

**AN INVESTIGATION INTO THE MOST  
APPROPRIATE PREDICTION METHOD  
FOR BIRTH OUTCOMES AND  
MATERNAL MORBIDITY, AND THE  
INFLUENCE OF SOCIOECONOMIC  
STATUS IN A GROUP OF PREGNANT  
WOMEN IN KHAYELITSHA, SOUTH  
AFRICA**

by

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degree of Master of Nutrition at the University of Stellenbosch*

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## **DECLARATION**

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the owner of the copyright thereof and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

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# **ABSTRACT**

## **Introduction**

The health status of women in peri-urban areas has been influenced by the South African political transition. Despite some progress, maternal and child mortality rates are still unacceptably high. A mother's nutritional status is one of the most important determinants of maternal and birth outcomes. The Institute of Medicine's pre-pregnancy Body Mass Index (BMI) method is not always appropriate to use in a peri-urban setting as many women attend their first antenatal clinic later on in their pregnancy. Two alternative methods, the gestational BMI (GBMI) and the gestational risk score (GRS), have been used elsewhere to screen for at risk pregnancies, but have not been used in a South African peri-urban setting. Furthermore, examining socio-economic variables (SEV) aids in the explanation of the impact of social structures on an individual. Risk factors can then be established and pregnant women in these higher risk groups can be identified and given additional antenatal clinic appointments and priority during labour.

## **Aim**

The first aim was to investigate the strength of the GBMI and GRS methods for predicting birth outcomes and maternal morbidities. The second aim was to investigate the relationships between SEV, GBMI and maternal morbidities.

## **Methods**

This was a sub-study of the Philani Mentor Mothers Study. A sample of 103 and 205 were selected for investigating the prediction methods and SEV respectively. Maternal anthropometry, gestational weeks and SEV were obtained during interviews before birth. Information obtained was used to calculate GBMI and GRS and to assess the SEV. Birth outcomes were obtained from the infant's clinic cards and maternal morbidities were obtained from interviews two days after the birth.

## **Results**

No significant association was found between GBMI and birth outcomes and maternal morbidities. A significant positive association was found between GRS and birth head circumference percentile ( $r=0.22$ ,  $p<0.05$ ). The higher the GRS, the higher the risk of an infant spending longer time in the hospital (Kruskal Wallis  $X^2 = 4$ ,  $p<0.05$ ). A significant positive association was found between GBMI and the following SEV factors; age ( $r=0.33$ ,  $p<0.05$ ), height ( $r=0.15$ ,  $p<0.05$ ), parity ( $r=0.23$ ,  $p<0.05$ ), income ( $r=0.2$ ,  $p<0.05$ ), marital status ( $X^2 = 9.35$ ,  $p<0.05$ ), employment ( $U=2.9$ ,  $p<0.05$ ) and HIV status ( $U=2.54$ ,  $p<0.05$ ). No statistically significant relationships were found between gestational hypertension and gestational diabetes mellitus and SEV.

## **Conclusion**

From the findings of this sub-study there were some promising results, however it is still unclear as to which method is the most appropriate to predict adverse birth outcomes and maternal morbidity. It is recommended that the GBMI and GRS once-off methods be repeated in a larger population to see if there are more parameters that could be predicted. Women who were older, shorter, married, had more pregnancies, HIV negative and had a higher socio-economic status tended to have a greater GBMI. This can lead to adverse birth outcomes and increases the risk of women developing maternal morbidities and other chronic diseases later in their life. Optimal nutrition and health promotion strategies targeting women before conception should be implemented.

# OPSOMMING

## **Inleiding**

Die gesondheidstatus van vroue in semi-stedelike areas is beïnvloed deur die Suid-Afrikaanse politiese oorgang. Ten spyte van 'n mate van vooruitgang is die sterftesyfers vir moeders en kinders steeds onaanvaarbaar hoog. 'n Moeder se voedingstatus is een van die mees belangrike bepalende faktore van moeder- en geboorteuikomste. Die Instituut van Geneeskunde se voor-swangerskap Liggaamsmassa Indeks (LMI) metode is nie altyd toepaslik om te gebruik in 'n semi-stedelike opset nie aangesien baie vroue hul eerste voorgeboorte-kliniek eers later in hul swangerskap bywoon. Twee alternatiewe metodes, die swangerskap LMI (SLMI) en die swangerskap risiko telling (SRT) is al elders gebruik as sifting vir hoë risiko swangerskappe, maar is nog nie gebruik in 'n Suid-Afrikaanse semi-stedelike opset nie. Vervolgens kan 'n ondersoek na sosio-ekonomiese veranderlikes (SEV) help om die impak van maatskaplike strukture op 'n individu te verduidelik. Risiko faktore kan dan vasgestel word en swanger vroue wat in hierdie hoër risiko groepe val kan geïdentifiseer word. Dié vroue kan addisionele voorgeboorte-kliniek afsprake ontvang asook voorkeurbehandeling tydens die geboorteproses.

## **Doelstellings**

Die eerste doelstelling was om die sterkte van die SLMI en SRT metodes te ondersoek as voorspellers van geboorte uitkomst en moeder-morbiditeite. Die tweede doelstelling was om die verhoudings tussen SEV, SLMI en moeder-morbiditeite te ondersoek.

## **Metodes**

Hierdie projek was 'n sub-studie van die Philani Mentor Moeders Studie. 'n Steekproefgrootte van 103 en 205 was geselekteer om onderskeidelik die voorspeller metodes en SEV te ondersoek. Die moeder se antropometrie, swangerskap weke en SEV was verkry gedurende onderhoude voor geboorte. Informasie ingewin was gebruik om die SLMI en SRT te bereken en om die SEV te ondersoek. Geboorteuikomste was verkry vanaf die babas se

kliniekkarte en moeder-morbiditeite was verkry tydens onderhoude twee dae na die geboorte.

## **Resultate**

Geen betekenisvolle assosiasie was gevind tussen SLMI, geboorteuikomste en moeder-morbiditeite nie. 'n Betekenisvolle positiewe assosiasie was gevind tussen SRT en die geboorte kopomtrek persentiel ( $r=0.22$ ,  $p<0.05$ ). Hoe hoër die SRT, hoe hoër die risiko dat 'n baba langer in die hospitaal sou bly (Kruskal Wallis  $X^2=4$ ,  $p<0.05$ ). 'n Betekenisvolle positiewe assosiasie was gevind tussen SLMI en die volgende SEV faktore: ouderdom ( $r=0.33$ ,  $p<0.05$ ), lengte ( $r=0.15$ ,  $p<0.05$ ), pariteit ( $r=0.23$ ,  $p<0.05$ ), inkomste ( $r=0.2$ ,  $p<0.05$ ), huwelikstatus ( $X^2=9.35$ ,  $p<0.05$ ), besit van 'n identiteitsdokument ( $U=1.75$ ,  $p<0.05$ ), werkstatus ( $U=2.9$ ,  $p<0.05$ ) en MIV status ( $U=2.54$ ,  $p<0.05$ ). Geen statisties beduidende verhoudings was gevind tussen swangerskap hipertensie, swangerskap diabetes mellitus en SEV nie.

## **Gevolgtrekking**

Sommige bevindinge van hierdie sub-studie dui op belowende resultate, alhoewel dit steeds nie duidelik is watter metode die mees toepaslike is om ongewenste geboorteuikomste en moeder-morbiditeit te voorspel nie. Dit word aanbeveel dat die SLMI en SRT eenmalige metodes herhaal word in 'n groter populasie om te sien of daar meer parameters is wat voorspel kan word. Vroue wat ouer, korter, getroud, meer swangerskappe, MIV negatief en 'n hoër sosio-ekonomiese status gehad het was geneig om 'n hoër SLMI te hê. Dit kan lei tot ongewenste geboorteuikomste en verhoogde risiko om moeder-morbiditeite en ander chroniese siektes later in hul lewe te ontwikkel. Optimale voeding en gesondheidsbevordering strategieë wat vroue teiken voor bevrugting behoort geïmplementeer te word.

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## LIST OF ABBREVIATIONS

<b>AIDS</b>	Acquired immune deficiency syndrome
<b>BMI</b>	Body mass index
<b>BUN</b>	Blood urea nitrogen
<b>GBMI</b>	Gestational body mass index
<b>GDM</b>	Gestational diabetes mellitus
<b>GHPT</b>	Gestational hypertension
<b>GIGT</b>	Gestational impaired glucose tolerance
<b>GRS</b>	Gestational risk score
<b>HIV</b>	Human immunodeficiency virus
<b>HPT</b>	Hypertension
<b>IGT</b>	Impaired glucose tolerance
<b>IOM</b>	Institute of Medicine
<b>IUGR</b>	Intra-uterine growth retardation
<b>LGA</b>	Large for gestational age
<b>LBW</b>	Low birth weight
<b>MDG</b>	Millennium development goals
<b>MUAC</b>	Mid upper arm circumference
<b>NCCEMD</b>	National Committee for the Confidential Enquiry into Maternal Death
<b>PIHD</b>	Pregnancy induced hypertension disorders
<b>PPIP</b>	Perinatal Problem Identification Programme
<b>SADHS</b>	South African Demographic and Health Survey
<b>SES</b>	Socioeconomic status
<b>SEV</b>	Socioeconomic variables
<b>SGA</b>	Small for gestational age
<b>TB</b>	Tuberculosis
<b>Type II DM</b>	Type 2 diabetes mellitus
<b>VLBW</b>	Very low birth weight
<b>WHO</b>	World Health Organisation

**CHAPTER 1**  
**INTRODUCTION AND LITERATURE REVIEW**

## 1.1 INTRODUCTION AND LITERATURE REVIEW

A mother's nutritional status is one of the most important determinants of an infant's birth-weight and birth outcomes.<sup>1,2</sup> There are various methods of measuring nutritional status during pregnancy.<sup>3</sup> The majority of these methods require the pregravid weight and Body Mass Index (BMI) of a pregnant women and for her to attend regular antenatal clinic appointments.<sup>4</sup> The overall attendance at antenatal clinics has increased in South Africa by 25%,<sup>5</sup> mainly due to the implementation of basic free health care for pregnant women and children below the age of six in 1994.<sup>5</sup> The mean number of antenatal visits in South Africa is 3.8, with the Western Cape having the highest continuous attendance of 4.9.<sup>5,6</sup> Nevertheless, the reality in a township setting is that many women attend these clinics later on in their pregnancy (mean = 5.5 months).<sup>5</sup> The pre-pregnancy weight and BMI are therefore not always measured or known.

Examining socio-economic status (SES) explains the impact of social structures on an individual.<sup>7</sup> The knowledge and the establishment of the influence of an individual's SES can assist in the prevention of the development of maternal morbidities and adverse birth outcomes.<sup>7</sup> The most recent study looking at SES in the South African population was the South African Demographic and Health Survey (SADHS) in 2003.<sup>5</sup> The relationship between socioeconomic variables (SEV) and health status in economically active subjects in the Western Cape has been looked at recently by Stellenberg et al, (2008)<sup>8</sup>, in the coloured population and Malhotra, (2008)<sup>9</sup> in the black African population in the Western Cape. Unfortunately there are very few studies that look at the SEV as predictors of health, especially in pregnant women in the black South African population.<sup>2</sup>

A reliable and uni-occasion prediction method is needed to increase awareness of possible adverse birth outcomes and maternal morbidity. There is also a need for the determination of a relationship between SEV and gestational BMI (GBMI) and maternal morbidities. The understanding of the

influence of specific SEV is important for the development of public health policy. Both of these outcome results are essential in the development and implementation of appropriate public health intervention programmes for mothers.

## **1.2 MATERNAL AND CHILD HEALTH**

### **1.2.1 Millennium Development Goals**

The Millennium Development Goals (MDG) were implemented by the United Nations in 1990, and consist of, amongst others, reducing child mortality by two thirds (MDG number 4) and maternal mortality by 75% (MDG number 5) by 2015.<sup>10</sup> These were the two significant goals for improving maternal and child health.<sup>11,12,13</sup> In a World Health Organisation (WHO) systematic review it was found that the two main causes of maternal death in Africa were haemorrhages (33.9%) and hypertensive disorders (9.2%).<sup>14</sup> Since 1990, most countries have been able to reduce their child mortality rates, however there has been an increase in 12 countries, including South Africa.<sup>13</sup> Prematurity is dangerous in low to middle-income countries as intensive care facilities are not always adequate.<sup>12</sup> Ninety-eight percent of worldwide neonatal deaths are in low-income countries.<sup>12</sup>

### **1.2.2 Maternal and Child Health in South Africa**

Maternal and child health was declared one of the top health priorities after the African National Congress came into power in South Africa in 1994.<sup>13</sup> Numerous public health policies were implemented, but the two that impacted on maternal and child health were the creation of 1300 primary health care facilities and free health care given to children under the age of six as well as all pregnant and lactating women.<sup>13</sup>

#### **1.2.2.1 Maternal health in South Africa**

With regards to maternal health, the above-mentioned policies helped improve antenatal clinic attendance.<sup>5</sup> A large percentage of all pregnant women now attend at least one antenatal clinic, although this has decreased

slightly from 94% (1998) to 92% (2003).<sup>5,13</sup> Women in low to middle-income countries are more likely to attend antenatal clinics later in their pregnancy.<sup>5</sup> In South Africa, the average gestational age for the first antenatal visit is 5.5 months.<sup>5</sup> There is still a concern about the poor treatment of pregnant women and the cost of transport to the clinics and therefore initial and follow-up appointments may be missed.<sup>15-17</sup>

It has been difficult to estimate the difference the policies have made to maternal mortality as it only became compulsory to report all maternal deaths to the National Committee for the Confidential Enquiry into Maternal Deaths (NCCEMD) in 1997.<sup>11</sup> It is thought that with the increase of Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) and the poor condition of antenatal clinics and midwifery obstetric units, maternal mortality has probably increased in South Africa, since 1997.<sup>11,13,15</sup> Maternal mortality is still high at 2500 per annum and a lifetime risk of 1 in 110.<sup>13,18</sup> It has been estimated that approximately 38% of maternal deaths could have been prevented if the conditions of the midwifery obstetric units and district hospitals had been improved.<sup>13,18</sup>

Table 1.1 illustrates the disparity between the WHO review and South African NCCEMD figures on the major contributors to maternal mortality.<sup>11,14</sup> The discrepancy with regards to haemorrhage could be due to the availability of blood for emergencies in the midwifery obstetric units in South Africa compared to the rest of Africa.<sup>11</sup> The higher incidence and prevalence of Hypertension (HPT) may be due to, among other, the higher prevalence (>50%) of overweight and obese women in South Africa.<sup>19</sup> Both the WHO and South African HIV/AIDS figures may be an underestimate as the WHO found that the HIV/AIDS status in three quarters of maternal deaths was unknown.<sup>14</sup> The reason the NCCEMD figure for infection is higher could be due to the fact that they included non-pregnancy related infections, including HIV/AIDS related infections.<sup>11</sup>

**TABLE 1.1: Contributors to maternal mortality in the WHO systematic review and the NCCEMD<sup>11,14</sup>**

Cause of Maternal death	WHO review (Africa) %	NCCEMD figures (South Africa) %
Haemorrhage	33.9	13.4
Hypertensive disorders	9.1	19.1
HIV/AIDS	6.2	14-15
Sepsis and Infection	9.7*	8.3 37.8 (non-pregnancy related)
Abortion and Ectopic pregnancy	3.9 0.5	4.9
Obstructed labour	4.1	**
Anaemia	3.7	**
Pre-existing maternal disease	**	5.6

\*Figures combined

\*\*Figures not available

The number of women who gave birth in a health facility in South Africa increased from 83% in 1998 to 89% in 2003.<sup>5</sup> However, in peri-urban settings, only 24% of births were performed by a skilled health personnel.<sup>5</sup> Doctors are more likely to perform deliveries on older women (over 35 years) and in urban areas.<sup>5</sup> The percentage of births performed by a doctor was higher in the Western Cape (39.1%), but less than a third of these were in black African women.<sup>5</sup> In the Western Cape, 33.6% of deliveries are caesarian sections and of these only 21.1% were on black African women.<sup>5</sup> Most women are discharged six hours after a natural birth and three days after a caesarean birth from the midwifery obstetric units.<sup>5,13</sup> There needs to be a more accurate way to classify women at risk, in order for high risk births to be carried out by a doctor and more post-partum care given.<sup>5</sup>

### 1.2.2.2 Child health in South Africa

South Africa is one of the 12 countries in the world where infant mortality has increased from 1990 to 2006.<sup>15,20</sup> It was found that countries with an increase in child mortality had a high maternal mortality and high HIV prevalence.<sup>15,20</sup> The Perinatal Problem Identification Programme (PPIP) audits avoidable

perinatal deaths in South Africa.<sup>18</sup> It has been used nationally since 2000 and to date five reports have been generated.<sup>18</sup> Statistics from approximately 40% of midwifery obstetric units, district, regional and provincial hospitals are obtained.<sup>11,18</sup> It was established that the most common causes of neonatal death were unexplained stillbirths (24%), placental disease (23%), spontaneous premature deliveries (23%), and labour related problems (17%).<sup>12,18,21,22</sup> The 2009 Saving Babies report affirmed that due to poor intrapartum care, 44% of the deaths due to labour were avoidable.<sup>18</sup> Neonatal deaths are higher in the following socio-economic groups; urban, especially in the black African population, no education or grade 8-11 education, male children, maternal age over 35 years, first births, mothers with more than four children and children that are born with less than two years birth interval.<sup>5,18</sup> With regards to neonatal death, the SADHS (2003) statistics need to be interpreted with caution as they do not seem to agree with previous surveys. The lowest number of neonatal deaths in South Africa occurs within the Western Cape.<sup>5</sup>

### **1.3 ADVERSE PREGNANCY AND BIRTH OUTCOMES**

#### **1.3.1 Definitions of Birth Outcomes**

##### **1.3.1.1 Low birth weight (LBW) and very low birth weight infants (VLBW)**

LBW and VLBW are defined when the birth mass of an infant is less than 2500 and 1500 grams respectively.<sup>23,24</sup> This occurs either because the infant is born early or born small for gestational age (SGA) due to intrauterine growth restriction (IUGR).<sup>23,24</sup> Women who have had a previous stillbirth and have a low BMI have an increased risk for giving birth to a LBW infant.<sup>25</sup> LBW usually arises if there is inadequate maternal nutrition, the mother smokes and/or drinks alcohol or the mother is stressed or distressed.<sup>26,27</sup> LBW indirectly increases the risk of perinatal and infant mortality.<sup>25,26</sup> These infants have an increased risk of developing necrotizing enterocolitis, bronchopulmonary dysplasia, growth and developmental delay.<sup>23,24</sup> LBW

infants also have increased risk factors for poor health during their childhood and are at a higher risk of developing malnutrition in the first five years of life.<sup>28,29,30</sup> IUGR and LBW can lead to an increased risk of developing a high BMI and metabolic syndrome later in life.<sup>31</sup>

### **1.3.1.2 Preterm infants**

If an infant is born before 37 weeks, the infant is classified as being preterm.<sup>32,33</sup> Lower socioeconomic status, lower education level, single marital status, low income, teenage mothers, genetic factors, poor prenatal care, low maternal weight gain, lower BMI, inadequate birth spacing, multiple births, pregnancy induced hypertension, placental insufficiency, uterine abnormalities, infections during pregnancy, rupture of membranes, previous preterm delivery, heavy work and stress are all risk factors for a preterm birth.<sup>25,34</sup> Smoking is associated with very early delivery (before 32 weeks).<sup>34</sup> Preterm infants frequently have an immature gastrointestinal tract, lungs, kidneys, liver and heart.<sup>32,33</sup> The risk of perinatal mortality is also increased with a preterm birth.<sup>32</sup>

### **1.3.1.3 Intrauterine growth restriction**

IUGR is defined as poor growth of the foetus in the womb.<sup>27</sup> The weight of infants who have IUGR fall below the tenth percentile for gestational age.<sup>27</sup> The risk factors for developing IUGR are low maternal energy intake, low preconception BMI, short stature, maternal infections, abnormal placental blood flow, foetal infections, primi-parity, pregnancy induced hypertension, smoking and malaria.<sup>27</sup>

