)	89 (14.3)		
After birth				
No	260 (38.2)	217 (31.9)	0.93	0.33
Yes	103 (15.1)	101 (14.8)		
Depressed mood during pregnancy				
EPDS > 12				
No	215 (31.6)	202 (29.7)	0.30	0.58
Yes	148 (21.7)	116 (17.0)		

EPDS > 18	305 (44.8)	273 (40.1)	0.44	0.51
No	58 (8.5)	45 (6.6)		
Yes				
Depressed mood after birth				
EPDS > 12	282 (41.4)	243 (35.7)	0.62	0.43
No	81 (11.9)	75 (11.0)		
Yes				
EPDS > 18	286 (43.5)	265 (38.9)	0.38	0.54
No	67 (9.8)	53 (7.8)		
Yes				
Financial support CSG ²	88 (20.5)	71 (16.5)	0.35	0.55
No	142 (33.0)	129 (30.0)		
Yes				
Non-primipara	139 (20.4)	119 (17.5)	0.05	0.82
No	224 (32.9)	199 (29.2)		
Yes				
Feeding method for first 6 months	28 (56.0)	22 (44.0)	1.14	0.57
Only breastfeeding	62 (57.4)	46 (42.6)		
Only formula feeding	273 (52.2)	250 (47.8)		
Mixed feeding				

*p<0.1 **p<0.05 ***p<0.01

1. Risky drinking behaviour is defined as all scores above two on the AUDIT-C.
2. Child Support Grant

As can be seen, no variables were found to be significantly related to social withdrawal behaviour. As all results regarding the independent analysis of variance between groups were non-significant, no further multivariate analysis was conducted.

CHAPTER 5 - Discussion and Conclusion

5.1 Sample characteristics

Within the current study, the intervention and control groups were similar with no significant difference between groups. The socio-demographic characteristics of participants were comparable to other maternal studies conducted in similar populations from Khayelitsha (Chopra, Daviaud, Pattinson, Fonn, & Lawn, 2009; Cooper, et al., 2009; Davies, et al., 2012; Engelbrecht, Summerton, Meyer, Heunis, & Janse van Rensburg-Bonthuyzen; Hoffman, Pick, Cooper, & Myers, 1997; Malhorta, et al., 2008). Furthermore, sample characteristics were comparable to the latest South African Demographic and Health Survey (SADHS) (South African Department of Health, 2003) and the latest census data (Information and Knowledge Management Department, 2005). To a certain extent, the results of the current study suggest an improvement in the living standards of pregnant women currently living in Khayelitsha. However, it is clear that living conditions are still characterised by high levels of socio-economic hardship.

5.1.1 Baseline sample characteristics

Education levels were higher compared to the general female population of Khayelitsha. Ninety one percent of women had some or all secondary schooling compared to 75% in the general female population (Information and Knowledge Management Department, 2005). In comparison to Hoffman, Pick, Cooper and Myers (1997) and the SADHS (2003), there has been overall improvement in education statistics. This was, however, still poor compared to the education levels of high-income populations.

More than half of the sample was married or cohabiting with a partner. This figure was similar to Cooper et al (2009) (58% vs. 60%) but higher than results found in Cooper et al (1999) (58% vs. 37.4%) conducted in a similar population 15 years before. This figure was also higher in

comparison to a study conducted in a similar sample from Umlazi, Durban (58% vs. 27.7%) (Peltzer, Davids, & Njuho, 2011).

The rate of unemployment among participants was higher compared to earlier studies (80.8% vs.) (Hoffman, Pick, Cooper, & Myers, 1997; Malhorta, et al., 2008; South African Department of Health, 2003). The figure was also higher compared to female unemployment in the general population of Khayelitsha (80.8% vs. 57.6%) (Information and Knowledge Management Department, 2005). This suggests that unemployment is more prevalent among perinatal samples than in the general female population. A possible explanation might be that being pregnant makes it less likely of finding employment or in the case of a second or third pregnancy it might be due to child care responsibilities for other young children. The latter explanation is highly likely as almost two-thirds of the current sample were non-primiparous.

Compared to Cooper et al (2009), more women reported to be living in formal housing (32.2% vs. 14.6%). In comparison to other studies, there was also an increase in access to water and sanitation in the current study (Hoffman, Pick, Cooper, & Myers, 1997; Mfenyana, et al., 2006; South African Department of Health, 2003).

The prevalence of antenatal depressive symptoms was higher compared to the rates found in a systematic review of epidemiological studies in other LMIC (Pereira, et al., 2011) (38.8% vs. 20%) and high-income countries (38.8% vs. 10-15%). Furthermore, this figure was higher than the estimated prevalence of 4% to 17% found in other parts of Africa (Sawyer, Ayers, & Smith, 2010). These findings support the growing body of literature stating that women from LMIC have an increased risk for antenatal depression compared to women from high-income countries (Rochat, Tomlinson, Barnighausen, Newell, & Stein, 2011).

Prevalence of alcohol use prior to pregnancy discovery was higher compared to results from high income countries. A higher number of participants drank in the month prior to pregnancy discovery (8.5% versus 24.7%) and a higher number of women exhibited risky drinking

behaviour¹⁹ (2.7% versus 18.5%) (Substance Abuse and Mental Health Service Administration, 2013).

However, the prevalence of alcohol use and risky drinking behaviour decreased after participants became aware of their pregnancy. The prevalence of alcohol use was similar to prevalence rates from high income countries. However, a higher number of women still engaged in risky drinking behaviour. The decrease might suggest that women from this sample were less likely to drink and engage in risky drinking behaviour after they became aware of their pregnancy. Nevertheless in many cases women continue to use alcohol after becoming aware they are pregnant when they suffer from high levels of depression (O'Connor & Whaley, 2006). This may be the case in the current study where depression levels were high.

The prevalence of smoking at baseline was comparable to findings from the SAHDS (2003). This low prevalence of smoking within a predominantly African community is in line with the SADHS results and supports the finding that smoking amongst African female communities is significantly lower compared to other populations.

With regards to HIV, a high percentage (92.1%) of the total sample had been tested for HIV at the baseline assessment. This figure illustrates that it is becoming more acceptable for women in Khayelitsha to be tested for HIV/AIDS in antenatal clinics (Med Sans Frontier, 2011) as the testing acceptance rate has been approximately 100% since 2003 (Garone, et al., 2011). The launch of rapid HIV testing kits, infant PCR testing, community-based testing locations, and wide-ranging HIV counselling and testing (HCT) campaigns can explain the increase in the frequency of people being tested for HIV. Furthermore, the employment of paraprofessional counsellors to perform HCT could also contribute to the increase in testing.

At baseline, the prevalence of HIV/AIDS was lower compared to the national prevalence of the general population of antenatal women (25.3% vs. 30.2%). This decrease is supported by other

¹⁹ Risky drinking behaviour is defined as all scores above two on the AUDIT-C.

reports of decreased HIV/AIDS prevalence found in antenatal samples in Khayelitsha (Med Sans Frontier, 2011). This can be explained by the significant increase in testing and prevention strategies (Med Sans Frontier, 2011). Furthermore, evidence suggests that treatment serves as a significant prevention tool. The first ARV pilot programme was implemented in Khayelitsha and persons living with HIV/AIDS have been receiving ARV treatment since 2001 (Jury & Nattrass, 2013). Furthermore, the Western Cape was the first to introduce a province-wide Prevention of mother-to-child transmission (PMTCT) programme in 2002 and to provide pregnant mothers with both single-dose NVP and AZT in 2004 while the national PMTCT programme continued to provide single-dose NVP only (Stinson, et al., 2014). These factors may contribute to the decreased prevalence of HIV/AIDS at baseline.

5.1.2 Six month sample characteristics

At the six-month assessment, the prevalence of postnatal depressive symptoms was comparable to a number of other studies conducted in similar samples from Khayelitsha. The prevalence of clinically significant depressive symptoms reported by these studies ranged from 16-35% (Cooper, et al., 2002; Cooper, et al., 2009; Cooper, et al., 1999; Tomlinson, Swartz, Cooper, & Molteno, 2004). This lends support to the growing literature indicating that rates of depression tend to be higher in contexts characterised by high levels of poverty and social adversity (Hartley, 2010; Honikman, van Heyningen, Field, Baron, & Tomlinson, 2012).

The prevalence of alcohol use and the prevalence of risky drinking behaviour were higher compared to baseline figures. The prevalence of alcohol use was similar to findings from a national population-based survey that assessed the prevalence of alcohol use among the general population of African women (10.7 versus 10.0%) (Peltzer, Davids, & Njuho, 2011). However, the prevalence of risky drinking behaviour was higher compared to the general African female population (Peltzer, Davids, & Njuho, 2011).

At the six-month assessment, the overall use of tobacco had decreased to 2.1%. This decrease in smoking prevalence indicated that at least a third of women had stopped smoking between the baseline and six-month assessment. This is supported by findings which indicate that most pregnant women stop smoking or at least reduce their smoking during pregnancy (Petersen, 2011; Steyn, Yach, Stander, & Fourie, 1997).

Since birth, 40.1% of women had been tested for HIV. However, this figure does not distinguish between participants who were tested for the first time and those who were retested. The prevalence of HIV among participants had increased to 30% from baseline figures. This prevalence was similar to the 30.2% found among the general population of antenatal women in South Africa (South Africa Department of Health, 2011).

In summary, the living conditions of the study sample were characterised by high levels of socio-economical adversity, depression, alcohol misuse and HIV.

5.2 Effectiveness of the Philani Plus home-visiting intervention programme

The main aim of the present study was to assess the effectiveness of the Philani Plus home-visiting intervention programme by examining whether infants in the intervention condition displayed less social withdrawal behaviour compared to infants in the control condition. Social withdrawal behaviour was measured because evidence suggests that it is ideal target behaviour to identify when assessing the effectiveness of interventions or treatment approaches (Guedeney, Matthey, & Puura, 2013).

Findings indicate that no significant difference between the intervention group and the control group with regards to infant social withdrawal behaviour ($p=0.525$) was found. A possible explanation could be linked to the specific cut-off scores indicating significant social withdrawal behaviour. To investigate this, the cut-off score of 3 and above was also analysed. However, this yielded no significant differences between groups.

Another possible explanation for the similarity between groups could be that the current intervention did not focus on improving the mother-infant relationship specifically. The present intervention was designed to target maternal behaviours regarding nutrition, alcohol use, TB and HIV. Improving the mother-infant relationship was only a minor focus point and parenting behaviours such as sensitivity and responsiveness were not targeted specifically.

Interventions implemented in high-income countries that focussed specifically on improving difficulties in parenting behaviours have had success in improving mother-infant interactions and infant attachment (Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2003). However, few studies in LMIC have focussed specifically on improving the mother-infant interaction (Cooper, et al., 2002; Cooper, et al., 2009). One such study, a pilot study conducted in Khayelitsha, where resident mothers from the community were trained to provide support to mothers with infants, yielded encouraging results of improving the mothers' ability to interact sensitively with their infants (Cooper, et al., 2002).

Another study conducted in the community of Khayelitsha designed an intervention which specifically focussed on improving the mother-infant relationship (Cooper, et al., 2009). Similar to Cooper et al (2002), local women from the community were selected to deliver the intervention. With no formal qualifications except study training in basic parenting, counselling and the specific mother-infant intervention, these women delivered 16 intensive at-home sessions that focused solely on improving the mother-infant interaction by promoting sensitive and responsive parenting and secure infant attachment. In addition, essential to effective CHW programmes, the women had a fixed task, were provided with adequate support and supervision, and had fervent community support (Cooper, et al., 2009).

Within this study the intervention significantly benefited the mother infant relationship as the intervention group was found to be significantly more sensitive and less intrusive when interacting with their infants compared to the control group who received no specific support (Cooper, et al.,

2009). The extent of improvement in parenting was similar to the improvement described in supportive interventions that focussed on sensitivity in high-income countries (Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2003).

Therefore, the similarity between the intervention and control groups in terms of social withdrawal behaviour in the current study could be due to the fact that the intervention did not exclusively or specifically focus on improving the mother-infant relationship or related parenting behaviours (e.g. maternal sensitivity and responsiveness). This conclusion is supported by findings of two recent reviews of early intervention studies which demonstrated that interventions had no impact on the quality of the mother-infant relationship if it did not target mother-infant interactions specifically or exclusively (Murray, Halligan, & Cooper, 2010; Nylén, Moran, Franklin, & O'Hara, 2006).

5.3 Prevalence of social withdrawal and usability of the m-ADBB

In the present study, 46.7% of infants were socially withdrawn. This figure was higher compared to the majority of ADBB studies as well as in comparison to Hartley et al (2010). Only one other ADBB study had found a marginally higher prevalence of social withdrawal behaviour in comparison to the present study (Re, Dean, Menahem, & Paul, 2010).

The high prevalence found in the current study is in line with the growing evidence indicating that the prevalence of social withdrawal behaviour tends to be higher in high-risk samples (13-48%) (Dollberg, Feldman, Keren, & Guedeney, 2006; Guedeney, Foucalt, Bougen, Larroque, & Mentre, 2008; Guedeney, Marchand-Martin, Cote, & Larroque, 2012; Matthey, Guedeney, Starakis, & Barnett, 2005; Milne, Greenway, Guedeney, & Larroque, 2009; Molteno, Jacobson, Colin Carter, Dodge, & Jacobson, 2013; Re, Dean, Menahem, & Paul, 2010) compared to samples with lower risk (3%-11.6%) (Dollberg, Feldman, Keren, & Guedeney, 2006; Mantymaa, et al., 2008; Puura, et al., 2010).

Therefore, it is possible that the high prevalence of social withdrawal truly represents the level of social withdrawal within the study sample. It could be argued that since the intervention did not target or improve the mother-infant interaction specifically, the impact thereof on infant social withdrawal behaviour was minimal.

However, the m-ADBB has not been validated in different cultures or in conjunction with other independent psychiatric diagnoses or infant interactional behaviour scales. Therefore, the results may not be a true representation of the actual level of social withdrawal within the current population. To investigate this, the cut-off score of 3 and above was also analysed. With this cut-off score the prevalence of social withdrawal decreased to 23.5%. This figure was lower in comparison to Hartley et al (2010). However, Hartley et al (2010) did not use the cut-off score of 3 and above. Instead the m-ADBB was used as a categorical measure where any one item indicated possible problematic social withdrawal and any two items indicated a definite problem as recommended by Matthey et al (2005). This could explain the lower prevalence found in the current study.

The high prevalence of social withdrawal may also be a cultural artefact²⁰ of the current sample. To date no studies using the ADBB or the m-ADBB have directly investigated whether cultural differences in infants' social behaviour exist (Matthey, Crncec, Hales, & Guedeney, 2013). Therefore, infants of the current sample displaying social withdrawal behaviour based on the m-ADBB could also be displaying social behaviour that is appropriate within the cultural context. For example, it could be socially appropriate behaviour for infants of an African population to use minimal facial expressions and vocalisations in comparison to other populations.

Another possible explanation could be that decreasing the number of response categories on the m-ADBB from the original format of the ADBB has decreased the discriminating power of the measure. The issue concerning the optimal number of response categories in rating scales remains unresolved. However, for decades most rating scales and other similar measures made use of five or

²⁰ Include the behavioural manifestations of culture (Davies, Nutley, & Mannion, 2009).

seven response categories (Bearden et al, 1993; Bloom, Fisher & Orme, 2003; Peter, 1979; Shaw & Wright 1967). An overview of the literature demonstrated that different studies use different criteria (e.g. reliability, validity, discriminating power) to judge the performance of rating scales with different response categories (Preston & Colman, 2000). Nevertheless, based on the indices of reliability, validity and discriminating power, rating scales with the fewest response categories performed the worst (Preston & Colman, 2000).

As the m-ADBB only has three response categories compared to five response categories of the ADBB, it is possible that the scale produced scores with relatively minor variance. However, it should be kept in mind that scales with few response categories tend to generate scores with comparatively little variance, limiting the magnitude of correlations with other scales (e.g., Chang, 1994; Martin, 1973, 1978; Nunnally, 1970). This restriction-of-range effect tends to depress the convergent validity of scores from scales with few response categories, but it is worth remembering that this arises ultimately from the inherent bluntness of such scales, which also limits their usefulness for many practical psychometric purposes (Preston & Colman, 2000).

Despite these factors, the high prevalence of social withdrawal behaviour is still a cause for concern as it indicates an increased risk for suboptimal development (Braarud, et al., 2013). Other possible explanations could also be linked to the stability of the m-ADBB. The following section will discuss this matter in more depth.

5.4 Associations between social withdrawal behaviour and socio-demographic variables

A secondary aim of the study was to investigate potential risk factors for social withdrawal behaviour in the current population. Analysis investigated whether social withdrawal behaviour was significantly related to socio-demographic variables. No variables were found to be significantly related to social withdrawal behaviour. No other studies that have used the m-ADBB have investigated associations between social withdrawal behaviour and all the socio-demographic variables examined in the current study. However, Hartley et al (2010) examined associations

between social withdrawal behaviour, maternal postpartum depression and infant gender. Similar to the findings of the current study, no significant associations was found. A potential explanation for this could be that when social and economic hardship is endemic to the whole population, research is unable to usefully examine these variables (Cooper, et al., 1999).

5.5 Strengths and limitations

Regardless of the challenging conditions associated with LMIC and peri-urban areas, the current study was nevertheless able to implement a randomised controlled trial which adhered to complex trial procedures. In addition, the study succeeded in training unqualified community workers to deliver the intervention to an elevated standard.

Furthermore, the current study is only the second study to use the m-ADBB to measure social withdrawal behaviour both globally and within a South African context. This measure was effective in screening for social withdrawal behaviour in a South African peri-urban sample and results from this study support the effective use of the m-ADBB in screening for social withdrawal behaviour, especially in high risk samples. Also, the m-ADBB was a cost effective means to screen for social withdrawal behaviour in large samples where financial resources are limited because it is fast, inexpensive and easy to use. This makes it very valuable in the South African context where an increasing need for cost-effective measures exists and healthcare sources are severely limited.

However, several limitations need to be considered. Firstly, because the m-ADBB is only a screening tool, it does not provide information regarding the cause of the social withdrawal behaviour.

Secondly, social withdrawal was assessed only at a single time point. Research has indicated that many infants displaying signs of withdrawal on an initial assessment did not display this behaviour when reassessed at a later point in time or towards their mother (Matthey, Guedeney, Starakis, & Barnett, 2005). Therefore, the stability of the infant's social withdrawal behaviour over

time should be taken into account when assessing social withdrawal behaviour to determine whether the behaviour was temporary or persistent.

An unpublished study conducted by two of the authors of the m-ADBB examined the stability of infants' social withdrawal behaviour over time and with different people (Hales, Matthey, & Crnec, 2010; Matthey, Crnec, Hales, & Guedeney, 2013). To determine the stability of infants' behaviour over time, infants were assessed at two different time points. Both assessments were video-recorded and physical examinations conducted by a nurse in the presence of the mother. The second assessment was conducted between two to five weeks after the first assessment and included an additional 10-min recording of the interaction between mother and infant. At the first assessment, 11 of 33 infants were found to be socially withdrawn. However the prevalence of social withdrawal had decreased at the second assessment as only 4 infants were still withdrawn at this time point. In addition, only one infant withdrawn at the second assessment also displayed social withdrawal behaviour with their mother. It is important to note that this mother was assessed as being less socially engaging with her infant (Hales, Matthey, & Crnec, 2010; Matthey, Crnec, Hales, & Guedeney, 2013).

These results underline the importance of not over-pathologising infants as socially withdrawn when they were only assessed at a single point in time (Hales, Matthey, & Crnec, 2010; Matthey, Crnec, Hales, & Guedeney, 2013). As this behaviour was only measured at a single time point, these findings offer a possible explanation for the high prevalence of social withdrawal behaviour in the current study as it is possible that infants were overpathologised as being socially withdrawn. This is in line with previous studies that have shown that the rate of social withdrawal behaviour assessed with the ADDBB decreases when assessed at more than one assessment (Mantymaa, et al., 2008; Matthey, Guedeney, Starakis, & Barnett, 2005; Milne, Greenway, Guedeney, & Larroque, 2009; Puura, et al., 2010).

These findings indicate that infants initially assessed as socially withdrawn with a data collector should be reassessed approximately two weeks after the initial assessment to establish the stability of the behaviour across time (Matthey, Crncec, Hales, & Guedeney, 2013). These limitations may contribute to the high levels of social withdrawal behaviour as well as the similarity between the intervention and control groups.

5.6 Directions and future research

The findings of the current study raise several questions and considerations for future research. Firstly, further research examining infant social withdrawal behaviour and mother-infant interactions in the South African context is needed. This is particularly true with regards to the usability of the m-ADBB which is still awaiting further validation in different populations and different countries. Furthermore, studies using measures like the ADDB and the m-ADBB have not directly investigated whether cultural differences in infants' social behaviour exist. If cultural differences exist, it is evident that findings of studies using the m-ADBB should consider this (Matthey, Crncec, Hales, & Guedeney, 2013). Examining the existence of possible cultural differences in infants' social behaviour could be especially important in culturally diverse countries such as South Africa.

Secondly, screening for social withdrawal behaviour in health care settings in South Africa will allow for the early identification of at-risk infants (Guedeney, et al., 2011). Therefore, more research is needed to support screening for infant social withdrawal in clinics and other health care settings. Furthermore, because the m-ADBB is a brief, inexpensive, easy-to-use screening tool that requires minimal training, impending research should examine the usability of the m-ADBB in community-health care settings and whether the m-ADBB could be used by CHWs to successfully screen for social withdrawal behaviour.

Thirdly, more research is required to further identify potential causes leading to social withdrawal in early infancy and to isolate infants with special needs and in specific risk situations

(Guedeney, Matthey, & Puura, 2013). Establishing clear links between potential causes and infant social withdrawal behaviour will support the implementation of effective interventions.

Future research could also expand the intervention protocol to focus on improving the mother-infant interaction specifically to determine the impact thereof on infant social withdrawal behaviour. It is important that these studies ensure that infants are evaluated with the m-ADBB on more than one occasion.

Another important consideration that should be explored in rater-observation scales like the m-ADBB is the degree of ‘drifting’ of trained raters across time in their categorisation of behaviour. This will inform whether intermittent, continuous training is needed to ensure high inter-rater reliability (Matthey, Crnec, Hales, & Guedeney, 2013). Finally, future research could also examine whether in-vivo ratings using the m-ADBB concurs with ratings made from recordings (Matthey, Crnec, Hales, & Guedeney, 2013).

5.7 Summary and conclusion

The prevalence of social withdrawal in peri-urban settings surrounding Cape Town is high. However, this study did not yield any significant differences between intervention and control groups in terms of infant social withdrawal behaviour. Similarly, no significant differences between infants of mothers of high risk groups receiving the intervention and infants of mothers in high risk groups receiving standard care (control condition) were found. From these findings it is clear that the intervention was not successful in reducing social withdrawal behaviour since no significant differences between intervention and control groups were found.

Nevertheless, the high prevalence of social withdrawal behaviour does demonstrate a cause for concern as it indicates an increased risk for suboptimal development (Braarud, et al., 2013). However, most importantly, this high prevalence suggests that within a screening context data collectors should not overpathologise infants as withdrawn based on a single assessment (Hartley M.

, 2010). Furthermore, because infant social withdrawal behaviour is reasonably easy to identify with the m-ADBB, it could serve as a significant distress signal for infant health in a screening context.

Further research regarding social withdrawal behaviour and the mother-infant interaction in the South African context is needed. Impending studies should also investigate the casual mechanisms associated with the development of infant social withdrawal behaviour. Furthermore, validation studies of the m-ADBB should be conducted to establish the usability thereof in different contexts, especially in LMIC settings similar to South African settings

References

- Academy of Science of South Africa. (2007). *HIV/AIDS, TB and nutrition: Scientific inquiry into the nutritional influences on human immunity with special reference to HIV infection and active TB in South Africa*. Pretoria, South Africa: Academy of Science of South Africa.
- Augustyn, M., Frank, D., & Zuckermann, B. (2009). Infancy and toddler years. In W. Carey, A. Crocker, W. Coleman, E. Elias, & H. Feldman, *Developmental-Behavioural Pediatrics* (4th ed., pp. 27-38). Philadelphia: W.B Saunders. Retrieved from <http://dx.doi.org.ez.un.ac.za/10.1016/B978-3370-7.00003-1>
- Bakermans-Kranenburg, M., van IJzendoorn, M., & Juffer, F. (2003). Less is more: Meta-analysis of sensitivity and attachment interventions in early childhood. *Psychological Bulletin*, 129(2), 195-215. doi:10.1037/0033-2909.129.2.195
- Berk, L. (1994). *Infants and Children. Prenatal through Middle Childhood*. Boston, Massachusetts: Allan & Bacon.
- Black, M., & Hurley, K. (2010). Infant Nutrition. In J. Bremner, & T. Wachs, *The Wiley-Blackwell Handbook of Infant Development: Vol 2. Applied and policy issues* (2nd ed., pp. 32-61). Chichester, West Sussex: Wiley-Blackwell.
- Bornstein, M., & Tamis-Lemonda, C. (2010). Parent-infant interaction. In J. Bremner, & T. Wachs, *The Wiley-Blackwell Handbook of Infant Development: Vol 1. Basic research* (2nd ed., pp. 458-482). Chichester, West Sussex: Wiley-Blackwell.
- Braarud, H. C., Slinning, K., Moe, V., Smith, L., Vannebo, U. T., & Guedeney, .: H. (2013). Relation between social withdrawal symptoms in full-term and premature infants and depressive symptoms in mothers: A longitudinal study. *Infant Mental Health Journal*, 34(6), 532-541. doi:10.1002/imhj.21414
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge: Harvard University Press.
- Bronfenbrenner, U. (1993). Ecological models of human development. In M. Gauvain, & M. Cole, *Readings on the development of children* (2nd ed., pp. 37-43). New York: Freeman.
- Children Count. (2010). *Demography*. Retrieved from Children Count: Statistics on children in South Africa: <http://www.childrencount.ci.org.za/domain.php?id=1>
- Cho, J., Holditch-Davis, D., & Miles, M. (2008). Effects of maternal depressive symptoms and infant gender on the interactions between mothers and their medically at-risk infants. *Journal of Obstetric, Gynecologic and Neonatal Nursing*, 37(1), 58-70. doi:doi:10.1111/j.1552-6909.2007.00206.x

- Chopra, M., Daviaud, E., Pattinson, R., Fonn, S., & Lawn, J. (2009). Saving the lives of South Africa's mothers, babies, and children: Can the health system deliver. *Lancet*, 374(9692), 835-846. doi:10.1016/S0140-6736(09)61123-5
- City of Cape Town official website. (2010). *2001 Census*. Retrieved from <http://www.capetown.gov.za/en/stats/2001census/Pages/default.aspx>
- City of Cape Town official website. (2011). *Economic statistics*. Retrieved from <http://www.capetown.gov.za/en/ehd/Pages/EconomicStatistics.aspx>
- City of Cape Town official website. (2011). *Local government services*. Retrieved from <http://www.capetown.gov.za/en/Services/Pages/default.aspx>
- Cohen, J. (1988). *Statistical power analysis for the behavioural sciences*. Mahwah, New Jersey: Lawrence Erlbaum.
- Collins, W., Maccoby, E., Steinberg, L., Hetherington, E., & Bornstein, M. (2000). Contemporary research on parenting: the case for nature vs. nurture. *American Psychologist*, 55(2), 218-232. doi:10.1037/0003-066X.55.2.218
- Cooper, P., Landman, M., Tomlinson, M., Molteno, C., Swartz, L., & Murray, L. (2002). Impact of a mother-infant intervention in an indigent peri-urban South African context: Pilot study. *British Journal of Psychiatry*, 180, 76-81.
- Cooper, P., Tomlinson, M., Swartz, L., Landman, M., Molteno, C., Stein, A., . . . Murray, L. (2009). Improving quality of mother-infant relationship and infant attachment in socioeconomically deprived community in South Africa: Randomised controlled trial. *British Medical Journal*, 338: b974. doi:10.1136/bmj.b974
- Cooper, P., Tomlinson, M., Swartz, L., Woolgar, M., Murray, L., & Molteno, C. (1999). Post-partum depression and the mother-infant relationship in a South African peri-urban settlement. *British Journal of Psychiatry*, 175, 554-558. doi:10.1192/bjp.175.6.554
- Cox, J., Holden, J., & Sagovsky, R. (1987). Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry*, 150, 782-786.
- Cox, J., Holden, J., & Sagovsky, R. (1987). Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry*, 150, 782-786. doi:10.1192/bjp.150.6.782
- Davies, H., Nutley, S., & Mannion, R. (2009). Organisational culture and quality of health care. *Quality in Health Care*, 9, 111-119.
- Davies, H., Visser, J., Tomlinson, M., Rotheram-Borus, M., LeRoux, I., & Gissane, C. (2012). An investigation into the influence of socioeconomic variables on gestational body mass

- index in pregnant women living in a peri-urban settlement, South Africa. *Maternal and Child Health Journal*, 16(8), 1732-1741. doi:10.1007/s10995-011-0869-7
- Dawson, D., Grant, B., & Stinson, F. (2005). The AUDIT-C: screening for alcohol use disorders and risk drinking in the presence of other psychiatric disorders. *Comprehensive Psychiatry*, 46, 405-416. doi:10.1016/j.comppsy.2005.01.006
- DeRegnier, R., & Desai, S. (2010). Fetal Development. In J. Bremner, & T. Wachs, *The Wiley-Blackwell Handbook of Infant Development: Vol 2. Applied and policy issues* (2nd ed., pp. 9-32). Chichester, West Sussex: Wiley-Blackwell.
- Dollberg, D., Feldman, R., Keren, M., & Guedeney, A. (2006). Sustained withdrawal behaviour in clinic-referred and nonreferred infants. *Infant Mental Health Journal*, 27(3), 293-309. doi:10.1002/imhj.20093
- Dollberg, D., Feldman, R., Keren, M., & Guedeney, A. (2006). Sustained withdrawal behaviour in clinic-referred and nonreferred infants. *Infant Mental Health Journal*, 27(3), 293-309. doi:10.1002/imhj.20093
- Engelbrecht, M., Summerton, J., Meyer, K., Heunis, C., & Janse van Rensburg-Bonthuyzen, P. (n.d.). Delivery in the Khayelitsha Urban Renewal Site: Western Cape mapping gaps in the IMCI women's health, TB, STI, HIV/AIDS and EDL programmes.
- Engle, P. (2010). Infant development in the developing world. In J. Bremner, & T. Wachs, *The Wiley-Blackwell Handbook of Infant Development: Vol 2. Applied policy* (2nd ed., pp. 140-164). Chichester, West Sussex: Wiley-Blackwell.
- Facuri-Lopez, S., Ricas, J., & Cotta Mancini, M. (2008). Evaluation of the psychometric properties of the Alarm Distress Baby Scale among 122 Brazilian children. *Infant Mental Health Journal*, 29(2), 153-173. doi:10.1002/imhj.20169
- Field, T. (1984). Early interactions between infants and their postpartum depressed mothers. *Infant Behaviour and Development*, 7(4), 517-522. doi:10.1016/S0163-6383(84)80010-7
- Garone, D., Hilderbrand, K., Boule, A., Coetzee, D., Goemaere, E., Van Cutsem, G., & Besada, D. (2011). Khayelitsha 2001-2011: 10 years of primary care HIV and TB programmes. *South African Journal of HIV Medicine*, 12(4), 33-39.
- Gavin, N. I., Gaynes, B., Lohr, K., Meltzer-Brody, S., Gartlehner, G., & Swinson, T. (2005). Perinatal depression: a systematic review of prevalence and incidence. *Obstetrics & Gynecology*, 106(5, Part 1), 1071-1083. doi:10.1097/01.AOG.0000183597.31630.db
- Gomby, D., Culcross, P., & Berhman, R. (1999). Home-visiting: recent programme evaluations - analysis and recommendation. *The Future of Children*, 9(1), 4-26. Retrieved from <http://www.jstor.org/stable/1602719>

- Gorksi, P. (2009). Pregnancy, birth, and the first days of life. In W. Carey, A. Crocker, W. Coleman, E. Elias, & H. Feldman, *Developmental-Behavioural Pediatrics (4th Ed)* (pp. 13-23). Philadelphia: Saunders.
- Greenberg, M., Speltz, M., Deklen, M., & Jones, K. (2001). Correlates of clinic referral for early conduct problems: Variable- and person-orientated approaches. *Development and Psychopathology*, 13(2), 255-276.
- Guedeney, A. (2000). Infant depression and withdrawal: Clinical assessment. In J. Osofky, & H. Fitzgerald, *WAIM Handbook of Infant Mental Health: Vol 4: Infant mental health in groups at high risk* (pp. 456-484). New York: Wiley.
- Guedeney, A. (2007). Withdrawal behaviour and depression in infancy. *Infant mental health journal*, 28(4), 393-40. DOI:10.1002/imhj.20143.
- Guedeney, A. (2007). Withdrawal behaviour and depression in infancy. *Infant Mental Health Journal*, 28(4), 393-40. doi:10.1002/imhj.20143
- Guedeney, A., & Fermanian, J. (2001). A validity and reliability study of assessment and screening for sustained withdrawal reaction in infancy: the Alarm Distress Baby Scale. *Infant Mntal Health Journal*, 22(5), 559-575.
- Guedeney, A., Foucalt, C., Bougen, E., Larroque, B., & Mentre, F. (2008). Screening for risk factors of relational withdrawal behaviour in infants aged 14-18 months. *European Psychiatry*, 23(2), 150-155. doi:10.1016/j.eurpy.2007.07.008
- Guedeney, A., Guedeney, N., Tereno, S., Dugravier, R., Greacen, T., Welniarz, B., & Saias, T. (2011). The time of the infant, parent-infant desynchronisation attachment disorganisation, or how long does it take for a preventive action to be effective? *Working Papers no. 2011-026*. Human Capital and Economic Opportunity Working Group.
- Guedeney, A., Marchand-Martin, L., Cote, S., & Larroque, B. (2012). Perinatal risk factors and social withdrawal behaviour. *European Child and Adolescent Psychiatry*, 21(4), 185-191. doi:10.1007/s00787-012-0250-4
- Guedeney, A., Marchand-Martin, L., Cote, S., & Larroque, B. (2012). Perinatal risk factors and social withdrawal behaviour. *European Child and Adolescent Psychiatry*, 21(4), 185-191. doi:10.1007/s00787-012-0250-4
- Guedeney, A., Matthey, S., & Puura, K. (2013). Social withdrawal behaviour in infancy: A history of the concept and a review of published studies using the Alarm Distress Baby Scale. *Infant Mental Health Journal*, 34(6), 1-16. doi:10.1002/imhj.21412
- Guedeney, A., Wendland, J., Dugravier, R., Saias, T., Tubach, F., Weiniarz, B., . . . Pasquier, B. (2013). Impact of a randomised home-visiting trial on infant social withdrawal in the CAPEDP prevention study. *Infant Mental Health Journal*, 1-9. doi:10.1002/imhj.21413

- Halbreich, U., & Karkun, S. (2006). Cross-cultural and social diversity of prevalence of postpartum depression and depressive symptoms. *Journal of Affective Disorders*, 91(2-3), 97-111.
- Halbreich, U., & Karkun, S. (2006). Cross-cultural and social diversity of prevalence of postpartum depression and depressive symptoms. *Journal of Affective Disorders*, 91(2-3), 97-111. doi:10.1016/j.jad.2005.12.051
- Hales, A., Matthey, S., & Crnec, R. (2010). Investigation of the stability of the m-ADDB. Unpublished study.
- Hartley, C., Pretorius, K., Mohamed, A., Laughton, B., Madhi, S., Cotton, M., . . . Seedat, S. (2010). Maternal posartum depression and infant social withdrawal among human immunodeficiency virus (HIV) positive mother-infant dyads. *Psychology, Health and Medicine*, 15(3), 278-287. doi:10.1080/13548501003615258
- Hartley, C., Pretorius, K., Mohamed, A., Laughton, B., Madhi, S., Cotton, M., . . . Seedat, S. (2010). Maternal posartum depression and infant social withdrawal among human immunodeficiency virus (HIV) positive mother-infant dyads. *Psychology, Health and Medicine*, 15(3), 278-287. doi:10.1080/13548501003615258
- Hartley, M. (2010). *Depressed mood in pregnancy: Prevalence and social factors in Cape Town peri-urban settlements*. Stellenbosch University, Dissertation. Thesis (M.Psychology).
- Hedeker, D., Gibbons, R., & Flay, B. (1994). Random-effects regression models for clustered data with an example from smoking prevention research. *Journal of Consulting and Clinical Psychology*, 62(4), 757-765.
- Hedeker, D., Gibbons, R., & Waternaux, C. (1999). Sample size estimation for longitudinal designs with attrition: Comparing time-related contrasts between two groups. *Journal of Educational and Behavioural Statistics*, 24, 70-93. doi:10.3102/10769986024001070
- Henretig, F. (2009). Toxins. In W. Carey, A. Crocker, W. Coleman, E. Elias, & H. Feldman, *Developmental-Behavioural Pediatrics* (4th ed., pp. 314-324). Philadelphia: W.B. Saunders.
- Hoffman, M., Pick, W., Cooper, D., & Myers, J. (1997). Women's health status and use of health services in a rapidly growing peri-urban area of South Africa. *Social Sciences & Medicine*, 45(1), 149-157.
- Information and Knowledge Management Department. (2005). *A population profile of Khayelitsha: Socio-economic information from 2001 Census*. Retrieved September 19, 2013, from http://web.capetown.gov.za/eDocuments/A_Population_Profile_of_Khayelitsha_1052006142120_359.pdf

- Johnson, M. (2010). Functional brain development during infancy. In J. Bremner, & T. Wachs, *The Wiley-Blackwell Handbook of Infant Development (2nd ed). Volume 1. Basic Research* (pp. 295-313). West Sussex: Blackwell Publishing Ltd.
- Jury, C., & Nattrass, N. (2013). Parental presence within households and the impact of antiretroviral therapy in Khayelitsha, Cape Town. *South African Journal of HIV Medicine*, 14(2), 70-74. doi:10.7196/SAJHIVMED.921
- Kalichman, S., Simbayi, L., Vermaak, R., Cain, D., Smith, G., Mthebu, J., & Jooste, S. (2008). Randomised trial of a community-based alcohol-related HIV risk-reduction intervention for men and women in Cape Town, South Africa. *Annals of Behavioural Medicine*, 36, 270-279. doi:doi:10.1007/s12160-008-9067-2
- Kelly, R., Russo, J., Holt, V., Danielsen, B., Zatzick, D., Walker, E., & Katon, W. (2002). Psychiatric and substance use disorders as risk factors for low birth weight and preterm delivery. *Obstetrics & Gynecology*, 100(2), 297-304. doi:10.1016/S0029-7844(02)02014-8
- Kodituwakku, P., Kalberg, W., & May, P. (2001). The effects of prenatal alcohol exposure on executive functioning. *Alcohol Research and Health*, 25(3), 25, 192-199.
- Kodituwakku, P., May, P., Clericuzio, C., & Weers, D. (2001). Emotion-related learning in individuals prenatally exposed to alcohol: an investigation of the relation between set shifting, extinction of responses, and behaviour. *Neuropsychologia*, 39(7), 699-708. doi:10.1016/S0028-3932(01)00002-1
- Lawrie, T., Hofmeyr, G., de Jager, M., & Berk, M. (1998). Validation of the Edinburgh Postnatal Depression Scale on a cohort of South African women. *South African Medical Journal*, 88, (1340-1344).
- Leppert, M., & Allen, M. (2009). Neurodevelopmental consequences of preterm birth: Causes, assessment and management. In W. Carey, A. Crocker, W. Coleman, E. Elias, & H. Fedman, *Developmental-behavioural pediatrics* (4th ed., pp. 259-268). Philadelphia: W. B. Saunders.
- Leu, J. C.-Y. (2008). Early childhood music education in Taiwan: An ecological systems perspective. *Arts Education Policy Review*, 109(3), 17-26. doi:10.3200/AEPR.109.3.17-26
- Malhorta, R., Hoyo, C., Ostbye, T., Hughes, G., Schwartz, D., Tsolekile, L., . . . Puoane, T. (2008). Determinants of obesity in an urban township of South Africa. *South African Journal of Clinical Nutrition*, 21(4), 315-320.
- Mantymaa, M., Puura, K., Luoma, I., Kaukonen, P., Salmelin, R., & Tamminen, T. (2008). Infants' social withdrawal and parents' mental health. *Infant Behaviour and Development*, 31(4), 606-613. doi:10.1016/j.infbeh.2008.07.005

- Matthey, S., Crnec, R., & Guedeney, A. (2008). *The Modified Alarm Distress Baby Scale: Manual v4.4*. Sydney South West Area Health Service: Sydney, Australia.
- Matthey, S., Crnec, R., & Guedeney, A. (2008). *The Modified Alarm Distress Baby Scale: Manual v4.4*. Sydney South West Area Health Service: Sydney, Australia.
- Matthey, S., Crnec, R., Hales, A., & Guedeney, A. (2013). A description of the modified Alarm Distress Baby Scale (m-ADDB): An instrument to assess for infant social withdrawal. *Infant Mental Health Journal*, 34(6), 1-8. doi:10.1002/imhj.21407
- Matthey, S., Guedeney, A., Starakis, N., & Barnett, B. (2005). Assessing the social behaviour of infants: Use of the ADDB scale and relationship to mother's mood. *Infant Mental Health Journal*, 26(5), 442-458. doi:10.1002/imhj.20061
- May, P. A., Gossage, J., White-country, M., Goodhart, K., Decoteau, S., Trujillo, P. M., . . . Hoyme, H. E. (2004). Alcohol consumption and other maternal risk factors for fetal alcohol syndrome among three distinct samples of women before, during and after pregnancy: the risk is relative. *American Journal of Medical Genetics: Part C. Seminars in medical genetics*, 127C(1), 10-20. doi:10.1002/ajmg.c.30011
- Mayo Foundation for Medical Education and Research. (2011). *Infant development: milestones from 4 - 6 months*. Retrieved from Mayoclinic: <http://mayoclinic.com/health/infant-development/FL0099>
- McGrath, J., Records, K., & Rice, M. (2008). Maternal depression and infant temperament characteristics. *Infant behavior and development*, 71-80.
- Med Sans Frontier. (2011). *Khayelitsha 2001-2011: Activity report 10 years of HIV/TB care at primary health care level*. Retrieved from <http://www.health-e.org.za/documents/6eadc65d79595b1a2cb0c86337161a4c.pdf>
- Mfenyana, K., Griffin, M., Yogeswaran, P., Modell, B., Modell, M., Chandia, J., & Nazareth, I. (2006). Socio-economic inequalities as a predictor of health in South Africa: the YENZA cross-sectional study. *South African Medical Journal*, 96(4), 323-330.
- Milne, L., Greenway, P., Guedeney, A., & Larroque, B. (2009). Long term developmental impact of social withdrawal in infants. *Infant Behavior and Development*, 32, 159-166. doi:10.1016/j.infbeh.2008.12.006
- Molteno, C., Jacobson, J., Colin Carter, R., Dodge, N., & Jacobson, S. (2013). Infant emotional withdrawal: A precursor of effective and cognitive disturbances in foetal alcohol spectrum disorders. *Alcoholism: Clinical and experimental research*. doi:10.1111/acer.12240
- Murray, L., Fiori-Cowley, A., Hooper, R., & Cooper, P. (1996). The impact of postnatal depression and associated adversity on early mother-infant interactions and later infant outcome. *Child Development*, 67(5), 2512-2526. doi:10.1111/1467-8624.ep9706060181

- Murray, L., Halligan, S., & Cooper, P. (2010). Effects of postnatal depression on mother-infant interactions and child development. In T. Wachs, & G. Bremner, *The Wiley-Blackwell Handbook of Infant Development. Vol 2. Applied and policy issues* (2nd ed., pp. 192-220). Chichester, West Sussex: Wiley-Blackwell.
- Niccols, A. (2007). Fetal alcohol syndrome and the developing socio-emotional brain. *Brain and Cognition*, 65(1), 137-142. doi:10.1016/j.bandc.2007.02.009
- Nichols, S., & Farley, J. (2009). Human Immunodeficiency Virus infection in children. In W. Carey, A. Crocker, W. Coleman, E. Elias, & H. Feldman, *Developmental-Behavioural Pediatrics* (4th ed., pp. 26-276). Philadelphia: W.B. Saunders.
- Nylen, K., Moran, T., Franklin, C., & O'Hara, M. (2006). Maternal depression: A review of relevant treatment approaches for mothers and infants. *Infant Mental Health Journal*, 27(4), 327-343. doi:10.1002/imhj.20095
- Oates, M., Cox, J., Neema, S., Asten, P., Glangeaud-Freudenthal, N., Figuerido, B., . . . Yoshida, K. (2004). Postnatal depression across countries and cultures: A qualitative study. *British Journal of Psychiatry*, 184(supp.146), 10-16. doi:10.1192/03-332
- O'Connor, M., & Kasari, C. (2000). Prenatal alcohol exposure and depressive features in children. *Alcoholism: Clinical and Experimental Research*, 24(7), 1084-1092. doi:10.1111/j.1530-0277.2000.tb04654.x
- O'Connor, M., & Whaley, S. (2007). Brief intervention for alcohol use by pregnant women. *American Journal of Public Health*, 97(2), 252-258. doi:10.2105/AJPH.2005.077222
- O'Connor, M., Tomlinson, M., LeRoux, I. M., Stewart, J., Greco, E., & Rotheram-Borus, M. J. (2011). Predictors of alcohol use prior to pregnancy recognition among township women in Cape Town, South Africa. *Social Science & Medicine*, 72(1), 83-90. doi:10.1016/j.socscimed.2010.09.049
- Olds, D., Henderson, C., & Kitzman, H. (2007). Programmes for parents of infants and toddlers: recent evidence from randomised trials. *Journal of Child Psychology and Psychiatry*, 48(3-4), 355-391. doi:10.1111/j.1469-7610.2006.01702.x
- Parsons, C., Young, K., Murray, L., Stein, A., & Kringelbach, M. (2010). The functional neuroanatomy of the evolving parent-infant relationship. *Progress in Neurobiology*, 91(3), 220-241. doi:10.1016/j.pneurobio.2010.03.001
- Peltzer, K., & Ramlagan, S. (2009). Alcohol use trends in South Africa. *Journal of Social Sciences*, 18(1), 1-12.
- Peltzer, K., Davids, A., & Njuho, P. (2011). Alcohol use and problem drinking in South Africa: Findings from a national population-based survey. *African Journal of Psychiatry*, 14, 30-37.