### **1.3.1.4 Small for gestational age Infants (SGA)**

SGA is defined when the mass of an infant is less than the tenth percentile for its gestational age.<sup>33</sup> Women who smoke during pregnancy often give birth to SGA babies.<sup>35</sup> Smoking decreases the placental blood flow and therefore restricts the nutrients available to the foetus.<sup>35</sup> Women who have pregnancy induced hypertension are also at risk of delivering a SGA infant.<sup>25</sup> SGA infants have limited fat and glycogen stores and have a higher energy



expenditure.<sup>33</sup> They are therefore at risk of developing hypoglycaemia and growth delay.<sup>33</sup>

#### **1.3.1.5 Large for gestational age infants (LGA)**

LGA is defined when the mass of the infant is greater than the ninetieth percentile for its gestational age.<sup>36</sup> Boney et al (2005) found that children who were born LGA had more of a risk of developing the metabolic syndrome if they had a mother with GDM and/or obesity.<sup>36</sup> Obesity in the absence of GDM is also associated with an increased risk of a child developing metabolic syndrome in later life.<sup>36</sup>

#### **1.3.1.6 Macrosomia**

Macrosomia is defined when the mass of an infant is greater than >4500 grams.<sup>37</sup> An infant can be both macrosomic and LGA.<sup>37</sup> The adverse effects of macrosomia for maternal health are the following: postpartum haemorrhage and necessity for caesarean section.<sup>38</sup> Macrosomia increases the risk of an infant having shoulder dystocia (failure of shoulder to emerge after the foetal head during delivery), chorioamnionitis (inflammation of foetal membranes), fourth degree lacerations, prolonged hospital stay, neonatal death, asphyxia, meconium aspiration and becoming overweight in childhood.<sup>38</sup>

#### **1.3.1.7 Neonatal death**

Neonatal death is defined when the death of an infant occurs before one month of age.<sup>12</sup> Approximately four million neonatal deaths occur each year and 98% of these are found in developing countries.<sup>12</sup> Prematurity was found to be the leading cause of neonatal death (60.5%) in a study looking at 7993 pregnancies in developing countries in which there were 71 neonatal deaths.<sup>12</sup> Other factors that were found to cause neonatal death were infection and birth asphyxia.<sup>12</sup>

#### **1.3.1.8 Perinatal death**

A perinatal death is defined when a miscarriage or spontaneous abortion occurs before 20 weeks.<sup>12</sup> It is more common in the first 12 weeks of

pregnancy.<sup>12</sup> Risk factors for a miscarriage are inconclusive, but the following have been thought to be contributing factors: maternal age over 35 years, maternal underweight and overweight, infertility problems, previous termination, stress and alcohol use.<sup>12</sup> The causes for many miscarriages is still unknown and not linked to any of the above risk factors.<sup>12</sup>

#### **1.3.1.9 Stillbirth**

Stillbirths are defined as foetal death after 20 weeks.<sup>12</sup> In the study by Nguyen Ngoc, (2006) the rate of stillbirths was 12.5 per 1000 in poor-middle income countries (Argentina, Egypt, India, Peru, South Africa and Vietnam).<sup>12</sup> Some risk factors for stillbirths are IUGR, macrosomia, gestational hypertensive disorders, smoking and pre-pregnancy obesity.<sup>12,39</sup>

### **1.3.2 Adverse Pregnancy and Birth Outcomes with High or Low Pregravid Body Mass Index (BMI)**

#### **1.3.2.1 High pregravid BMI**

Over-nutrition can lead to a greater than recommended weight gain and high gestational BMI (GBMI).<sup>40,41</sup> Increased GBMI can lead to maternal hyperinsulinemia, which results in increased nutrients crossing the placenta and the foetus developing hyperinsulinemia and increased foetal mass.<sup>40,41</sup> This increases the risk of a pregnant woman developing GDM and Gestational Hypertension (GHPT).<sup>4,23,42</sup> A large retrospective study on 12 915 pregnant women was conducted by Joy et al (2008) in the USA.<sup>43</sup> The researchers investigated the impact of maternal obesity on birth outcomes and found that obesity increases the risk of pregnant women developing GDM (3.7% and 12% in normal and obese BMI groups respectively,  $p < 0.001$ ), GHPT (9% and 30.9% in normal and obese BMI groups respectively,  $p < 0.001$ ), intervention delivery (36% and 50.4% in the normal and obese groups respectively,  $p < 0.001$ ) and caesarean delivery (22% and 38.2% in the normal and obese groups respectively,  $p < 0.001$ ).<sup>43</sup> These findings were in agreement with both Cruz et al (2007)<sup>23</sup> in a South American study ( $n=697$ ) and Kruger (2005)<sup>4</sup> in a South African review. High GBMI is also associated

with a longer gestational period, increased caesarean sections and an increase in labour induction.<sup>3,31,44-46</sup> These maternal morbidities contribute to the increased risk of adverse birth outcomes.<sup>43</sup>

It was found by Joy et al (2008), that infants born from obese mothers were significantly heavier (3261g and 3354g normal and obese BMI groups respectively  $p < 0.001$ ), more likely to be admitted to intensive care units (5.8% and 8.2% in the normal and obese groups respectively  $p < 0.001$ ) and LGA (6.5% and 12.3% in the normal and obese groups respectively,  $p < 0.001$ ).<sup>43</sup> Furthermore, several other studies have found that increased weight gain increases the risk of the following: LBW, VLBW, macrosomia, stillbirths, hypoglycaemia of the infant and neonatal resuscitation.<sup>25-27,31,37,43-45,47,48</sup> A possible explanation for women who gained excess weight and gave birth to small babies, could be that they developed other morbidities, such as vascular complications and hypertension that restricted foetal growth.<sup>49</sup> It was found however that both groups had the same mean gestational age (38.6 weeks), and there were more stillbirths in the normal group (4) compared to the obese group (1), though this was not statistically significant.<sup>49</sup>

Underweight women gaining more than the recommended Institute of Medicine (IOM) weight range were at a higher risk of giving birth to a LGA baby than an overweight woman who put on the same amount of weight.<sup>37</sup> The association between weight gain and LGA is greater than the association between insufficient weight gain and SGA.<sup>37</sup>

High maternal weight gain is also a risk factor for a woman being overweight in subsequent pregnancies.<sup>37</sup> Parity is a contributory factor to obesity and if postpartum weight loss is not optimal, BMI correlates with parity.<sup>4,50</sup> The one positive aspect of increased inter-pregnancy weight gain is that it reduces the risk for delivering SGA infants.<sup>50</sup>

A large percentage of the black population in South Africa tend to be shorter and overweight than the rest of the population.<sup>51,52</sup> In the whole of South

Africa, 26.7% of women over the age of 15 in the black African population were found to be overweight and 31.8% were obese.<sup>51</sup> In the Cape Peninsula these percentages are slightly higher; the percentage of women who are overweight is 36.4% and obese is 34.4%.<sup>51</sup> It has been found that black women retain more weight postpartum and therefore parity increases the risk of obesity amongst black African women.<sup>4</sup>

### **1.3.2.2 Low pregravid BMI**

During gestation, the foetus protects its vital organs and during times of starvation, it would rather provide its brain with nutrients, than other organs, such as the kidneys or pancreas.<sup>53,54</sup> According to the Barker hypothesis, suboptimal intra-uterine growth can lead to poor development of certain organs and this can lead to the development of chronic diseases later in life.<sup>53,54</sup> These diseases include hypertension, insulin resistance, hypercholesterolemia, and hyperuricemia.<sup>53,54</sup>

Low pre-pregnancy BMI and under-nutrition can lead to less than recommended weight gain and low GBMI.<sup>4</sup> Women who are < 45 kg in weight, < 145 cm tall and have a Mid Upper Arm Circumference (MUAC) of < 22 cm are at increased risk for adverse birth outcomes.<sup>4</sup> They deliver smaller babies, with smaller head circumferences and shorter lengths.<sup>4,23,31,55</sup> VLBW can be attributed to a low pre-gravid BMI<sup>48</sup>. Low weight gain is positively correlated with perinatal mortality,<sup>27</sup> SGA,<sup>48</sup> LBW,<sup>4,23,31,44,56</sup> VLBW,<sup>48</sup> IUGR<sup>4,23,31</sup> and infant hospitalisation.<sup>56</sup> If maternal weight gain is less than 0.3-0.4 kg/week, there is an increased risk for preterm labour.<sup>55</sup> These factors all contribute to an increased risk for infant morbidity and mortality.<sup>23</sup>

### **1.3.3 Gestational BMI in a Peri-urban Setting**

Transitional nutrition habits have led to more over-nutrition than under-nutrition in the peri-urban areas of South Africa.<sup>51</sup> Previously HIV/AIDS was associated with an increased risk for losing weight, however it was found in a meta-analysis that with the increased education, urbanisation and use of Anti-Retroviral Drugs (ARV), the proportion of HIV positive women with a low BMI

has decreased.<sup>57</sup> The prevalence of underweight women over the age of 15 in the whole of the South African black African population is low at 4.8%,<sup>51</sup> and is even lower in the Cape Peninsula at 3.7%.<sup>58</sup> It was found that the more urbanised the population, the higher the prevalence of obesity.<sup>58</sup> Puoane et al (2002) established that an increase in income in a peri-urban setting resulted in a more atherogenic diet which was lower in complex carbohydrate and higher in saturated fat.<sup>51</sup> This led to an increase in obesity, and therefore an increase in chronic diseases of lifestyle.<sup>51</sup>

## **1.4 MATERNAL MORBIDITIES**

Maternal morbidities are diseases that arise during pregnancy and often disappear after the infant is born, but increase the risk of the mother developing the disease in a subsequent pregnancy or later in life.<sup>59</sup>

### **1.4.1 Gestational Diabetes Mellitus (GDM)**

GDM is diagnosed when insulin intolerance first arises during the second half of pregnancy.<sup>59</sup> If abnormally high blood glucose occurs during the first trimester, it is more than likely latent Type 2 Diabetes Mellitus (Type II DM).<sup>59</sup> GDM usually abates after birth, although a woman with GDM is more likely to develop Impaired Glucose Tolerance (IGT) and Type II DM later in life and develop GDM in the next pregnancy.<sup>60,61,62</sup> Infants born from mothers who have GDM are also at an increased risk for adverse birth outcomes, such as congenital abnormalities, LGA, hyperglycaemia, jaundice and childhood obesity later in life.<sup>62</sup> Furthermore, women with gestational IGT (GIGT) are at more of a risk of giving birth to LGA infants.<sup>63,64</sup>

The prevalence of GDM worldwide is between 2-19% in high-income countries.<sup>59</sup> In poor to middle income countries, it appears to be in the lower range. Dode and Santos, (2009) found a prevalence of 2.95% in 4123 Brazilian pregnant women.<sup>65</sup> Few studies have looked at GDM in Sub-Saharan Africa, particularly in rural and peri-urban regions of South Africa.<sup>62,66</sup> One small study (n=262) by Mamabolo et al, (2007) found a low prevalence (1.5% for GDM and 7.3% for GIGT) in the Limpopo province.<sup>66</sup> This was in contrast to the study (n=348) by Huddle, (2005)<sup>62</sup> which found a higher

prevalence (47.5% developed GDM over an 11 year period, average 4.2% per year). High maternal age is one of the most recognised risk factors for developing GDM.<sup>67</sup> The discrepancy between the two studies could possibly be explained in part by this as the average age of Mamabola's participants was 26.3 ( $\pm 5.53$ ) and 25.5 ( $\pm 6.8$ ) respectively compared to the average age of Huddle's participants ( $33.9 \pm 5.2$ ).<sup>62,66</sup>

Other risk factors for developing GDM are; ethnicity, genetic predisposition, parity, history of abnormal blood glucose and obesity.<sup>42,49,65-71</sup> Mamabola et al, (2007) disagrees with one of these risk factors as they found that obesity in black African women was not associated with an increased risk for developing GDM or GIGT.<sup>66</sup> This was a smaller study (n=262) and the impact of other risk factors such as age (mean=25.5) and parity (mean=1) was less than most of the other studies.<sup>66</sup> This study was done in only one province in South Africa and the population's genetic profile could be protecting them from developing GDM or GIGT. Torloni et al, (2006) conducted a systematic review (70 studies) investigating pre-pregnancy BMI as a measure of obesity and the risk of GDM.<sup>72</sup> The risk of developing GDM correlated positively with an increase in pregravid BMI and it was found that for every  $1\text{kgm}^2$  increase in BMI, the risk of developing GDM increased by 0.92%.<sup>72</sup> It was also found that decreasing BMI by  $1\text{kgm}^2$  decreases risk of GDM by 1%.<sup>72</sup> The odds ratio of developing GDM were found to be 0.75, 1.97, 3.05 and 5.55 for underweight, overweight, moderately obese, morbidly obese respectively.<sup>72</sup> The strength of the evidence of the systematic review compared to one study is clear and therefore in conclusion, high pregravid BMI is an important risk factor for developing GDM.

Both height and smoking in the first and second trimester seemed to have a protective effect against developing GDM.<sup>65</sup> With regards to height, this is in agreement for Branchtein et al, (2000)<sup>73</sup> (n=5564; Brazilian pregnant women), Jung et al, (1998)<sup>74</sup> (n=9005; Korean pregnant women) and Kousta et al, (2002)<sup>75</sup> (n=833; British pregnant women).<sup>73-75</sup> The evidence suggests that shorter women (height <1.51m) are found to have lower socio-economic

status and may have been subjected to foetal and/or childhood under-nutrition.<sup>73</sup> Impaired glucose homeostasis has been associated with shorter individuals.<sup>74</sup> There are controversial findings with regards to smoking and reduced risk of developing GDM.<sup>69,76</sup> Very few studies have looked at smoking in pregnant women, but there is evidence that smoking is correlated with a decrease in BMI and therefore a decrease in insulin sensitivity impairment.<sup>77-79</sup>

GDM is relatively easy to treat but needs to be detected early.<sup>62</sup> Huddle, (2005) evaluated a simple but effective specialised diabetic unit (physician, obstetrician, paediatrician and diabetes nurse educator) for treating GDM in Soweto.<sup>62</sup> Pregnant women with both GDM and GIGT were examined.<sup>62</sup> The researchers found that perinatal mortality was significantly less in the intervention group (3.7%) compared to the control group (15.6%).<sup>62</sup> Caesarean section was still high at 60% possibly because doctors did not want the pregnancy to go beyond 38 weeks (Huddle, 2005).<sup>62</sup> They concluded that a relatively cost-effective intervention was beneficial to decrease adverse effects of GDM and GIGT.<sup>62</sup> However they also found that late referrals were a constant problem.<sup>62</sup> In the Western Cape, blood glucose (96.2%) and urine (97.3%) tests are performed on pregnant women attending antenatal clinics.<sup>5</sup> It is public policy protocol to refer a pregnant women if her values are above the normal range (< 5.5 mmol/l fasting and < 8 mmol/l two hours post-prandially or glucose found in the urine, maternal weight over 120 kg or a previous LGA baby).<sup>5</sup> Unfortunately referral does not always take place due to the lack of blood glucose testing equipment and therefore GDM and GIGT pregnancies are not always identified.<sup>62</sup>

As stated before, the main risk factor for developing GDM is obesity and as this is becoming a major public health problem in South Africa, GDM could be increasing and placing an increased burden on maternal health in South Africa.<sup>80</sup> South Africa also has an increased prevalence of T2DM, and this could be explained by the increase in women developing GDM.<sup>66,80</sup> Possibilities for the increase in GDM and hence Type II DM could be the rural

urban nutrition transition and IUGR of the mother (when she was a foetus) which programmes the maternal body to have metabolic and endocrine impairment.<sup>66,81</sup>

Pre-pregnancy BMI is a reliable indicator of obesity during pregnancy and BMI is a better predictor for GDM than weight.<sup>82</sup> This is ideal for pre-pregnancy counselling, but this is not always appropriate in the peri-urban setting, as most women do not attend clinics until they are in their second trimester of pregnancy. However, counselling and education could be given if a woman is planning future pregnancies and to reduce the risk of developing IGT and T2DM.<sup>62</sup>

#### **1.4.2 Pregnancy Induced Hypertensive Disorders**

Pregnancy induced hypertensive disorders (PIHD) include gestational hypertension (GHPT), pre-eclampsia and eclampsia.<sup>83-85</sup> GHPT is defined as developing hypertension (blood pressure > 140/90 mmHg) or severe GHPT (> 160/110 mmHg) after 20 weeks of pregnancy without proteinuria, whilst pre-eclampsia is defined as hypertension with significant amounts of protein in the urine.<sup>83-85</sup> Pre-eclampsia could lead to eclampsia (proteinuria with convulsions) which is life-threatening to both the mother and foetus.<sup>83,84,85</sup>

PIHD affect both maternal and child health.<sup>86,87</sup> It was found that 15.7% of maternal deaths were due to complications of PIHD during pregnancy in South Africa.<sup>83,88</sup> There are differences in the aetiology of GHPT and pre-eclampsia.<sup>89</sup> Twenty five percent of women in South Africa are reported to have HPT, the prevalence of which is increasing as a result of the increase in obesity.<sup>90</sup> Black South Africans are particularly at risk due to a genetic susceptibility to low rennin low aldosterone hypertension.<sup>91,92</sup>

##### **1.4.2.1 Gestational hypertension**

Overweight and obese women are at a greater risk of developing GHPT.<sup>93</sup> It is frequently exposed by pregnancy and the mother often develops hypertension later in life (Silva, 2008).<sup>94</sup> GHPT is also associated with other



co-morbidities, such as cardiovascular disease and T2DM.<sup>94</sup> Smoking is the only known protective effect against GHPT.<sup>95,96</sup> It is thought that the combustion of smoke and not the nicotine is the aid in this protective factor.<sup>96</sup> It has also been found that smoking later in the second and third trimester showed more of a protective effect.<sup>95,96</sup> However due to the other harmful effects of smoking it is not recommended during pregnancy.<sup>94</sup> In the Dutch Generation R study, 3262 pregnant women were categorised according to education levels.<sup>94</sup> Women with low or mid-low education levels were at a higher risk of developing GHPT.<sup>94</sup> Other factors such as substance abuse, pre-existing diabetes, high BMI and hypertension, increased this risk.<sup>94</sup> This could be due to the fact that in high-income countries, women with a lower education level tend to have a higher BMI.<sup>94</sup> The opposite has been found in poor to middle-income countries, where women with a higher education have a higher BMI and are therefore more susceptible to GHPT.<sup>66,94,97</sup> The increasing burden of non-communicable diseases in South Africa could be exacerbating GHPT.<sup>80</sup>

#### **1.4.2.2 Pre-eclampsia**

The aetiology of pre-eclampsia is uncertain. Pre-eclampsia usually develops in first pregnancies (7-18% compared with 4-9% in subsequent pregnancies).<sup>84</sup> Various thoughts such as placental ischaemia, immune maladaptation and genetic predisposition have been implicated.<sup>98</sup> In a study by Conde-Agudelo and Belizan, (2000)<sup>99</sup> looking at 878 680 pregnancies in Latin American and Caribbean women, it was found that the following are risk factors for pre-eclampsia: age over 35 years, single mother, first child, history of hypertension, pre-pregnancy BMI > 26 kg/m<sup>2</sup>, multiple pregnancies, presence of foetal malformations, T2DM. Similarly to GHPT, smoking and low pre-pregnancy BMI (< 19.6 kg/m<sup>2</sup>) were protective factors.<sup>84,95,96,99</sup> This protective effect is outweighed by the increased risk of having a SGA infant associated with smoking.<sup>100</sup> This is in agreement with other studies.<sup>76,101,102</sup> Obesity has the opposite effect when looked at together with smoking.<sup>103</sup> It was found by Ness et al (2008) that obesity obliterated the reduced pre-eclampsia effect of smoking.<sup>100</sup> Therefore suggesting that the protective

effect of smoking occurs as a consequence of diminished appetite.<sup>77-79</sup> A Cochrane systematic review (12 studies) found that low calcium diets increase the risk for pre-eclampsia and that supplementation can reduce this risk.<sup>104</sup> Furthermore, the black South African population have been found to have a high prevalence of lactose intolerance and a low dietary calcium intake.<sup>4,92</sup>

### **1.4.3 Management of Gestational Hypertensive Disorders**

Over half (58.5%) of maternal deaths are deemed avoidable due to GHPT.<sup>83,105</sup> Both GHPT and pre-eclampsia increases the risk of caesarean sections, perinatal morbidity, such as IUGR, preterm births, VLBW, SGA, stillbirths and neonatal death.<sup>105-108</sup> A South African study (n=226) found that 44.7% of preterm deliveries of VLBW infants was due to PIHD disorders.<sup>105</sup> The majority of the other adverse events are due to postpartum problems. There are procedures in health care facilities in South Africa that could avoid these morbidities and deaths.<sup>83</sup> Mothers with PIHD need to be monitored pre- and post pregnancy, equipment needs to be checked and calibrated regularly to avoid under-reading of blood pressure and medication given correctly and adhered to.<sup>83</sup> Although these recommendations seem to be relatively easy and cost-effective, they are not always implemented optimally in the primary healthcare setting.<sup>83</sup>

## **1.5 EXISTING METHODS USED TO PREDICT MATERNAL MORBIDITY AND BIRTH OUTCOMES**

### **1.5.1 Institute of Medicine's Pregravid BMI and Weight Gain Recommendations**

There are various methods of measuring weight gain during pregnancy, examples of these are total weekly rates of weight gain and/or weight gain over a period of a particular trimester.<sup>3</sup> A universal method of measuring weight gain has not yet been accepted and this has led to different methods being used in different studies and could explain the conflicting results.<sup>3</sup>

A widely used method was developed by the Institute of Medicine (IOM).<sup>109</sup> Their recommendations were based on population observation studies and maternal and child health outcomes in the USA (IOM, 2009).<sup>109</sup> They looked at pregnant women's pregravid weight, total weight gain and rate of weight gain associated with the best birth outcomes.<sup>109</sup> They then categorised the recommended rate and total weight gain according to pregravid BMI.<sup>110</sup> These standards were revised and published in May 2009.<sup>110</sup> The two main differences in these guidelines are that the pregravid BMI categories have been changed from those based on the Metropolitan Life Insurance tables to those developed by the World Health Organisation (WHO) and the weight gain recommendations for obese women range across a smaller scale.<sup>110</sup> Women who tended to gain less weight than recommended by the IOM in the black population in the USA were younger, shorter, had a lower pregravid BMI, were less educated and smoked.<sup>111</sup> It has been found that more women are currently entering pregnancy when they are heavier and older and are gaining too much weight during the pregnancy.<sup>110</sup> It is recommended that women attain normal BMI before conception and if this is not possible, they should try to adhere to recommended weight gain guidelines.<sup>110</sup> The IOM guidelines have been criticised as the recommendations are too generous and may result in increased obesity and larger babies.<sup>112</sup> The guidelines have also been developed for American women only.<sup>112</sup> Wong et al (2000)<sup>113</sup> developed their own recommendations for weight gain specifically for the Chinese population as he found their optimal weight gain during pregnancy was significantly different.<sup>113</sup> Guidelines could be developed for other populations accordingly.