- Pereira, P., Lovisi, G., Lima, L., Legay, L., de Cintra Santos, J., Santos, S., . . . Valencia, E. (2011). Depression during pregnancy: Review of epidemiological and clinical aspects in developed and developing countries. In T. Uehara, *Psychiatric Disorders: Trends and developments* (pp. 267-290). Retrieved from <http://www.intechopen.com/books/psychiatric-disorders-trends-and-developments/depression-during-pregnancy-review-of-epidemiological-and-clinical-aspects-in-developed-and-developi>
- Petersen, Z. (2011). *Smoking cessation during pregnancy. Dissertation*. Umea University.
- Preston, C., & Colman, A. (2000). Optimal number of response categories in rating scales: Reliability, validity, discriminating power, and respondent preferences. *Acta Psychologica*, 104, 1-15.
- Puura, K., Guedeney, A., Mantymaa, M., & Tamminen, T. (2007). Detecting infants in need: Are complicated measures really necessary. *Infant Mental Health Journal*, 28(4), 409-421. doi:doi:10.1002/imhj.20144
- Puura, K., Mantymaa, M., Luoma, I., Kaukonen, P., Guedeney, A., Salmelin, R., & Tamminen, T. (2010). Infants' social withdrawal symptoms assessed with a direct infant observation method in primary health care. *Infant Behaviour and Development*, 33, 579-588. doi:10.1016/j.infbeh.2010.07.009.
- Re, J., Dean, S., Menahem, S., & Paul, C. (2010). Holding mothers in mind Mothers holding babies in mind through medical and surgical treatment for children. *Infant Mental Health Journal*, 31(3, Abstract Supplement).
- Riley, E., & McGee, C. (2005). Fetal alcohol spectrum disorders: An overview with emphasis on changes in brain and behaviour. *Experimental Biology and Medicine*, 230(6), 357-365.
- Riordan, D., Appleby, L., & Faragher, B. (1999). Mother-infant interaction in postpartum women with schizophrenia and affective disorders. *Psychological Medicine*, 29(4), 991-995.
- Robles, N., & Sabria, J. (2011). Effects of ethanol and nicotine on human CNS development. In R. Gupta, *Reproductive and developmental toxicology* (pp. 333-339). doi:10.1016/B978-0-12-382032-7.10025-6
- Rochat, T., Richter, L., Doll, H., Buthelezi, N., Tomkins, A., & Stein, A. (2006). Depression among pregnant rural South African women undergoing HIV testing. *Journal of the American Medical Association*, 295(12), 1373-1378.
- Rochat, T., Tomlinson, M., Barnighausen, T., Newell, M., & Stein, A. (2011). The prevalence and clinical presentation of antenatal depression in rural South Africa. *Journal of Affective Disorders*, 135(1-3), 362-373. doi:10.1016/j.jad.2011.08.011

- Rochat, T., Tomlinson, M., Newell, M., & Stein, A. (2013). Detection of antenatal depression in rural HIV-affected populations with short and ultrashort versions of the Edinburgh Postnatal Depression Scale (EPDS). *Archives of Womens Mental Health*, 16, 401-410. doi:10.1007/s00737-013-0353-z
- Rotheram-Borus, M. J., & Duan, N. (2003). Next generation of preventive interventions. *Journal of American Academy of Child and Adolescent Psychiatry*, 42(5), 518-526. doi:10.1097/01.CHI.0000046836.90931.E9
- Rotheram-Borus, M., Lee, M., Lin, Y., & Leser, P. (2004a). Six-year intervention outcomes for adolescent children of parents with the human immunodeficiency virus. *Archives of Pediatrics and Adolescent Medicine*, 158(8), 742-748. doi:10.1001/archpedi.158.8.742
- Rotheram-Borus, M., Swendeman, D., Comulada, W., Weiss, R., Lee, M., & Lightfoot, M. (2004b). Prevention for substance using HIV-positive young people: Telephone and in-person delivery. *Journal of Aquired Immune Deficiency Syndromes*, 37(Suppl 2), S68-S77.
- Sashegyi, A., Brown, K., & Farrell, P. (2000). Application of a generalised random effects regression model for cluster-correlated longitudinal data to a school-based smoking prevention trial. *American Journal of Epidemiology*, 152(12), 1192-1200.
- Saunders, J., Aasland, O., Babor, T., de la Fuente, J., & Grant, M. (1993). Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO Collaborative Project on Early Detection of Persons with Harmful Alcohol Consumption--II. *Addiction*, 88(6), 791-804.
- Save the Children. (2012). *Nutition in the first 1000 days: State of the world's mothers*. London: Save the Children International.
- Sawyer, A., Ayers, S., & Smith, H. (2010). Pre- and postnatal psychological wellbeing in Africa: a systematic review. *Journal of Affective Disorders*, 123, 17-29. doi:10.1016/j.jad.2009.06.027
- Shah, A. (2013). *Poverty facts and Stats*. Retrieved from Global Issues - social, political, economic and environmental issues that affect us all: <http://www.globalissue.org/article/26/poverty-facts-and-stats>
- South Africa Department of Health. (2011). *The 2010 National Antenatal Sentiel HIV & Syphilis Prevalence Survey*. Pretoria, South Africa: Department of Health.
- South African Department of Health. (2003). *South African Health and Demographics Survey*. Pretoria, South Africa: Department of Health.
- South African Department of Health. (2008). *Policy and guidelines for the implemetation of the PMTCT programme*. Retrieved from <http://www.doh.gov.za/docs/policy/pmtct.pdf>

- Statistics South Africa. (2011). *General Household Survey*. Pretoria, South Africa: Statistics South Africa.
- Steinberg, L., Belsky, J., & Meyer, R. (1991). *Infancy, Childhood and Adolescence*. New York: McGraw-Hill.
- Stevenson, M., & Krebs, N. (2009). Nutrition assessment and support. Chapter 29. In W. Carey, A. Crocker, W. Coleman, E. Elias, & H. Feldman, *Developmental-Behavioural Pediatrics* (4th ed., pp. 277-286). Philadelphia: W.B. Saunders.
- Steyn, K., Yach, D., Stander, I., & Fourie, J. (1997). Smoking in urban pregnant women in South Africa. *South African Medical Journal*, 87, 460-463.
- Stinson, K., Giddy, J., Cox, V., Burton, R., Ibeto, M., Cragg, C., . . . Goemaere, E. (2014). Reflections on a decade of delivering PMTCT in Khayelitsha, South Africa. *Southern African Journal of HIV Medicine*, 15(1), 30-32. doi:10.7196/SAJHVMED.1025
- Stinson, K., Giddy, J., Cox, V., Burton, R., Ibeto, M., Cragg, C., . . . Goemaere, E. (2014). Reflections on a decade of delivering PMTCT in Khayelitsha, South Africa. *South African Journal of HIV Medicine*, 15(1), 30-32. doi:10.7196/SAJHVMED.1025
- Strategic Development Information and GIS Department. (2013). *City of Cape Town: 2011 Census Suburb Khayelitsha*. Retrieved from http://www.capetown.gov.za/en/stats/2011CensusSuburbs/2011_Census_CT_Suburb_Khayelitsha_Profile.pdf
- Substance Abuse and Mental Health Service Administration. (2013). *Results from the 2012 national survey on drug use and health: Summary of national findings*. Rockville, MD: Author.
- Sweet, M., & Appelbaum, M. (2004). Is home visiting an effective strategy? A meta-analytic review of homevisiting programmes for families with young children. *Child Development*, 75(5), 1435-1456. doi:10.1111/j.1467-8624.2004.00750.x
- Teasdale, C., & Besser, M. (2008). Enhancing PMTCT programmes through psychosocial support and empowerment of women: The mothers2mothers model of care. *Southern African Journal of HIV Medicine*, 9(1), 60-64.
- The World Bank. (2012). *Data: Fertility rates, total (births per woman)*. Retrieved from The World Bank: Working for a world free of poverty: <http://data.worldbank.org/indicator/SP.DYN.TFRT.IN>
- The World Bank. (2012). *Data: GINI Index*. Retrieved from The World Bank: Working for a world free of poverty: <http://data.worldbank.org/indicator/SI.POV.GINI>

- Tomlinson, M., Cooper, P., & Murray, L. (2005). The mother- infant relationship and infant attachment in a South African peri-urban settlement. *Child Development*, 76(5), 1044-1054. doi:10.1111/j.1467-8624.2005.00896.x
- Tomlinson, M., Soloman, W., Singh, Y., Doherty, T., Chopra, M., Ijumba, P., . . . Jackson, D. (2009). The use of mobile phones as a data collection tool: A report from a household survey in South Africa. *BMC Medical Informatics and Decision Making*, 9(51). doi:10.1186/1472-6947-9-51
- Tomlinson, M., Swartz, L., Cooper, P., & Molteno, C. (2004). Social factors and postpartum depression in Khayelitsha, Cape Town. *South African Journal of Psychology*, 34(3), 409-420.
- Trevarthen, C., & Aitken, K. (2001). Infant intersubjectivity: Research, theory and clinical applications. *Journal of Child Psychology and Psychiatry*, 42(1), 3-48. doi:10.1111/1469-7610.00701
- UNAIDS. (2007). *2007 AIDS Epidemic Update*. Geneva, Switzerland: UNAIDS.
- UNAIDS. (2012). *2012 Report on the global AIDS epidemic*. Geneva, Switzerland: UNAIDS.
- United Nations Children's Fund. (2009). *The state of the world's children 2009: Maternal and newborn health*. New York: United Nations Children's Fund.
- United Nations Children's Fund. (2009). *Women and Children in South Africa*. Retrieved from UNICEF: <http://www.unicef.org/southafrica/children.html>
- United Nations Children's Fund. (2012). *Statistics by area: Newborn care*. Retrieved from Childinfo - Monitoring the situation of children and women: <http://www.childinfo.org/newborncare.html>
- United Nations Children's Fund. (2012b). *The state of the world's children 2012: Children in an urban world*. New York: United Nations Children's Fund.
- United Nations Children's Fund. (2013). *Statistics by area: Low birthweight*. Retrieved from Childinfo: Monitoring the situation of children and women: http://www.childinfo.org/low_birthweight.html
- United Nations Children's Fund, World Health Organisation, The World Bank. (2012). *UNICEF-WHO-The World Bank Joint Child Malnutrition Estimates: Levels and trends in child malnutrition*. Retrieved from <http://www.who.int/nutgrowthdb/estimates/en/>
- United Nations Children's Fund, World Health Organisation, The World Bank, United Nations Population Division. (2012). *Levels and trends in child mortality: Report 2012. Estimates developed by the UN inter-agency group for child mortality estimation*. New York: United Nations Children's Fund.

- Walker, S., Wachs, T., Grantham-McGregor, S., Black, M., Nelson, C., Huffman, S., . . . Richter, L. (2011). Inequality in early childhood: risk and protective factors for early child development. *The Lancet*, 378(9799), 1325-1338. doi:10.1016/S0140-6736(11)60555-2
- Walker, S.P.; Wachs, T.D.; Gardner, J.M.; Lozoff, B.; Wasserman, G.A.; Pollitt, E.; Carter, J.A.; The International Child Development Steering Group. (2007). Child development: risk factors for adverse outcomes in developing countries. *Lancet*, 369(9556), 369, 145-157. doi:10.1016/S0140-6736(07)60076-2
- Warren, K., Calhoun, F., May, P., Viljoen, D., Li, T., Tanaka, H., . . . Goetz, M. (2001). Fetal alcohol syndrome: An international perspective. *Alcoholism: Clinical and Experimental Research*, 25(s1), 202-206. doi:10.1111/j.1530-0277.2001.tb02397.x
- Weck, R. L., Paulose, T., & Flaws, J. (2008). Impact of environmental factors and poverty on pregnancy outcomes. *Clinical Obstetrics and Gynecology*, 51(2), 349-359. doi:10.1097/GRF.0b013e31816f2709
- World Health Organisation. (2010). *Nutrition Landscape Information System (NLIS) country profile indicators: Interpretation guide*. Geneva, Switzerland: World Health Organisation.
- World Health Organisation. (2012). *Maternal Mortality*. Retrieved from World Health Organisation: www.who.int/mediacentre/factsheets/fs348/en/
- World Health Organisation. (2012). *World Health Statistics: A snapshot of global health*. Retrieved from <http://www.who.int/iris/handle/10665/70889>
- World Health Organisation, United Nations Children's Fund, United Nations Population Fund, The World Bank. (2012). *Trends in maternal mortality: 1990-2010*. Geneva, Switzerland: World Health Organisation.
- World Health Organisation: Regional Office for Africa. (2012). *Newborn Health*. Retrieved from World Health Organisation Regional Office for Africa: <http://www.afro.who.int/en/clusters-a-programmes/frh/making-pregnancy-safer/programme-components/newborn-health.html>
- Zeanah, C., Boris, N., & Larrieu, J. (1997). Infant development and developmental risk: a review of the past 10 years. *Journal of the American Academy of Child and Adolescent Psychiatry*, 36(2), 165-178. doi:10.1097/00004583-199702000-00007
- Zere, E., & McIntyre, D. (2003). Inequities in under-five child malnutrition in South Africa. *International Journal for Equity in Health*, 2(1).

Appendices

Appendix A – Topics addressed in prenatal and postnatal visits

Topic	Description
Living with HIV	<p>Mentor Mothers:</p> <ul style="list-style-type: none"> • Review universal precautions for blood spills • Provide encouragement to get partner tested for HIV • Encourage consistent condom use • Provide strategies to cope with partner's alcohol use and multiple relationships • Provide support for the processes involved with the disclosure of serostatus • Provide all couples with pregnant women with referral letters to get tested for sexually transmitted diseases simultaneously to counteract stigma and circumvent obligation for MLH to disclose serostatus • Provide MLH with a card to be handed to the hospital nurse disclosing her serostatus to circumvent verbal disclosure • Show MLH the Nevirapine bottle and appropriate method of administration • Supports adherence to AZT before and after childbirth • Encourage MLH to choose a single feeding method (preferably breastfeeding) • Recommend MLH to avoid formula feeding unless MLH have access to clean water on the premises, a toilet , and sufficient financial support to afford formula milk, especially if supplies at clinics are exhausted
Alcohol use	<p>Mentor Mothers:</p> <ul style="list-style-type: none"> • Present a lifelike black infant doll with features of FAS • Discuss characteristics and long-term effects of alcohol on infants • Screen for alcohol use with the Derived AUDIT-C • Deliver a brief intervention on reducing alcohol if necessary

Nutrition	<p>Mentor Mothers:</p> <ul style="list-style-type: none"> • Monitor infant nutritional status over time • Make use of a chart that documents and updates the weight and height of each infant and key aspects of the infant's home environment at each visit • Assist mothers to problem solve how and where to get food • Only distribute food in the most dire cases
Child financial Assistance Grant	<p>Barriers to getting the grant:</p> <ul style="list-style-type: none"> • Requires presentation of ID document and infant's birth certificate <p>Mentor Mothers:</p> <ul style="list-style-type: none"> • Review models and strategies for problem-solving challenges to getting an ID document • Review health records • Refer mothers to Philani social work program to assist in completing the required paperwork for the grant
Self-care and social support	<p>Mentor Mothers:</p> <ul style="list-style-type: none"> • Encourage mothers to enjoy life and make time for themselves • Encourage mothers to enjoy and care for their infant • Share with mothers their optimism and caring continuously • Support mothers in taking notice of daily joys in their children and families

Note. MLH = Mothers living with HIV

Appendix B(i) - Baseline Antenatal Assessment Part 1

Section 1. Interview Identification

1.1 Interviewer code

Please enter your interviewer code:

Expects a numeric response (required)

1.2 Neighbourhood code

Please enter the neighbourhood code:

Expects a single line text response (required)

1.3 Date of Interview

Please confirm the date of this interview:

Expects a date response (required)

1.4 Time of Interview

Please confirm the time of this interview:

Expects a time response (required)

1.5 Participant ID

Please enter the participants unique identifier code:

Expects a valid GS1 Identifier (required)

Section 2. Informed Consent

2.1 Informed consent granted

Was the informed consent form explained and accepted?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

Branches

If response Equals 'Yes [1]' then skip to *GQ Prompt (3.1)*

If response Equals 'No [2]' then skip to *Home visits (2.2)*

2.2 Home visits

If your neighbourhood is one where a Mentor Mother is working, would you still like to receive home visits even though you have chosen not to participate in the research interviews?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

Branches

If response Equals 'No [2]' then skip to *End (13.2)*

If response Equals 'Yes [1]' then skip to *Expected Birth Date No ICF (13.1)*

Section 3. Participant Demographics

3.1 GQ Prompt

Thank you for participating in this interview. I will start by asking you some general questions about yourself.

3.2 Identity Document

Do you have an ID book?

Expects a single option response (required)

- ☐ Yes [1]
 - ☐ No [2]
 - ☐ Decline to answer [91]
-

3.3 Mother's age

How old are you (in completed years)?

Expects a numeric response (required)

3.4 Mother's date of birth

What is your date of birth?

Expects a date response (required)

3.5 Mother's home language

What is your home language?

Expects a single option response (required)

- ☐ English [1]
 - ☐ IsiZulu [2]
 - ☐ IsiXhosa [3]
 - ☐ Other [95]
 - ☐ Decline to answer [91]
-

3.6 Participant education

What is the highest level of education you have completed?

Expects a single option response (required)

- ☐ No schooling [0]
 - ☐ Grade 1 / Sub A [1]
 - ☐ Grade 2 / Sub B [2]
 - ☐ Grade 3 / Std 1 [3]
 - ☐ Grade 4/ Std 2 [4]
 - ☐ Grade 5 / Std 3 [5]
 - ☐ Grade 6 / Std 4 [6]
 - ☐ Grade 7 / Std 5 [7]
 - ☐ Grade 8 / Std 6 [8]
 - ☐ Grade 9 / Std 7 [9]
 - ☐ Grade 10 / Std 8 [10]
 - ☐ Grade 11/ Std 9 [11]
 - ☐ Grade 12/ Matric [12]
 - ☐ Post Matric Certificate / Diploma [13]
 - ☐ Degree [14]
 - ☐ Decline to answer [91]
-

3.7 Marital status

Are you currently single or married (in any form)?

Expects a single option response (required)

- ☐ Single [1]
- ☐ Married [2]
- ☐ Not married but living together [3]
- ☐ Decline to answer [91]

3.8 Favourite Colour

What is your favourite colour?

Expects a single line text response (required)

Section 4. Household Overview

4.1 Household Overview Prompt

Thank you. Now I would like to ask you a few questions about the people who live with you.

4.2 Participant lives with others

Do you live with others in your household (people who sleep in the household more than 2 nights each week)?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to Answer [91]

4.3 HH Member Count

How many other people, including yourself and all adults and children, live in the household? Please note that, if there are more than 15 members in the household, you need to only enter 15 here and capture the first 15 memebers.

Expects a numeric response (required)

Constraints

Response must be Greater Than or Equal '1'

Response must be Less Than or Equal '15'

4.4 Household Member Prompt

The next section will capture some details on the members of this household.

Repeat this section for value of ***HH Member Count (4.3)***

Section 5. Household People Count

5.1 HH Member Name

What is this members name?

Expects a single line text response (required)

5.2 HH Member Age

What is ***HH Member Name (5.1)***'s age?

Expects a numeric response (required)

5.3 HH Member Gender

Is **HH Member Name (5.1)** male or female?

Expects a single option response (required)

- ☐ Male [1]
- ☐ Female [2]

Section 6. Demographic Information about Housing

6.1 Housing Prompt

In this next section, the questions are about the house where you live.

6.2 Housing description

What best describes your housing?

Expects a single option response (required)

- ☐ Formal brick structure on a separate yard [1]
- ☐ Pre fab dwelling/wendy house in back yard [2]
- ☐ Informal dwelling/Shack in backyard [3]
- ☐ Informal dwelling/Shack not in backyard, e.g. in an informal/squatter settlement [4]
- ☐ Hostel [5]
- ☐ Decline to answer [91]

6.3 Water source

What is the main source of drinking water?

Expects a single option response (required)

- ☐ Water in the home [1]
- ☐ Water on the premises [2]
- ☐ Water from a community tap / public tank [3]
- ☐ Water from a river [4]
- ☐ Decline to answer [91]

6.4 Household toilet

What toilet facilities does your household have?

Expects a single option response (required)

- ☐ Flush toilet on the premises [1]
- ☐ Bucket toilet [2]
- ☐ Public toilet [3]
- ☐ Pit latrine [4]
- ☐ None [5]
- ☐ Other [95]
- ☐ Decline to answer [91]

6.5 Electricity

Do you have electricity in your household?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

6.6 Cooking fuel

What is your main source of fuel for cooking?

Expects a single option response (required)

- ☐ Electricity [1]
- ☐ Paraffin [2]
- ☐ Gas [3]
- ☐ Coal [4]
- ☐ Wood [5]
- ☐ Other [95]
- ☐ Decline to answer [91]

6.7 Household items

Does your household have any of the following items that I will read off?

Expects multiple selected options (required)

- ☐ Stove (coal, electric, primus, gas) [1]
- ☐ Cell phone [2]
- ☐ Bicycle [3]
- ☐ Radio [4]
- ☐ Refrigerator [5]
- ☐ Television [6]
- ☐ Car in working condition [7]
- ☐ Telephone (landline) [8]
- ☐ Computer [9]
- ☐ Internet (computer) [10]
- ☐ Internet (cell phone) [11]
- ☐ Decline to answer [91]
- ☐ None of these [12]

Section 7. Income and Employment

7.1 Income Prompt

Now I would like to ask you a few questions about employment and income.

7.2 Participant employed

Are you employed?

Expects a single option response (required)

- ☐ Part time [1]
- ☐ Full time [2]
- ☐ Temporary/casual work [3]
- ☐ No [4]
- ☐ Self employed [5]
- ☐ Decline to answer [91]

7.3 Household income sources

What are the sources of income for the household?

Expects multiple selected options (required)

- ☐ Regular Income [1]
- ☐ Irregular income [2]
- ☐ Self employment [3]
- ☐ Contribution from others [4]
- ☐ Retirement pension [5]
- ☐ State pension [6]
- ☐ Disability grant [7]
- ☐ Child support grant [8]

- ☐ Foster care grant [9]
- ☐ Care dependency grant [10]
- ☐ None of these [11]
- ☐ Dont know [99]
- ☐ Other [95]
- ☐ Decline to answer [91]

7.4 Household monthly income

What is the average household monthly income?

Expects a single option response (required)

- ☐ 0 to 499 Rand [1]
- ☐ 500 to 1000 [2]
- ☐ 1001 to 2000 [3]
- ☐ 2001 to 5000 [4]
- ☐ 5001 to 8000 [5]
- ☐ 8000 and above [6]
- ☐ Dont know [99]
- ☐ Decline to answer [91]

7.5 Participant days of hunger

How many days in the passed week have you gone hungry? (By this I mean days when you felt you didnt have enough to eat)

Expects a numeric response (required)

Constraints

Response must be *Less Than or Equal* '7'

7.6 Household children hunger

How many days in the last week have any of the children gone hungry? (By this I mean days when you felt that your children needed to eat more.)

Expects a numeric response (required)

Constraints

Response must be *Less Than or Equal* '7'

Section 8. This Pregnancy

8.1 Pregnancy Prompt

Now I have a few short questions about your future baby.

8.2 Baby due date

What is the due date for your baby?

Expects a date response (required)

8.3 Weeks pregnant

How many weeks pregnant are you?

Expects a numeric response (required)

Constraints

Response must be *Less Than or Equal* '48'

8.4 Booked at Antenatal Clinic

Have you booked at the antenatal clinic?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

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Section 9. General Health - Participant

9.1 General Health Prompt

Thank you. The next few questions are about your general health, relating to illnesses such as Diabetes, Disability and TB.

9.2 Participant Height

Please record the participants height (m):

Expects a decimal response (required)

Constraints

Response must be Less Than or Equal '3'

Response must be Greater Than or Equal '0.5'

9.3 Participant Weight

Please record the participants weight (kg):

Expects a decimal response (required)

Constraints

Response must be Greater Than or Equal '30'

Response must be Less Than or Equal '250'

9.4 Chronic illness

Are you currently diagnosed with any of the following chronic illnesses?

Expects multiple selected options (required)

- ☐ Diabetes [1]
- ☐ Hypertension [2]
- ☐ Disability [3]
- ☐ Asthma [4]
- ☐ None [5]
- ☐ Other [95]
- ☐ Decline to answer [91]

9.5 Ever Tested TB

Have you ever tested for TB?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to Answer [91]

9.6 Previous TB result

Did you ever test positive for TB?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

9.7 Previous treatment TB

Did you ever receive treatment when you tested positive for TB?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

9.8 TB test this pregnancy

During this pregnancy have you tested for TB?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

Branches

If response **Not Equal** 'Yes [1]' then skip to *HH member TB test (9.11)*

9.9 Current TB test result

During this pregnancy, did you test positive for TB?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

Branches

If response **Not Equal** 'Yes [1]' then skip to *HH member TB test (9.11)*

9.10 Current treatment TB

Are you currently receiving treatment for TB?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to Answer [91]

9.11 HH member TB test

During your pregnancy has anybody ELSE in the household tested for TB?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Dont know [99]
- ☐ Decline to answer [91]

Branches

If response **Not Equal** 'Yes [1]' then skip to *Mental Health Prompt (10.1)*

9.12 HH member current treatment

Are they currently receiving treatment for TB?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Dont know [99]
- ☐ Decline to answer [91]

10.1 Mental Health Prompt

Now I have some questions to ask about your feelings over the last week. Please state the answer which comes closest to how you have felt IN THE PAST 7 DAYS, not just how you feel today.

10.2 Laugh

I have been able to laugh and see the funny side of things.

Expects a single option response (required)

- ☐ As much as I always could [0]
- ☐ Not quite so much now [1]
- ☐ Definitely not so much now [2]
- ☐ Not at all [3]

10.3 Enjoyment

I have looked forward with enjoyment to things.

Expects a single option response (required)

- ☐ As much as I ever did [0]
- ☐ Rather less than I used to [1]
- ☐ Definitely less than I used to [2]
- ☐ Hardly at all [3]

10.4 Self Blame

I have blamed myself unnecessarily when things went wrong.

Expects a single option response (required)

- ☐ Yes, most of the time [3]
- ☐ Yes, some of the time [2]
- ☐ Not very often [1]
- ☐ No, never [0]

10.5 Anxious/worry

I have been anxious or worried for no good reason.

Expects a single option response (required)

- ☐ No, not at all [0]
- ☐ Hardly ever [1]
- ☐ Yes, sometimes [2]
- ☐ Yes, very often [3]

10.6 Panicky

I have felt scared or panicky for no very good reason.

Expects a single option response (required)

- ☐ Yes, quite a lot [3]
- ☐ Yes, sometimes [2]
- ☐ No, not much [1]
- ☐ No, not at all [0]

10.7 Things piled up

Things have been getting on top of me.

Expects a single option response (required)

- ☐ Yes, most of the time I haven't been able to cope at all [3]
- ☐ Yes, sometimes I haven't been coping as well as usual [2]
- ☐ No, most of the time I have coped quite well [1]
- ☐ No, I have been coping as well as ever [0]

10.8 Difficulty sleeping

I have been so unhappy that I have had difficulty sleeping

Expects a single option response (required)

- ☐ Yes, most of the time [3]
- ☐ Yes, sometimes [2]
- ☐ Not very often [1]
- ☐ No, not at all [0]

10.9 Sad/miserable

I have felt sad or miserable

Expects a single option response (required)

- ☐ Yes, most of the time [3]
- ☐ Yes, sometimes [2]
- ☐ Not very often [1]
- ☐ No, not at all [0]

10.10 Crying

I have been so unhappy that I have been crying.