Dietz et al (2009) conducted a study, examining 104 980 pregnant women's gestational weight gain in the USA.<sup>37</sup> Thirty eight percent were found to have gained more than the recommended IOM guidelines, 36% within the range and 26% below the range.<sup>37</sup> Similar results were found by May et al (2007) in another smaller American study (n=233).<sup>49</sup> Sieger-Riz (1994) investigated total weight gain and the rate of weight gain for predicting birth outcomes in 5766 Hispanic women in America.<sup>109</sup> The pregravid weight was self-reported

and weight was measured at each visit.<sup>109</sup> Self-reported weight gain has been well correlated with measured weight, except in obese individuals who tend to underreport.<sup>3</sup> It was found that women with a pre-pregnancy BMI < 19.8 kg/m<sup>2</sup> had the greatest risk of delivering a preterm baby (relative risk, 1.7).<sup>109</sup> There was a similar pattern of weight gain in the underweight and normal group of women and between the overweight and obese group of women.<sup>109</sup> The majority of the former group gained the correct amount of weight, whereas most of the latter gained more than the recommended weight.<sup>109</sup> They concluded that pre-pregnancy BMI was conclusively indicative of adverse birth outcomes in underweight women only.<sup>109</sup> Women with poor gestational weight gain for both underweight and overweight groups had an increased risk of giving birth prematurely.<sup>109</sup> Conversely Murakami et al (2005) suggest that weight gain during pregnancy does not influence pregnancy and birth outcomes and maintained that pre-pregnancy-BMI was a better predictor of outcomes.<sup>114</sup> These authors argued that rather than looking at total weight gain, the pattern of weight gain should be observed.<sup>109</sup> It was found that if a woman gained less than 60% of the recommended weight during the third trimester, it would increase the risk of a premature birth.<sup>109</sup> As previously mentioned, low pre-gravid BMI and inadequate gestational weight gain influences the risk of LBW and VLBW infants.<sup>48</sup>

There is a lack of research on pregnancy weight gains in South Africa.<sup>4</sup> Many women in peri-urban areas attend antenatal clinics late in their pregnancy and therefore monitoring weight gain is difficult; gestational age is also uncertain.<sup>4</sup> Studies looking at pre-pregnancy weight in developing countries therefore tend to rely on self-reporting.<sup>109</sup> The SADHS (2003) found that the validity of self-reporting depended on the ethnic group and level of education.<sup>5</sup> Similarly to Kleinman et al,(2007) they found that overweight and obese black African women often underestimated their weight.<sup>3,51</sup> An inaccurate pregravid BMI can lead to small errors in weight-gain calculations.<sup>109</sup> This pre-gravid weight needs to correlate with the BMI in the first trimester as the first two-month weight gain has been found to be minimal.<sup>3,109</sup> Weight gain in the first

trimester reflects the accumulation of maternal fat stores and the weight gained in the third trimester reflects the growth of the foetus.<sup>110</sup>

Although the IOM method may be the better process for measuring maternal weight gain and predicting adverse birth outcomes and maternal morbidity, it is not always the most appropriate method within a peri-urban setting.

### **1.5.2 Anthropometry**

BMI (weight (kg)/height (m)<sup>2</sup>) has been used globally as a form of anthropometry for characterising body composition and nutritional status in underweight, normal, overweight and obese individuals.<sup>48</sup> It is a simple, reliable and low-cost calculation which can be taught easily and utilised by community health workers.<sup>56</sup> Maternal anthropometry is imperative in predicting pregnancy and birth outcomes and maternal morbidity.<sup>48,115</sup>

A collaborative meta-analysis was conducted by the WHO ten years ago.<sup>56</sup> Studies were included if they had looked at the value of anthropometric measurements during pregnancy.<sup>56</sup> Height, weight, MUAC (pre- or early pregnancy), BMI, weight for gestational age and interval weight gain were assessed.<sup>56</sup> The following maternal and birth outcomes were examined; delivery mode, postpartum haemorrhage and pre-eclampsia, LBW, IUGR and preterm births (WHO).<sup>56</sup> There was no advantage in measuring weight at each antenatal visit and it was established that an attained weight taken at 5 (16-20 weeks) or 7 months (24-28 weeks) is the most practical screening tool for LBW and IUGR.<sup>56</sup> This is important with regards to intervention, since if the mother has been found to have insufficient weight gain at 7 months, it may be insufficient time for nutritional supplementation.<sup>56</sup> The fact that pre-pregnancy weight is needed could be a problem for if the mother does not attend the antenatal clinic before or during early pregnancy, she will have to recall her weight.<sup>56</sup> There is a discrepancy as to whether this recalled weight is accurate or not.<sup>56</sup> The WHO (1995) found that there was a great deal of error whereas other studies have found that there was little difference between recalled and actual weight.<sup>3,5,56</sup> It was also found that

anthropometric methods have limited prediction for maternal outcomes and preterm births.<sup>56</sup> Neggers and Goldenberg (2003)<sup>116</sup> found the opposite, especially with pregravid BMI being one of the strongest predictors for both IUGR and preterm births. Height was the only weak predictor of a maternal outcome and assisted delivery.<sup>56</sup>

Height and MUAC needed one measurement, as height was static during pregnancy, unless the pregnant mother was under 18 years and MUAC does not change significantly over the duration of 9 months in developing countries.<sup>56</sup> In the WHO review, if studies did not measure heights or weights, MUAC was used to predict LBW and IUGR, but this method did not meet the criteria for prediction.<sup>56</sup> MUAC has usually been used as a measure together with BMI to assess gestational nutritional status.<sup>4</sup> It has been established that MUAC increases with an increase in maternal weight.<sup>117</sup> It has been used as an indicator of pre-pregnancy and early maternal weight in developing countries, where pre-pregnancy weight is usually unknown and estimated.<sup>117</sup> This is however in contradiction to the WHO analysis.<sup>3</sup> There have been different cut-off values (proposed by different authors) indicating nutritional stress when assessing MUAC;  $< 22 \text{ cm}^4$ ,  $< 23 \text{ cm}^{117}$  and  $< 27 \text{ cm}^{118}$ . It would be a suitable tool to use but MUAC is not routinely measured in the antenatal clinics of South Africa.

In a recent study conducted by Elishbly and Schmalisch (n=1000)<sup>118</sup> regarding Sudanese pregnancy outcomes, all maternal anthropometric measurements (weight, height and MUAC) were positively correlated with the infant's birth weight, but height was the only measurement that was statistically significant.<sup>118</sup> This is in agreement with Adair and Bisgrove<sup>119</sup> where taller women were found to have a low odds ratio of giving birth to a LBW infant. Picket, (2002)<sup>120</sup> found similar results where height was found to be a predictive factor for birth weight in all ethnic groups of American pregnant women (n=8870), except for the Hispanic population.<sup>120</sup> Maternal height also correlated positively with gestational age.<sup>118</sup> Maternal height of less than 156 cm increased the risk of having a LBW infant by 52%.<sup>56</sup> This is in agreement

with a study by Baqui et al (1994)<sup>121</sup> who looked at the nutritional status of pregnant women in Bangladesh as well as Santos et al (2008)<sup>122</sup> although their cut-off value was slightly different at 1.50m.<sup>121,122</sup> However, Oija and Malla (2007) disagree with these findings in their study on Nepalese women (n=154) as they found that both maternal weight and MUAC showed a significant difference ( $p < 0.05$ ), but both height ( $p = 0.058$ ) and BMI ( $p = 0.280$ ) did not show a significant difference in mothers with normal and LBW babies.<sup>123</sup> It should be noted though that this was a relatively small sample size, compared to other studies.

## **1.6 ALTERNATIVE METHODS FOR PREDICTING MATERNAL MORBIDITY AND ADVERSE BIRTH OUTCOMES**

### **1.6.1 Gestational Body Mass Index (GBMI)**

A review looking at BMI in developing countries (46 surveys) showed that women with a low BMI during pregnancy were at risk for giving birth to a LBW baby or having a preterm baby and higher neonatal mortality.<sup>124</sup> Miscarriages and stillbirths were more likely to happen to women with higher BMIs and over 25 years old.<sup>124</sup> This is in agreement with studies done by Bolzan and Guimarey (2001)<sup>125</sup> and Thame et al (1997)<sup>126</sup> where they found that there was a direct correlation between the mother's BMI and birth weight. Thame et al (1997)<sup>126</sup> also found a correlation with maternal BMI and infant head circumference.

Cruz et al investigated the BMI of HIV positive South American pregnant women and birth outcomes (n=697).<sup>23</sup> They used a logarithmic equation developed by the Argentinian Ministry of Health to adjust the BMI for gestational age.<sup>23</sup> A once-off measurement of BMI at any stage of the pregnancy was used together with specific biochemical parameters, i.e. bicarbonate, Blood Urea Nitrogen (BUN), cholesterol and haemoglobin.<sup>23</sup> The calculated GBMI was then grouped into categories.<sup>23</sup> The main findings of this study were similar to those of studies which observed accumulative weight gain and birth outcomes: women who were classified as underweight

gave birth to infants of lower weight, shorter length and smaller head circumference, compared to infants born from mothers in the normal and overweight category.<sup>23</sup>

Weight is measured in the majority of antenatal clinics in South Africa [Western Cape (97%), SA-urban (97.2%) and SA-non-urban (96.8%)].<sup>5</sup> Height is measured in the majority of the antenatal clinics in the Western Cape (90.4%).<sup>5</sup> It is still only being measured in two thirds of pregnant women in the non-urban antenatal clinics of South Africa (61.5%).<sup>5</sup> In order for GBMI to be calculated and used, staff should be trained and equipment needs to be installed in the antenatal clinics. This GBMI method is simple and effective and could be used as an alternative for predicting adverse birth outcomes and maternal morbidity in a South African peri-urban setting.

### **1.6.2 Gestational Risk Score Method**

The original gestational risk score was developed by Chamberlain in the 1970s for the British birth survey.<sup>127</sup> He obtained the data from a perinatal mortality study done by Bonham and Butler in 1958.<sup>127</sup> It revealed the accumulative effect of certain risk factors and identified high risk mothers. Socio-economic factors cannot be looked at in isolation as they influence each other. Most of these factors are not quantitatively measurable and therefore the intensity of the effect of a social factor in the above mentioned study was given a numerical score.<sup>127</sup> The scoring system was limited to a few factors, but it was suggested that if the scoring system was used for future studies, a few extra factors should be used. The total score can then be classified into a risk category.<sup>127</sup> It is a simple method to enable it to be used in a practical setting. This system has been used in numerous birth surveys.<sup>127</sup>

Barros then adapted Chamberlain's scoring system for a developing country in 1980.<sup>128</sup> He found that the majority of the factors and their scores were similar, however he changed social class to family income, added marital



status, removed most of the obstetric history except for previous LBW and took out previous medical history as seen in table 1.2.<sup>128</sup>

**TABLE 1.2: A comparison of Chamberlain and Barros's Gestational Risk Scoring classification**

<b>Socio-economic factor</b>	<b>Chamberlain, 1970<sup>127</sup></b>	<b>Barros, 1980<sup>128</sup></b>
<b>Age</b>	Not given a score	Added a score of 2 for under 20
<b>Parity</b>	Not given a score	Added a score of 1 for nulliparity
<b>Social Class</b>	Social class was given a score	Social class was changed to family income and given a similar scoring system
<b>Previous obstetric performance</b>	Included caesarean section	Caesarean section excluded
<b>Medical History</b>	Included hypertension (140/90 mmHg before 20 weeks gestation) and diabetes.  <i>Additional scoring to be included if future studies were to be done:</i> cardiac disease, chronic respiratory disease, chronic renal disease, endocrine disease	Only included hypertension and diabetes
<b>Previous Obstetric history</b>	<i>Additional scoring to be included if future studies were to be done:</i> Antepartum haemorrhage Postpartum haemorrhage Previous Preterm infant Previous LBW infant	Included only previous LBW infant
<b>Height</b>	<i>Additional scoring to be included if future studies were to be done:</i> Height < 157.5cm	Height <150cm
<b>Smoking</b>	<i>Additional scoring to be included if future studies were to be done:</i> > 5 cigarettes per day	Smoking (any amount)
<b>Marital status</b>	Not included	Added a score of 2 for single and 0 for with partner

When using this Gestational Risk Score (GRS), Santos et al (2008) found that the perinatal mortality rate was 13/1000 and 54/1000 for the low and high risk groups respectively.<sup>122</sup> The investigators also found that women in the high risk category were less likely to attend antenatal clinics than the women in the low risk category.<sup>122</sup> Doctors gave more attention to the women in the high risk group (69.7% compared to 56.6% in the low risk group) and caesarean sections were performed more for the high risk group, (33.2% compared to 26.8%) than for the low risk group.<sup>122,128</sup> No scoring system is completely

unbiased, but it should be used as a preventative method to decrease maternal and perinatal risk.

This scoring system has also been used in the study by Santos et al (2008).<sup>122</sup> They looked at the comparison of three cohorts (1982 n=6011, 1993 n=5304, 2004 n=4287) in Southern Brazil.<sup>122</sup> There was a trend for women in the higher age group to be in the higher income group.<sup>122</sup> There was an increase in the number of mothers in the extreme age groups, <20 and >34 years of age.<sup>122</sup> A reduction in smoking was found from 35.6% to 25.1% in 1982 and 2004 respectively.<sup>122</sup> The reduction in smoking was greater in women with a higher income.<sup>122</sup> The number of women who were <150cm reduced between 1982 and 1993, but increased in 2004.<sup>122</sup> The pregnant women in the 2004 cohort were significantly heavier across all income groups.<sup>122</sup> The mean BMI went from 22.7 to 22.8 and eventually to 24.2kg/m<sup>2</sup> in 1982, 1993 and 2004 respectively.<sup>122</sup> Mothers also gained an average of 600-800g more than the original cohort. There was also a significant increase in obesity from 4.4% in 1982 to 10.7% in 2004.<sup>122</sup> Parity decreased from 1.3 to 1.1, this was seen more in higher income families.<sup>122</sup> The mean birth interval increased from 2 years to 5 years.<sup>122</sup> High risk pregnancies were highest among low income families.<sup>122</sup> The prevalence of a caesarian section was three times more in 2004 than in 1982 as more high risk pregnancies were identified.<sup>122</sup>

The main findings of these studies were that social inequalities had a negative impact on maternal health.<sup>122</sup> The GRS has not been used in South Africa. It is another alternative simple yet effective tool that could be used in the antenatal clinics to identify pregnant women who are at risk.

## **1.7 INFLUENCE OF SOCIO-ECONOMIC STATUS ON GBMI AND MATERNAL MORBIDITY DURING PREGNANCY**

In the Western Cape, Khayelitsha is one of the fastest expanding peri-urban areas.<sup>17,129</sup> It was formally recognised and classified as a peri-urban setting in

1983 and has a mixture of formal and informal housing structures.<sup>17,122</sup> The health status of women in peri-urban areas is influenced by the South African political transition, increased urbanisation and the awareness of the importance of healthcare for maternal and child health.<sup>7,17</sup> Urbanisation is a determinant of health and can be positive if it increases the access to health care facilities, but it also gives rise to poverty, especially in South Africa.<sup>7,17,130,131</sup> The negative effects of urbanisation are highest among pregnant women.<sup>7,17</sup> Politics and race have also been South Africa's social determinants of health and the government still needs to reduce health inequalities to improve maternal and child health for the benefit of all in South Africa.<sup>13</sup>

The transition from a rural to an urban setting alters an individual's SES and has a major impact on their health.<sup>7,9,130</sup> Women, especially pregnant women, are one of the most vulnerable groups during this transition.<sup>7,130</sup> Maternal mortality is still too high in South Africa and it is therefore important to look at SES and the influence it has on pregnancies.<sup>26</sup> Risk factors can then be established and pregnant women in these higher risk groups can be identified and given additional antenatal appointments.<sup>26</sup> Priority can also be given to these high risk pregnant women during labour.<sup>5</sup> Presently 39.1% of women's deliveries are conducted by a doctor in the Western Cape, but only 22.5% of these are performed on black African women.<sup>5</sup>

As previously mentioned, most of the studies investigating the impact of SEV on health have not been done in the black African population and there are very few studies that have looked specifically at pregnant black South African women.<sup>17,132</sup> The SADHS (2003) looked at SEV in the whole of the South African population, but not the impact on health status.<sup>5</sup> Whereas, although Malhotra et al (2008) investigated SEV specifically in the black African population in the Western Cape, the focus was on obesity.<sup>9</sup>

The main study that has looked at socio-economic inequalities as a predictor of health is the Yenza cross-sectional study.<sup>132</sup> They interviewed 12 049 men

and women in two deprived areas in the Eastern Cape. One of the areas was mostly rural and the other peri-urban.<sup>132</sup> It was established that the main determinants of health in a South African peri-urban setting included education, access to electricity and refuse disposal. Education and basic services needs to improve to help reduce health inequalities and improve the impact on health.<sup>132</sup>

### **1.7.1 Education and Employment**

In high-income countries such as the Netherlands and the United Kingdom, it has been found that women with a lower education level and unemployed, had a higher BMI and therefore were at a greater risk of developing comorbidities such as GHPT and GDM.<sup>94,133</sup> This is dissimilar to what has been found in low to middle-income countries. Brazilian pregnant women who were more educated had a significantly higher pre-pregnancy-, gestational- and post-pregnancy BMI.<sup>122</sup> They also gained more weight during the pregnancy when compared to women who were less educated.<sup>122</sup> In Brazil, it was found that a larger proportion of women who were employed had a higher BMI and a higher proportion of unemployed women were underweight.<sup>23</sup> These findings were in agreement with Banda's et al (2007)<sup>44</sup> Zambian study, and Bourne et al (2002)<sup>90</sup> and Malhotra et al (2008)<sup>9</sup> who investigated the black population of South Africa (n=983, both men and women). Urbanisation affects educational status and it was found that newer arrivals to the peri-urban area had lower educational status, more informal housing and a lower atherogenic diet, which contributed to a lower BMI.<sup>51</sup> Bourne et al (2002)<sup>90</sup> also established that women who were more urbanised, had a higher level of education, more formal housing and ate a more westernised diet; tended to have a higher BMI compared with those with little or no schooling.<sup>90</sup> Whereas Malhotra et al (2008)<sup>9</sup> found that married women had a higher BMI. The Yenza study had similar findings to Bourne et al (2002)<sup>90</sup> and established that higher education level and employment correlated with increase in BMI.<sup>132</sup> This increase in BMI correlated with an increase in hypertension and both were associated with a higher monthly income.<sup>132</sup>

A household survey was done by Hoffman et al (1997) (n=661) in Khayelitsha.<sup>17</sup> With regards to schooling, 7% had no schooling, 38.7% had basic literacy (less than 7 years schooling) and 54.3% had secondary schooling. The SADHS found that in the Western Cape (urban and non-urban and all ethnic races), 1.7% of women had no education, 54% completed between grades 8-11, 23% had completed Grade 12 and 6.7% had tertiary education.<sup>5</sup> People who lived in urban areas were three times more likely to have tertiary education and younger people were found to have higher education levels.<sup>5</sup> With regards to employment, Hoffman et al (1997) found that 54.6% of women were employed.<sup>17</sup> The main forms of employment were domestic service and trading/hawking.<sup>17</sup> The Western Cape's percentage of employment was considerably higher than the rest of the country (55% compared to 36%), but this again was across all ethnic races.<sup>5</sup> The SADHS had similar findings to Hoffman et al (1997) and found that the main type of work was domestic services and self-employed trading.<sup>5,17</sup>

An increase in urbanisation has led to an increase in SES and more affluence.<sup>51,90,134</sup> This has resulted in people having less time to prepare more healthy meals. A more 'western' diet which was lower in carbohydrate and higher in fat has been adopted. This has led to an increase in obesity, and therefore an increase in chronic diseases of lifestyle.<sup>90</sup>

The prevalence of hypertension was 2.2% and diabetes was 0.5% in Hoffman's study.<sup>17</sup> There was a higher prevalence of chronic diseases in higher educated and more urbanised women.<sup>17</sup> Employment status however was not associated with chronic illness.<sup>17</sup>

### **1.7.2 Age and Parity**

In the SADHS, it was established that older women had a higher BMI.<sup>51</sup> This is in agreement with other studies<sup>17,51,89,93,132</sup>, particularly the Yenza study where age correlated with increasing BMI and increasing blood pressure.<sup>132</sup> High maternal age is also one of the most recognised risk factors for developing GDM.<sup>67</sup>

Women who have had more children previously are more likely to have an increased BMI than nulliparous women.<sup>135</sup> Banda et al (2007) found in their study on pregnant Zambian women (n=1211) that women with the higher GBMI were older, and had higher parity.<sup>44</sup> Parity has decreased significantly in Brazil from 1.3 (1982) to 1.1 (2004) and the interval between births increased from 33.5 months (1982) to 65.7 months (2004).<sup>122</sup> In the South African setting, parity has also decreased from 2.9 (2001) to 2.5 (2007).<sup>6</sup> This decrease has also been seen in the black African population from 3.2 (2001) to 2.75 (2007).<sup>6</sup> Women in the formal housing area were less likely to have more than five children compared to the shack area.<sup>130</sup> This reduction is thought to be due to socio-economic factors such as increased economic growth, urbanisation, social mobility and the education of women with regards to family planning.<sup>6</sup> It should then follow that if parity is reduced, obesity should also reduce, but as stated before, black African women retain more weight postpartum and this outweighs the effect of reduced parity.<sup>4</sup> With an increase in age and parity associated with an increase in BMI, it follows that there is an increased risk of developing GHPT and GDM.<sup>17</sup>

### **1.7.3 Height**

Various studies conducted in this peri-urban setting have found the average height of women in Khayelitsha to be approximately 1.59 m.<sup>5,51</sup> Other studies have shown that height has a positive association with GBMI: Branchtein et al (2000)<sup>73</sup> examined 5564 Brazilian pregnant women, Jung et al (1998)<sup>74</sup>; 9005 Korean pregnant women and Kousta et al (2002)<sup>75</sup> 833 British pregnant women). As previously mentioned, women who have had a socially deprived upbringing, tend to be shorter.<sup>73,74</sup> Furthermore, their smaller stature has a positive association with developing glucose intolerance, especially during pregnancy.<sup>65,73,74</sup>

### **1.7.4 Housing and Services**

The Yenza study established that access to electricity, clean water and refuse disposal are good predictors of the health of a peri-urban population.<sup>132</sup>

Almost 60% (59.5%) of the houses were structurally adequate, 39% had access to clean water, 25.6% had access to gas or electricity and 21.6% had a refrigerator.<sup>132</sup> These results differ from Hoffman et al (1997), who found that 13.7% lived in formal housing settlements, 54.6% lived in informal housing, but the area was serviced and 31% lived in settlements without water or sanitation.<sup>17,132</sup> One of the reasons for the discrepancy could be that Hoffman's study was conducted before 1994 (1990) and the Yenza study (1999) after 1994 where there was a change in government and health policies.<sup>136</sup> Secondly the Yenza study was looking at both men and women, whereas Hoffman et al only looked at women. Thirdly a rapid increase of urbanisation has occurred in the Khayelitsha area which has led to an increase in informal settlements whereas individuals in the Eastern Cape have lived there for longer and are more established.<sup>9,17,129,132</sup>

The SADHS (2003) found that there was an increase of 12% in electricity users since 1998 and 77% of South Africans had access to electricity.<sup>5</sup> Yet, there is still a significant difference between urban and non-urban access.<sup>5</sup> There has been a general decrease in the use of other fuels for cooking and 76% of South Africans now use electricity as a cooking source.<sup>5</sup> High BMI and high blood pressure were associated with having electricity and a higher monthly income.<sup>132</sup>

With regards to water, 41.2% had water piped into their dwelling, 25% had water piped into their yard and 19.3% used a public tap (SADHS, 2003).<sup>5</sup> The number of dwellings and yards that have piped water has increased.<sup>5</sup> The number of flush toilets (75%) connected to sewerage has not changed much since 1998.<sup>5</sup> Six percent have flush toilets connected to septic tanks.<sup>5</sup> Seventy percent of the non-urban population use a pit latrine, whilst 8% have no sanitation.<sup>5</sup> South African sanitation services need improvement as it is vital for the improvement of health.

The length of urbanisation seems to affect housing status.<sup>130</sup> People who have been in the peri-urban area for longer have more formal housing



compared to those who have newly arrived.<sup>130</sup> In Cooper et al's (1991) study looking at women's health in Khayelitsha (n=3229), it was found that there was a significant difference ( $p<0.001$ ) between chronic illnesses in the formal area (5.8%) compared to the shack area (1.6%).<sup>130</sup> The prevalence of HPT was 2.7% and 0.2% in formal and shack area respectively ( $p<0.001$ ) and diabetes was 2% and 0.6% in formal and shack area respectively ( $p<0.001$ )(Cooper, 1991).<sup>130</sup>

### **1.7.5 Smoking**

Smoking may inhibit maternal weight gain.<sup>100,127,138</sup> In the Yenza study, 6% of women were smokers.<sup>132</sup> This is slightly lower to the findings of Steyn et al (1997)<sup>139</sup> who conducted a survey in public antenatal clinics in four different South African cities. They interviewed 394 pregnant women with regards to smoking and found that only 4% of black African women smoked compared to 47% of coloured women. Overall 90% of the pregnant women knew that it was unhealthy to smoke.<sup>137</sup> Low education, increasing age, inadequate housing, lack of electricity, no refrigerator, lack of access to clean water, inadequate toilet facilities, inadequate refuse disposal and being male were in general predictive factors for being a smoker.<sup>132</sup> Women with these social-inequalities have lower BMI and therefore cigarette smoking is contributing to this lower BMI.

Dode and Santos (2009)<sup>65</sup> found that smoking in the first and second trimester seemed to have a protective effect against developing GDM.<sup>65</sup> There are controversial findings with regards to this.<sup>61,76</sup> As mentioned previously, for ethical reasons, few studies have looked at smoking during gestation. However, the studies that have been conducted have found an association with smoking and decreased BMI.<sup>100,137,138</sup> This lower BMI has had a positive effect on insulin sensitivity.<sup>100,137,138</sup>

### **1.7.6 Marital Status**

Marital statistics are difficult to compare as studies categorise marital status in different ways and there are large cultural and religious diversity in South

Africa.<sup>5</sup> In South Africa, the customary marriage act came into place in 1998 where traditional African marriages were recognised as valid.<sup>140</sup> In Hoffman et al's (1997)<sup>17</sup> household survey, 60.2% were married, 28.4% were single and 11.3% were widowed/separated or divorced.<sup>17</sup> These statistics are vastly different from the SADHS (2003)<sup>5</sup> and Mahlotora (2008)<sup>9</sup> and could be explained by previously mentioned factors. The survey also took into account the whole of South Africa. The survey found that 54.3% of women had never married, which was an increase from 48% in 1998 and 27.9% of women had married, which was a decrease from 33.7% in.<sup>5</sup> Approximately ten percent of the population were found to be living with their partner but not married.

Malhotra (2008) found an association with marriage and GBMI.<sup>9</sup> This is in disagreement with Hoffman. It was however found that chronic illnesses did not seem to be associated with marital status.<sup>9,17</sup> The increase in BMI could have an influence on increasing these maternal morbidities in the future.

### **1.7.7 Socioeconomic Variables (SEV)**

Examining SEV explains the impact of social structures on the individual.<sup>7</sup> The knowledge and the establishment of the influence of SEV can assist in the prevention of adverse birth outcomes and the development of maternal morbidities.<sup>7</sup> Social inequalities dominate the peri-urban population and the relationship between SEV and birth outcomes and maternal morbidity needs to be determined. As previously mentioned, the awareness of the effect of various SEV on pregnant women can aid in the development of strategic maternal health policies.<sup>134</sup>

## **1.8 CONCLUSIONS AND RATIONAL FOR THE STUDY**

To conclude, there are controversial findings as to which method is the most appropriate for predicting adverse birth outcomes and maternal morbidity. Women need to be educated to visit their ante-natal clinics as soon as they suspect or establish that they are pregnant. However, an alternative once-off method needs to be established as the first antenatal visit often occurs late in

the gestational period in the African, and also South African setting and weight gain over the pregnancy cannot therefore be used as a prediction method. Appropriate medical and nutritional advice can then be given to the pregnant woman to improve their outcomes.

SEV have been looked at in relation to health status in the coloured community of the Western Cape and black African population. There are however few studies that have looked at the influence of SEV in a group of pregnant women. There is therefore a need for a study to be conducted in this population. Social inequalities dominate this group and the relationship between SEV and birth outcomes and maternal morbidity needs to be determined. The understanding of the influence of specific SEV is important for the development of public health policy in this field.<sup>15</sup>

## **CHAPTER 2**

### **METHODOLOGY**

## **2.1 AIMS AND OBJECTIVES OF THE STUDY**

### **2.1.1 Aims**

The aims of this study were:

1. To investigate the strength of the GBMI and GRS methods for predicting birth outcomes and maternal morbidity.
2. To investigate the relationships between socio-economic variables, GBMI and maternal morbidities in Khayelitsha, South Africa.

### **2.1.2 Specific Objectives**

The specific objectives of the study were:

1. To describe the following for the first 103 pregnant participants (intervention group only) of the Philani Mentor Mothers' Project (PMMP) in Khayelitsha, South Africa:
  - Pre-pregnancy BMI and gestational weight gain
  - Gestational BMI (GBMI)
  - Gestational Risk Score (GRS)
2. To describe the following for the first 205 pregnant participants (intervention and control groups) of the Philani Mentor Mothers' Project (PMMP) in Khayelitsha, South Africa:
  - Socio-economic variables
  - GBMI
  - Maternal Morbidities: Gestational Diabetes and Hypertension
3. To investigate if there is a significant difference between:  
Prediction of birth outcomes and maternal morbidity between three prediction methods, namely: pregravid BMI and maternal weight gain, gestational BMI and GRS

4. To investigate the prediction strength of pregravid BMI and maternal weight gain, gestational BMI and GRS
5. To investigate the relationship between:
  - Socioeconomic variables and Gestational BMI
  - Socioeconomic variables and maternal morbidities

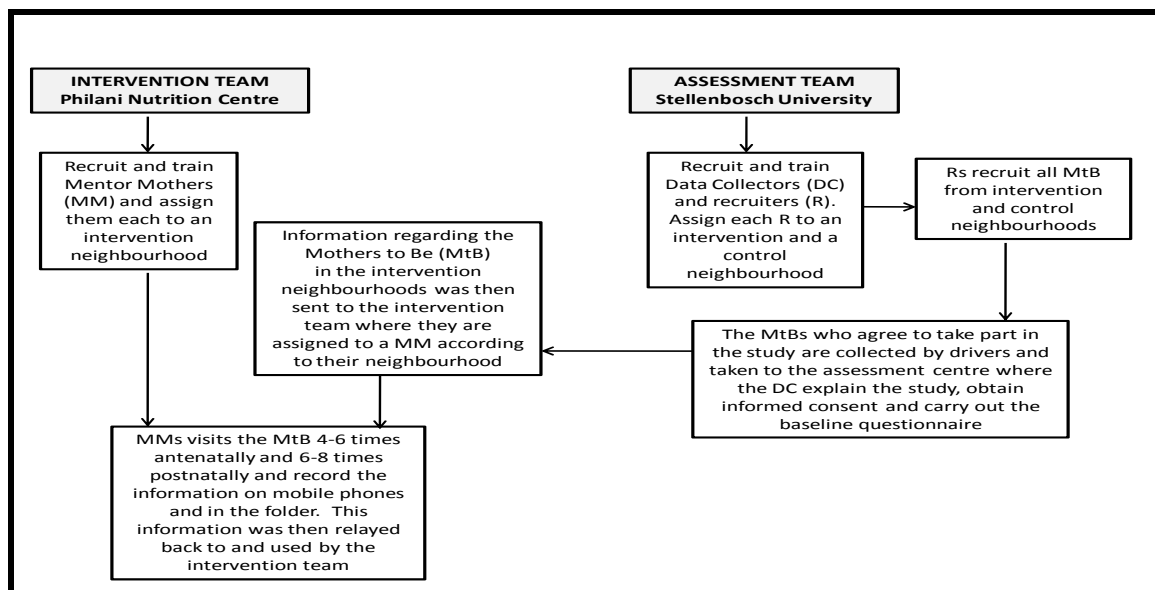
## **2.2 HYPOTHESES**

- There is no significant difference between the three different prediction methods.
- Prediction methods accurately predict birth outcomes and maternal morbidities.
- There is a correlation between socioeconomic variables and gestational BMI.
- There is a correlation between socioeconomic variables and maternal morbidities.

## **2.3 OPERATIONALIZATION**

This was a sub-study of the Philani Mentor Mothers' Study (PMMS) (Figure 2.1). The author of this sub-study was the research and administrative co-ordinator for the intervention part of the research team for PMMS. The author was involved in developing and implementing the PMMS. In the PMMS twenty-six matched neighbourhoods were identified in the township; Khayelitsha, Western Cape, South Africa. Thirteen of these were assigned as intervention neighbourhoods and the other thirteen were controls. Pregnant women were recruited from these neighbourhoods by a group of trained recruiters. The intervention was conducted by the Philani Nutrition Centres Trust. Mentor mothers were trained by Philani and assigned to an intervention neighbourhood (preferably near to where they live so that they are familiar with the community). Pregnant women in the intervention areas received between four to six antenatal visits and six to eight postnatal visits from the

mentor mothers. Two extra visits were scheduled ante- and postnatally if the pregnant women had more than two of the following risk factors: HIV positive, Tuberculosis (TB), drinking during and after pregnancy and a previous LBW baby. Antenatal topics discussed included the following: maternal health, nutrition, alcohol, smoking, HIV, TB and preparing for delivery. Postnatal topics discussed included the following: maternal and child health, infant feeding, hygiene, protection of child, mother care, danger signs, alcohol use, growth monitoring, TB, HIV, immunizations and complementary feeding.

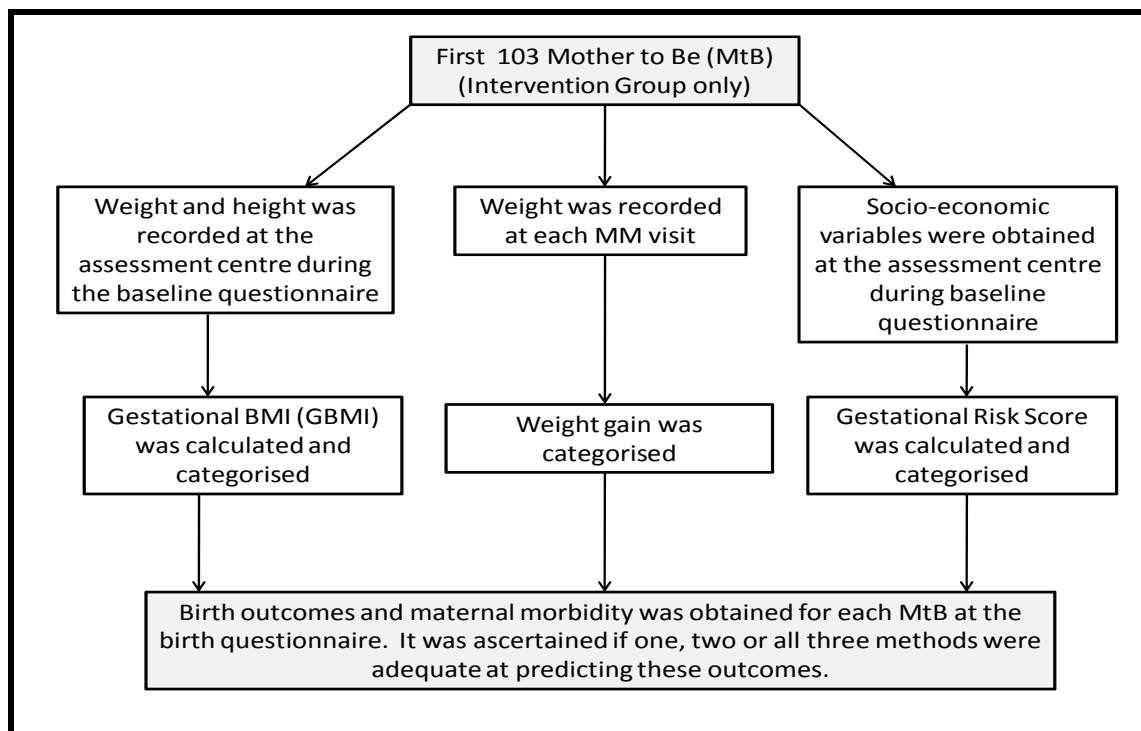


**FIGURE 2.1: Diagrammatical representation of the Philani Mentor Mothers' Study**

The interviews and assessments were organised and conducted by Department of Psychology, Stellenbosch University. Trained assessment interviewers administered the questionnaires to participants and infants at the following points:

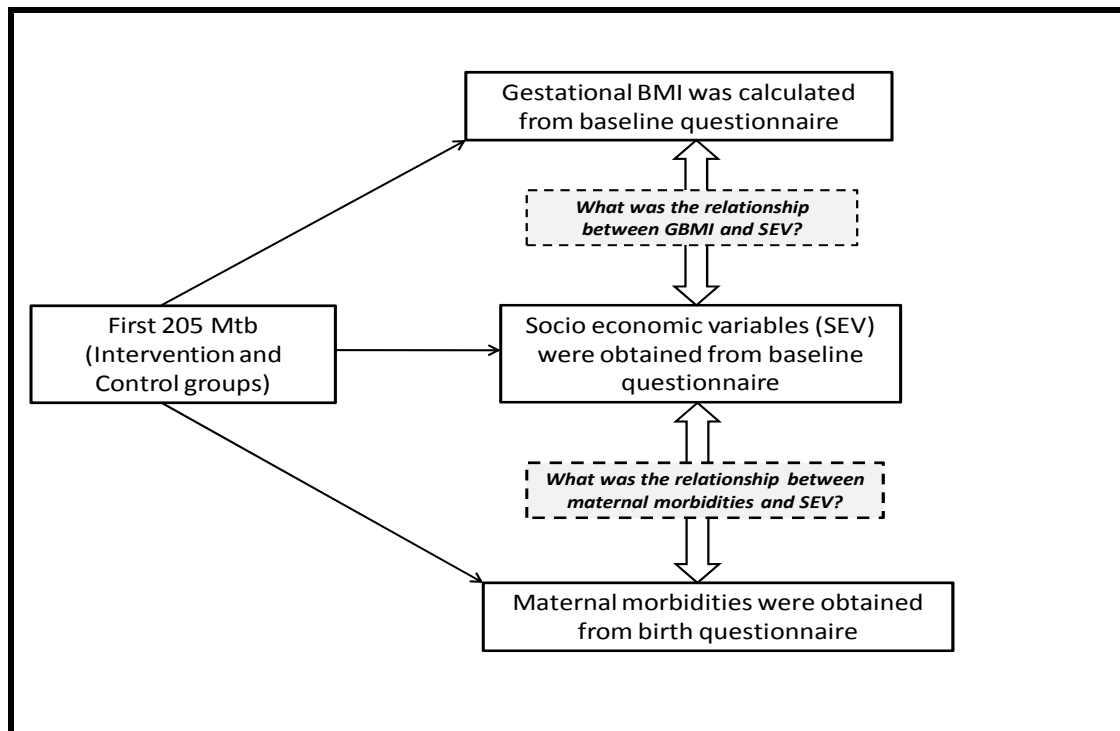
- Antenatal baseline assessment upon identification of pregnancy and recruitment to study (baseline questionnaire)
- One week after birth (birth questionnaire)
- Six months after birth
- Eighteen months after birth

This sub-study used data from the questionnaires done at baseline and one week after birth. Figures 2.2 and 2.3 are diagrammatical representations of specific objectives 1 and 2 respectively. Relevant questions that were used in this sub-study have been listed in the two questionnaires: baseline [English (Appendix A) and Xhosa (Appendix B)] and birth [(English (Appendix D) and Xhosa (Appendix E))] assessments. Weight gain was obtained from the folders that the Mentor Mothers filled in at each antenatal visit.