Expects a single option response (required)

- ☐ Yes, most of the time [3]
- ☐ Yes, quite often [2]
- ☐ Only occasionally [1]
- ☐ No, never [0]

10.11 Self harm

The thought of harming myself has occurred to me.

Expects a single option response (required)

- ☐ Yes, quite often [3]
- ☐ Sometimes [2]
- ☐ Hardly ever [1]
- ☐ Never [0]

10.12 General Health Questionnaire (GHQ) Prompt

We would like to know how your health has been in general OVER THE PAST FEW WEEKS. Please answer ALL the questions simply by stating which answer most closely applies to you OVER THE PAST FEW WEEKS. Remember that we want to know about PRESENT AND RECENT (Interviewer prompt: over the past few weeks since the month and dates you want to discuss) complaints, not those you had in the past. It is important that you try to answer all the questions.

10.13 GHQ Concentrate

Have you been able to concentrate on whatever youre doing?

Expects a single option response (required)

- ☐ Better Than usual [3]
- ☐ Same as usual [2]
- ☐ Less than usual [1]
- ☐ Much less than usual [0]

10.14 GHQ Lost sleep

Have you recently lost much sleep over worry?

Expects a single option response (required)

- ☐ Not at all [3]
- ☐ No more than usual [2]
- ☐ Rather more than usual [1]

☐ More more than usual [0]

10.15 GHQ Useful part

Have you recently felt that you are playing a useful part in things?

Expects a single option response (required)

☐ More so than usual [3]

☐ Same as usual [2]

☐ Less useful than usual [1]

☐ Much less useful [0]

10.16 GHQ Decisions

Have you recently felt capable of making decisions about things?

Expects a single option response (required)

☐ More so than usual [3]

☐ Same as usual [2]

☐ Less so than usual [1]

☐ Much less capable [0]

10.17 GHQ Under strain

Have you recently felt constantly under strain?

Expects a single option response (required)

☐ Not at all [3]

☐ No more than usual [2]

☐ Rather more than usual [1]

☐ Much more than usual [0]

10.18 GHQ Unable overcome difficulties

Have you recently felt you couldn't overcome your difficulties?

Expects a single option response (required)

☐ Not at all [3]

☐ No more than usual [2]

☐ Rather more than usual [1]

☐ Much more than usual [0]

10.19 GHQ Enjoy activities

Have you recently been able to enjoy your normal day-to-day activities?

Expects a single option response (required)

☐ More than usual [3]

☐ Same as usual [2]

☐ Less so than usual [1]

☐ Much less than usual [0]

10.20 GHQ Face problems

Have you recently been able to face up to your problems?

Expects a single option response (required)

☐ More than usual [3]

☐ Same as usual [2]

☐ Less able than usual [1]

☐ Much less able [0]

10.21 GHQ Unhappy/depressed

Have you recently been feeling unhappy and depressed?

Expects a single option response (required)

☐ Not at all [3]

- ☐ No more than usual [2]
- ☐ Rather more than usual [1]
- ☐ Much more than usual [0]

10.22 GHQ Loosing confidence

Have you recently been losing confidence in yourself?

Expects a single option response (required)

- ☐ Not at all [3]
- ☐ No more than usual [2]
- ☐ Rather more than usual [1]
- ☐ Much more than usual [0]

10.23 GHQ Worthless person

Have you recently been thinking of yourself as a worthless person?

Expects a single option response (required)

- ☐ Not at all [3]
- ☐ No more than usual [2]
- ☐ Rather more than usual [1]
- ☐ Much more than usual [0]

10.24 GHQ Reasonably happy

Have you recently been feeling reasonably happy, all things considered?

Expects a single option response (required)

- ☐ More than usual [3]
 - ☐ About the same as usual [2]
 - ☐ Less so than usual [1]
 - ☐ Much less than usual [0]
-

Section 11. Social Support

11.1 Social Support Prompt

Next are some questions about friends and relatives who are available to you for support

11.2 Close friends and relatives

How many close friends and relatives do you have? By this, I mean people you feel at ease with and can talk with about what is on your mind.

Expects a numeric response (required)

11.3 Frequency Contact

In this past month, approximately how many times have you had contact with friends or relatives (including visits, phone calls, sms, and social gatherings)?

Expects a numeric response (required)

11.4 Participation in groups or organisations

Which (if any) of the following organisations do you participate in?

Expects multiple selected options (required)

- ☐ A temple/ church [1]
- ☐ Community events [2]
- ☐ Community meetings [3]
- ☐ Support group [4]
- ☐ AIDS education group [5]

- ☐ An organization for HIV+ persons [6] Stellenbosch University <http://scholar.sun.ac.za>
- ☐ AIDS activities outside your neighbourhood [7]
- ☐ Other [95]
- ☐ Decline to answer [91]
- ☐ None of these [8]
-

11.5 Recreation time

In the past month, how often did you do enjoyable or relaxing things just for yourself such as watching TV, going to church, having your hair done, singing dancing?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Once or twice a month [5]
- ☐ Once or twice a week [2]
- ☐ Several times a week [3]
- ☐ Daily [4]
- ☐ Decline to answer [91]
- ☐ Don't know [99]
-

11.6 Practical support

How many times in the past week has someone provided you with practical support? (E.g. money for taxi fare, helping with chores, childcare)

Expects a numeric response (required)

11.7 Current partner

Do you have a current partner?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

Branches

If response Not Equal 'Yes [1]' then skip to *Trust, talk to Mother (11.11)*

11.8 Trust and share with partner

Can you trust, talk to and share your feelings with your husband / partner?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Sometimes [2]
- ☐ Always [3]
- ☐ Decline to answer [91]
-

11.9 Turn to partner in difficulty

Can you lean on and turn to your husband/partner in times of difficulty?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Sometimes [2]
- ☐ Always [3]
- ☐ Decline to answer [91]
-

11.10 Partner practical help

Does he give you practical help?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Sometimes [2]

- Ⓔ Always [3]
- Ⓔ Decline to answer [91]

11.11 Trust, talk to Mother

Can you trust, talk frankly and share your feelings with your mother?

Expects a single option response (required)

- Ⓔ Never [1]
- Ⓔ Sometimes [2]
- Ⓔ Always [3]
- Ⓔ Mother is deceased [4]
- Ⓔ Decline to answer [91]

Branches

If response Equals 'Mother is deceased [4]' then skip to *Trust, talk to father (11.14)*

11.12 Turn to mother in difficulty

Can you lean on and turn to your mother in times of difficulty?

Expects a single option response (required)

- Ⓔ Never [1]
- Ⓔ Sometimes [2]
- Ⓔ Always [3]
- Ⓔ Mother is deceased [4]
- Ⓔ Decline to Answer [91]

11.13 Mother practical help

Does your mother give you practical help?

Expects a single option response (required)

- Ⓔ Never [1]
- Ⓔ Sometimes [2]
- Ⓔ Always [3]
- Ⓔ Mother is deceased [4]
- Ⓔ Decline to answer [91]

11.14 Trust, talk to father

Can you trust, talk frankly and share your feelings with your father?

Expects a single option response (required)

- Ⓔ Never [1]
- Ⓔ Sometimes [2]
- Ⓔ Always [3]
- Ⓔ Father is deceased [4]
- Ⓔ Decline to answer [91]

Branches

If response Equals 'Father is deceased [4]' then skip to *Father Prompt (12.1)*

11.15 Turn to father in difficulty

Can you lean on and turn to your father in times of difficulty?

Expects a single option response (required)

- Ⓔ Never [1]
- Ⓔ Sometimes [2]
- Ⓔ Always [3]
- Ⓔ Father is deceased [4]
- Ⓔ Decline to answer [91]

11.16 Father practical help

Does your father give you practical help?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Sometimes [2]
- ☐ Always [3]
- ☐ Father is deceased [4]
- ☐ Decline to answer [91]

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Section 12. Father of the Child

12.1 Father Prompt

Thank you. I would now like to ask you some questions about the father of this child.

12.2 Fathers knowledge of pregnancy

Have you told the father of this baby about the pregnancy?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

12.3 Fathers acknowledgement of baby

Will the father introduce (acknowledge) this baby to his family?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Don't know [99]
- ☐ Decline to answer [91]

12.4 Fathers financial support

Is the father of this baby supporting you financially?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to Answer [91]

12.5 Father staying with you

Is the father of this child staying with you?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ no [2]
- ☐ Decline to answer [91]

12.6 Father opinions on feeding

Does the baby's father have any opinions about how to feed the baby?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Dont Know [99]
- ☐ Decline to answer [91]

Branches

If response Not Equal 'Yes [1]' then skip to *End Part 1 (13.3)*

12.7 Father feeding suggestion

How does he want you to feed the baby?

Expects a single option response (required)

- ☐ Breastfeed [1]
- ☐ Formula feed [2]
- ☐ Breast and other food [3]
- ☐ Don't know [99]
- ☐ Decline to answer [91]

Branches

If response Not Equal 'Breastfeed [1]' then skip to *End Part 1 (13.3)*

If response Equals 'Breastfeed [1]' then skip to *End Part 1 (13.3)*

Section 13. End of Survey

13.1 Expected Birth Date No ICF

What is the due date for your baby?

Expects a date response (required)

13.2 End

You have reached the end of the survey. You can go back and review previous responses or select Next to complete the section.

Prerequisites

Skip when *Informed consent granted (2.1)* Not Equal 'Yes [1]'

13.3 End Part 1

You have reached the end of the first part of the survey. You can go back and review previous responses or select Next to complete the section. Once you have completed this section, please continue with Part 2 of the Baseline Survey.

Appendix B (ii) - Baseline Assessment Part 2

Section 1. Interview Identification

1.1 Interviewer code

Please enter your interviewer code:

Expects a numeric response (required)

1.2 Neighbourhood code

Please enter the neighbourhood code:

Expects a single line text response (required)

1.3 Date of Interview

Please confirm the date of this interview:

Expects a date response (required)

1.4 Time of Interview

Please confirm the time of this interview:

Expects a time response (required)

1.5 Participant ID

Please enter the participants unique identifier code:

Expects a valid GS1 Identifier (required)

Section 2. Use of Tobacco & Other Substances

2.1 Smoking Prompt

The next few questions are about smoking.

2.2 Use of Tobacco

Do you use tobacco?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

☐ Decline to answer [91]

Branches

If response Not Equal 'Yes [1]' then skip to *Use of Dagga (2.4)*

2.3 Tobacco Frequency

In the past 3 months, on how many days did you use tobacco?

Expects a numeric response (required)

Constraints

2.4 Use of Dagga

Do you use dagga?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

Branches

If response **Not Equal** 'Yes [1]' then skip to *Use of Tik (2.6)*

2.5 Dagga Frequency

On how many days in the past 3 MONTHS did you use dagga

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal '0'*

Response must be *Less Than or Equal '92'*

2.6 Use of Tik

Do you use Tik?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

Branches

If response **Not Equal** 'Yes [1]' then skip to *Type of traditional medicines used (3.1)*

2.7 Tik Frequency

On how many days in the past 3 MONTHS did you use Tik?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal '0'*

Response must be *Less Than or Equal '92'*

Section 3. Use of Traditional Medicines

3.1 Type of traditional medicines used

Please tell us which of the following, if any, you have used in the time since you became pregnant.

Expects multiple selected options (optional)

- ☐ Enemas [1]
- ☐ Traditional vitamins or supplements in liquid [2]
- ☐ Medicines for social health (e.g. love potions, bewitchment) [3]
- ☐ Medicines for pregnancy (e.g. pregnancy enemas, contraction stimulants) [4]
- ☐ Medicines for spiritual health (e.g. liquids for protecting baby) [5]
- ☐ Medicines for children (muti wenyoni, lennons medicines) [6]
- ☐ Decline to answer [91]

Section 4. Use of Alcohol

4.1 Alcohol Prompt

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Now I'd like to ask you a few more questions about drinking alcohol. I know that sometimes these can be sensitive questions, but please remember that your answers will be kept secret and no one will know that these answers belong to you. Your name will not appear on any research forms and we will not share your answers with anyone other than research staff. We are asking many women these important questions and thank you for doing your best to answer them all honestly.

4.2 Weeks pregnant when found out about pregnancy

How many weeks pregnant were you when you found out you were pregnant?

Expects a numeric response (required)

4.3 Alcohol in pregnancy before knowledge of pregnancy

How often did you use alcohol in the month before you found out you were pregnant? [INTERVIEWER WILL USE A LOCAL TYPICAL CUP TO VISUALLY SHOW SIZE OF 1 DRINK]

Expects a single option response (required)

- ☐ Never [1]
- ☐ Less than once a month [2]
- ☐ Once a month [3]
- ☐ 2 to 3 times a month [4]
- ☐ Once a week [5]
- ☐ 2 times a week [6]
- ☐ 3 to 4 times a week [7]
- ☐ Nearly every day [8]
- ☐ Every day [9]
- ☐ Decline to answer [91]

Branches

If response Equals 'Never [1]' then skip to *Alcohol during pregnancy after learning of pregnancy. (4.7)*

If response Equals 'Decline to answer [91]' then skip to *Alcohol during pregnancy after learning of pregnancy. (4.7)*

4.4 Alcohol per day on days when used alcohol before knowledge of pregnancy

During the month before you found out you were pregnant, counting all types of alcohol combined, how many drinks did you USUALLY have on days when you drank alcohol?

Expects a single option response (required)

- ☐ 1 or 2 [1]
- ☐ 3 or 4 [2]
- ☐ 5 or 6 [3]
- ☐ 7, 8 or 9 [4]
- ☐ 10 or more [5]
- ☐ Decline to answer [91]

4.5 Frequency of four or more drinks per day before knowledge of pregnancy

During the month before you found out you were pregnant, about how often did you drink FOUR or MORE drinks in a single day?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Less than once a month [2]
- ☐ Once a month [3]
- ☐ 2 to 3 times a month [4]
- ☐ Once a week [5]
- ☐ 2 times a week [6]
- ☐ 3 to 4 times a week [7]
- ☐ Nearly every day [8]
- ☐ Every day [9]
- ☐ Decline to answer [91]

During the month before you found out you were pregnant, about how often did you drink THREE or MORE drinks in a single day?

Expects a single option response (optional)

- ☐ Never [1]
- ☐ Less than once a month [2]
- ☐ Once a month [3]
- ☐ 2 to 3 times a month [4]
- ☐ Once a week [5]
- ☐ 2 times a week [6]
- ☐ 3 to 4 times a week [7]
- ☐ Nearly every day [8]
- ☐ Every day [9]
- ☐ Decline to answer [91]

4.7 Alcohol during pregnancy after learning of pregnancy.

Now that you know you are pregnant, about how often do you drink ANY alcoholic beverage?

Expects a single option response (optional)

- ☐ Never [1]
- ☐ Less than once a month [2]
- ☐ Once a month [3]
- ☐ 2 to 3 times a month [4]
- ☐ Once a week [5]
- ☐ 2 times a week [6]
- ☐ 3 to 4 times a week [7]
- ☐ Nearly every day [8]
- ☐ Every day [9]
- ☐ Decline to answer [91]

Branches

If response Equals 'Never [1]' then skip to *Previous Pregnancies Prompt (5.1)*

If response Equals 'Decline to answer [91]' then skip to *Previous Pregnancies Prompt (5.1)*

4.8 Alcohol per day on days when used alcohol after knowledge of pregnancy

Now that you know you are pregnant, counting all types of alcohol combined, how many drinks do you USUALLY have on days when you drink alcohol?

Expects a single option response (required)

- ☐ 1 or 2 [1]
- ☐ 3 or 4 [2]
- ☐ 5 or 6 [3]
- ☐ 7,8 or 9 [4]
- ☐ 10 or more [5]
- ☐ Decline to Answer [91]

4.9 Frequency of four or more drinks per day after knowledge of pregnancy

Now that you know you are pregnant, about how often do you drink FOUR or MORE drinks in a single day?

Expects a single option response (optional)

- ☐ Never [1]
- ☐ Less than once a month [2]
- ☐ Once a month [3]
- ☐ 2 to 3 times a month [4]
- ☐ Once a week [5]
- ☐ 2 times a week [6]
- ☐ 3 to 4 times a week [7]
- ☐ Nearly every day [8]

- ☐ Every day [9]
- ☐ Decline to answer [91]

4.10 Frequency of three or more drinks per day after knowledge of pregnancy

Now that you know you are pregnant, about how often do you drink THREE or MORE drinks in a single day?

Expects a single option response (optional)

- ☐ Never [1]
- ☐ Less than once a month [2]
- ☐ Once a month [3]
- ☐ 2 to 3 times a month [4]
- ☐ Once a week [5]
- ☐ 2 times a week [6]
- ☐ 3 to 4 times a week [7]
- ☐ Nearly every day [8]
- ☐ Every day [9]
- ☐ Decline to answer [91]

4.11 Number drinks to feel high

How many drinks does it take to make you feel high?

Expects a numeric response (required)

4.12 Friend/relatives complained about drinking

Have close friends or relatives worried or complained about your drinking?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

4.13 Alcohol upon waking

Do you sometimes take a drink in the morning when you first get up?

Expects a single option response (optional)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to Answer [91]

4.14 Memory loss with alcohol

Has a friend or family member ever told you about things you said or did while you were drinking that you could not remember?

Expects a single option response (optional)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

4.15 Need to cut down drinking

Do you sometimes feel the need to cut down on your drinking?

Expects a single option response (optional)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

5.1 Previous Pregnancies Prompt

Thank you. The next few questions are about any previous pregnancies and children you might have had.

5.2 Total number pregnancies

How many times have you been pregnant, including this pregnancy?

Expects a numeric response (required)

Constraints

Response must be Greater Than or Equal '1'

Branches

If response Equals '1' then skip to *Previous treat of STI (5.5)*

5.3 Number live births

How many live babies have you given birth to?

Expects a numeric response (required)

5.4 Previous LBW babies

How many (if any) of the babies you have given birth to were low birth weight (weighed less than 2500g at birth)?

Expects a numeric response (required)

Constraints

Response must be Less Than or Equal 'Number live births (5.3)'

Response must be Greater Than or Equal '0'

5.5 Previous treat of STI

Have you ever received treatment for an STI?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

☐ Decline to answer [91]

5.6 Current Pregnancy Prompt

Now I have a further few questions about this baby you are carrying now.

5.7 Attempt to terminate pregnancy

Have you ever tried to terminate this pregnancy?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

☐ Decline to answer [91]

5.8 Baby planned

Was the baby planned? (Note: planned is defined as intending or planning on her own or with partner to have a child.)

Expects a single option response (optional)

☐ Yes [1]

☐ No [2]

☐ Decline to Answer [91]

5.9 Treatment of STI during this pregnancy

Have you received treatment for an STI during this pregnancy?

Expects a single option response (optional)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

Section 6. Reproductive Health – HIV & STI's

6.1 HIV Prompt

Now I would like to ask you some questions regarding HIV.

6.2 Tested for HIV ever

Have you been tested for HIV?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

Branches

If response Not Equal 'Yes [1]' then skip to *Previous Partners Prompt (7.1)*

6.3 Date last tested

When were you last tested for HIV?

Expects a date response (required)

6.4 HIV test prompt

The next question is about the result of your HIV test. I know that this is a very sensitive question. Please be reassured that your answer will be kept strictly confidential and will never be linked to your name or your personal details in any way whatsoever. No one will ever know the answer to this question, but it will greatly benefit this project if you are able to share this information with us.

6.5 HIV test result

What was the result of your test?

Expects a single option response (required)

- ☐ HIV Positive [1]
- ☐ HIV Negative [2]
- ☐ Decline to answer [91]

Section 7. Partnerships – Previous Sexual behaviour

7.1 Previous Partners Prompt

The next few questions are about sexual partners that you have had in the past. Again, please be reassured that this information will remain strictly confidential.

7.2 Lifetime sexual partners

In your lifetime, with how many different people have you had sex? If you can't recall the exact number, please give a best guess.

Expects a numeric response (required)

Constraints

Response must be Greater Than or Equal '0'

7.3 Sexual partners in previous year

How many persons have you had sex with in the last year?

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Expects a numeric response (required)

Constraints

Response must be *Less Than or Equal 'Lifetime sexual partners (7.2)'*

Response must be *Greater Than or Equal '0'*

7.4 Concurrent sexual partners past year

Was there a period in the last year when you had two or more sexual partners in the same time period (Note To interviewer: More than one partner at a concurrent time period not including group sex)

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

7.5 Knowledge of partners HIV status past year

Of the partners you have had sex with in the past year, how many do you know the HIV status of?

Expects a numeric response (required)

Constraints

Response must be *Less Than or Equal 'Sexual partners in previous year (7.3)'*

Response must be *Greater Than or Equal '0'*

Branches

If response Equals '0' then skip to *Any partners engaged in HIV status discussion past year (7.7)*

7.6 Number partners HIV+ past year

How many of your sexual partners in the past year were HIV+?

Expects a numeric response (required)

Constraints

Response must be *Less Than or Equal 'Sexual partners in previous year (7.3)'*

Response must be *Greater Than or Equal '0'*

7.7 Any partners engaged in HIV status discussion past year

Of the ***Sexual partners in previous year (7.3)*** sexual partners, how many did you talk to about HIV?

Expects a numeric response (required)

Constraints

Response must be *Less Than or Equal 'Sexual partners in previous year (7.3)'*

Response must be *Greater Than or Equal '0'*

7.8 Knowledge of sexual partners other sexual relationships last year

Of the partners in the last year, how many do you think were also involved with other women at the same time as you?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal '0'*

Response must be *Less Than or Equal 'Sexual partners in previous year (7.3)'*

Section 8. Partnerships – Current Sexual Behaviour

8.1 Current Partners Prompt

In the following section I will be asking you questions about your most recent sexual partner or partners. Recent is defined as anyone you have had sex with in the last three months.

8.2 Sexual partners last 3 months

How many people have you had sex with in the past 3 months?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal '0'*

Response must be *Less Than or Equal 'Sexual partners in previous year (7.3)'*

8.3 Concurrent sexual partners last 3 months

Was there a period in the last 3 months when you had two or more sexual partners in the same time period (Note to interviewer: more than one partner at a concurrent time period not including group sex).

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

☐ Decline to answer [91]

8.4 Knowledge of partners HIV status last 3 months

Of the partners you have had sex with in the past 3 months, how many do you know the HIV status of?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal '0'*

Response must be *Less Than or Equal 'Sexual partners last 3 months (8.2)'*

Branches

If response **Equals '0'** then skip to *Number of partners engaged in HIV status discussion last 3 months (8.6)*

8.5 Number of partners HIV+ last 3 months

How many of your sexual partners in the past 3 months were HIV+?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal '0'*

Response must be *Less Than or Equal 'Sexual partners last 3 months (8.2)'*

8.6 Number of partners engaged in HIV status discussion last 3 months

In the last 3 months, did you talk about your HIV status with any of your sexual partners?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

☐ Decline to answer [91]

8.7 Knowledge of sexual partners other sexual relationships last 3 months

Of the partners in the last 3 months, how many do you think were also involved with other women at the same time as you?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal '0'*

Response must be *Less Than or Equal 'Sexual partners last 3 months (8.2)'*

8.8 Use of condom last 3 months

Of the last 10 times you had sex, how many times out of 10 did you use a condom?

Expects a single option response (required)

☐ 0 [0]

- ☐ 1 [1]
- ☐ 2 [2]
- ☐ 3 [3]
- ☐ 4 [4]
- ☐ 5 [5]
- ☐ 6 [6]
- ☐ 7 [7]
- ☐ 8 [8]
- ☐ 9 [9]
- ☐ 10 [10]
- ☐ Decline to answer [91]

Section 9. Disclosure & Protection

Prerequisites
Skip when *HIV test result (6.5)* Not Equal 'HIV Positive [1]'

9.1 Support Prompt

Thank you. The next few questions I will ask about disclosure and support, regarding your HIV status

Prerequisites
Skip when *HIV test result (6.5)* Not Equal 'HIV Positive [1]'

9.2 Able to disclose

If you wanted to disclose your HIV status would you be able to?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Unsure [99]
- ☐ Decline to answer [95]

Prerequisites
Skip when *HIV test result (6.5)* Not Equal 'HIV Positive [1]'

9.3 Disclosed to Partner

Have you disclosed you HIV status to your partner?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Has no partner [3]
- ☐ Decline to answer [91]

Prerequisites
Skip when *HIV test result (6.5)* Not Equal 'HIV Positive [1]'

9.4 Disclosed to Family

How many family members have you disclosed your HIV Status to?