**FIGURE 2.2:** Diagrammatical representation of the specific objective 1





**FIGURE 2.3:** Diagrammatical representation of the specific objective 2

## 2.4 STUDY DESIGN

### 2.4.1 Study Domain

The study domain was quantitative.

### 2.4.2 Study Design

This was a prospective follow-up sub-study as part of a randomised controlled study.

## 2.5 POPULATION AND SAMPLING FOR THE STUDY

This study was a sub-study of the PMMS. Participants were recruited as part of the bigger PMMS (n=600; 300 in intervention group and 300 in control group), and data was used for this sub-study as follows:

## **2.5.1 Sample Selection**

### **2.5.1.1 Sample selection for prediction methods**

The first consecutive 103 pregnant women in the intervention group of the PMMS were selected. Their information was used to analyse the strength of the prediction methods.

### **2.5.1.2 Sample selection for SEV**

The first consecutive 205 pregnant women in both the intervention and control groups of the PMMS were selected. Their information was used to evaluate and correlate the SEV and GBMI and correlate the SEV and maternal morbidity.

## **2.5.2 Sample Size**

### **2.5.2.1 Sample size for prediction methods**

A sample size of 103 was calculated providing an effect size of 0.25 with a power goal of 0.9 for specific objectives.

### **2.5.2.2 Sample Size for SEV**

A sample size of 102 from the intervention group and 103 from the control group provided an effect size between 0.25 and 0.4. with a power goal of 0.9.

## **2.6 SELECTION CRITERIA**

### **2.6.1 Criteria for Inclusion**

Participants were included in the PMMS if the following inclusion criteria were met (a sub-sample of these participants was used for the current sub-study):

- Age 18 or over
- Pregnant

- Living in a study neighbourhood for the duration of the study
- Ability to give informed consent as judged by assessment interviewer
- No psychosis, neurological damage, inability to communicate with interviewer, delusional or hallucinating, as judged by an interviewer with consultation with an assessment co-ordinator.

## **2.7 DATA COLLECTION TOOLS**

### **2.7.1 Questionnaires**

Questionnaires were developed by the PMMS research team. Each questionnaire as a whole was not validated for the specific population, but when looking at various likert scales, they had been previously validated. The questionnaires were translated into Xhosa and translated back into English for quality assurance. Questionnaires were delivered in Xhosa as this was the first language of all the participants. The questionnaires were installed onto specific mobile phones. Assessment interviewers were trained to input the data onto the mobile phone during the interviews. This information was then uploaded onto a central consol system (developed by Clyral mobile research company) and the information was analysed.<sup>141</sup>

### **2.7.2 Anthropometric Measurements**

Maternal weight, maternal height, birth weight, birth length and birth head circumference was used to determine maternal weight gain, GBMI and birth outcomes.

## **2.8 QUALITY OF DATA COLLECTED**

### **2.8.1 Questionnaires**

The quality of data was checked for each interview by the PMMS assessment data-coordinator. A random selection of interviews was cross checked by an external quality controller.

## **2.8.2 Anthropometric measurements**

The researcher attained quality assurance by doing weekly spot checks on the mentor mothers and data collectors and holding regular revision workshops.

## **2.9 METHODS OF DATA COLLECTION**

### **2.9.1 Anthropometric Measurements**

Data collectors and mentor mothers attended a training workshop on obtaining anthropometric measurements. This training workshop was organised and held and executed by the researcher. To improve reliability, both data collectors and mentor mothers were asked to take all measurements three times and to record the average.

### **2.9.2 Pregravid BMI**

Pregravid weight was recalled by participants. Pregravid BMI was calculated using the equation  $(\text{weight}/(\text{height})^2)$ . Pregravid BMI was then categorised according to the IOM categories seen in table 2.1.

### **2.9.3 Gestational Weight Gain**

Weight was measured using a calibrated Precision Health Scale Model UC321.<sup>142</sup> The scale was placed on a flat surface to ensure an accurate reading.<sup>142</sup> Add-on feet were used if the surface was uneven.<sup>142</sup> The weight was measured to the nearest 0.1kg.<sup>142</sup> Time of day and clothing can alter the validation of the weight taken, but unfortunately time of day could not be controlled for.<sup>142</sup> The anthropometric measurements were completed in a private office at the PMMS assessment centre (Scott Street, Khayelitsha) by the data collector (height and weight) or in the pregnant woman's home by the mentor mother (weight). Weight was measured at each of the four antenatal visits. Weight gain was then classified according to the IOM standards (table 2.1).

**TABLE 2.1: IOM’s guide to gestational weight gain based on pre-pregnancy BMI<sup>110</sup>**

Pregravid BMI	BMI (kg/m <sup>2</sup> ) WHO	Recommended total weight gain (in kg) for total pregnancy
Underweight	<18.5	12.7-18.1
Normal weight	18.5-24.9	11.4-15.9
Overweight	25.0-29.9	6.8-11.4
Obese (includes all classes)	>30	6.8

#### 2.9.4 Gestational BMI

Weight was collected as described in section 2.11.2. Height was measured using a calibrated stationary stadiometer (model-MM5) during the baseline questionnaire.<sup>142</sup> Height was recorded to the nearest 0.001m.<sup>142</sup> Participants were asked to remove their shoes, socks and any head-gear. BMI was calculated accordingly to the equation (weight/(height)<sup>2</sup>).<sup>142</sup> Gestational BMI was calculated using the equation for adjusted BMI for self-reported gestational age (using the last menstrual cycle method) using the GBMI equation (table 2.2) and categorised (table 2.3).

**TABLE 2.2: Derivation of Gestational Body Mass Index (BMI) corrected for gestational age [GBMI].<sup>122</sup>**

Gestational age	GBMI
< 16	$[(\text{weight} - 2) \div (\text{height}^2)]$ multiplied by 10000
$\geq 16$ to < 21	$[(\text{weight} - 4) \div (\text{height}^2)]$ multiplied by 10000
$\geq 21$ to < 25	$[(\text{weight} - 5.5) \div (\text{height}^2)]$ multiplied by 10000
$\geq 25$ to < 29	$[(\text{weight} - 7) \div (\text{height}^2)]$ multiplied by 10000
$\geq 29$ to < 33	$[(\text{weight} - 8.5) \div (\text{height}^2)]$ multiplied by 10000
$\geq 33$ to < 37	$[(\text{weight} - 10) \div (\text{height}^2)]$ multiplied by 10000
$\geq 37$	$[(\text{weight} - 11) \div (\text{height}^2)]$ multiplied by 10000

**TABLE 2.3: Use of GBMI in defining maternal nutritional status (MNUT).<sup>122</sup>**

<b>GBMI</b>	<b>MNUT</b>
< 10	Value low (out of computable range)
≥ 10 to < 19.8	Underweight
≥ 19.8 to < 26.1	Normal
≥ 26.1 to < 29	Overweight
≥ 29 to < 50	Obese
≥ 50	Value high (out of computable range)

### **2.9.5 Gestational Risk Score**

The data in table 2.4 was obtained from the baseline questionnaire and used to calculate the gestational risk score. The score was then categorised into one of the following categories low risk (score of 0-2), intermediate risk (score of 3-7) or high risk (score of >8).

**TABLE 2.4: Adapted gestational risk score<sup>143</sup>**

<b>Demographic Characteristic</b>	<b>Points</b>
<b>Age</b>	
Under 20 years	2
20-29 years	0
30-34 years	1
Over 35 years	2
<b>Parity</b>	
No children	1
1-2 children	0
3 children	1
4 or more children	2
<b>History of</b>	
Abortion	4
Stillbirth	4
Neonatal death	4
Previous low birth weight baby	2
<b>Family income</b>	
Under 3 time the monthly minimum wage	2
3.1-6 times the monthly minimum wage	1
More than 6 times the monthly minimum wage	0
<b>Previous morbidity of mother</b>	
Diabetes	4
Hypertension	4
<b>Nutritional status</b>	
Mother's height <150cm	0
<b>Lifestyle</b>	
Smoking	1
<b>Marital status</b>	
With partner	0
Without partner	2
<b>Gestational risk</b>	
Low risk	0-2
Intermediate risk	3-7
High risk	>8

### **2.9.6 Birth Outcomes**

The following birth outcomes were obtained from the clinic card (filled out in the maternal obstetric unit) at the birth questionnaire:

- Weight
  - LBW = < 2500 grams
  - VLBW = <1500 grams
  - SGA = mass < than 10<sup>th</sup> percentile for gestational age.<sup>144</sup>
  - LGA = mass > 90<sup>th</sup> percentile for gestational age.<sup>144</sup>
  - Gestational age (normal between 38-42 weeks)
  - Macrosomic >4000 grams
- Length
  - Large length for age = length >90<sup>th</sup> percentile for gestational age.<sup>144</sup>
  - Small length for age = length < 10<sup>th</sup> percentile for gestational age.<sup>144</sup>
- Head circumference (HC)
  - Large HC for age = HC >90<sup>th</sup> percentile for gestational age.<sup>144</sup>
  - Small HC for age = HC < 10<sup>th</sup> percentile for gestational age.<sup>144</sup>
- Miscarriages
- Stillbirths
- Neonatal deaths
- Maternal deaths

### **2.9.7 Maternal Morbidity**

The following development of the following maternal morbidities were obtained during the birth questionnaire:

- Gestational diabetes
- Gestational hypertension

### **2.9.8 Socioeconomic Variables (SEV)**

The SEVs in table 2.5 were obtained during the baseline questionnaire.



**TABLE 2.5: Socioeconomic variables investigated**

Socioeconomic variables	Socioeconomic variables
<ul style="list-style-type: none"> <li>• Age</li> <li>• Height</li> <li>• ID book</li> <li>• Home language</li> <li>• Marital Status</li> <li>• Smoking</li> <li>• Total number of pregnancies (pariety)</li> <li>• Number of live births</li> <li>• Attempt to terminate pregnancies</li> <li>• Previous low birth weight babies</li> <li>• HIV status</li> <li>• TB status</li> </ul>	<ul style="list-style-type: none"> <li>• Education level</li> <li>• Employment status</li> <li>• Source of income for household</li> <li>• Household monthly income</li> <li>• Number of people living in household</li> <li>• Housing description</li> <li>• Water source</li> <li>• Household toilet</li> <li>• Electricity</li> <li>• Cooking fuel</li> <li>• Household items e.g. telephone</li> </ul>

## 2.10 STATISTICAL METHODS

MS Excel was used to capture the data and STATISTICA version 9 (StatSoft Inc. (2009) STATISTICA (data analysis software system), ([www.statsoft.com](http://www.statsoft.com).) was used to analyse the data.

Summary statistics was used to describe the variables. Distributions of variables were presented with histograms and/or frequency tables. Medians or means were used as the measures of central location for ordinal and continuous responses and standard deviations and quartiles as indicators of spread.

Relationships between two continuous variables were analysed with regression analysis and the strength of the relationship measured with the Pearson correlation or Spearman correlation if the continuous variables were not normally distributed. If one continuous response variable was related to

several other continuous input variables, multiple regression analysis was used and the strength of the relationship measured with multiple correlation.

The relationships between continuous response variables and nominal input variables were analysed using appropriate analysis of variance (ANOVA). Specifically an ANOVA was used to examine whether or not there was a significant difference among the three prediction methods and birth outcomes and maternal morbidity.

When ordinal response variables were compared versus a nominal input variable, non-parametric ANOVA methods were used. For completely randomized designs the Mann-Whitney test or the Kruskal-Wallis test was used and for repeated measures the Wilcoxon- or Friedman tests was used.

The relation between nominal variables was investigated with contingency tables and likelihood ratio chi-square tests.

A p-value of  $p < 0.05$  represented statistical significance in hypothesis testing and 95% confidence intervals were used to describe the estimation of unknown parameters.

## **2.11 ETHICS CONSIDERATIONS**

### **2.11.1 Ethics Review Committee**

Ethics approval for the Mentor Mothers' Project was obtained from both Stellenbosch University (NO8/08/218) and UCLA (NOG07-02-033). A research protocol for this sub-study was submitted to and approved by the Health Research Ethics Committee, Faculty of Health Sciences, Stellenbosch University, South Africa.

### **2.11.2 Informed Consent**

Participation was voluntary and participants could opt out at any stage of the study. Each participant was given an informed consent form to sign by the

assessment interviewer. The consent form content and all aspects of the study were explained to the participant in Xhosa. A copy of the consent form is attached. (Appendix G (English version) and H (Xhosa version)).

### **2.11.3 Participant's Confidentiality**

Each participant was given a personal identity number (PID) and ensured that their information would be treated confidentially. The pregnant women who were in the intervention group had a folder opened for them. This had both their name and PID number. These folders were handed out at the beginning of the day and collected at the end of the day and kept in a locked filing cabinet at the Philani Nutrition Centre.

## **2.12 FUNDING**

The cost of the sub-study was covered by the PMMS. The PMMS received funding from the National Institute of Health and and National Institution of Alcohol Abuse and Alcoholism. The researcher covered personal expenses such as printing, photocopying and telephone calls.

## **CHAPTER 3**

### **RESULTS**

## **3.1 RESULTS FOR PREDICTION METHODS**

### **3.1.1 Characteristics of the Participants**

The first 103 women from the 300 pregnant women in the intervention group of the PMMS were selected. The socioeconomic and demographic characteristics of the participants can be seen in Table 3.1. Participants were all Xhosa speaking pregnant women with a mean age of  $26.3 \pm 5.5$  years. The majority of women had South African identity documents (95.1%, n=98). This is essential for booking at the antenatal clinic, of which 76.6% (n=79) of the total women had done. Less than a quarter (22.3%, n=23) of the women reported being tested for TB during their current pregnancy. Out of those, only 1.9% (n=2) had positive results. Less than a quarter (22.3%, n=23) of the 95% that reported being tested for HIV were positive. The other 5% had either not been tested, or did not want to disclose their status. Only 6.7% (n=7) reported to be smokers. The majority of participants (51.4 %; n=53) had a Grade 8-11 education level. However, only a third (29.1%, n=30) had completed high school and only 5.8% (n=6) had tertiary education. There were slightly more single women (37.8%, n=39) than married women (33.9%, n=34) or living with their partner (28.1%, n=29). Just over half of the participants (53.3%; n=55) lived in an informal settlement and the average household member count was  $4.1 \pm 2.1$ .

**TABLE 3.1: Socio-economic and demographic (SED) characteristics of participants (Percentage and number, mean  $\pm$  standard deviation)**

SED characteristics	Mean $\pm$ SD or %	Number (n)
Age	26.3 $\pm$ 5.5	103
Smokers	6.7%	7
Identity document	95.1%	98
Xhosa speaking	100%	103
Booked at Antenatal clinic	76.6%	79
<b>TB or HIV status</b>		
TB positive of those who tested (22.3%)	1.9%	2
HIV positive of those who tested (95%)	22.3%	23
<b>Marital Status</b>		
Single	37.8%	39
Married	33.9%	34
Living with partner	28.1%	29
<b>Education</b>		
Grade1-7	13.5%	14
Grade 8-11	51.4%	53
Grade 12	29.1%	30
Post matric diploma	5.8%	6
<b>Housing</b>		
Household member count	4.1 $\pm$ 2.1	
Formal structure	31.1%	32
Prefab in backyard	5.8%	6
Informal in backyard	9.7%	10
Informal settlement	53.3%	55

### 3.1.2 Anthropometry, Pregravid BMI, GBMI and GRS

The average height, pregravid BMI and weight gain, GBMI and GRS classifications of the participants can be seen in table 3.2. Recalled pregravid BMI of the participants were classified as only 0.9% (n=1) underweight, whereas 32% (n=33) and 28.3% (n=29) respectively were classified as overweight and obese.

Thirty one point two percent (n=32), 33.9% (n=35) and 34.9% (n=36) of participants gained less, equal to and more than the IOM recommended weight gain respectively.

GBMI calculations classified the participants as underweight (7.8%, n=8), normal (38.8%, n=40), overweight (22.3%, n=23) and obese (31.1%, n=32).

Categorising the women according to their GRS score resulted in 19.4% (n=20,  $\bar{x} = 1.8 \pm 0.4$ ) classified as low risk, 56.4% (n=58,  $\bar{x} = 4.4 \pm 1.2$ ) intermediate risk and 24.2% (n=25  $\bar{x} = 9.4 \pm 1.9$ ) classified as high risk.

**TABLE 3.2: Anthropometry, GBMI and GRS of participants (percentage and number or mean and standard deviation (sd))**

<b>Anthropometry</b>	<b>Mean <math>\pm</math> SD or %</b>		<b>Number (n)</b>
Height	1.6 $\pm$ 0.05		103
<b>Pregravid BMI (recalled)</b>			
Pregravid BMI (recalled)	27.4 $\pm$ 6.9		
% Underweight	0.9%		1
% Normal	38.8%		40
% Overweight	32%		34
% Obese	28.3%		29
<b>Weight Gain</b>			
Weight gain	10.6 $\pm$ 4.2		
% Less than recommended	31.2%		32
% Equal to recommended	33.9%		35
% More than recommended	34.9%		36
<b>GBMI</b>			
GBMI	26.8 $\pm$ 5.7		
% Underweight	7.8%		8
% Normal	38.8%		40
% Overweight	22.3%		23
% Obese	31.1%		32
<b>GRS</b>			
GRS		5.1 $\pm$ 2.9	
% low risk	19.4%	1.8 $\pm$ 0.4	20
% intermediate risk	56.4%	4.4 $\pm$ 1.2	58
% high risk	24.2%	9.4 $\pm$ 1.9	25

BMI = Body Mass Index

GBMI = Gestational Body Mass Index

GRS = Gestational Risk Score

### **3.1.3 Maternal Morbidity**

Almost four percent (3.8%; n=4) of the pregnant mothers had Type II DM before pregnancy, but none were receiving medication. None of the mothers in this subsample developed GDM. Almost six percent (5.8%; n=6) of the pregnant mothers had hypertension before pregnancy, but none received medication. Approximately fifteen percent (14.5% n=15) of the participants developed GHPT, and four of these women received prescribed hypertensive medication.

### **3.1.4 Birth Outcomes**

Birth outcomes can be seen in table 3.3. The majority of mothers (63.7%, n=65) stayed one day or less in the hospital after giving birth, whilst 36.3% (n=38) stayed more than one day. More than half of the babies (56.8%, n=58) spent longer than 24 hours in hospital, with the majority of these babies (64.7%, n=66) staying less than 3 days. More males (58.8%, n=60) than females (41.2%, n=43) were born. There were 83.3% (n=85) vaginal deliveries. The majority (63.7%, n=65) of the infants were born at normal term and one third (33.3%, n=34) were preterm. Ten (9.8%) of the infants were LBW, one infant (0.98%) was greater than 4.5kg, 15.6% (n=16) were SGA and 23.5% (n=24) were LGA. The mean birth weight, birth length and birth head circumference were 3.15 kg  $\pm$  0.45, 49.75 cm  $\pm$  1.5 and 34.75 cm  $\pm$  3.1 respectively. All of these means were between the 10<sup>th</sup> and 50<sup>th</sup> percentile for a normal term birth. Approximately a sixth of the infants were below the 10<sup>th</sup> percentile for weight (15.6%, n=16), length (15.6%, n=16) and almost a quarter were below the 10<sup>th</sup> percentile for head circumference (23.5%, n=24). There was one maternal death and no miscarriages, stillbirths or neonatal deaths.



**TABLE 3.3: Birth Outcomes of infants (percentage and number or mean  $\pm$  standard deviation (sd))**

Birth Outcomes	Percentage (%) / mean $\pm$ sd	Number (n)
<b>Maternal hospital stay</b>		
<1 day hospital duration	28.4%	29
1 day hospital duration	35.3%	36
> 1 day hospital duration	36.3%	38
<b>Baby hospital duration</b>		
Baby spent longer than 24 hours in hospital	56.8%	58
< 3 days	64.7%	66
> 3 days, < 2 weeks	31.3%	32
> 2 weeks	4%	5
<b>Gender</b>		
Males born	58.8%	60
Females born	41.2%	43
<b>Delivery mode</b>		
Vaginal delivery	83.3 %	85
Caesarian section	16.7 %	18
<b>Gestational period</b>		
Preterm babies born	33.3%	34
Normal term babies born	63.7%	65
Over term babies born	3%	4
<b>Mean birth weight</b>	3.15 $\pm$ 0.45	
<b>Birth weight percentile</b>		
<10 <sup>th</sup>	15.6%	16
<50 <sup>th</sup>	33.4%	34
<90 <sup>th</sup>	29.5%	31
<97 <sup>th</sup>	21.5%	22
LBW	9.8%	10
Macrosomic	0.98%	1
Small for gestational age	15.6%	16
Large for gestational age	23.5%	24
<b>Mean birth length</b>	49.75 $\pm$ 1.5	
<b>Birth length percentile</b>		
<10 <sup>th</sup>	15.6%	16
<50 <sup>th</sup>	30.3%	31
<90 <sup>th</sup>	28.5%	30
<97 <sup>th</sup>	25.6%	26
<b>Mean birth head circumference</b>	34.75 $\pm$ 3.1	
<b>Birth head circumference percentile</b>		
<10 <sup>th</sup>	23.5%	24
<50 <sup>th</sup>	31.3%	32
<90 <sup>th</sup>	28.5%	30
<97 <sup>th</sup>	16.7%	17

<b>Birth Outcomes</b>	<b>Percentage (%) / mean <math>\pm</math>sd</b>	<b>Number (n)</b>
<b>Adverse outcomes</b>		
Maternal deaths	0.97%	1
Miscarriage	0%	0
Stillbirth	0%	0
Neonatal death	0%	0

### **3.1.5 Prediction Methods**

Table 3.4 is a summary of the prediction strength of the following methods: IOM pregravid BMI, IOM weight gain, GBMI and GRS. The significant values are highlighted in red.

**TABLE 3.4: The strength of three different methods to predict various birth outcomes and maternal morbidity**

Birth Outcomes	IOM PPBMI	p value	IOM weight gain	p value	GBMI method	p value	GRS method	p value
Gestational age	r=0.02	0.82	KX <sup>2</sup> =3.19	0.07	r=0.03	0.88	r=0.03	0.79
BW percentile	r=0.11	0.29	KX <sup>2</sup> =3.16	0.05	r=-0.1	0.33	r=0.02	0.25
BL percentile	r=0.11	0.26	KX <sup>2</sup> =4.21	0.05	r=0.00	0.97	r=0.02	0.45
BHC percentile	r=0.22*	0.03	KX <sup>2</sup> =0.91	0.41	r=-0.16	0.12	r=0.22*	0.03
Delivery type	U=2.65	0.14	CX <sup>2</sup> =3	0.2	U=1.37	0.19	U=1.88	0.19
Birth duration	KX <sup>2</sup> =0.8	0.79	CX <sup>2</sup> =3.73	0.4	KX <sup>2</sup> =0.68	0.45	KX <sup>2</sup> =0.16	0.52
Baby hospital duration	KX <sup>2</sup> =0.11	0.83	CX <sup>2</sup> =2.7	0.6	KX <sup>2</sup> =0.01	1.0	KX <sup>2</sup> =4*	P<0.01
Macro-somic	Unable to analyse							
LBW	U=0.02	0.75	CX <sup>2</sup> =4.34	0.11	U=0.001	1.00	U=0.3	0.86
SGA/LGA	U=0.08	0.57	CX <sup>2</sup> =2.52	0.28	U=0.26	0.79	U=0.001	0.75
GHPT	U=0.08	0.43	CX <sup>2</sup> =0.63	0.7	U=0.29	0.76	U=2.4	0.07
GDM	Unable to analyse							

\*p<0.05 is significant

BW – Birth Weight

BL – Birth Length

BHC – Birth Head Circumference

IOM PPBMI – Institute of Medicine Pre-pregnancy BMI

IOM – Institute of Medicine

GBMI – Gestational BMI

GRS – Gestational Risk Score

r= Spearman's correlation coefficient used between all groups (except weight gain) and the following birth outcomes; gestational age, birth weight percentile, birth length percentile, birth HC percentile

KX<sup>2</sup>=Kruskall Wallis coefficient used between all groups (except weight gain) and the following birth outcomes; birth hospital duration and baby hospital duration. Also used between weight gain and gestational age, birth weight percentile, birth length percentile, birth HC percentile

U=Mann-Whitney coefficient used between all groups (except weight gain) and the following birth outcomes; delivery type, LBW, SGA, LGA and gestational hypertension.

CX<sup>2</sup>=Chi-square coefficient. This test was used to analyse the relationship between the weight gain group and the following birth outcomes; delivery type, birth hospital duration, baby hospital duration, LBW, SGA, LGA and gestational hypertension

### 3.1.5.1 Prediction of IOM pregravid BMI and weight gain methods

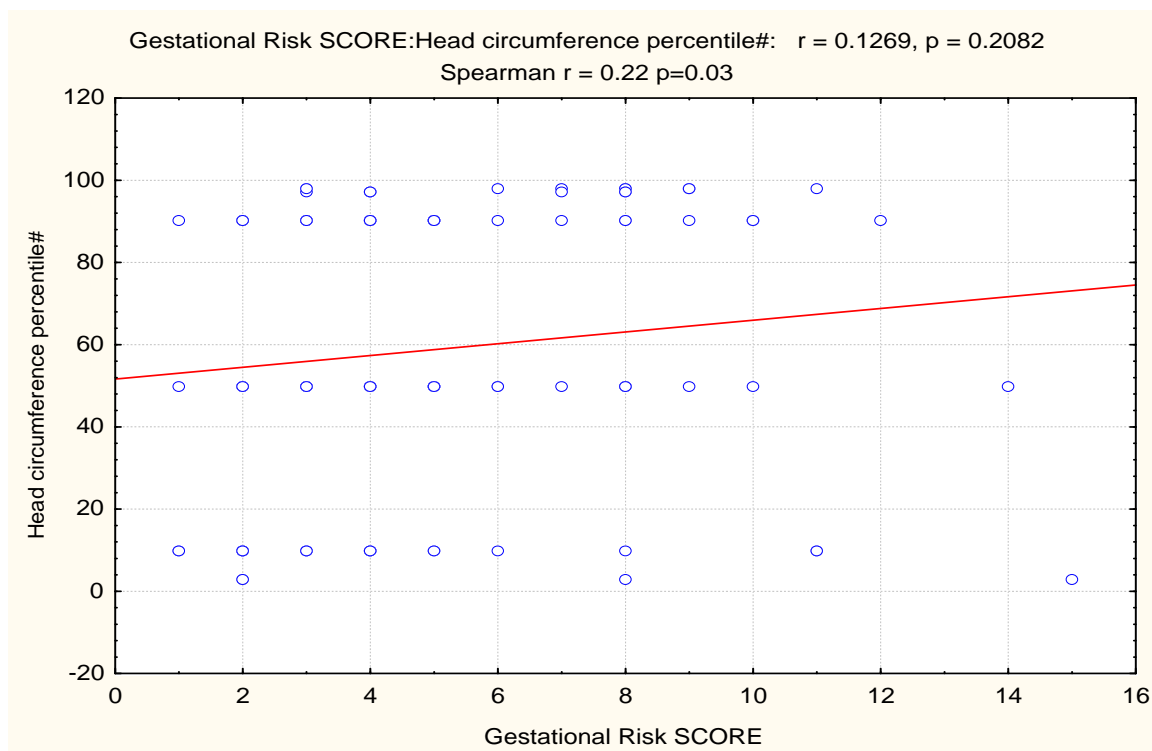
A significant positive association was found between pregravid BMI and birth HC percentile ( $r=0.22$ ,  $p=0.03$ ). The greater the pregravid BMI, the greater the birth HC percentile. No birth outcome parameters or maternal morbidities were found to be significantly different in any of the three IOM weight gain categories.

### 3.1.5.2 Prediction of GBMI Method

There was no significance found between GBMI and any of the birth outcomes or maternal morbidities.

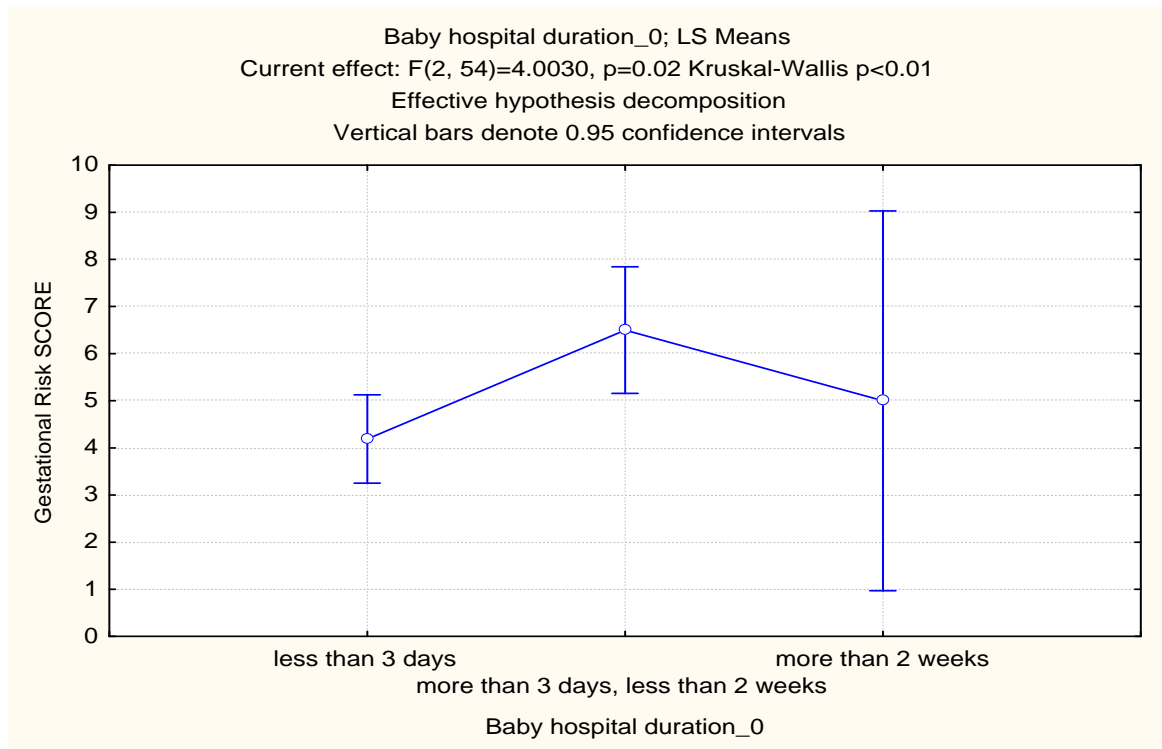
### 3.1.5.3 Prediction of GRS Method

A significant positive association was found between GRS and birth HC percentile ( $r=0.22$ ,  $p=0.03$ ) (Figure 3.1). This significant difference was only found between the low risk and intermediate risk groups. The greater the GRS, the greater the birth HC percentile.



**FIGURE 3.1: Positive association between GRS and Head Circumference Percentile**

The higher the GRS, the higher the risk of an infant spending longer time in the hospital (Kruskal Wallis  $X^2 = 4$ ,  $p < 0.01$ ) (Figure 3.2) This was only found to be significant between the groups of infants who stayed less than 3 days and more than 3 days, but less than 2 weeks. The number of babies in the 'more than 2 weeks' group were too few to analyse.



**FIGURE 3.2: Significant difference between all GRS categories and time baby spent in hospital**

## 3.2 RESULTS FOR SEV

### 3.2.1 Characteristics of Participants

The first 205 pregnant women from the 600 women in the intervention and control groups of the PMMS were selected. Characteristics and anthropometry of participants are shown in table 3.5. The mean age of participants was  $26.59 \pm 5.50$  years. The mean height of the women was  $1.59 \text{ m} \pm 0.05$ . The mean GBMI was  $27.17 \pm 6.08$  and the majority of the group (44.8%, n=92) fell in the normal weight category.

**TABLE 3.5: Characteristics and anthropometry of participants (percentage and number or mean  $\pm$  standard deviation (sd))**

Characteristics	Mean $\pm$ sd	Percentage (%)	Number (n)
Age	$26.59 \pm 5.50$		205
Height	$1.59 \pm 0.05$		205
GBMI	$27.17 \pm 6.08$		205
% Underweight (GBMI)		3.9	8
% Normal (GBMI)		44.8	92
% Overweight (GBMI)		19	39
% Obese (GBMI)		32.3	66

GBMI – Gestational Body Mass Index

### 3.2.2 Adverse Birth Outcomes

There was one (0.48%) maternal death, no miscarriages, two (0.97%) stillbirths, one (0.48%) neonatal death and two (0.97%) infant deaths.

### 3.2.3 Maternal Morbidities

One percent (n=2) of the participants developed GDM and were put onto medication. Twenty percent (n=41) developed GHPT, and four percent (n=16) of these women were put onto prescribed hypertensive medication.

### **3.2.4 Socioeconomic Characteristics**

The socioeconomic characteristics of the participants can be seen in table 3.6. All participants were Xhosa speaking, and a low percentage reported to be smokers (7.8%, n=16). Ninety one percent of the participants had identity documents (n=187). There were slightly more single women (40%, n=82) than, married women (34.1%, n=70) or women living with their partner (25.9%, n=53). The average parity was  $1.84 \pm 1.14$ . Ten percent (n=21) of the participants had tried to terminate previous pregnancies and 8.7% (n=18) had one previous stillbirth and one previous LBW infant. During this pregnancy, 21.5% (n=44) and 94.6% (n=194) had reported being tested for TB and HIV respectively. Of those tested, 0.97, (n=2) had TB and 29.3% (n=60) were HIV positive. The majority of the women (53.3%, n=109) lived in an informal shack, 86% (n=176) had access to electricity and just under half (48.7%, n=100) of the women used a community tap as their water source. Electricity was the major source of cooking fuel (77.1%, n=158). Two thirds of the women had not finished school (67.3%, n=138). Only 20% (n=41) of the women were employed and a third (33.3%, n=68) of the women earned less than SAR 500 (\$65) per month.

**TABLE 3.6: Socioeconomic characteristics of participants (percentage and number or mean  $\pm$  standard deviation (sd))**

CHARACTERISTICS	MEAN $\pm$ SD	PERCENTAGE (%)	NUMBER (N)
Smokers		7.8	16
Identity Document		91.2	187
Xhosa speaking		100	205
<b>MARITAL STATUS</b>			
Single		40	82
Married		34.1	70
Living with partner		25.9	53
Parity	1.84 $\pm$ 1.14		205
Terminations of pregnancies		10.2	21
<b>PREVIOUS STILL BIRTHS</b>			
1		8.7	18
2		0.97	2
<b>PREVIOUS LBW BABIES</b>			
1		8.7	18
2		0.97	2
<b>TB AND HIV STATUS</b>			
TB tested this pregnancy		21.5	44
Positive TB result		0.97	2
HIV test this pregnancy		94.6	194
Positive HIV result		29.3	60
Household count	4.28 $\pm$ 2.14		205
<b>TYPE OF HOUSING</b>			
Formal brick structure		29.2	60
Prefab in backyard		6.3	13
Shack in backyard		11.2	23
Informal shack		53.3	109
<b>WATER SOURCE</b>			
Water in house		19	39
Water on premises		32.3	66
Community tap		48.7	100
<b>EDUCATION</b>			
Grade 3-7		11.2	23
Grade 8-11		56.1	115
Grade 12		29.7	61
Post Grad diploma		3	6
<b>EMPLOYMENT</b>			
Employed		20	41
Full time		9.8	20
Part-time		4.4	9
Self-employed		4.9	10
Temporary contract		0.97	2



CHARACTERISTICS	MEAN ± SD	PERCENTAGE (%)	NUMBER (N)
<b>HOUSEHOLD MONTHLY INCOME</b>			
0-499		33.3	68
500-1000		15.1	32
1001-2000		23.9	49
2001-5000		22.9	48
5001-8000		2.9	7
>8000		0.97	2
Access to Electricity		86	176
<b>COOKING FUEL</b>			
Electricity		77.1	158
Paraffin		14.1	29
Gas		8.8	18
<b>IN POSSESSION OF:</b>			
Cell phone		92.1	189
Telephone		0.97	2
Bicycle		7.8	16
Car		10.2	21
Fridge		66.8	137
Television		80	164
Computer		0.97	2

A comparison of some of the socioeconomic characteristics of the participants found in the SADHS (2003), with the studied population, can be seen in table 3.7. Both urban and rural populations have been observed. The use of own transport (car and bicycle), radio, telephone and computer is less in this sub-study compared to the SADHS. The use of cellular phones and televisions is greater.

**TABLE 3.7: Comparison of possession of items between SADHS(2003) and this sub-study (percentage)**

Item	SADHS, 2003 (%)		PMMS Sub-Study (%)	Number (n)
	Urban	Rural		
Bicycle	15.6	14.8	7.8	16
Car	31.8	12.2	10.2	21
Radio	80.3	69.4	66.8	137
Cellular phone	63.4	41.3	92.1	189
Telephone	34	5.7	0.97	2
Fridge	71.2	37.1	66.8	137
TV	74.6	40.6	80	164
Computer	15.9	2	0.97	2

### 3.2.5 Relationship between GBMI, GHPT, GDM and SEV

Table 3.8 show a summary of the relationships between the SEV and GBMI, GHPT and GDM. The significant associations are highlighted in red.