Expects a numeric response (required)

Constraints
Response must be Greater Than or Equal '0'

Prerequisites
Skip when *HIV test result (6.5)* Not Equal 'HIV Positive [1]'

9.5 Disclosed to Others

How many people outside your family have you disclosed your HIV Status to?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal '0'*

Prerequisites

Skip when *HIV test result (6.5)* Not Equal 'HIV Positive [1]'

9.6 Inform sister of status at delivery

Do you feel confident that you could tell your clinic sister about your HIV status when you go to give birth?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Unsure [99]
- ☐ Decline to answer [91]

Prerequisites

Skip when *HIV test result (6.5)* Not Equal 'HIV Positive [1]'

9.7 Prevention of further infection

Now that you know your status how do you plan to protect yourself from being reinfected with HIV?

Expects multiple selected options (required)

- ☐ Be faithful [1]
- ☐ Use condoms [2]
- ☐ Abstain [3]
- ☐ Test for HIV [4]
- ☐ Nothing [5]
- ☐ Other [95]
- ☐ Decline to answer [91]

Prerequisites

Skip when *HIV test result (6.5)* Not Equal 'HIV Positive [1]'

9.8 Comfortable talking to partner

Which (if any) of the following do you feel comfortable talking to your partner about?

Expects multiple selected options (required)

- ☐ About pregnancy [1]
- ☐ About HIV [2]
- ☐ About asking for help when you need it [3]
- ☐ About speaking up when things are wrong [4]
- ☐ About revealing your HIV status [5]
- ☐ None of the above [6]
- ☐ NOT APPLICABLE, has no partner [7]
- ☐ Decline to answer [91]

Prerequisites

Skip when *HIV test result (6.5)* Not Equal 'HIV Positive [1]'

9.9 Comfortable talking to clinic sister or nurse

Which (if any) of the following do you feel comfortable talking to your clinic sister / nurse about?

Expects multiple selected options (required)

- ☐ About pregnancy [1]
- ☐ About HIV [2]
- ☐ About asking for help when you need it [3]
- ☐ About speaking up when things are wrong [4]
- ☐ About revealing your HIV status [5]
- ☐ None of the above [6]
- ☐ Decline to answer [91]

Prerequisites

9.10 Comfortable talking to female relative/friend

Which (if any) of the following do you feel comfortable talking to your mother/sister/female relative or female friend about?

Expects multiple selected options (required)

- ☐ About pregnancy [1]
- ☐ About HIV [2]
- ☐ About asking for help when you need it [3]
- ☐ About speaking up when things are wrong [4]
- ☐ About revealing your HIV status [5]
- ☐ None of the above [6]
- ☐ Decline to answer [91]

Prerequisites

Skip when *HIV test result (6.5)* Not Equal 'HIV Positive [1]'

Skip when *Disclosed to Partner (9.3)* Not Equal 'Yes [1]'

9.11 Conflict due to status

How much conflict has your diagnosis of HIV caused between you and your partner?

Expects a single option response (required)

- ☐ None [1]
- ☐ A little [2]
- ☐ Quite a lot [3]
- ☐ A lot of conflict [4]
- ☐ Decline to answer [91]

Prerequisites

Skip when *HIV test result (6.5)* Not Equal 'HIV Positive [1]'

9.12 Conflict in the home

How much conflict is there at home?

Expects a single option response (required)

- ☐ None [1]
- ☐ A little [2]
- ☐ Quite a lot [3]
- ☐ A lot of conflict [4]
- ☐ Decline to answer [91]

Section 10. Relationships and violence

10.1 Relationship Prompt

The next few questions are about your current relationship with your partner.

10.2 Frequency quarrels

In your current relationship how often would you say that you have quarrelled? Would you say never, rarely, sometimes or often?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Rarely [2]
- ☐ Sometimes [3]
- ☐ Often [4]

10.3 Talk about relationship to friend

Do you talk to a friend or relative about problems in your relationship?

Expects a single option response (required)

- ☐ Yes [1]

10.4 Quality current relationship

Would you say your relationship is it excellent, alright, just ok, or not alright?

Expects a single option response (required)

- ê Excellent [1]
- ê Alright [2]
- ê Just ok [3]
- ê Not alright [4]

10.5 Violence Prompt

Men often fight with their girlfriends and often these fights get physical. I am going to ask some questions about this because we want to learn more about what women experience in their lives. I want you to speak freely and remember that everything you say will be confidential.

10.6 Slap

In the past 12 months, did your current partner or any other boyfriend slap you or throw something at you which could hurt you? Did this happen many times, a few times, once or did it not happen?

Expects a single option response (required)

- ê Never [1]
- ê Once [2]
- ê Few [3]
- ê Many [4]

10.7 Shove

In the past 12 months, did your current partner or any other boyfriend push or shove you? Did this happen many times, a few times, once or did it not happen?

Expects a single option response (required)

- ê Never [1]
- ê Once [2]
- ê Few [3]
- ê Many [4]

10.8 Punch

In the past 12 months, did your current partner or any other boyfriend hit you with a fist or with something else which could hurt you? Did this happen many times, a few times, once or did it not happen?

Expects a single option response (optional)

- ê Never [1]
- ê Once [2]
- ê Few [3]
- ê Many [4]

10.9 Weapon

In the past 12 months, did your current partner or any other boyfriend threaten to use or actually use a gun, knife or other weapon against you? Did this happen many times, a few times, once or did it not happen?

Expects a single option response (optional)

- ê Never [1]
- ê Once [2]
- ê Few [3]
- ê Many [4]

Prerequisites

Skip when *Slap (10.6)* Not Equal 'Never [1]'

Skip when *Shove (10.7)* Not Equal 'Never [1]'

Skip when *Punch (10.8)* Not Equal 'Never [1]'

Skip when *Weapon (10.9)* Not Equal 'Never [1]'

10.10 No physical violence confirmation

Is it correct to confirm then that, in the last 12 months, you have not been physically harmed by your current partner or any other boyfriend?

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Expects a single option response (required), Default: Yes

☐ Yes [1]

☐ No [2]

Branches

If response Equals 'Yes [1]' then skip to *Antenatal Health Prompt (11.1)*

10.11 Willing to Tell Most Recent Date

Are you willing to tell us the most recent date on which you had an argument with your boyfriend that got physical?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

Branches

If response Not Equal 'Yes [1]' then skip to *Number violent episodes (10.13)*

Prerequisites

Skip when *No physical violence confirmation (10.10)* Equals 'Yes [1]'

10.12 Most recent violence

When was the most recent time you had an argument with a boyfriend that got physical?

Expects a date response (optional)

10.13 Number violent episodes

In the past 12 months on how many occasions in did you have an argument with any boyfriend that got physical?

Expects a numeric response (required)

10.14 Violence from current partner in previous year

In the past 12 months did you have an argument with your current partner that got physical?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

☐ Not applicable (no current partner) [3]

☐ Decline to answer [91]

Section 11. Baseline Knowledge – Antenatal Health

11.1 Antenatal Health Prompt

Now I am going to ask you some questions about antenatal health. While you may not know all the answers to the following questions, please answer each question to the best of your ability.

11.2 Ok to have little alcohol

Statement: It is ok for a pregnant woman to drink a little alcohol to relax.

Expects a single option response (required)

☐ Agree [1]

☐ Disagree [2]

☐ Dont know [3]

☐ Decline to answer [91]

11.3 Weight gain is healthy

Statement: The more weight a pregnant woman gains in pregnancy, the healthier the baby.

Expects a single option response (required)

- ☐ Agree [1]
- ☐ Disagree [2]
- ☐ Dont know [3]
- ☐ Decline to answer [91]

11.4 Vitamins Prompt

Thank you. Now we have a question about any vitamins or mineral supplements you might be taking.

11.5 V&M Supplementation

Are you taking any of the following during this pregnancy?

Expects multiple selected options (required)

- ☐ Multivitamin [1]
- ☐ Folic acid [2]
- ☐ Iron tonic / tablets [3]
- ☐ Calcium [4]
- ☐ None of these [5]

11.6 Milk and Dairy

How often in the last week did you eat milk and dairy (e.g. sour milk, yoghurt and cheese)

Expects a numeric response (required)

Constraints

Response must be Greater Than or Equal '0'

11.7 Fruit and vegetables

How often in the last week did you eat fruit and vegetables?

Expects a numeric response (required)

Constraints

Response must be Greater Than or Equal '0'

11.8 Meats

How often in the last week did you eat meats (e.g. chicken, beef, pork)?

Expects a numeric response (required)

Constraints

Response must be Greater Than or Equal '0'

11.9 Fish

How often in the last week did you eat fish?

Expects a numeric response (required)

Constraints

Response must be Greater Than or Equal '0'

11.10 Eggs

How often in the last week did you eat eggs?

Expects a numeric response (required)

Constraints

Response must be Greater Than or Equal '0'

11.11 Margarine and oil

How often in the last week did you eat margarine and oil?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal '0'*

11.12 Sugar and chocolates

How often in the last week did you eat sugar and chocolates?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal '0'*

11.13 Fizzy cold drinks

How often in the last week did you drink fizzy cold drinks?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal '0'*

11.14 Breads, samp and porridge

How often in the last week did you eat breads, samp and porridge?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal '0'*

11.15 Beans and lentils

How often in the last week did you eat beans and lentils?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal '0'*

Section 12. Baseline Knowledge – Delivery Health

12.1 Delivery Prompt

Now I am going to ask you some questions about when your baby is going to be born.

12.2 Know where will deliver

Do you know which health facility you will deliver at?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

☐ Decline to answer [91]

Branches

If response Equals 'No [2]' then skip to *Post birth follow-up for mother (12.7)*

Prerequisites

Skip when *Know where will deliver (12.2)* Not Equal 'Yes [1]'

12.3 Delivery Facility

Please select the delivery facility

Expects a single option response (required)

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- ☐ Michael Mapongwana Day Hospital [1]
- ☐ Site B Hospital [2]
- ☐ Tygerberg Hospital [3]
- ☐ Mowbray Maternity Hospital [4]
- ☐ Home (outside hospital) [5]
- ☐ Eastern Cape [6]
- ☐ Bishop Lavis [7]
- ☐ Other [95]

12.4 Travel means during day

Have you made plans to get to the hospital if you start giving birth during the day?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

12.5 Travel means during night

Have you made plans to get to the hospital if you start giving birth at night?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to Answer [91]

12.6 Delivery companion

Have you asked anybody to go with you to the hospital when you give birth?

Expects a single option response (optional)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Dont Know [99]
- ☐ Decline to answer [91]

12.7 Post birth follow-up for mother

After giving birth, when should a mother next go to the clinic?

Expects a single option response (required)

- ☐ 1 week [1]
- ☐ 2 weeks [2]
- ☐ 3 weeks [3]
- ☐ 4 weeks [4]
- ☐ 5 weeks [5]
- ☐ 6 weeks [6]
- ☐ 7 weeks [7]
- ☐ 8 weeks [8]
- ☐ 9 weeks [9]
- ☐ 10 weeks [10]
- ☐ Dont know [99]

Section 13. Maternal Knowledge of Vertical Transmission

Prerequisites

Skip when *HIV test result (6.5)* Equals 'HIV Positive [1]'

13.1 Skip Section- Interviewer Instruction Only

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This is for the interviewer, please DO NOT read it out: Some questions are going to be skipped because they are only for mothers who answered that they were HIV positive.

Expects a single option response (required), Default: Continue

☐ Continue [1]

Branches

If response Equals 'Continue [1]' then skip to *Baby Feeding Prompt (14.1)*

If response Not Equal 'Continue [1]' then skip to *Baby Feeding Prompt (14.1)*

13.2 Medicine Prompt

Now I have some questions about medicines for you and your baby. While you may not know all the answers to the following questions, please answer each question to the best of your ability.

13.3 Maternal Knowledge Statements Prompt

I am now going to read some statements to you. Please tell me if you agree.

13.4 HIV+ mother =HIV+ baby

Statement: HIV positive women only have HIV positive babies.

Expects a single option response (required)

☐ Yes / true [1]

☐ No / false [2]

☐ Dont know [99]

☐ Decline to answer [91]

13.5 Mothers can act to protect child

Statement: HIV positive women can do a lot to influence whether their babies are HIV positive or HIV negative.

Expects a single option response (optional)

☐ Yes / true [1]

☐ No / false [2]

☐ Dont know [99]

☐ Decline to answer [91]

13.6 Mixed feeding

Statement: Mixed feeding before 6 months does not increase the chance of my baby getting HIV

Expects a single option response (optional)

☐ Yes / true [1]

☐ No / false [2]

☐ Dont know [99]

☐ Decline to answer [91]

13.7 Healthy behaviours to protect baby

[INTERVIEWER: FOR THE THIS QUESTION, ASK THE MOTHER TO TELL YOU WHAT THEY ARE, THEN TICK ALL THAT APPLY] What are the things that you can do to make sure your baby is born HIV negative?

Expects multiple selected options (required)

☐ Nothing [1]

☐ Use only one feeding method [2]

☐ Breastfeeding only [3]

☐ Bottle feeding only [4]

☐ Caesarean birth [5]

☐ Give cotrimoxazole for 18 months [6]

☐ Care for nipples if I breastfeed [7]

☐ Get HIV tested at 6 weeks of age [8]

☐ Get NVP for newborn at time of birth [9]

- Ⓔ Other [95]
- Ⓔ Dont know [99]
- Ⓔ Decline to answer [91]

Section 14. Feeding Strategies and Prevention of Infections

14.1 Baby Feeding Prompt

Thank you. We are almost at the end of the interview now. I have a few more questions about baby feeding.

14.2 Feeding plan first 6 months

How do you plan to feed your baby for the first 6 months?

Expects a single option response (required)

- Ⓔ Only breastfeeding [1]
- Ⓔ Only formula feeding [2]
- Ⓔ Breastfeed plus formula (and other foods such as pap, water and glucose = mixed feeding) [3]
- Ⓔ Decline to answer [91]

Branches

If response Equals 'Only breastfeeding [1]' then skip to *Routine Prompt (15.1)*

14.3 Formula feed resources

Given that you plan to formula feed (or mix feed), do you have access to any of the following:

Expects multiple selected options (required)

- Ⓔ Money or other means to obtain formula if the clinic runs out [1]
- Ⓔ Running water in your house [2]
- Ⓔ Electricity to boil water [3]
- Ⓔ None of these [4]
- Ⓔ Decline to answer [91]

Section 15. Routines

15.1 Routine Prompt

Now I would like to ask you some general questions about your activities over the last few days.

15.2 Wake-up time yesterday

What time did you get up yesterday morning? (If not weekend, otherwise ask for Friday)

Expects a time response (required)

15.3 Wake up time 2 days ago

What time did you get up two days ago? (If not weekend, otherwise ask for Friday)

Expects a time response (required)

15.4 Wake up time 3 days ago

What time did you get up three days ago? (If not weekend, otherwise ask for Friday)

Expects a time response (required)

15.5 Bed time yesterday

What time did you go to bed yesterday evening? (If not weekend, otherwise ask for Friday)

Expects a time response (required)

15.6 Bed time 2 days ago

What time did you go to bed two days ago? (If not weekend, otherwise ask for Friday)

Expects a time response (required)

15.7 Bed time 3 days ago

What time did you go to bed three days ago? (If not weekend, otherwise ask for Friday)

Expects a time response (required)

15.8 Main meal yesterday

What time did you cook the main meal yesterday? (If not weekend, otherwise ask for Friday)

Expects a time response (required)

15.9 Main meal 2 days ago

What time did you cook the main meal two days ago? (If not weekend, otherwise ask for Friday)

Expects a time response (required)

15.10 Main meal 3 days ago

What time did you cook the main meal three days ago? (If not weekend, otherwise ask for Friday)

Expects a time response (required)

15.11 Meal together yesterday

How many times did your family eat a meal together yesterday? (If not weekend, otherwise ask for Friday)

Expects a numeric response (required)

15.12 Meal together 2 days ago

How many times did your family eat a meal together two days ago? (If not weekend, otherwise ask for Friday)

Expects a numeric response (required)

15.13 Meal together 3 days ago

How many times did your family eat a meal together three days ago? (If not weekend, otherwise ask for Friday)

Expects a numeric response (required)

15.14 Household chores yesterday

When did you start your household chores yesterday (If not weekend, otherwise ask for Friday)

Expects a time response (required)

15.15 Household chores 2 days ago

When did you start your household chores two days ago? (If not weekend, otherwise ask for Friday)

Expects a time response (required)

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15.16 Household chores 3 days ago

When did you start your household chores three days ago? (If not weekend, otherwise ask for Friday)

Expects a time response (required)

15.17 Conflict at meal times

How much conflict has there been at meal times in the past three days?

Expects a single option response (required)

- ☐ None [1]
- ☐ A little [2]
- ☐ Quite a lot [3]
- ☐ A lot of conflict [4]
- ☐ Decline to answer [91]

Section 16. Baseline Stated Future Plans

16.1 Future Plans Prompt

This is the last section of the interview. I am now going to ask you some questions about your future plans.

16.2 Return to work

Do you plan to return to work or school after the baby is born?

Expects a single option response (required)

- ☐ Yes / true [1]
- ☐ No / false [2]
- ☐ Dont know [3]
- ☐ Not applicable (unemployed) [4]
- ☐ Decline to answer [91]

16.3 Time return work

At what age (of the baby) do you plan to return to work?

Expects a single option response (required)

- ☐ less than 1 month [1]
- ☐ 1 month [2]
- ☐ 6 weeks [3]
- ☐ 3 months [4]
- ☐ 6 months [5]
- ☐ 9 months [6]
- ☐ One year [7]
- ☐ Other [99]
- ☐ Dont know [95]
- ☐ Decline to answer [91]

16.4 Caregiver in mothers absence

Who will be the primary caregiver for the baby when you are away?

Expects multiple selected options (required)

- ☐ Own Family [1]
- ☐ In Laws [2]
- ☐ Paid care [3]

- ☐ Friends [4]
- ☐ Neighbour [5]
- ☐ Dont know [99]
- ☐ Decline to answer [91]

Section 17. End of Survey

17.1 Voucher given

Was the participant given R80 food voucher?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]

17.2 End

You have reached the end of the survey. You can go back and review previous responses or select Next to complete the section.

Appendix C (i) - Six months Postnatal Assessment Part 1

Section 1. Participant Identifier

1.1 Participant ID

Please enter the participant's unique identifier code:

Expects a numeric response (required)

1.2 Interviewer Code

Please enter your interviewer code:

Expects a numeric response (required)

1.3 Neighbourhood Code

Please enter the neighbourhood code:

Expects a single line text response (required)

1.4 Date of Interview

Please confirm the date of this interview:

Expects a date response (required)

1.5 Time of Interview

Please confirm the time of this interview:

Expects a time response (required)

1.6 Address

Please enter the participant's address:

Expects a single line text response (required)

Section 2. Informed Consent

2.1 Informed Consent Granted

Was the informed consent form explained and accepted?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

Branches

If response Equals 'Yes [1]' then skip to *Demographics Prompt (3.1)*

2.2 Refusal Reason

If mother refuses to participate note the reason for non-participation:

Expects a single option response (required)

☐ Fear of stigma [1]

☐ No reason given [2]

☐ Family member / partner disagree with mother's participation [3]

☐ Family member / partner does not allow explanation [4]

☐ Other [5]

Branches

If response Equals 'Fear of stigma [1]' then skip to *End (20.1)*

If response Not Equal 'Fear of stigma [1]' then skip to *End (20.1)*

Section 3. Participant Demographics

3.1 Demographics Prompt

Thank you for participating in this interview. I will start by asking you some general questions about yourself.

3.2 Mother's Age

How old are you (in completed years)?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal '18'*

Response must be *Less Than or Equal '80'*

3.3 Mother's Date of Birth

What is your date of birth?

Expects a date response (required)

3.4 Changed Marital Status

Have you changed your marital status since you were first interviewed in this study while you were pregnant?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

Branches

If response Equals 'No [2]' then skip to *Always Lived CT (3.6)*

3.5 Marital Status

Are you currently single or married (in any form)?

Expects a single option response (required)

☐ Single [1]

☐ Married [2]

☐ Not married but living together [3]

☐ Decline to answer [91]

3.6 Always Lived CT

Have you always lived in Cape Town?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

Branches

If response Equals 'Yes [1]' then skip to *Housing Prompt (4.1)*

3.7 Year Moved to CT

In what year did you first move to Cape Town?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal '1920'*

Response must be *Less Than or Equal '2015'*

3.8 Place Living before CT

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Where were you living before you moved to Cape Town?

(required)

3.9 Years in CT

What is the longest uninterrupted period IN YEARS that you have lived in Cape Town (holidays away from Cape Town do not count as time away)?

Expects a decimal response (required)

Section 4. Demographic Information about Housing

4.1 Housing Prompt

In this next section, the questions are about the house where you live.

4.2 Moved Since Birth

Have you moved households or changed your address since you enrolled in the study?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

Branches

If response Equals 'No [2]' then skip to *Participant Lives With Others (4.10)*

4.3 Housing Description

What best describes your housing?

Expects a single option response (required)

☐ Formal brick structure on a separate yard [1]

☐ Site and service [2]

☐ Informal dwelling/Shack in backyard [3]

☐ Informal dwelling/Shack not in backyard, e.g. in an informal/squatter settlement [4]

☐ Hostel [5]

☐ Decline to answer [91]

4.4 Water Source

What is the main source of drinking water?

Expects a single option response (required)

☐ Water in the home [1]

☐ Water on the premises [2]

☐ Water from a community tap / public tank [3]

☐ Water from a river [4]

☐ Decline to answer [91]

4.5 Household Toilet

What toilet facilities does your household have?

Expects a single option response (required)

☐ Flush toilet on the premises [1]

☐ Bucket toilet [2]

☐ Public toilet [3]

☐ Pit latrine [4]

☐ None [5]

☐ Other [95]

☐ Decline to answer [91]

4.6 Electricity

Do you have electricity in your household?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

☐ Decline to answer [91]

4.7 Cooking Fuel

What is your main source of fuel for cooking?

Expects a single option response (required)

- ☐ Electricity [1]
- ☐ Paraffin [2]
- ☐ Gas [3]
- ☐ Coal [4]
- ☐ Wood [5]
- ☐ Other [95]
- ☐ Decline to answer [91]

4.8 Household Items

Does your household have any of the following items that I will read off?

Expects multiple selected options (required)

- ☐ Stove (coal, electric, primus, gas) [1]
- ☐ Cell phone [2]
- ☐ Bicycle [3]
- ☐ Radio [4]
- ☐ Refrigerator [5]
- ☐ Television [6]
- ☐ Car in working condition [7]
- ☐ Telephone (landline) [8]
- ☐ Computer [9]
- ☐ Internet (computer) [10]
- ☐ Internet (cell phone) [11]
- ☐ None of these [12]
- ☐ Decline to answer [91]

4.9 Household Members Prompt

Thank you. Now I would like to ask you a few questions about the people who live with you. If you are staying in the same household as before, some of this information might not have changed, but if you would answer these questions again for us, we would be most grateful.

4.10 Participant Lives With Others

Do you live with others in your household (people who sleep in the household more than 2 nights each week)?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

Branches

If response Equals 'No [2]' then skip to *Income Prompt (6.1)*

4.11 HH Member Count

How many other people, including yourself and all adults and children, live in the household?

Expects a numeric response (required)

Constraints

Response must be Greater Than or Equal '1'

The next section is a repeating questions format. That is, the same questions will be asked repeatedly for each of the household members that the participant speaks of.

Section 5. Household Members

5.1 HH Member Name

What is this member's name?

Expects a single line text response (required)

5.2 HH Member Age

What is **HH Member Name (5.1)**'s age?

Expects a numeric response (required)

5.3 HH Member Gender

Is **HH Member Name (5.1)** male or female?

Expects a single option response (required)

- ☐ Male [1]
- ☐ Female [2]

Section 6. Income and Employment

6.1 Income Prompt

Now I would like to ask you a few questions about employment and income.

6.2 Participant Employed

Are you employed?

Expects a single option response (required)

- ☐ Part time [1]
- ☐ Full time [2]
- ☐ Temporary/casual work [3]
- ☐ No [4]
- ☐ Self employed [5]
- ☐ Decline to answer [91]

6.3 Household Income Sources

What are the sources of income for the household?

Expects multiple selected options (required)

- ☐ Regular Income [1]
- ☐ Irregular income [2]
- ☐ Self employment [3]
- ☐ Contribution from others [4]
- ☐ Retirement pension [5]
- ☐ State pension [6]
- ☐ Disability grant [7]
- ☐ Child support grant [8]
- ☐ Foster care grant [9]
- ☐ Care dependency grant [10]
- ☐ None of these [11]
- ☐ Don't know [99]
- ☐ Other [95]
- ☐ Decline to answer [91]

6.4 Household Monthly Income

What is the average household monthly income?

Expects a single option response (required)

- ☐ 0 to 499 Rand [1]
- ☐ 500 to 1,000 [2]
- ☐ 1,001 to 2,000 [3]
- ☐ 2,001 to 5,000 [4]
- ☐ 5,001 to 8,000 [5]
- ☐ 8,000 and above [6]
- ☐ Don't know [99]
- ☐ Decline to answer [91]

6.5 Participant Days of Hunger

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How many days in the passed week have you gone hungry? (By this I mean days when you felt you didn't have enough to eat)

Expects a numeric response (required)

Constraints

Response must be *Less Than or Equal* '7'

Response must be *Greater Than or Equal* '0'

6.6 Household Children Hunger

How many days in the last week have any of the children gone hungry? (By this I mean days when you felt that your children needed to eat more.)