**TABLE 3.8: Relationship between socioeconomic variables and Gestational Body Mass Index (GBMI) or Gestational Hypertension (GHPT) or Gestational Diabetes Mellitus (GDM)**

SEDF	Relationship with GBMI		Relationship with GHPT		Relationship with GDM	
		p value		p value		p value
Age	r=0.33*	0.00	U=3.41	0.07	U=1.02	0.35
Smoking	U=-0.95	0.33	CX <sup>2</sup> = 0.21	0.64	CX <sup>2</sup> = 0.33	0.56
Height	r = -0.15*	0.03	U=1.29	0.26	U=0.017	0.97
Marital Status	KX <sup>2</sup> = 9.35	<0.01	CX <sup>2</sup> = 4.09	0.12	CX <sup>2</sup> = 4.39	0.11
ID Document	U = 1.75	0.07	CX <sup>2</sup> = 1.	0.27	CX <sup>2</sup> = 0.37	0.54
Home Language	None, all participant's home language was Xhosa		None, all participant's home language was Xhosa		None, all participant's home language was Xhosa	
Parity	r=0.23*	0.00	U=0.17	0.8	U=1.09	0.22
Education	r=0.01	0.86	U=3.8	0.52	U=0.024	0.75
Employment	U=2.9*	<0.003	CX <sup>2</sup> = 0.46	0.49	CX <sup>2</sup> = 0.9	0.34
Income	r=0.2*	0.00	U=0.28	0.65	U=0.31	0.57
HH member count	r=0.07	0.53	U=0.99	0.47	U=0.72	0.43
Housing	KX <sup>2</sup> =0.36	0.72	CX <sup>2</sup> = 2.67	0.44	CX <sup>2</sup> = 2.94	0.4
Water source	KX <sup>2</sup> =0.96	0.77	CX <sup>2</sup> = 3.35	0.34	CX <sup>2</sup> = 2.89	0.4
Toilet	KX <sup>2</sup> =1.23	0.12	CX <sup>2</sup> = 6.79	0.23	CX <sup>2</sup> = 0.85	0.13
TB status	U=0.6	0.54	CX <sup>2</sup> = 0.71	0.39	CX <sup>2</sup> = 1	0.12
HIV status	U=2.54*	0.01	CX <sup>2</sup> = 0.25	0.62	CX <sup>2</sup> = 4.96*	0.02

\*p<0.05 is statistically significant

r= Spearman's correlation coefficient used between GBMI and age, height, parity, education, income and HH member count.

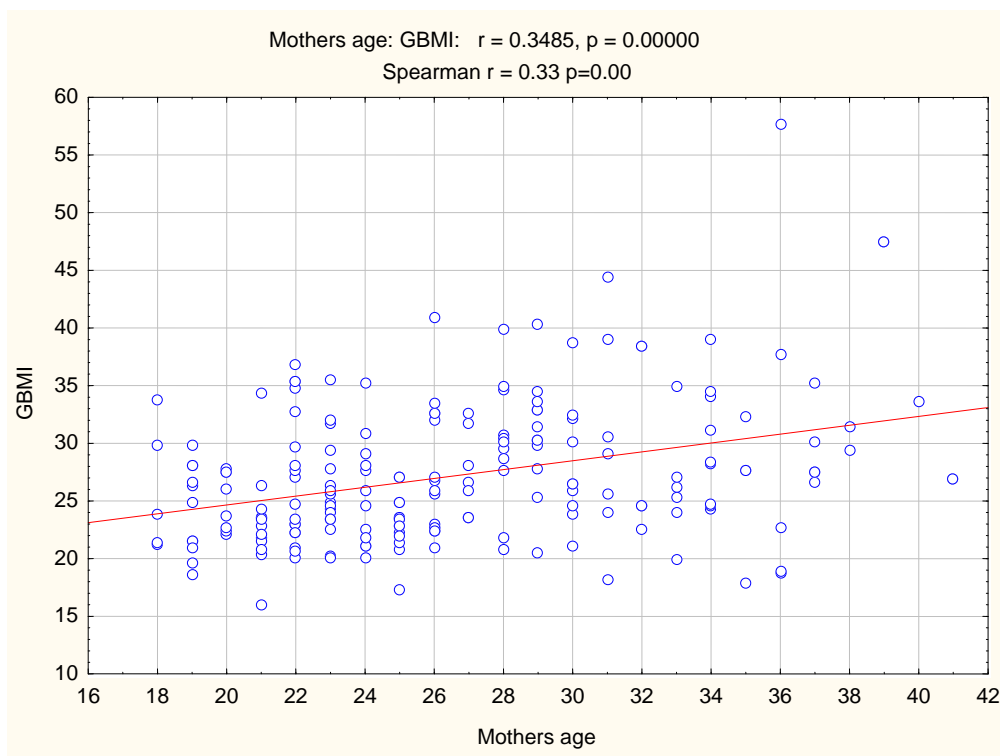
KX<sup>2</sup>=Kruskall Wallis coefficient used between GBMI and marital status, type of housing water source, toilet type

U=Mann-Whitney coefficient used between GBMI and smoking, identity document, employment, TB status and HIV status. It was also used between GHPT and age, height, parity. It was also use between GDM and age, height, parity.

CX<sup>2</sup>=Chi-square coefficient was used GHPT and smoking, marital status, identity document, employment, type of housing, type of water source, toilet type TB status and HIV status. The Mann-Whitney coefficients It was also used between GDM and smoking, marital status, identity document, employment, type of housing, type of water source, toilet type TB status and HIV status.

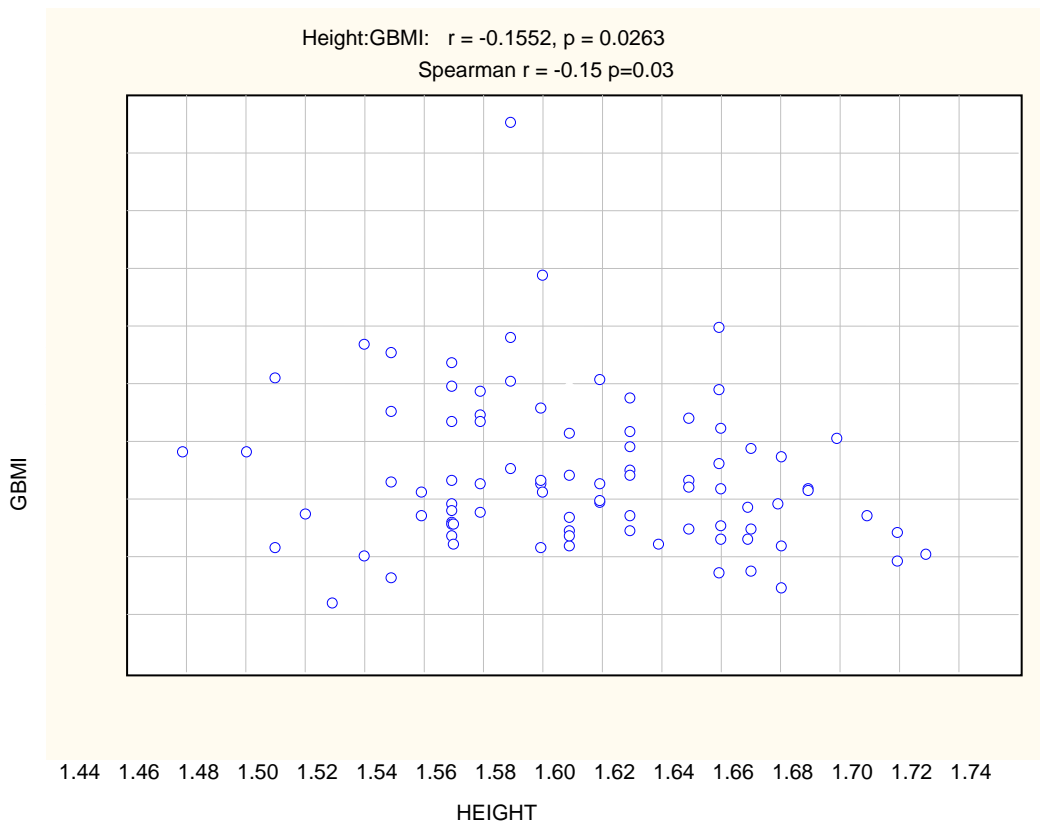
A significant positive association was found between GBMI and the following SEV; age, height, parity, income, marital status, employment and HIV status. There was no statistically significant relationship found between GBMI and the following SEV: smoking, education, ID document, household member count, type of housing, water source, type of toilet and TB status.

A positive association ( $r=0.33$ ,  $p=0.00$ ) between GBMI and the mother's age can be seen in figure 3.3.

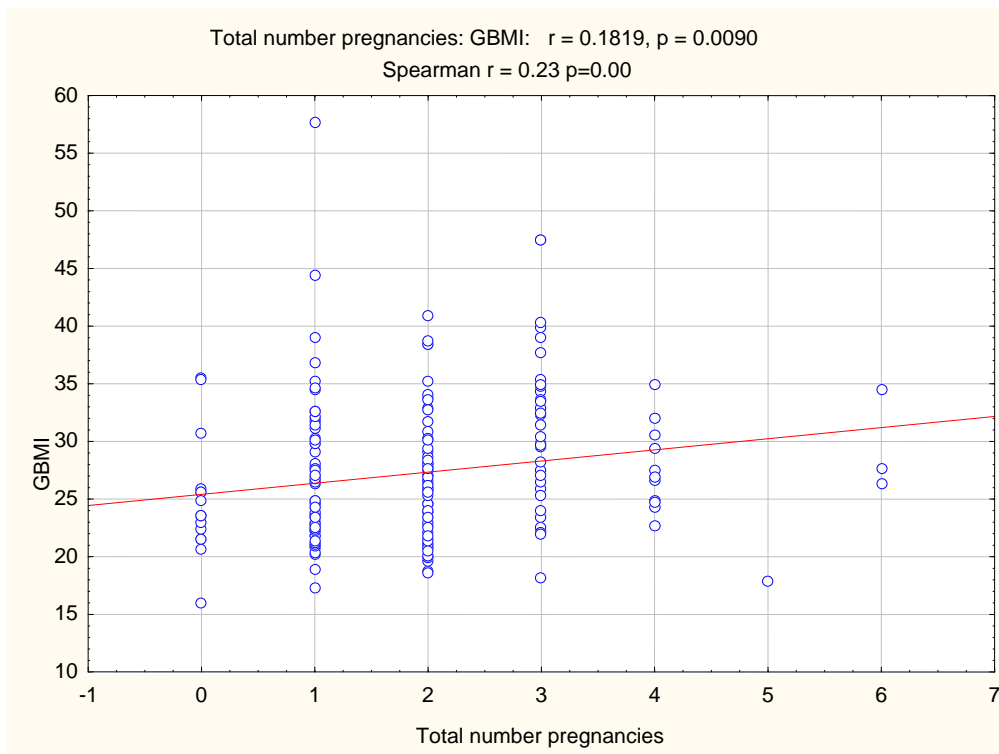


**FIGURE 3.3: Positive association between Gestational Body Mass Index (GBMI) and mother's age**

A negative association ( $r=-0.15$ ,  $p=0.03$ ) can be seen between GBMI and the mother's height in figure 3.4. A positive association ( $r=0.23$ ,  $p=0.00$ ) between GBMI and parity can be seen in figure 3.5.

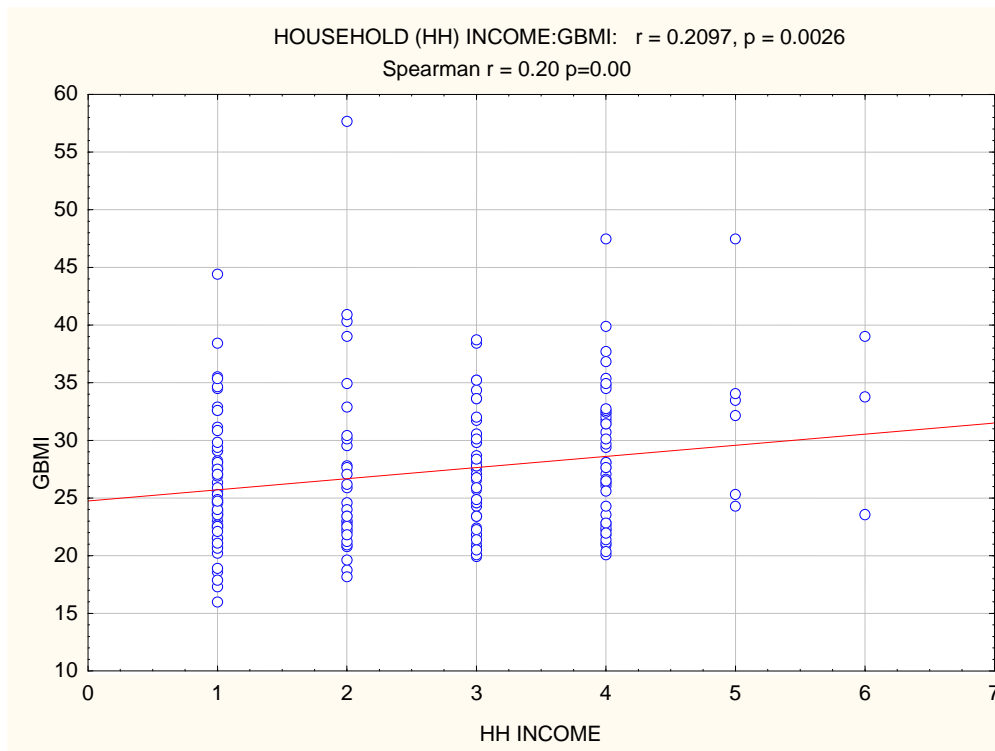


**FIGURE 3.4: Negative association between GBMI and mother's height**



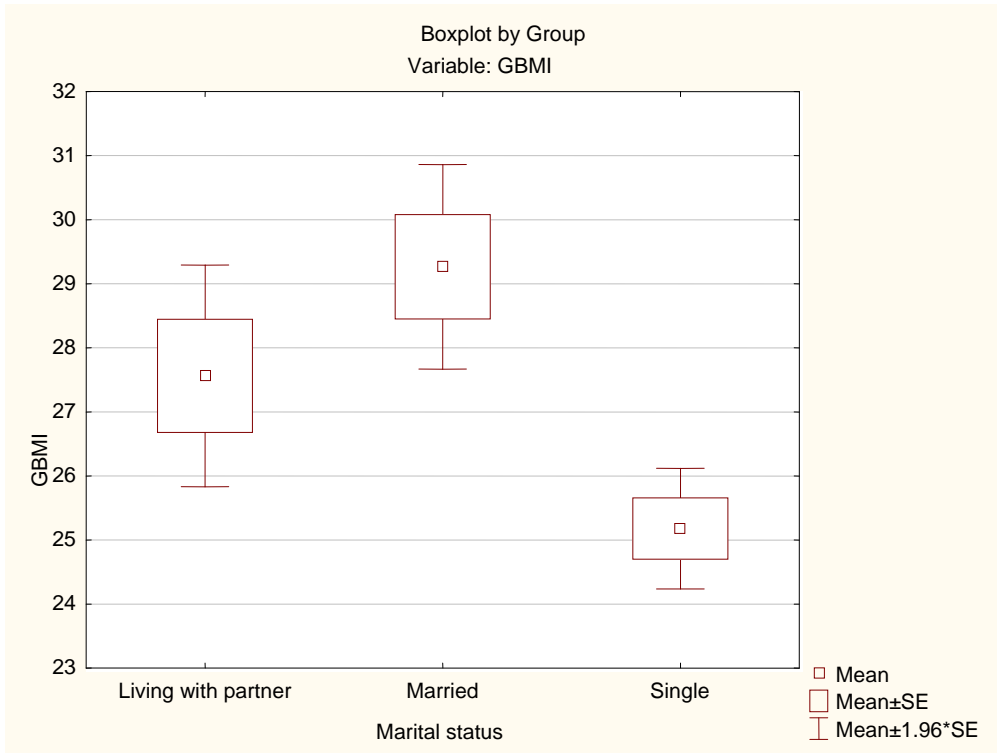
**FIGURE 3.5: Positive association between GBMI and parity**

A positive association ( $r=0.20$ ,  $p=0.00$ ) between GBMI and income can be seen in figure 3.6.



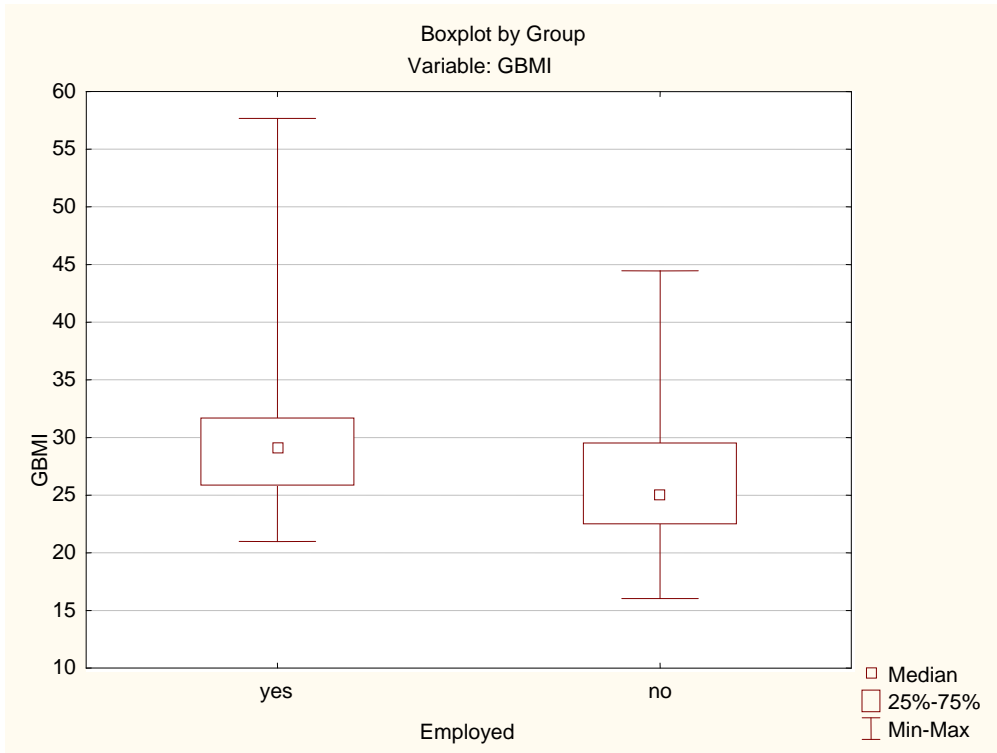
**FIGURE 3.6: Positive association between GBMI and mother's income**

A positive association ( $p<0.01$ ) between GBMI and marital status can be seen in figure 3.7. This association is between single and married groups only.



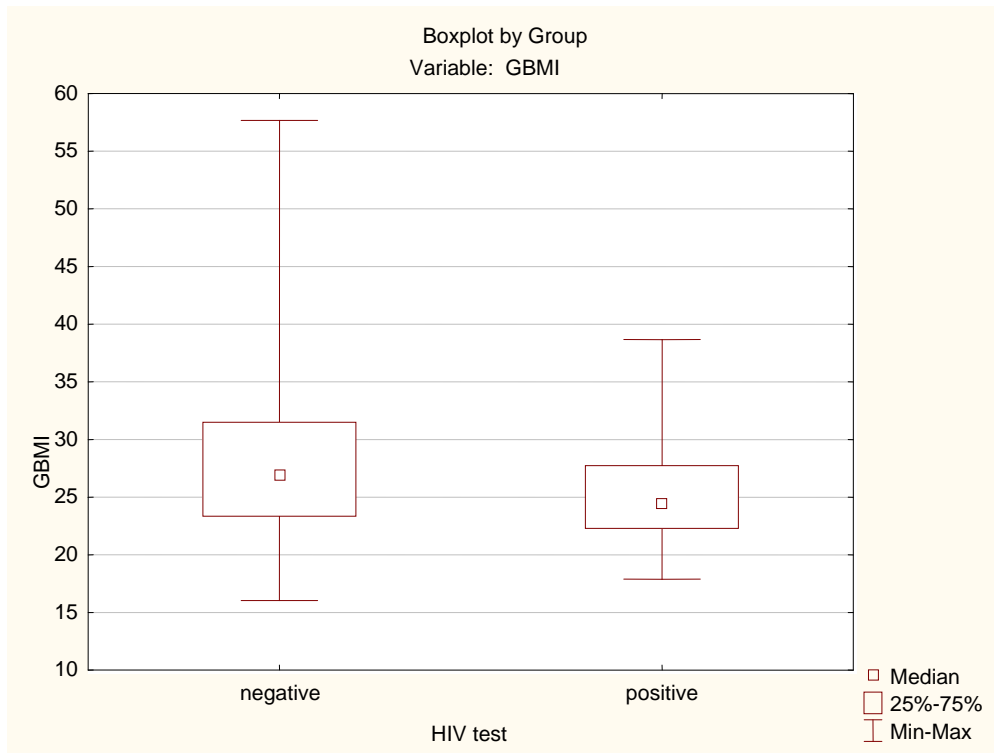
**FIGURE 3.7: Positive association between GBMI and mother’s marital status ( $p < 0.01$ )**

A positive association ( $p = < 0.003$ ) between GBMI and employment status can be seen in figure 3.8.