Expects a numeric response (required)

Constraints

Response must be *Less Than or Equal* '7'

Response must be *Greater Than or Equal* '0'

Section 7. Social Support

7.1 Support Support

Next are some questions about friends and relatives who are available to you for support.

7.2 Close Friends and Relatives

How many close friends and relatives do you have? By this, I mean people you feel at ease with and can talk with about what is on your mind.

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal* '0'

7.3 Frequency Contact

In this past month, approximately how many times have you had contact with friends or relatives (including visits, phone calls, sms, and social gatherings)?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal* '0'

7.4 Participation in Groups or Organisations

Which (if any) of the following organisations or civic activities do you participate in?

Expects multiple selected options (required)

- ☐ A church/ temple [1]
- ☐ Civic community organisation [2]
- ☐ Political organisation [3]
- ☐ Support group [4]
- ☐ AIDS education group/an organization for HIV+ persons/AIDS activities outside your neighbourhood. [5]
- ☐ None of these [6]
- ☐ Other [95]
- ☐ Decline to answer [91]

7.5 Recreation Time

In the past month, how often did you do enjoyable or relaxing things just for yourself such as watching TV, going to church, having your hair done, singing dancing?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Once or twice a month [2]
- ☐ Once or twice a week [3]
- ☐ Several times a week [4]
- ☐ Daily [5]
- ☐ Decline to answer [91]

7.6 Practical Support

How many times in the past week has someone provided you with practical support? (E.g. money for taxi fare, helping with chores, childcare)

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal* '0'

7.7 Current Partner

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Do you have a current partner?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

Branches

If response Equals 'No [2]' then skip to *Trust, Talk to Mother (7.11)*

7.8 Trust and Share with Partner

Can you trust, talk to and share your feelings with your husband / partner?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Sometimes [2]
- ☐ Always [3]
- ☐ Decline to answer [91]

7.9 Turn to Partner in Difficulty

Can you lean on and turn to your husband/partner in times of difficulty?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Sometimes [2]
- ☐ Always [3]
- ☐ Decline to answer [91]

7.10 Partner Practical Help

Does he give you practical help?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Sometimes [2]
- ☐ Always [3]
- ☐ Decline to answer [91]

7.11 Trust, Talk to Mother

Can you trust, talk frankly and share your feelings with your mother?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Sometimes [2]
- ☐ Always [3]
- ☐ Mother is deceased [4]
- ☐ Decline to answer [91]

Branches

If response Equals 'Mother is deceased [4]' then skip to *Trust, Talk to Father (7.14)*

7.12 Turn to Mother in Difficulty

Can you lean on and turn to your mother in times of difficulty?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Sometimes [2]
- ☐ Always [3]
- ☐ Mother is deceased [4]
- ☐ Decline to answer [91]

7.13 Mother Practical Help

Does your mother give you practical help?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Sometimes [2]
- ☐ Always [3]
- ☐ Mother is deceased [4]
- ☐ Decline to answer [91]

7.14 Trust, Talk to Father

Can you trust, talk frankly and share your feelings with your father?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Sometimes [2]
- ☐ Always [3]
- ☐ Father is deceased [4]
- ☐ Decline to answer [91]

Branches

If response Equals 'Father is deceased [4]' then skip to *Help When Unavailable (7.17)*

7.15 Turn to Father in Difficulty

Can you lean on and turn to your father in times of difficulty?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Sometimes [2]
- ☐ Always [3]
- ☐ Father is deceased [4]
- ☐ Decline to answer [91]

7.16 Father Practical Help

Does your father give you practical help?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Sometimes [2]
- ☐ Always [3]
- ☐ Father is deceased [4]
- ☐ Decline to answer [91]

7.17 Help When Unavailable

Do you have someone to help take care of the baby when you need to rest, go shopping, and do errands?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Declined to answer [91]

Section 8. Maternal Health & TB

8.1 Health Prompt

Thank you. The next few questions are about your health and any illnesses you might be experiencing, including things such as Hypertension, Diabetes and TB.

8.2 Diabetes

Are you currently diagnosed with Diabetes?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Declined to answer [91]

Branches

If response Equals 'No [2]' then skip to *Standard Hypertension - Mother (8.4)*

8.3 Diabetes Medication

What medication (if any) do you receive for your Diabetes?

Expects a single option response (required)

- ☐ Tablets [1]
- ☐ Injections [2]
- ☐ Nothing [3]
- ☐ Declined to answer [91]

8.4 Standard Hypertension - Mother

Are you currently diagnosed with hypertension?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Declined to answer [91]

Branches

If response Equals 'No [2]' then skip to *Post Birth Conditions - Mother (8.6)*

8.5 Hypertension Medication

Are you currently taking medication for your hypertension?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

8.6 Post Birth Conditions - Mother

After the birth of your child, did you have any of the following?

Expects multiple selected options (required)

- ☐ Heavy vaginal bleeding [1]
- ☐ Bad smelling discharge [2]
- ☐ Temperature [3]
- ☐ Persistent cough [4]
- ☐ Breast infection [5]
- ☐ Other [95]
- ☐ None [6]

8.7 Traditional Medicine - Mother

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Please tell us which of the following, if any, you have used since the time of your last assessment.

Expects multiple selected options (optional)

- ☐ Enemas [1]
- ☐ Traditional vitamins or supplements in liquid [2]
- ☐ Medicines for social health (e.g. love potions, bewitchment) [3]
- ☐ Medicines for spiritual health (e.g. liquids for protecting baby) [4]
- ☐ Medicines for children (muti wenyoni, lennon's medicines) [5]
- ☐ Decline to answer [91]
- ☐ None [6]

8.8 Participant TB Test

Since your last assessment after the birth of your baby, have you tested for TB?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Declined to answer [91]

Branches

If response Equals 'No [2]' then skip to *Participant HH TB (8.11)*

8.9 TB Test Result

What was the result of your test?

Expects a single option response (required)

- ☐ Positive [1]
- ☐ Negative [2]
- ☐ Declined to answer [91]

Branches

If response Not Equal 'Positive [1]' then skip to *Participant HH TB (8.11)*

8.10 Participant TB Treatment

Are you currently receiving treatment?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Declined to answer [91]

8.11 Participant HH TB

Since our last meeting has anybody ELSE in your household had a diagnosis of TB?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Don't know [99]
- ☐ Declined to answer [91]

Branches

If response Not Equal 'Yes [1]' then skip to *Weight (8.13)*

8.12 Participant HH TB Treatment

Are they currently receiving treatment for TB?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Don't know [99]
- ☐ Declined to answer [91]

8.13 Weight

Please record the participant's weight.

Expects a decimal response (required)

Constraints

Response must be Greater Than or Equal '30'
Response must be Less Than or Equal '180'

Section 9. Mental Health (EPDS)

9.1 Mental Health Prompt

Now I have some questions to ask about your feelings over the last week. Please state the answer which comes closest to how you have felt IN THE PAST 7 DAYS, not just how you feel today.

9.2 Laugh

I have been able to laugh and see the funny side of things.

Expects a single option response (required)

- ☐ As much as I always could [0]
 - ☐ Not quite so much now [1]
 - ☐ Definitely not so much now [2]
 - ☐ Not at all [3]
-

9.3 Enjoyment

I have looked forward with enjoyment to things.

Expects a single option response (required)

- ☐ As much as I ever did [0]
 - ☐ Rather less than I used to [1]
 - ☐ Definitely less than I used to [2]
 - ☐ Hardly at all [3]
-

9.4 Self Blame

I have blamed myself unnecessarily when things went wrong.

Expects a single option response (required)

- ☐ Yes, most of the time [3]
 - ☐ Yes, some of the time [2]
 - ☐ Not very often [1]
 - ☐ No, never [0]
-

9.5 Anxious/worry

I have been anxious or worried for no good reason.

Expects a single option response (required)

- ☐ No, not at all [0]
 - ☐ Hardly ever [1]
 - ☐ Yes, sometimes [2]
 - ☐ Yes, very often [3]
-

9.6 Panicky

I have felt scared or panicky for not very good reason.

Expects a single option response (required)

- ☐ Yes, quite a lot [3]
 - ☐ Yes, sometimes [2]
 - ☐ No, not much [1]
 - ☐ No, not at all [0]
-

9.7 Things piled up

Things have been getting on top of me.

Expects a single option response (required)

- ☐ Yes, most of the time I haven't been able to cope at all [3]
 - ☐ Yes, sometimes I haven't been coping as well as usual [2]
 - ☐ No, most of the time I have coped quite well [1]
 - ☐ No, I have been coping as well as ever [0]
-

9.8 Difficulty Sleeping

I have been so unhappy that I have had difficulty sleeping.

Expects a single option response (required)

- ☐ Yes, most of the time [3]
 - ☐ Yes, sometimes [2]
 - ☐ Not very often [1]
 - ☐ No, not at all [0]
-

9.9 Sad/miserable

I have felt sad or miserable.

Expects a single option response (required)

- ☐ Yes, most of the time [3]
 - ☐ Yes, sometimes [2]
 - ☐ Not very often [1]
 - ☐ No, not at all [0]
-

9.10 Crying

I have been so unhappy that I have been crying.

Expects a single option response (required)

- ☐ Yes, most of the time [3]
 - ☐ Yes, quite often [2]
 - ☐ Only occasionally [1]
 - ☐ No, never [0]
-

9.11 Self harm

The thought of harming myself has occurred to me.

Expects a single option response (required)

- ☐ Yes, quite often [3]
 - ☐ Sometimes [2]
 - ☐ Hardly ever [1]
 - ☐ Never [0]
-

Section 10. Mental Health (GHQ)

10.1 GHQ Prompt

We would like to know how your health has been in general OVER THE PAST FEW WEEKS. Please answer ALL the questions simply by stating which answer most closely applies to you OVER THE PAST FEW WEEKS. Remember that we want to know about PRESENT AND RECENT (Interviewer prompt: over the past few weeks since the month and dates you want to discuss) complaints, not those you had in the past. It is important that you try to answer all the questions.

10.2 GHQ Concentrate

Have you been able to concentrate on whatever you're doing?

Expects a single option response (required)

- ☐ Better than usual [3]
- ☐ Same as usual [2]
- ☐ Less than usual [1]
- ☐ Much less than usual [0]

10.3 GHQ Lost Sleep

Have you recently lost much sleep over worry?

Expects a single option response (required)

- ☐ Not at all [3]
- ☐ No more than usual [2]
- ☐ Rather more than usual [1]
- ☐ Much more than usual [0]

10.4 GHQ Useful Part

Have you recently felt that you are playing a useful part in things?

Expects a single option response (required)

- ☐ More so than usual [3]
- ☐ Same as usual [2]
- ☐ Less useful than usual [1]
- ☐ Much less useful [0]

10.5 GHQ Decisions

Have you recently felt capable of making decisions about things?

Expects a single option response (required)

- ☐ More so than usual [3]
- ☐ Same as usual [2]
- ☐ Less so than usual [1]
- ☐ Much less capable [0]

10.6 GHQ Under Strain

Have you recently felt constantly under strain?

Expects a single option response (required)

- ☐ Not at all [3]
 - ☐ No more than usual [2]
 - ☐ Rather more than usual [1]
 - ☐ Much more than usual [0]
-

10.7 GHQ Unable Overcome Difficulties

Have you recently felt you couldn't overcome your difficulties?

Expects a single option response (required)

- ☐ Not at all [3]
 - ☐ No more than usual [2]
 - ☐ Rather more than usual [1]
 - ☐ Much more than usual [0]
-

10.8 GHQ Enjoy Activities

Have you recently been able to enjoy your normal day-to-day activities?

Expects a single option response (required)

- ☐ More than usual [3]
 - ☐ Same as usual [2]
 - ☐ Less so than usual [1]
 - ☐ Much less than usual [0]
-

10.9 GHQ Face Problems

Have you recently been able to face up to your problems?

Expects a single option response (required)

- ☐ More than usual [3]
 - ☐ Same as usual [2]
 - ☐ Less able than usual [1]
 - ☐ Much less able [0]
-

10.10 GHQ Unhappy/depressed

Have you recently been feeling unhappy and depressed?

Expects a single option response (required)

- ☐ Not at all [3]
 - ☐ No more than usual [2]
 - ☐ Rather more than usual [1]
 - ☐ Much more than usual [0]
-

10.11 GHQ Loosing Confidence

Have you recently been losing confidence in yourself?

Expects a single option response (required)

- ☐ Not at all [3]
 - ☐ No more than usual [2]
 - ☐ Rather more than usual [1]
 - ☐ Much more than usual [0]
-

10.12 GHQ Worthless Person

Have you recently been thinking of yourself as a worthless person?

Expects a single option response (required)

- ☐ Not at all [3]
 - ☐ No more than usual [2]
 - ☐ Rather more than usual [1]
 - ☐ Much more than usual [0]
-

Have you recently been feeling reasonably happy, all things considered?

Expects a single option response (required)

- ☐ More than usual [3]
 - ☐ About the same as usual [2]
 - ☐ Less so than usual [1]
 - ☐ Much less than usual [0]
-

Section 11. Enjoyable Activities

11.1 Favourite Colour

What is your favourite colour?

Expects a single line text response (required)

11.2 Chocolate days

On how many days in the past week have you eaten chocolate?

Expects a numeric response (required)

Branches

If response Equals '0' then skip to *Meat days (11.4)*

11.3 Chocolate bars

On average, on the days when you ate chocolate, how many chocolate bars did you eat?

Expects a numeric response (required)

11.4 Meat days

On how many days in the past week have you eaten meat?

Expects a numeric response (required)

Branches

If response Equals '0' then skip to *Bread days (11.6)*

11.5 Meat pieces

On average, on the days when you ate meat, how many pieces of meat did you eat?

Expects a numeric response (required)

11.6 Bread days

On how many days in the past week have you had bread for breakfast?

Expects a numeric response (required)

Branches

If response Equals '0' then skip to *Sweets days (11.8)*

11.7 Bread slices

On average, on the days when you ate bread for breakfast, how many slices of bread did you eat?

Expects a numeric response (required)

11.8 Sweets days

On how many days in the past week have you eaten sweets?

Expects a numeric response (required)

Branches

If response Equals '0' then skip to *Coke days (11.10)*

11.9 Sweets amount

On average, on the days when you ate sweets, how many sweets did you eat?

Expects a numeric response (required)

11.10 Coke days

On how many days in the past week did you drink coke?

Expects a numeric response (required)

Branches

If response Equals '0' then skip to *Tobacco Use (12.1)*

11.11 Coke cups

On average, on the days when you drank coke, how many cups of coke (250mls each) did you drink?

Expects a numeric response (required)

Section 12. Substances

12.1 Tobacco Use

Have you used any tobacco since the birth of your baby?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

Branches

If response Not Equal 'Yes [1]' then skip to *Tik (12.3)*

12.2 Tobacco Frequency

In the past week, on how many days did you use tobacco?

Expects a numeric response (required)

Constraints

Response must be *Less Than or Equal* '7'

Response must be *Greater Than or Equal* '0'

12.3 Tik

Have you used any Tik since the birth of your baby?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

Branches

If response Not Equal 'Yes [1]' then skip to *Dagga (12.5)*

12.4 Tik Frequency

In the past week, on how many days did you use tik?

Expects a numeric response (required)

Constraints

Response must be *Less Than or Equal* '7'

Response must be *Greater Than or Equal* '0'

12.5 Dagga

Have you used any Dagga since the birth of your baby?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

Branches

If response Not Equal 'Yes [1]' then skip to *Alcohol Prompt (13.1)*

12.6 Dagga Frequency

In the past week, on how many days did you use dagga?

Expects a numeric response (required)

Constraints

Response must be *Less Than or Equal* '7'

Response must be *Greater Than or Equal* '0'

Section 13. Brief Screening for Alcohol

13.1 Alcohol Prompt

Now I'd like to ask you a few more questions about drinking alcohol. I know that sometimes these can be sensitive questions, but please remember that your answers will be kept secret and no one will know that these answers belong to you. Your name will not appear on any research forms and we will not share your answers with anyone other than research staff. We are asking many women these important questions and thank you for doing your best to answer them all honestly.

13.2 Any alcohol

Since your baby was born, about how often do you drink ANY alcoholic beverage?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Less than once a month [2]
- ☐ Once a month [3]
- ☐ 2 to 3 times a month [4]
- ☐ Once a week [5]
- ☐ 2 times a week [6]
- ☐ 3 to 4 times a week [7]
- ☐ Nearly every day [8]
- ☐ Every day [9]
- ☐ Decline to answer [91]

Branches

If response Equals 'Never [1]' then skip to *Sexual Behaviour Prompt (14.1)*

If response Equals 'Decline to answer [91]' then skip to *Sexual Behaviour Prompt (14.1)*

13.3 Drinks Per Day

Since your baby was born, counting all types of alcohol combined, how many drinks do you USUALLY have on days when you drink alcohol?

Expects a single option response (required)

- ☐ 1 or 2 [1]
- ☐ 3 or 4 [2]
- ☐ 5 or 6 [3]
- ☐ 7, 8 or 9 [4]
- ☐ 10 or more [5]
- ☐ Decline to answer [91]

13.4 Frequency 4+

Since your baby was born, about how often do you drink FOUR or MORE drinks in a single day?

Expects a single option response (required)

- ☐ Never [1]
 - ☐ Less than once a month [2]
 - ☐ Once a month [3]
 - ☐ 2 to 3 times a month [4]
 - ☐ Once a week [5]
 - ☐ 2 times a week [6]
 - ☐ 3 to 4 times a week [7]
 - ☐ Nearly every day [8]
 - ☐ Every day [9]
 - ☐ Decline to answer [91]
-

13.5 Frequency 3+

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Since your baby was born, about how often do you drink THREE or MORE drinks in a single day?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Less than once a month [2]
- ☐ Once a month [3]
- ☐ 2 to 3 times a month [4]
- ☐ Once a week [5]
- ☐ 2 times a week [6]
- ☐ 3 to 4 times a week [7]
- ☐ Nearly every day [8]
- ☐ Every day [9]
- ☐ Decline to answer [91]

13.6 Number Drinks to Feel High

How many drinks does it take to make you feel high?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal* '1'

13.7 Friend/relatives Complained About Drinking

Have close friends or relatives worried or complained about your drinking?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

13.8 Alcohol Upon Waking

Do you sometimes take a drink in the morning when you first get up?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

13.9 Memory Loss with Alcohol

Has a friend or family member ever told you about things you said or did while you were drinking that you could not remember?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

13.10 Need to Cut Down Drinking

Do you sometimes feel the need to cut down on your drinking?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

Section 14. Current Sexual Behaviour

14.1 Sexual Behaviour Prompt

In the following section I will be asking you questions about any sexual partners you might have had since the birth of your baby. Again, please be reassured that this information will remain strictly confidential.

14.2 Sexual Partners Since Birth

How many people have you had sex with since the birth of your baby?

Expects a numeric response (required)

Branches

If response Equals '0' then skip to *Baby Demographics Prompt (16.1)*

14.3 Concurrent Sexual Partners Since Birth

Was there a period since you gave birth when you had two or more sexual partners in the same time period (Note to interviewer: more than one partner at a concurrent time period not including group sex).

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

☐ Decline to answer [91]

14.4 Sexual Partner Prompt

Now I have a few questions about each of your sexual partners from the time your baby was born.

Section 15. Sexual Partner

15.1 Partner HIV Status

As far as you know, does this partner have HIV?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Don't know [99]
- ☐ Decline to answer [91]

15.2 Discussed Own Status with Partner

Have you discussed your status with this partner?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

15.3 Asked Partner to Test

Have you asked this partner to go for an HIV test?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

15.4 Partner had Other Partners

Do you think that this partner is/was also involved with other women at the same time as you?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Don't know [99]
- ☐ Decline to answer [91]

15.5 Use of Condom Last 3 Months

Of the last 10 times you had sex with this partner, how many times out of 10 did you use a condom?

Expects a single option response (required)

- ☐ 0 [0]
- ☐ 1 [1]
- ☐ 2 [2]
- ☐ 3 [3]
- ☐ 4 [4]
- ☐ 5 [5]
- ☐ 6 [6]
- ☐ 7 [7]
- ☐ 8 [8]
- ☐ 9 [9]
- ☐ 10 [10]
- ☐ Decline to answer [91]

Section 16. Baby Count

16.1 Baby Demographics Prompt

Thank you very much. Most of the remaining questions are now about your baby.

16.2 Infant Birth Count

Please may I confirm how many infants you gave birth to?

Expects a numeric response (required)

Section 17. Baby Demographics

17.1 Baby Birth Date

Please could you give me your child's birth date again?

Expects a date response (required)

17.2 Baby Name

What is your baby's name?

Expects a single line text response (required)

17.3 Baby Gender

Is **Baby Name (17.2)** a boy or a girl?

Expects a single option response (required)

☐ Male [1]

☐ Female [2]

17.4 Baby Current Weight

Baby Name (17.2) current weight (kg):

Expects a decimal response (required)

Constraints

Response must be Less Than or Equal '15'

Response must be Greater Than or Equal '3'

17.5 Baby Current Length

Baby Name (17.2) current length (cm):

Expects a decimal response (required)

Constraints

Response must be Greater Than or Equal '20'

Response must be Less Than or Equal '100'

17.6 Baby Current Head Circumference

Enter **Baby Name (17.2)** current head circumference (cm):

Expects a decimal response (required)

Constraints

Response must be Greater Than or Equal '10'

Response must be Less Than or Equal '100'

Section 18. Registration, Grants & Child care

18.1 Child Care Prompt

Now there are a few questions about child care issues and business things to do as a mother.

18.2 Birth Certificate

Does **Baby Name (17.2)** have a birth certificate?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Don't Know [99]
- ☐ Decline to answer [91]

18.3 Know Apply CSG

Do you know how to apply for the child support grant?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]

18.4 Applied CSG

Have you applied for a child support grant for **Baby Name (17.2)** ?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]

Branches

If response Equals 'Yes [1]' then skip to *Started Receiving CSG (18.7)*

18.5 Plan Apply CSG

Are you planning to apply for the Child Support Grant for **Baby Name (17.2)** ?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]

Branches

If response Equals 'Yes [1]' then skip to *Father of Child Prompt (19.1)*

18.6 CSG Not Applied Reason

Why will you not apply for a child support grant for **Baby Name (17.2)** ?

Expects multiple selected options (required)

- ☐ Mother does not know how to apply [1]
- ☐ Do not qualify because of financial situation [2]
- ☐ Mother does not have an ID Book [3]
- ☐ Mother does not have a clinic card for baby [4]
- ☐ Mother does not have a birth certificate for baby [5]
- ☐ No citizenship [6]
- ☐ Do not qualify for other reason [7]
- ☐ Other [95]

18.7 Started Receiving CSG

Have you started receiving this grant?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

Branches

If response Equals 'Yes [1]' then skip to *Father of Child Prompt (19.1)*

Section 19. Father of the Child

19.1 Father of Child Prompt

Thank you. I would now like to ask you some questions about the father of this child. Some of these questions might seem repetitive because they are the same as when we first interviewed you during your pregnancy. The reason we ask them again is that the answers might have changed for some of the women in this study. If you can bear with me and answer all of these questions I will be most grateful.

19.2 Father Staying with You

Is the father of this child staying with you?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

Branches

If response Equals 'Yes [1]' then skip to *Father's Acknowledgement of Baby (19.4)*

19.3 Father's Knowledge of Baby

Have you told the father of **Baby Name (17.2)** about him/her.

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [91]

Branches

If response Not Equal 'Yes [1]' then skip to *End (20.1)*

19.4 Father's Acknowledgement of Baby

Has the father of **Baby Name (17.2)** acknowledged him/her to his family?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Don't know [99]
- ☐ Decline to answer [91]

19.5 Father's Financial Support

Is the father of this baby supporting you financially?

Expects a single option response (required)

- ☐ Yes [1]
 - ☐ No [2]
 - ☐ Decline to Answer [91]
-

Section 20. End

20.1 End

You have reached the end of Part 1 of the 6-month Assessment. Please select Next to complete this survey and then open Part 1 of the 6-month Assessment.

Appendix C (ii) - Six months Postnatal Assessment Part 2

Section 1. Participant Identification

1.1 Participant ID

Please enter the participant's unique identifier code:

Expects a valid GS1 identifier (required)

1.2 Interviewer Code

Please enter your interviewer code:

Expects a numeric response (required)

1.3 Neighbourhood Code

Please enter the neighbourhood code:

Expects a single line text response (required)

1.4 Date of Interview

Please confirm the date of this interview:

Expects a date response (required)

1.5 Time of Interview

Please confirm the time of this interview:

Expects a time response (required)

1.6 Address

Please enter the participant's address:

Expects a single line text response (required)

Section 2. Information from Part 1

2.1 Child's Name

What is your child's name?

Expects a single line text response (required)

2.2 Partner

Please can you indicate again whether you have a partner.

Expects a single option response (required)

- ☐ Has partner. [1]
- ☐ Does not have a partner. [2]
-

Section 3. Feeding

3.1 Feeding Prompt

Thank you. Now I have a few questions about how you are feeding your baby.

3.2 6 Months Feeding Plan

How did you feed **Child's Name (2.1)** for the first 6 months after he/she was born?

Expects a single option response (required)

- ☐ Only breastfeeding [1]
- ☐ Only formula feeding [2]
- ☐ Breastfeed plus formula (and other foods such as pap, water and glucose = mixed feeding) [3]

Branches

If response Equals 'Only breastfeeding [1]' then skip to *Breastfeed Duration (3.5)*

3.3 Formula Feed Resources

If you have been formula feeding (or mix feed), have you had access to:

Expects multiple selected options (required)

- ☐ Enough money to buy all the formula the child needs [1]
- ☐ Running water in your house [2]
- ☐ Electricity to boil water [3]
- ☐ None of the above [4]

3.4 Ever Breastfed

Have you ever breastfed **Child's Name (2.1)** ?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]

Branches

If response Equals 'No [2]' then skip to *Age Other Foods (3.7)*

3.5 Breastfeed Duration

How long after **Child's Name (2.1)** was born did you give him/ her breast milk only?

Expects a single option response (required)

- ☐ Less than a week [1]
- ☐ 1 -3 weeks [2]
- ☐ 1 month [3]
- ☐ 2 months [4]
- ☐ 3 months [5]
- ☐ 4 months [6]
- ☐ 5 months [7]
- ☐ 6 months [8]

3.6 Currently Breastfeeding

Are you currently breastfeeding?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]

3.7 Age Other Foods

At what age, in months, did you/do you plan to give other foods/liquids to **Child's Name (2.1)** ?

Expects a numeric response (required)

3.8 Other Responsible Feeding Choice

Was anyone else responsible for making a decision on how to feed **Child's Name (2.1)** ?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

Branches

If response Equals 'No [2]' then skip to *Feeding Items Ever (3.10)*

3.9 Person Responsible

Who was responsible?

Expects a single option response (required)

☐ Partner / Husband [1]

☐ Mother in law [2]

☐ Mother [3]

☐ Nurse [4]

☐ Father of the baby [5]

☐ Other [95]

Now I will read out a list of items. Please could you tell me if you ever gave **Child's Name (2.1)** any of these items in the time when **Child's Name**

(2.1) was aged 0-6 months old.

Expects multiple selected options (required)

- ☐ Water [1]
- ☐ Water with sugar or glucose [2]
- ☐ Fruit Juice [3]
- ☐ Herbs [4]
- ☐ Tea without milk [5]
- ☐ Tea with milk [6]
- ☐ Rice water [7]
- ☐ Diluted cows milk [8]
- ☐ Non diluted cows milk [9]
- ☐ Infant formula [10]
- ☐ Other powdered milk [11]
- ☐ Goats milk [12]
- ☐ Cereals, porridge or bread [13]
- ☐ Fruits/ Vegetables [14]
- ☐ Meat [15]
- ☐ Fish [16]
- ☐ Eggs [17]
- ☐ Dairy product (e.g. yoghurt, cheese or ice-cream) [18]
- ☐ Gripe Water [19]
- ☐ Entrense, Rooilaventer, Behoodmiddel, Steindruppels, or Saccarooi [20]
- ☐ Iquma [21]
- ☐ Borax [22]
- ☐ Castor Oil/ sweet oil [23]
- ☐ Milk of magnesia [24]
- ☐ Isicakathi / Umthombothi [25]
- ☐ Umthuthuzeli mama [26]
- ☐ Alcohol [27]
- ☐ None of these [28]

Section 4. Vaccinations

4.1 Vaccination Prompt

Now I am going to ask you questions which are related to your baby's health.

4.2 RTHC Available

Do you have a RTHC for **Child's Name (2.1)** which I may look at?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

Branches

If response Equals 'No [2]' then skip to *Child Had Vaccines (4.4)*

4.3 RTHC Check

Record the vaccinations that the child has had.

Expects multiple selected options (required)

☐ BCG (right arm) [1]

☐ Polio (oral) [2]

☐ Polio 1 (oral) [3]

☐ DTP 1 (left thigh) [4]

☐ Hib 1 (left thigh) [5]

☐ DTP 1 / Hip 1 Combined (left thigh) [6]

☐ Hep B 1 (right thigh) [7]

☐ Polio 2 (oral) [8]

☐ DTP 2 (left thigh) [9]

☐ Hib 2 (left thigh) [10]

☐ DTP 2 / Hip 2 Combined (left thigh) [11]

☐ Heb B 2 (right thigh) [12]

☐ Vitamin A [13]

☐ Pneumococcal Conjugate Vaccine (6 weeks) [14]

☐ Pneumococcal Conjugate Vaccine (14 weeks) [15]

☐ Rotavirus (6 weeks) [16]

☐ None of the above [100]

Prerequisites

Skip when *RTHC Available (4.2)* Equals 'Yes [1]'

4.4 Child Had Vaccines

Has **Child's Name (2.1)** had any vaccinations?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

Branches

If response Equals 'No [2]' then skip to *Diarrhoea Prompt (5.1)*

4.5 BCG Vaccine

Has **Child's Name (2.1)** been given the BCG vaccine? (Ask mother where the child was vaccinated - given in upp arm)

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

4.6 Polio Vaccine

Has **Child's Name (2.1)** been given the Polio vaccine? (Ask mother where the child was vaccinated - given as drops)

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

Section 5. Diarrhoea 2-week Recall

5.1 Diarrhoea Prompt

The definition of diarrhoea is passage of 3 or more loose, liquid or watery stools in a 24 hr period.

5.2 Had Diarrhoea

During the last two weeks that ended yesterday morning, did **Child's Name (2.1)** have diarrhoea?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

Branches

If response Equals 'No [2]' then skip to *Knowledge to Treat Diarrhoea (5.5)*

5.3 Admitted to Hospital

Was the child admitted to a hospital because of this diarrhoea?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

5.4 Diarrhoea Duration

How many days did the diarrhoea last?

Expects a single option response (required)

☐ 1-3 Days [1]

☐ 4-7 Days [2]

☐ 7-14 days [3]

☐ More than 14 days [4]

5.5 Knowledge to Treat Diarrhoea

If your child had diarrhoea, what would you do to treat it? [INTERVIEWER: DO NOT READ OUT THE OPTIONS HERE. LISTEN TO WHAT THE MOTHER TELLS YOU AND THEN TICK THOSE THAT APPLY.]

Expects multiple selected options (required)

☐ Stop feeding child [1]

☐ Give traditional enema [2]

☐ Give the child the contents of a sachet from the clinic [3]

☐ Give the child a salt and sugar solution [4]

☐ Give the child Rooibos tea [5]

☐ Antibiotics [6]

☐ Nothing [7]

☐ Other [95]

☐ Don't know [99]

5.6 Salt-Sugar Solution Composition

Can you tell me how to mix a salt-sugar solution? [INTERVIEWER: THE CORRECT ANSWER IS MIX 8 TEASPOONS OF SUGAR AND HALF A TEASPOON OF SALT INTO 1 LITRE OF WATER ONLY. ALL OTHER ANSWERS ARE INCORRECT. IF THE MOTHER SAYS SHE DOES NOT KNOW, MARK AS INCORRECT.]

Expects a single option response (required)

☐ Correct [1]

☐ Incorrect [2]

Section 6. Pneumonia 2-week Recall

6.1 Had Cough

During the last two weeks that ended yesterday morning, did **Child's Name (2.1)** have a cough?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

6.2 Had Difficulty Breathing

During the last two weeks that ended yesterday morning, did **Child's Name (2.1)** have fast or difficult breathing?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

Prerequisites

Skip when *Had Cough (6.1)* Equals 'Yes [1]'

Skip when *Had Difficulty Breathing (6.2)* Equals 'Yes [1]'

6.3 Confirm Cough Breathing

Please confirm that **Child's Name (2.1)** neither had a cough nor difficulty with breathing. If not, please go back to update the responses.

Expects a single option response (required)

☐ They had no difficulty breathing and no cough. [1]

Branches

If response Equals 'They had no difficulty breathing and no cough. [1]' then skip to *Child TB (7.1)*

6.4 Admitted to Hospital for Cough

Was the child admitted to a hospital because of this cough, and/or fast and difficult breathing?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

☐ Not applicable – did not have these symptoms [3]

Section 7. Child TB

7.1 Child TB

Has **Child's Name (2.1)** ever been tested for TB?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

Branches

If response Equals 'No [2]' then skip to *Reason for TB Test Future (7.4)*

7.2 TB Treatment

Did he/she receive treatment for TB?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

7.3 Reason for TB Test

Why did you have your child tested for TB? [INTERVIEWER: DO NOT READ OUT OPTIONS. LISTEN TO WHAT THE MOTHER TELLS YOU AND THEN TICK ALL THAT APPLY]

Expects multiple selected options (required)

☐ Child was coughing [1]

☐ Child was loosing weight [2]

☐ Clinic sister recommended it [3]

☐ Family member has TB [4]

☐ Other [95]

Branches

If response Includes 'Child was coughing [1]' then skip to *Method Child TB Test (7.5)*

If response Excludes 'Child was coughing [1]' then skip to *Method Child TB Test (7.5)*

7.4 Reason for TB Test Future

When would you take your child for TB testing? [INTERVIEWER: DO NOT READ OUT OPTIONS. LISTEN TO WHAT THE MOTHER TELLS YOU AND THEN TICK ALL THAT APPLY]

Expects multiple selected options (required)

☐ If the child was coughing for a long time [1]

☐ If the child was loosing weight [2]

☐ If the child had night sweats [3]

☐ If someone in the family has TB [4]

☐ Don't know [99]

☐ None of the above [100]

☐ Other [95]

7.5 Method Child TB Test

How is a child tested for TB? [INTERVIEWER: DO NOT READ OUT OPTIONS. LISTEN TO WHAT THE MOTHER TELLS YOU AND THEN TICK ALL THAT APPLY]

Expects multiple selected options (required)

☐ On the arm [1]

☐ Sputum [2]

☐ Xrays [3]

☐ Other [95]

☐ Don't know [99]

If an adult or child in your household was on TB treatment, can you tell me what action you would need to take to protect the rest of your family and especially your children? [INTERVIEWER: DO NOT READ OUT OPTIONS. LISTEN TO WHAT THE MOTHER TELLS YOU AND THEN TICK ALL THAT APPLY]

Expects multiple selected options (required)

- ☐ Open all windows every morning [1]
 - ☐ Keep your house clean [2]
 - ☐ Prepare healthy food for your family [3]
 - ☐ Take all family members for TB testing [4]
 - ☐ Make sure that any child under 6 years in the household gets TB prophylaxis [5]
 - ☐ Other [95]
 - ☐ None of the above [100]
 - ☐ Don't know [99]
-

Section 8. Hospitalisations & Clinic Treatment

8.1 Treated at Clinic

Has **Child's Name (2.1)** ever been treated for any of the following conditions at the CLINIC?

Expects multiple selected options (required)

- ☐ Diarrhoea [1]
- ☐ Chest infection (cough or difficulty breathing) [2]
- ☐ TB [3]
- ☐ Accident [4]
- ☐ High fever [5]
- ☐ None of the above [100]

Prerequisites

Skip when *Treated at Clinic (8.1)* Excludes 'Diarrhoea [1]'

8.2 Treat Diarrhoea

At what age, in weeks, was **Child's Name (2.1)** treated for diarrhoea?

Expects a numeric response (required)

Constraints

Response must be *Less Than or Equal '26'*

Response must be *Greater Than or Equal '0'*

Prerequisites

Skip when *Treated at Clinic (8.1)* Excludes 'Chest infection (cough or difficulty breathing) [2]'

8.3 Treat Chest Infection

At what age, in weeks, was **Child's Name (2.1)** treated for a chest infection?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal '0'*

Response must be *Less Than or Equal '26'*

Prerequisites

Skip when *Treated at Clinic (8.1)* Excludes 'TB [3]'

8.4 Treat TB

At what age, in weeks, was **Child's Name (2.1)** treated for TB?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal '0'*

Response must be *Less Than or Equal '26'*

Prerequisites

Skip when *Treated at Clinic (8.1)* Excludes 'Accident [4]'

8.5 Treat Accident

At what age, in weeks, was **Child's Name (2.1)** treated for accident?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal '0'*

Response must be *Less Than or Equal '26'*

8.6 Treat High Fever

At what age, in weeks, was **Child's Name (2.1)** treated for a high fever?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal '0'*

Response must be *Less Than or Equal '26'*

8.7 Has Been Admitted

Since birth has **Child's Name (2.1)** ever been admitted to hospital?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

Branches

If response Equals 'No [2]' then skip to *Maternal Knowledge Prompt (10.1)*

8.8 Admittance Count

How many times?

Expects a numeric response (required)

Constraints

Response must be *Greater Than or Equal '1'*

Response must be *Less Than or Equal '100'*

Section 9. Hospitalisations & Clinic Treatment 2

9.1 Child's Age

Referring to admittance #REPEAT IDX, how old was **Child's Name (2.1)** in weeks?

Expects a numeric response (required)

9.2 Cause to be Admitted

Referring to admittance #REPEAT IDX, what caused **Child's Name (2.1)** to be admitted?

Expects a single option response (required)

- ☐ Diarrhoea [1]
- ☐ Chest infection (cough or difficulty breathing) [2]
- ☐ TB [3]
- ☐ Accident [4]
- ☐ High fever [5]
- ☐ Other [95]

Section 10. Maternal Knowledge: Nutrition, Alcohol & Bonding

10.1 Maternal Knowledge Prompt

Now I am going to read you some statements. Please tell me if you think each one is true or false.

10.2 LBW > 2.5kg

Statement: A baby has a Low Birth Weight (LBW) if they weigh MORE THAN 2.5kg at birth.

Expects a single option response (required)

- ☐ Yes / true [1]
- ☐ No / false [2]
- ☐ Don't know [3]
- ☐ Decline to answer [91]

10.3 LBW Heath Complications

Statement: A Low Birth Weight baby is more likely to have health problems than a baby of normal weight.

Expects a single option response (required)

- ☐ Yes / true [1]
- ☐ No / false [2]
- ☐ Don't know [3]
- ☐ Decline to answer [91]

10.4 Doctor/Nurse Discuss Alcohol in Pregnancy

Statement: My doctor (nurse) talked to me about my alcohol use during pregnancy.

Expects a single option response (required)

- ☐ Yes / true [1]
- ☐ No / false [2]
- ☐ Don't know [3]
- ☐ Decline to answer [91]

10.5 Doctor/Nurse Warning

Statement: My doctor (nurse) told me not to drink alcohol during pregnancy.

Expects a single option response (required)

- ☐ Yes / true [1]
- ☐ No / false [2]
- ☐ Don't know [3]
- ☐ Decline to answer [91]

10.6 Alcohol = Excitable & Very Active

Statement: Children whose mothers drank alcohol during pregnancy with them may be excitable and very active.

Expects a single option response (required)

- ☐ Yes / true [1]
- ☐ No / false [2]
- ☐ Don't know [3]
- ☐ Decline to answer [91]

10.7 Alcohol = Less Pregnancy Blues

Stellenbosch University <http://scholar.sun.ac.za>

Statement: Drinking alcohol during pregnancy can chase away the blues.

Expects a single option response (required)

- ☐ Yes / true [1]
 - ☐ No / false [2]
 - ☐ Don't know [3]
 - ☐ Decline to answer [91]
-

10.8 Alcohol = No Effect Baby Brain

Statement: Drinking alcohol during pregnancy will have no affect on the baby's brain.

Expects a single option response (required)

- ☐ Yes / true [1]
 - ☐ No / false [2]
 - ☐ Don't know [3]
 - ☐ Decline to answer [91]
-

10.9 Little Alcohol Ok in Pregnancy to Relax

Statement: It is ok for a pregnant woman to drink a little alcohol to relax.

Expects a single option response (required)

- ☐ Yes / true [1]
 - ☐ No / false [2]
 - ☐ Don't know [3]
 - ☐ Decline to answer [91]
-

10.10 Homebrew = Light Complexion

Statement: A woman should drink home brew during pregnancy so that the babys complexion will be lightened.

Expects a single option response (required)

- ☐ Yes / true [1]
 - ☐ No / false [2]
 - ☐ Don't know [3]
 - ☐ Decline to answer [91]
-

10.11 Alcohol Safe When Breastfeeding

Statement: It is safe for mothers who breastfeed to have a little alcohol.

Expects a single option response (required)

- ☐ Yes / true [1]
 - ☐ No / false [2]
 - ☐ Don't know [3]
 - ☐ Decline to answer [91]
-

10.12 Alcohol & School Problems

Statement: Children whose mothers drank alcohol while they were pregnant with them may have problems at school when they are older.

Expects a single option response (required)

- ☐ Yes / true [1]
 - ☐ No / false [2]
 - ☐ Don't know [3]
 - ☐ Decline to answer [91]
-

Section 11. HIV

11.1 HIV Prompt

The next few questions are about HIV. Please remember that like all of your answers, this information will be kept strictly confidential.

11.2 HIV Positive

Are you HIV Positive (confirmatory and / or if status changed since birth assessment)?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Unsure [99]
- ☐ Declined to answer [91]

Branches

If response Equals 'Yes [1]' then skip to *Receiving Treatment (11.4)*

11.3 Tested Since Birth

Have you tested for HIV since the birth of your baby?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Declined to answer [91]

Branches

If response Equals 'Yes [1]' then skip to *HIV- Mother Protection From Infection (HIV- mothers only) (11.26)*

If response Not Equal 'Yes [1]' then skip to *HIV- Mother Protection From Infection (HIV- mothers only) (11.26)*

11.4 Receiving Treatment

Are you receiving treatment for HIV?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]

Branches

If response Equals 'No [2]' then skip to *Ever had CD4 Count (11.6)*

11.5 Treatment Being Received

What treatment are you receiving? [INTERVIEWER DO NOT READ THE LIST OUT. LISTEN TO WHAT THE MOTHER TELLS YOU AND THEN SELECT THE APPROPRIATE RESPONSES]

Expects multiple selected options (required)

- ☐ Antiretroviral [1]
- ☐ Cotrimoxazole [2]
- ☐ Other antibiotics [3]
- ☐ Vitamins [4]
- ☐ Immune boosters [5]
- ☐ Traditional medicine [6]
- ☐ Don't know [99]
- ☐ Other [95]
- ☐ No response [98]

11.6 Ever had CD4 Count

Have you ever had a CD4 count?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

Branches

If response Equals 'No [2]' then skip to *Actions to Protect Child BEFORE Birth (11.10)*

11.7 Last CD4 Count Date

When was the last time you had a CD4 count?

Expects a date response (required)

11.8 Know CD4 count

Do you know the result of your CD4 count?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

Branches

If response Equals 'No [2]' then skip to *Actions to Protect Child BEFORE Birth (11.10)*

11.9 CD4 Count

What was your CD4 count at the time of this test?

Expects a numeric response (required)

11.10 Actions to Protect Child BEFORE Birth

What can an HIV positive mother who is not on full ARV treatment do to protect her child from becoming infected BEFORE BIRTH? [INTERVIEWER DO NOT READ THE LIST OUT. LISTEN TO WHAT THE MOTHER TELLS YOU AND THEN SELECT THE APPROPRIATE RESPONSES]

Expects multiple selected options (required)

☐ Nothing [1]

☐ Take AZT from 34 weeks [2]

☐ Take Neviraprin at delivery [3]

☐ Take AZT 3 hourly during delivery [4]

☐ Do not know [99]

☐ Other [95]

11.11 Actions to Protect Child AFTER Birth

What can an HIV positive mother who is not on full ARV treatment do to protect her child from becoming infected AFTER BIRTH? [INTERVIEWER DO NOT READ THE LIST OUT. LISTEN TO WHAT THE MOTHER TELLS YOU AND THEN SELECT THE APPROPRIATE RESPONSES]

Expects multiple selected options (required)

☐ Nothing [1]

☐ Make sure the child gets one dose of NVP within 72 hours after delivery [2]

☐ Make sure the child gets AZT for 7 days after delivery [3]

☐ Make sure child gets AZT for 28 days after delivery [4]

☐ Use one feeding method only [5]

☐ Breast feed exclusively [6]

☐ Formula feed only [7]

☐ Do not know [99]

☐ Other [95]

11.12 HIV+ Mother Best Care After Birth

Stellenbosch University <http://scholar.sun.ac.za>

What does a HIV positive mother need to do to make sure her child gets the best care after birth? [INTERVIEWER DO NOT READ THE LIST OUT. LISTEN TO WHAT THE MOTHER TELLS YOU AND THEN SELECT THE APPROPRIATE RESPONSES]

Expects multiple selected options (required)

- ☐ Nothing [1]
- ☐ Make sure the baby is tested for HIV at six weeks [2]
- ☐ If the child is positive make sure the child gets Cotrimoxazole daily [3]
- ☐ Make sure the child is started on Antiretroviral medication as soon as possible [4]
- ☐ Do not know [99]
- ☐ Other [95]

11.13 Participate PMTCT

Did you participate in the PMTCT program?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Not applicable (full ARVs) [3]

Branches

If response Equals 'No [2]' then skip to *Taken to 6 Week PCR (11.16)*

11.14 PMTCT Medicine

Please tell me when you started taking AZT, how often you took it during delivery and if you took NVP at delivery as well. [INTERVIEWER - Complete: AZT from 34 weeks, 3 hourly during delivery, NVP one dose during delivery, All else incomplete.]

Expects a single option response (required)

- ☐ Complete [1]
- ☐ Incomplete [2]
- ☐ Not applicable (full ARVs) [3]

11.15 AZT for Baby

Tell me if your child got NVP at birth, when you started to give your child AZT, and for how many days. [INTERVIEWER- If the mother had complete PMTCT, NVP at birth 7 days AZT is correct. If the mother had incomplete PMTCT, NVP at birth and 28 days AZT is correct.]

Expects a single option response (required)

- ☐ Correct treatment for child [1]
- ☐ Incorrect treatment for child [2]
- ☐ Not applicable (full ARVs) [3]

11.16 Taken to 6 Week PCR

Have you taken **Child's Name (2.1)** for his/her 6 week PCR?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]

Branches

If response Equals 'No [2]' then skip to *HIV Statement Prompt (11.23)*

11.17 Fetched 6 Week PCR Result

Did you fetch the PCR results?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [98]

Branches

If response Equals 'No [2]' then skip to *HIV Statement Prompt (11.23)*

11.18 Number Attempts to Get Results

Stellenbosch University <http://scholar.sun.ac.za>

How many times did you have to go back before you received your child's result?

Expects a numeric response (required)

11.19 Baby Status

What is the baby's HIV status?

Expects a single option response (required)

- ☐ Positive [1]
- ☐ Negative [2]
- ☐ Decline to answer [98]

Branches

If response Not Equal 'Positive [1]' then skip to *HIV Statement Prompt (11.23)*

11.20 Baby Receiving Treatment

Is **Child's Name (2.1)** receiving any treatment for HIV?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Unsure [3]
- ☐ Decline to answer [98]

Branches

If response Not Equal 'Yes [1]' then skip to *HIV Statement Prompt (11.23)*

11.21 Type Baby Treatment Being Received

What treatment is your baby receiving?

Expects multiple selected options (required)

- ☐ Antiretroviral [1]
- ☐ Cotrimoxazole [2]
- ☐ Other antibiotics [3]
- ☐ Vitamins [4]
- ☐ Immune boosters [5]
- ☐ Traditional medicine [6]
- ☐ Don't know [99]
- ☐ Other [95]
- ☐ No response [100]

11.22 Co-trimoxazole for Infant

Do you have co-trimoxazole for your infant in the house today?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Decline to answer [98]

11.23 HIV Statement Prompt

I am now going to read some statements to you. Please tell me if you agree.

11.24 HIV+ Mother =HIV+ Baby

Statement: HIV positive women only have HIV positive babies.

Expects a single option response (required)

- ☐ Yes / true [1]
- ☐ No / false [2]
- ☐ Don't know [3]
- ☐ Decline to answer [91]

11.25 Mixed Feeding

Statement: Mixed feeding before 6 months by an HIV positive mother does not increase the chance of her baby getting HIV.

Expects a single option response (required)

- ☐ Yes / true [1]
- ☐ No / false [2]
- ☐ Don't know [3]
- ☐ Decline to answer [91]

Prerequisites

Skip when *HIV Positive (11.2)* Equals 'Yes [1]'

11.26 HIV- Mother Protection From Infection (HIV- mothers only)

How can you protect yourself against HIV and stay negative? [INTERVIEWER DO NOT READ THE LIST OUT. LISTEN TO WHAT THE MOTHER TELLS YOU AND THEN SELECT THE APPROPRIATE RESPONSES]

Expects multiple selected options (required)

- ☐ Condomise [1]
 - ☐ Stay faithful to one partner [2]
 - ☐ Refrain from having concurrent sexual partners [3]
 - ☐ Don't know [99]
 - ☐ Other [95]
-

Section 12. Disclosure and Protection

Prerequisites

Skip when *HIV Positive (11.2)* Equals 'Yes [1]'

12.1 HIV- Skip Section

As this participant has not been identified as HIV positive, the next section is going to be skipped.

Expects a single option response (required)

☐ Next [1]

Branches

If response Equals 'Next [1]' then skip to *Relationship Prompt (13.1)*

12.2 Disclosure Prompt

Thank you. I just have a few short questions now about HIV disclosure.

12.3 Able to Disclose

If you wanted to disclose your HIV status would you be able to?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

☐ Unsure [3]

☐ Decline to answer [95]

Prerequisites

Skip when *Partner (2.2)* Not Equal 'Has partner. [1]'

12.4 Disclosed to Partner

Have you disclosed you HIV status to your partner?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

☐ Not applicable - no partner [3]

☐ Decline to answer [91]

Branches

If response Not Equal 'Yes [1]' then skip to *Number Family Disclosed (12.6)*

Prerequisites

Skip when *Partner (2.2)* Not Equal 'Has partner. [1]'

12.5 Conflict with Partner

How much conflict has your HIV status caused between you and your partner?

Expects a single option response (required)

☐ None [1]

☐ A little [2]

☐ Quite a lot [3]

☐ A lot of conflict [4]

☐ Decline to answer [91]

12.6 Number Family Disclosed

How many family members have you disclosed to?

Expects a numeric response (required)

12.7 Number People Outside Family Disclosed to

Stellenbosch University <http://scholar.sun.ac.za>

How many people outside your family have you disclosed to?

Expects a numeric response (required)

12.8 Worry Church Disclosure

Would you be worried about your church learning you were HIV positive?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]
- ☐ Unsure [3]
- ☐ Not applicable- no church [4]
- ☐ Decline to answer [91]

Prerequisites

Skip when *Partner (2.2)* Not Equal 'Has partner. [1]'

12.9 Participant Comfortable Disclosing to Partner

Which (if any) of the following do you feel comfortable talking to your partner about?

Expects multiple selected options (required)

- ☐ About pregnancy [1]
- ☐ About HIV [2]
- ☐ About asking for help when you need it [3]
- ☐ About speaking up when things are wrong [4]
- ☐ About revealing your HIV status [5]
- ☐ Has no partner [6]
- ☐ None of the above [7]

12.10 Participant Comfortable Disclosing Clinic Nurse

Please select which of the following (if any) you feel comfortable talking to a NURSE / CLINIC STAFF MEMBER about:

Expects multiple selected options (required)

- ☐ About pregnancy [1]
- ☐ About HIV [2]
- ☐ About asking for help when you need it [3]
- ☐ About speaking up when things are wrong [4]
- ☐ About revealing your HIV status [5]
- ☐ None of the above [6]

12.11 Participant Comfortable Disclosing Female Relative/Friend

Please select which of the following (if any) you feel comfortable talking to your MOTHER / SISTER / FEMALE RELATIVE / FEMALE FRIEND about:

Expects multiple selected options (required)

- ☐ About pregnancy [1]
- ☐ About HIV [2]
- ☐ About asking for help when you need it [3]
- ☐ About speaking up when things are wrong [4]
- ☐ About revealing your HIV status [5]
- ☐ None of the above [6]

Section 13. Relationships and Violence

13.1 Relationship Prompt

The next few questions are about your current relationship with your partner.

Prerequisites

Skip when *Partner (2.2)* Not Equal 'Has partner. [1]'

13.2 Frequency Quarrels

In your current relationship how often would you say that you have quarrelled? Would you say never, rarely, sometimes or often?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Rarely [2]
- ☐ Sometimes [3]
- ☐ Often [4]

Prerequisites

Skip when *Partner (2.2)* Not Equal 'Has partner. [1]'

13.3 Talk about relationship to friend

Do you talk to a friend or relative about problems in your relationship?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]

Prerequisites

Skip when *Partner (2.2)* Not Equal 'Has partner. [1]'

13.4 Quality current relationship

Would you say your relationship is it excellent, alright, just ok, or not alright?

Expects a single option response (required)

- ☐ Excellent [1]
- ☐ Alright [2]
- ☐ Just ok [3]
- ☐ Not alright [4]

13.5 Violence Prompt

Men often fight with their girlfriends and often these fights get physical. I am going to ask some questions about this because we want to learn more about what women experience in their lives. I want you to speak freely and remember that everything you say will be confidential.

13.6 Slap

In the past 12 months, did your current partner or any other boyfriend slap you or throw something at you which could hurt you? Did this happen many times, a few times, once or did it not happen?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Once [2]
- ☐ Few [3]
- ☐ Many [4]

13.7 Shove

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In the past 12 months, did your current partner or any other boyfriend push or shove you? Did this happen many times, a few times, once or did it not happen?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Once [2]
- ☐ Few [3]
- ☐ Many [4]

13.8 Punch

In the past 12 months, did your current partner or any other boyfriend hit you with a fist or with something else which could hurt you? Did this happen many times, a few times, once or did it not happen?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Once [2]
- ☐ Few [3]
- ☐ Many [4]

13.9 Weapon

In the past 12 months, did your current partner or any other boyfriend threaten to use or actually use a gun, knife or other weapon against you? Did this happen many times, a few times, once or did it not happen?

Expects a single option response (required)

- ☐ Never [1]
- ☐ Once [2]
- ☐ Few [3]
- ☐ Many [4]

Prerequisites

Skip when *Slap (13.6)* Not Equal 'Never [1]'

Skip when *Shove (13.7)* Not Equal 'Never [1]'

Skip when *Punch (13.8)* Not Equal 'Never [1]'

Skip when *Weapon (13.9)* Not Equal 'Never [1]'

13.10 No Physical Violence Confirmation

Is it correct to confirm then that, in the last 12 months, you have not been physically harmed by your current partner or any other boyfriend?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]

Branches

If response Equals 'Yes [1]' then skip to *Family Planning Prompt (14.1)*

13.11 Wiling to Tell Most Recent Date

Are you willing to tell us the most recent date on which you had an argument with your boyfriend that got physical?

Expects a single option response (required)

- ☐ Yes [1]
- ☐ No [2]

Branches

If response Equals 'No [2]' then skip to *Number Violent Episodes (13.13)*

13.12 Most Recent Violence

When was the most recent time you had an argument with a boyfriend that got physical?

Expects a date response (required)

13.13 Number Violent Episodes

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In the past 12 months on how many occasions in did you have an argument with any boyfriend that got physical?

Expects a numeric response (required)

Prerequisites

Skip when *Partner (2.2)* Equals 'Does not have a partner. [2]'

13.14 Violence From Current Partner in Previous Year

In the past 12 months did you have an argument with your current partner that got physical?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

☐ Not applicable - no current partner [3]

☐ Decline to answer [91]

Section 14. Family Planning

14.1 Family Planning Prompt

The next few questions relate to family planning and future children.

14.2 Want More Children

Do you want more children?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

14.3 Currently Pregnant

Are you currently pregnant? [INTERVIEWER: DO NOT READ OUT THE LIST PRESENTED HERE, PLEASE LISTEN TO WHAT THE MOTHER TELLS YOU AND THEN TICK ONE OPTION]

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

☐ I was but I miscarried [3]

☐ I was but I had an abortion [4]

☐ Decline to answer [91]

14.4 Using Family Planning

Are you currently using any method of family planning to prevent a future pregnancy?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

Branches

If response Equals 'No [2]' then skip to *Routine Prompt (15.1)*

14.5 Method Family Planning

What method are you currently using?

Expects a single option response (required)

☐ Condoms [1]

☐ Injectable (Depo or Nur- Isterate) [2]

☐ Oral contraceptive pill [3]

☐ Female condom [4]

☐ Abstinence [5]

☐ Coitus Interruptus [6]

☐ Other [95]

Section 15. Routines

15.1 Routine Prompt

Now I would like to ask you some general questions about your activities over the last few days.

15.2 Wake up Time Yesterday

What time did you get up yesterday morning?

Expects a time response (required)

15.3 Bed Time Yesterday

What time did you go to bed yesterday evening?

Expects a time response (required)

15.4 Meal Together Yesterday

How many times did your family eat a meal together yesterday?

Expects a numeric response (required)

Constraints

Response must be Greater Than or Equal '0'

Response must be Less Than or Equal '9'

Section 16. End of Survey

16.1 Voucher Given

Was the participant given R80 food voucher?

Expects a single option response (required)

☐ Yes [1]

☐ No [2]

16.2 End

You have reached the end of the survey. You can go back and review previous responses or select Next to complete the section.

Appendix D – modified Alarm Distress Baby scale (m-ADBB)

m-ADBB SCALE (v24)**MATTHEY, ČRNČEC, & GUEDENEY (2008)**

(Derived from the Full ADBB Scale: Guedeney & Fermanian, 2001)

Reference as: Matthey, S., Črnčec, R., & Guedeney, A. (2008). *The Modified ADBB Scale (m-ADBB)*.
 Unpublished scale: Sydney South West Area Health Service, Sydney, Australia.

DATE:

INFANT's AGE:

INFANT's NAME:

EXAMINER:

Each item is rated according to the following categories:

Satisfactory

Possible problem

Definite problem

This scale is best rated by the clinician / observer on the basis of his/her observations during the clinical interview. The clinician / observer should try and socially engage the infant by smiling, chatting & touching him/her.

The rating is based on whether the infant demonstrates a given behaviour during the examination – except for eye contact and relationship, which are rated only with reference to the infant's behaviour towards the clinician / observer.

Don't rate any item if the infant spends nearly all the consult crying or is distressed.

1. FACIAL EXPRESSION: TOWARDS ANYONE

Assess the extent of facial expressiveness throughout the examination. Do not include crying or reactions to aversive/painful procedures (eg. oral examination) as a sign of facial expressiveness.

- ☐ Satisfactory: Facial expressiveness is clearly observed on several occasions, and is either all positive (eg. smiling), or there is a reasonable range of positive and negative (eg. grimacing) expressiveness.
- ☐ Possible problem: Expressiveness is less clear, although there is a reasonable suggestion of this (positive or negative), or expressiveness is exclusively negative.
- ☐ Definite problem: There are only hints of expressiveness, expressiveness is ambiguous or absent; face appears fixed, frozen, or 'sad' for the whole period.

2. EYE CONTACT: TOWARDS CLINICIAN / OBSERVER ONLY

Assess the nature of eye contact towards the clinician or any other unfamiliar person. As a rough 'rule of thumb', moderate eye contact means around two seconds; brief eye contact means about a second; and elusive or vague means less than a second.

- ☐ Satisfactory: At least one episode of moderate duration eye contact together with several episodes of brief eye contact.
- ☐ Possible problem: Only two brief eye contact episodes, or just one moderate episode.
- ☐ Definite problem: Only one brief eye contact episode, or eye contact is vague, elusive or completely absent.

If scored as a possible or definite problem, is this behaviour different towards the parent and the clinician?

☐-Yes, different ☐-No, not different ☐-Didn't assess Describe: _____

3. VOCALISATIONS: TOWARDS ANYONE

Assess the amount of vocalisation, crying, and whimpering throughout the examination.

- ☐ **Satisfactory:** Several obvious, brief vocalisations, or one or two long vocalisations (note: vocalisations may be positive or negative but do not include cries or whimpers).
- ☐ **Possible problem:** Only one or two obvious, brief vocalisations (see note above), and / or there is screaming, crying or whimpers; ambiguous vocalisations (eg., sighs or raspy sounds); or a total absence of vocalisation.

Please note that there is no 'Definite problem' response category for this item.

4. ACTIVITY: TOWARDS ANYONE

Assess head, torso, and limb movement of the infant without taking into account hands and fingers activity, both spontaneously and in response to unpleasant stimulation.

- ☐ **Satisfactory:** At least a moderate level of activity (not just in response to unpleasant stimulation).
- ☐ **Possible problem:** Reduced level of activity, or moderate level of activity occurs just in response to unpleasant stimulation.
- ☐ **Definite problem:** Very reduced level of activity regardless of the stimulation.

5. RELATIONSHIP: TOWARDS CLINICIAN / OBSERVER ONLY

Assess the infant's ability to engage in a relationship with the clinician or any other unfamiliar person. Relationship is assessed through the infant's visual contact and interaction with the clinician / observer.

- ☐ **Satisfactory:** Relationship at least moderately evident – either positive or negative
- ☐ **Possible problem:** Relationship seems tenuous or doubtful, or only seems to be evident when the infant is crying, struggling etc.
- ☐ **Definite problem:** No relationship evident – either positive or negative.

If scored as a possible or definite problem, is this behaviour different towards the parent and the clinician?

☐-Yes, different ☐-No, not different ☐-Didn't assess Describe: _____

CLINICIAN / OBSERVER CHARACTERISTICS

- ☐ Makes a good attempt to engage infant (much smiling, talking to the infant)
- ☐ Makes a fair attempt to engage infant (some smiling, talking to the infant)
- ☐ Makes a limited attempt to engage infant (little smiling, talking to the infant)

INFANT CHARACTERISTICS

- ☐ Infant appears to be tired
- ☐ Infant appears to be distressed throughout the consultation
- ☐ Other. Specify: _____

SUMMARY: # Satisfactory: _____ # Possible Problems: _____ # Definite Problems: _____

Appendix E - Informed Consent Form

Home Visit Interventions in South African Townships: Prevention of HIV, Alcohol, & Child Malnutrition

WHAT THIS IS ABOUT

You are being invited to take part in a research project. Please take some time to read the information presented here, which will explain the details of this project. Please ask the data collector any questions about any part of this project that you do not fully understand. Your participation in this study is **entirely voluntary**. This means you are free to decline to participate, or to withdraw from the study at any point. This will not affect you negatively in any way whatsoever.

This study has been approved by the Committee for Human Research at Stellenbosch University. It will be run following the rules of the Declaration of Helsinki, South African Guidelines for Good Clinical Practice and the Medical Research Council (MRC) Ethical Guidelines for Research.

WHO ARE WE AND WHY ARE WE HERE?

We are from Philani Nutrition Centres and Stellenbosch University. We work with the Centre for Community Health at the University of California, Los Angeles and the Laboratory for Comparative Human Biology at Emory University. We will be doing a study here over the next few years. We will collect information about expecting and new mothers and their babies, from the time a mother is pregnant until her baby is 18 months old. The reason we are doing the study is because we want to develop an effective intervention program to support the health of pregnant mothers and their babies in this community.

The National Institute on Alcohol Abuse and Alcoholism in the United States is paying for the study.

Dr. Mary Jane Rotheram-Borus from the University of California, Los Angeles (UCLA) is the Principal Investigator for this study. Prof. Mark Tomlinson (Stellenbosch University), Dr. Ingrid le Roux (Philani), Dr. Mary O'Connor (UCLA), and Dr. Carol Worthman (Emory) are Co-Investigators of this study.

WHY WE WOULD LIKE YOU TO PARTICIPATE

You are being invited to be part of this research because:

- You are a pregnant mother in this neighborhood
- You are 18 years of age or older

WHAT IS INVOLVED?

If you volunteer to participate in this study, we would like you to do the following things:

Interviews

Today we would like to interview you about many different aspects of your life, including information about your family, your health, sexual behaviors, thoughts about HIV issues, your daily routines, alcohol, and drug use, as well as general knowledge about child care and infant feeding. Some questions may be personal or sensitive, but they are all entirely voluntary. Here are some sample questions you may be asked: "Do you drink alcohol?", "How many children do you have?" and "How many sex partners have you had in the last year?" We will never ask your

name during the interview. Your answers will never be linked to your name or personal details. We think that the interview will last about 90 minutes.

If you still agree to be part of our study, you will also be asked questions 3 more times, when your baby is 6 days old, 6 months old, and 18 months old. At these interviews, the questions will be similar to those I will ask you today, and your baby will also be weighed and measured.

We will go to 26 different neighborhoods in Harare, Mfuleni, Ndlovini and Makaza, where we will ask other mothers like you to be involved in all our interviews as well. We will be asking approximately 1800 expecting mothers to participate in total.

Intervention

There will be two neighbourhood groups of expecting mothers in this study. In some neighborhoods the mothers in our study will continue to receive the normal medical care you can get at the government clinics. Other neighbourhoods will also receive home visits from Philani Nutrition Centres. We will flip a coin to decide which group your neighborhood is in. If your house is in one of the neighbourhoods where there are Philani home visits being offered, you will be asked to let a trained Mentor Mother visit you several times during your pregnancy, and several times after your baby is born. The Mentor Mother's job is to support you throughout your pregnancy, and she will talk with you about a range of different things, including things like your antenatal care, eating and drinking and taking the right medicines and vitamins when you are pregnant, feeding your baby, coping with or preventing HIV and TB, and taking care of your baby's health and happiness. On some visits, the Mentor Mother will bring someone else from the research team with them. The person they bring will be trained about home-visit topics and will be part of the research team.

Whether you have the home visits or not, you may still be asked to answer questions when your baby is one week old, and six and eighteen months old.

Medical Record Review

We will look at your medical records and your baby's Road to Health Card. We will collect information from these records. This information includes:

- TB Record
- ART Results
- CD4 Counts
- Tobacco use
- Alcohol use
- Substance use
- Infant feeding option
- STI results
- Urine results (glucose)
- Blood tests (blood group, haemoglobin, ferritin)

After your baby's birth, we will collect this information:

- Birth weight
- Length
- Head circumference

- APGAR
- Immunizations record
- If baby is a twin
- If there was / is a TB contact in the home
- If any brothers and sisters of the baby are underweight
- If baby is bottle-fed at all
- Vitamin A supplementation
- Diagnosis and treatment of illnesses

We will never link this information to you or your baby.

BIOMARKER COMPONENT AT SIX MONTHS ASSESSMENT

What, where and when

At the six month assessment, you will be invited to take part in a separate biomarker assessment, which will take place after your interview. The assessment is entirely voluntary, and no one will force you to do it. You can still remain in the study even if you choose not to do the extra biomarker assessment.

If you choose to participate, you will be asked to do the following:

- To stand on a machine which will read your weight, height, and body composition.
- To have your blood pressure and heart rate taken.
- To breathe into a cardboard container, which is to test your lungs.
- To have 5/6 drops of blood taken from a finger prick, which will be used to assess your iron levels, sugar levels, cholesterol, and protein levels.
- With your baby, we would like to spend 15 minutes asking you about your baby's behaviours, and playing with him/her to watch how he/she moves, makes sounds, and interacts.

How long will the extra assessment take?

The extra assessment will take approximately 45 minutes.

The tests with your blood spots measure general health and include the following:

- Hemoglobin: Will test to find out if you have anemia or are at risk for anemia.
- Glycosylated haemoglobin: Will test to find out if your blood sugar level has been high and if you are at risk for diabetes.
- Blood Lipids: Will measure both good and bad forms of cholesterol.
- EBV antibodies: Will test for your general level of stress.
- CRP: Will test for your general level of physical stress.

What will we do with the information we collect from the biomarker assessment?

We will use all of this information to look at your and your baby's health, including your iron levels, sugar levels, lung capacity, body fat composition, cholesterol, blood pressure and protein levels. We will give you feedback about your results straight after the assessment. Your blood will NOT be tested for HIV.

Sending your blood sample overseas

One test we would like to do on your blood is about protein, but we can not do the tests in South Africa. Your blood sample will be sent to America, where it will be analysed.

Compensation for the biomarker assessment

You will not be given any financial or extra food voucher incentives for doing the biomarker assessment, but you might benefit because part of the assessment includes feedback for you about your health, and the health of your baby.

LOCATOR FORM

We need to be able to keep in touch with you while you are in the study. To help do this, we have a form we hope you will fill out. The form asks you to tell us the names and phone numbers of people who might know how to get in touch with you. We will only call those people if we cannot find you first. We will never say that you are in this study, or tell them anything about you. The information you give us on this form will be kept separate from any other information you give us.

PARTICIPATION AND WITHDRAWAL

We would really like you to be in our study, but being in this study is **entirely voluntary**. You will NOT be penalized in ANY way if you decide you don't want to participate, or you want to stop your participation at any time.

Drs. Tomlinson and le Roux will answer questions about the study if you have any.

- ◆ Dr. Tomlinson's number is 021 808 3446.
- ◆ Dr. le Roux's number is 021 387-5124.
- ◆ If you still have questions or complaints which you feel were not answered properly by the above research members, you can call the Committee for Human Research. The telephone number is 021-938 9207.
- ◆ Dr. Rotheram-Borus' number is +310-794-8280. Her fax is +310-794-8297. Reverse-charges calls about the study will be accepted. Her address is:
UCLA Centre for Community Health
10920 Wilshire Blvd., Suite 350
Los Angeles, California, 90024, USA.

WHAT WILL HAPPEN TO THE INFORMATION COLLECTED?

The information we collect will help us decide how to improve the support and health of expecting and new mothers in South Africa. We hope this information will be used to improve services and support.

POTENTIAL RISKS AND DISCOMFORTS

Some of the questions we will ask may make you feel uneasy or upset. You do not need to answer any questions that you do not want to. If you become upset, we can also give you a list of people who are available to talk with you if and when you need it.

POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

You may not personally get any benefit from this study, though getting the home visits may help you directly if you are in a neighborhood where a Mentor Mother is working.

PAYMENT FOR PARTICIPATION

You will not be paid to be in this study. You will be given a food voucher to the value of R80 if you decide to answer the questions today. You will receive a food voucher to the value of R80 if you decide to answer questions in the future.

PHOTOGRAPHS

We would like to take a picture of you before the first interview in order to help us identify you when you arrive for future interviews after your baby is born. If you agree, we will keep the photograph on a computer which is locked so no one except research staff will be able to access it. The photograph will not be linked to any of your personal information from any of the interviews.

AUDIO TAPING

Today's questions will be audio taped. We tape the questions to check that they are being asked correctly. Only research staff members will listen to the tapes. Your identity will not be revealed. The tapes will be locked up during the study. They will be destroyed after their use in this research project.

If you participate in future interviews, they also will be audio taped.

VIDEO RECORDINGS

At the assessment when your baby is six months old, we would like to do two short exercises which will require us to video record you and your baby in addition to interviewing you. These are completely voluntary exercises. If you prefer only to do the interview and not to do the two exercises, this is completely up to you. In the one exercise, we would like to video record you and your baby while you are feeding him/her however you do at home. This will take five minutes. In the other exercise, we would like to record your baby for 10 minutes, while both you and our data collector interact with him or her. The reason we would like to do this is to learn how your baby interacts with you and with others. We are interested in things like his/her facial expressions and level of activity.

☐ I do not wish to be video recorded.

CONFIDENTIALITY

The information collected in this study cannot be identified with you. It is confidential. However, during the interviews we will ask you to provide the names of your household members and your infant.

Your bloodspots will be sent to, analyzed and stored at Emory University in Atlanta, Georgia in the USA. They will be stored until analyses are completed and then destroyed.

We will only use the information you give us for research. It will be stored on computers at a central location. It will be password protected. It will be kept in locked cupboards with limited access. Only the research staff can see the information you give us. The people who are paying for this research, the study monitors, auditors or Research Executive Committee (REC) members may need to inspect all study records at some point but nobody will be able to identify you personally. The results of the study might become public, but your information will remain confidential.

If you have any questions, you are welcome to contact the Ethics Committee at Stellenbosch University Office if you have questions. The address is:

Private Bag X1
Matieland 7602
021-938-9075.

CONSENT TO PARTICIPATE

I agree to participate in this research study. It will help develop a program to support expecting and new mothers and their children.

I will answer your questions. The questions are about my background, thoughts, feelings, situation, hardships, knowledge, weight and health. Research staff may conduct a review of my medical records.

If Mentor Mothers are assigned to my neighborhood, I will participate in their home visits.

I understand I am participating on an entirely voluntary bases, and that I can stop my participation at any point.

All of my questions about this research study and my participation in it have been answered.

I understand that this research may not benefit me personally.

I have received the telephone number of a person to contact if I need to speak about issues which may arise in during the questions.

I understand that this consent form will not be linked to my responses. My answers will remain confidential.

.....
Signature of Participant

.....
Name of participant

.....
Date

SIGNATURE OF INVESTIGATOR OR DESIGNEE

In my judgment the subject is voluntarily and knowingly giving informed consent and possesses the legal capacity to give informed consent to participate in this research study.

.....
Name of Investigator or Designee

.....
Signature of Investigator or Designee

.....
Date