**FIGURE 3.8: Positive association between GBMI and mother’s employment status ( $p < 0.003$ )**

A significant difference ( $p < 0.01$ ) can be seen between all three categories of GBMI and HIV status in figure 3.9.



**FIGURE 3.9: Significant difference between all three categories of GBMI and HIV status ( $p < 0.01$ )**

No statistically significant relationships were found between GHPT and the SEV. The association between GHPT and age ( $U=3.41$ ,  $p=0.07$ ) did reach borderline statistical significance.

No statistically significant relationships were found between GDM and the SEV. A significant difference was found between GDM and HIV status however, as only two of the participants developed GDM, no significant conclusions can be drawn.



**CHAPTER 4**  
**DISCUSSION**

#### 4.1 Discussion for prediction methods

This sub-study found some promising results with regards to the prediction strength of the GRS method, to predict a few adverse birth outcomes. No miscarriages, stillbirths or neonatal deaths were reported during the course of this sub-study. One maternal death was recorded. This participant was in the obese category for GBMI and had an intermediate GRS. There was only one macrosomic infant and no women who developed GDM and therefore these parameters could not be analysed. It is possible that there was only one macrosomic baby as there were no women with GDM.

A reason for the low prevalence of GDM in this sub-study could be the low mean age which is comparable with Mamabola et al (2007)<sup>66</sup> who also found a low prevalence of GDM in the Limpopo province. Whereas Huddle (2005)<sup>62</sup> found a higher prevalence, but their participants' mean age was 7.31 years higher.

Unlike other studies, gestational impaired glucose tolerance (GIGT) was not measured. It has been found that women with GIGT are at more of a risk of giving birth to a LGA infant.<sup>63,64</sup> In this sub-study, almost a quarter (23.5%) of the infants were LGA. Referral does not always take place and therefore GIGT and GDM diagnosis could have been missed in this sub-study and the PMMS.<sup>5,62</sup>

Prevalence of hypertension (HPT) is increasing in South Africa due to obesity and was found to be 25% in women.<sup>90</sup> It was found that 15.7% of maternal deaths were due to complications of HPT during pregnancy.<sup>18</sup> Over half (58.5%) of maternal deaths are deemed avoidable due to GHPT.<sup>18</sup> The majority of the adverse events are due to postpartum problems.<sup>18</sup> If the mothers are placed in a high risk category, more observation and monitoring can take place.<sup>59</sup>

There were more than double the number (15.5%, n=16) of women in this sub-study who had GHPT compared to other South African studies.<sup>66,97</sup> This could be due to the fact that the majority of both studies' participants were from more rural regions of South Africa, whereas this study's participants had the influence of urbanisation on

their weight.<sup>51</sup> Overweight and obese women are at a greater risk of developing GHPT.<sup>93</sup> It is frequently exposed by pregnancy and the mother often develops hypertension later in life and it is regularly associated with other co-morbidities, such as cardiovascular disease and diabetes.<sup>94</sup> It would be beneficial for reducing maternal and infant mortality if there was another way of assessing high risk pregnancies and births.

The IOM method is probably unsuitable to use to predict high risk pregnancies in a peri-urban population due to the fact that pregnant women usually first attend the clinic in their second or third trimester (mean= 5.5months).<sup>5</sup> Pregravid weight is therefore recalled and not accurately measured. Studies looking at pregravid weight in poor to middle income countries rely on self-reporting.<sup>3</sup> Studies have also found that in South Africa overweight and obese black African women often underreport their weight.<sup>3,51</sup> The rate of weight gain is also difficult to measure due to the irregular clinic visits and some of the women not returning to the clinic. The IOM prediction results obtained from this sub-study need to be used with caution due to the recalled pregravid BMI. The categories of recalled pregravid BMI and GBMI are however similar for all groups except for the underweight category. It therefore appeared that in this sub-study, the participants recalled relatively accurately, however this accuracy does depend on the population.

When analysing the IOM pregravid BMI method, the only outcome it predicted, was the birth HC percentile, the lower the pregravid BMI, the lower the birth HC percentile. A small HC can indicate reduced brain size, decreased cognitive development and lower intelligence.<sup>145,146</sup> A large HC can indicate hydrocephalus.<sup>145,146</sup> This is in agreement with Ronnenberg et al (2003)<sup>146</sup> who found that low pregravid BMI was associated with smaller HC (n=575).<sup>146</sup> On the other hand, Bhargave's (2000)<sup>147</sup> investigation on pregnant Kenyan women did not find a significant association between pregravid BMI and birth HC, but their study was smaller than the Ronnenberg study (n=100).<sup>147</sup>

The IOM weight gain categories were not statistically significant for predicting any of the parameters. This is in contrast to Sieger-Riz (1994)<sup>109</sup> who found that pregravid underweight women and poor gestational weight gain for under- and overweight groups had a greater chance of giving birth prematurely.<sup>109</sup> This sub-study's results are more in agreement with Murakami et al (2005)<sup>114</sup> who found that pregravid BMI was a better predictor of adverse birth outcomes than maternal weight gain. In a meta-analysis (n=25) conducted by the WHO it was found that both low pregravid BMI and inadequate weight gain were predictors of LBW and VLBW infants.<sup>56</sup> The reason that there was a low percentage of LBW infants (9.8%, n=10) in this sub-study could be because there was only one participant with a reported low pregravid BMI. A review (27 studies) found that pregravid BMI was a strong predictor of IUGR and preterm births.<sup>116</sup> Again this was not found in this sub-study, but the sample size was smaller than many of the studies that were reviewed and some of the studies were conducted in high income countries. Although this method is used in many countries, it does not seem the most appropriate one for a peri-urban setting.

The GBMI method predicted no birth outcomes or maternal morbidities. These findings are not in agreement with other considerably larger studies, that have found that GBMI is positively associated with both birth weight<sup>23,125,126</sup> and HC<sup>23,126</sup>. Cruz et al (2007)<sup>23</sup> found that GBMI was also predictive of birth length, which this sub-study did not find. A large study (46 national surveys from 36 developing countries) found that women with a low BMI during pregnancy gave birth to smaller babies.<sup>124</sup> They also found that this was a predictor for preterm and neonatal mortality, whereas this sub-study did not.<sup>124</sup> This could be due to the fact that there were only 7.8% of women in the underweight category. Unlike this sub-study, other bigger studies have also found that maternal GBMI has been a predictor of delivery outcome.<sup>4,46,59</sup> GBMI was not found to be a predictor of GHPT, this is in disagreement with many studies.<sup>4,23,42,43</sup> This could again be due to the fact that the sample size was much smaller. There are positive predictive findings when using the GBMI method. It would be beneficial to repeat this sub-study with a larger sample in a peri-urban setting. Weight and height have been recorded in the majority of antenatal clinics in the Western Cape (97% and 90.4% respectively).<sup>5</sup>

With appropriate training and calibrated equipment, the GBMI equation method is simple to calculate with these anthropometric measurements and the number of gestational weeks using either the sonar method if the mother comes early in the pregnancy or the last menstrual cycle method. It could be an appropriate method to assist in predicting high risk pregnancies in the future.

The GRS predicted the following birth outcome parameters: birth head circumference percentile and the length of time the baby spent in hospital. The higher the GRS, the more likely a women will give birth to an infant with a bigger HC percentile. The higher the GRS, the higher the risk of an infant spending longer time in hospital. This was only found to be significant between the groups less than three days and more than three days, but less than two weeks. The number of babies who were in the more than two weeks group, were too few to calculate. Less than 0.1% had not yet booked at the antenatal clinic, of these there were more from the intermediate group (n=5), than the high (n=3) and low (n=2) groups. This differed from Barros's results as he found more of the women from the high risk groups tended not to book at the antenatal clinics.<sup>128</sup> A similarity was found compared to the study by Barros, where women from the high risk group had more caesarian sections than women from the intermediate group, although this was not statistically significant.<sup>128</sup> It is difficult to compare this sub-study as there were such small numbers in each category compared to Barros's study.<sup>128</sup>

#### **4.2 Discussion for SEV**

This sub-study is one of the few to look at the associations between SEV and GBMI and maternal morbidities in a peri-urban pregnant black population in South Africa. The possession of the following items was found to be more comparable to the rural parts of the South African population and lower than the urban parts: radio, car, telephone and computer.<sup>5</sup> The reason for this is that although these items are more readily available in peri-urban areas, they are expensive to buy and maintain (with the exception of radios). The ownership of fridges and televisions was found to be more comparable to the urban parts of South Africa.<sup>5</sup> This could be due to the fact that these items would be more accessible, deemed more essential and require

electricity which is more readily available in the peri-urban areas. The number of participants with cellphones was higher than both urban and rural areas. This could be explained by the fact that this sub-study took place six years after the SADHS and cellphones are currently more accessible and cheaper.<sup>148</sup>

Risk factors for developing GDM are age, ethnicity, genetic predisposition, parity, history of abnormal blood glucose and obesity.<sup>43,71</sup> There were only two participants (0.97%) with GDM. As mentioned previously, this low prevalence is comparable with Mamabola et al (2007)<sup>66</sup>, but lower than Huddle (2005)<sup>62</sup>. GDM is easy to treat but needs to be detected early, referral and diagnosis is often missed (Huddle, 2005).<sup>62</sup>

There were more than double the number (20%, n=41) of women in this sub-study who had GHPT compared to Mamabola's<sup>66</sup> (6.8%, n=262) study and Buga's<sup>97</sup> (4.6%, n=760). This could be due to the fact that the majority of both studies' participants were from rural regions, whereas this study's participants had the influence of urbanisation on their weight.<sup>51</sup> Overweight and obese women are at a greater risk of developing GHPT.<sup>93</sup> It is frequently exposed by pregnancy and the mother often develops hypertension later in life and it is regularly associated with other co-morbidities, such as cardiovascular disease and diabetes.<sup>94</sup> The increasing burden of non-communicable diseases in SA could be exacerbating GHPT.<sup>80</sup>

In this sub-study, an overall improvement was found in the education statistics compared to a study conducted by Hoffman in the same population 12 years before and the SADHS (2003).<sup>5,17</sup> Every participant had attended school for at least three years, 85.8% (n=176) had started secondary school, and 29.7% (n=61) had completed their final year of school. The SADHS identified younger and more urbanised individuals to have a higher education level.<sup>5</sup> This study had a relatively young population (26.59 ± 5.5 years), and this could explain why the education level was higher. Another reason for the improvements could be due to government initiatives to rectify imbalances in schools across the country since the fall of apartheid and the introduction of fee-free schools.<sup>149</sup> The number of women who had obtained a post-graduate diploma (3%, n=6) was comparable to the Khayalitsha

population register, but lower than the SADHS figures (6.7%).<sup>150</sup> The reason for this disparity could be due to the SADHS including all populations of the Western Cape. No relationship was found between education levels and GBMI, GHPT or GDM in this sub-study, unlike findings from previous studies.<sup>90,32</sup> This could be explained by the smaller sample size and the fact that the population was more urbanised.

Twenty percent (n=41) of the sub-sample were employed. This is 34.6% and 35% less than Hoffmann's study and the SADHS respectively.<sup>5,9,17</sup> Discrepancies between these results could be due to the smaller sample size used and the population density of Khayelitsha has increased vastly since the other studies were conducted.<sup>150</sup> In addition the worldwide recession could have had an impact on employment statistics. There was a significant positive association found between employment and GBMI. This is similar to the findings of Hoffman, but different to the findings of other studies conducted in poor to middle income countries.<sup>23,44,90,132</sup> They all found that women who were employed had a higher GBMI and therefore had a higher risk of developing maternal morbidities. A reason provided by Bourne et al (2002)<sup>90</sup> is that with an increase in employment, individuals have less time to cook healthy time-consuming meals and tend to buy more high-fat 'fast' food on their way home from work.<sup>90</sup>

There was however a significant positive association between income and GBMI. This is in agreement with other studies.<sup>90,132</sup> that established that an increase in income in a peri-urban setting resulted in a more 'western' diet which was lower in carbohydrate and higher in fat. This led to an increase in obesity, and therefore an increase in chronic diseases of lifestyle.<sup>90</sup>

The average age of the participants in this sub-study was comparable to other maternal studies<sup>151-153</sup> conducted in Khayelitsha, but younger than studies conducted in high-income countries.<sup>154,155</sup> There was a significant positive correlation with age and GBMI and the relationship between age and GHPT was close to significance. This is in agreement with other studies, where older women had higher GBMI and therefore had an increased risk of developing GHPT.<sup>17,51,89,90,93</sup> No significant

association was found between age and GDM. High maternal age is one of the most recognised risk factors for developing GDM.<sup>67</sup> The discrepancy could be explained by the younger mean maternal age and diagnosis of GDM could have been missed.<sup>62,66</sup>

The average parity in this sub-study was 0.86 lower than the mean African black population.<sup>6</sup> The discrepancy could be due to the much smaller sample size and this sub-study did not measure the parity of both urban and rural populations. The lower number could also be due to the increased urbanisation and family planning offered to women which has been seen in the rest of South Africa.<sup>6</sup> There was a significant association with parity and GBMI, but none with parity and the maternal morbidities in this sub-study. It should then follow that if parity is reduced, obesity should also be reduced, but it has been found that black African women retain more weight postpartum and this outweighs the effect of reduced parity.<sup>4</sup>

The average height in the participants is comparable with various other studies conducted in a peri-urban setting.<sup>5,51</sup> Similarly to other studies, a positive association was found between height and GBMI.<sup>156-158</sup> The evidence suggests that shorter women (height <1.51m) are found to have lower socio-economic status and may have been subjected to foetal and/or childhood under-nutrition.<sup>156</sup> No association was found between height and GDM, but other studies have found that impaired glucose homeostasis has been associated with shorter individuals.<sup>156-158</sup> No association was found between height and GHPT.

The percentage of people living in formal brick structures was 13.7% greater than in Hoffman's study.<sup>17</sup> A reason for this could be that in a peri-urban setting, the length of urbanisation improves housing status.<sup>152</sup> There was a decrease of 14.6% of participants compared to Hoffman et al (1997) who lived in various forms of informal housing.<sup>17</sup> Unlike Cooper et al (1991)<sup>152</sup> results, this sub-study did not find an association between housing status and GBMI or GHPT or GDM. Reasons for this difference are the smaller sample size used and informal housing is difficult to compare as data on serviced informal houses was not collected in a similar way.



Electricity was provided to 9% more of the participants, than was reported in the SADHS in 2003.<sup>5</sup> In the SADHS there was a large difference between rural and urban settlements with regards to the access to electricity.<sup>5</sup> In this sub-study, no relationship was found between GBMI, GHPT or GDM and electricity. This differed from the YENZA study, where high BMI and high blood pressure were associated with having access to electricity.<sup>90</sup> The difference in results could again be because of a smaller sample size and the YENZA study was conducted in relatively less urbanised population.

An increase in both water access and sanitation was found in the sub-study compared to other studies.<sup>5,17,90</sup> This is in agreement with the increased piped water that has been created in peri-urban settlements.<sup>5</sup> More than a third (35%, n=72) of the participants used a public toilet. It is not possible to compare this figure with other studies, as they have not separated private and public toilets. The number of bucket and pit latrines seems to have decreased, but the number of people who have no sanitation at all is 1% greater than the SADHS statistics.<sup>5</sup> These figures show an increase of sanitation services to the more formal structures which will hopefully have an impact on health. No relationship was found between water source or type of toilet and GBMI or GHPT or GDM.

The prevalence (7.8%, n=16) of smoking in this sub-study was comparable to the YENZA<sup>90</sup> study, but double the number was found in a study conducted by Steyn et al (1997).<sup>139</sup> However, Steyn et al's study sample size was almost double that of the sub-study and they looked at four different South African urban cities as opposed to one peri-urban settlement. Health promotion and awareness of the dangers of smoking is higher in urban areas.<sup>139</sup> Although the number of smokers was small, the following SEV were similar to the smokers in the YENZE study: lower education, increasing age and informal housing.<sup>90</sup> In this sub-study, no significant difference was found between smoking and GBMI and maternal morbidities. This is comparable to the findings by Dode and Santos who found the smoking had a negative association with the development of GDM.<sup>65</sup> This protective effect could however be due to the lower BMI associated with smoking.<sup>100,137,138</sup> However this

protective effect has not been found in other studies, and due to the other harmful side-effects of smoking, it is not recommended during pregnancy.<sup>69,76</sup>

Marital statistics are difficult to compare as studies categorise marital status in different ways. In South Africa, the customary marriage act came into place in 1998 where traditional African marriages were recognised as valid.<sup>159</sup> This could explain why the current sub-study's, marital status statistics are different from those by Hoffman et al (1997)<sup>17</sup> but comparable to Malhotra (2008).<sup>9</sup> The results also differ from SADHS, but as mentioned before, the SADHS take into account the whole of South Africa.<sup>5,9</sup> The present sub-study found that there was a significant difference between single and married participants with regards to their GBMI, but not those living with their partners. The married women had a higher GBMI. This is in agreement with other studies.<sup>9,160</sup> As with Hoffman's (1997) study, the current sub-study found no association between marital status and maternal morbidities.<sup>17</sup>

A significant positive association was found between HIV and GDM. No conclusion can be drawn from this as there were only two participants who developed GDM. A reason for this could be that there is evidence that long term use of anti-retroviral therapy (ARV) causes insulin resistance and diabetes<sup>161,162</sup>, but there has been inconclusive evidence regarding ARV use and gestational diabetes<sup>163</sup>. Unfortunately the use of ARV medication was not collected. A larger sample with GDM needs to be investigated. Due to only two participants having TB, there was no association found between TB and GBMI and maternal morbidities.

### **4.3 Limitations**

The sample size for the prediction methods was small. This number was calculated for a power goal of 0.9 and effect size of 0.25. In the future a bigger sample size could be used. In this sub-study pregravid weight was recalled and not actually measured. Studies looking at pregravid weight in poor to middle-income countries tend to rely on self-reporting.<sup>3</sup> An inaccurate pregravid BMI can lead to small errors in weight-gain calculations.<sup>3</sup> This pre-gravid weight needs to correlate with the BMI in the first trimester as the first two-month weight gain has been found to be

minimal.<sup>3,109</sup> The average first antenatal visit in the peri-urban setting is during the second trimester and most of the participants may not have had access to a weighing scale before their first visit. The recalled pregravid weight may therefore not be reliable.

The participants were not informed of the distinction between GHPT and pre-eclampsia, therefore the two different morbidities could not be separated in the analysis. No participants under the age of 18 were included in the study and therefore the sub-study. One in ten women aged between 15-19 years has had at least one child. Teenage pregnancies are at a higher risk for the following adverse birth outcomes; LBW, premature infants, smaller length and head-circumference.<sup>164</sup> There was inter-variable reliability as all infant anthropometric measurements (birth weight, length and HC) were obtained from the clinic card and maternal weight and height was measured by study trained data-collectors. Most of the information was from participant's memory recollection. Quality of the data is therefore variable.

**CHAPTER 5**  
**CONCLUSIONS AND RECOMMENDATIONS**

## 5.1 CONCLUSIONS:

From the findings of this study there were some promising results, but it is still unclear as to which method is the most appropriate to predict adverse birth outcomes and maternal morbidity. There was a significant positive association between the GRS method and head circumference and the amount of time a baby spent in hospital. The GBMI and GRS methods have previously been used successfully to help improve maternal and child mortality rates in South America. It is therefore recommended that these once-off methods be repeated in a larger sample size in the black African population to see if there are more parameters that could be predicted and if their prediction strength improves. The GBMI and GRS methods could be useful and practical tools to use in a peri-urban setting to aid in identifying high risk pregnancies. It has been found that weight is measured in the majority (range = 96.8 – 97.2%) of antenatal clinics, whilst height is not measured uniformly (range = 61.5 – 90.4%) across South Africa. With appropriate installation of equipment and training the methods are relatively easy and cost-effective to implement. Due to the fact that the IOM method is more reliable when calculated in early pregnancy, it would probably not be appropriate to use in the black African peri-urban population. Both the GBMI and GRS methods would be more suitable as previously, they have been able to assess risk at a later stage in pregnancy. This would be more suitable for the average first attendance of an antenatal clinic appointment in a peri-urban area. If a pregnant woman is classified in a higher risk category, more antenatal appointments can be scheduled and more attention can be given before, during and after the birth. Appropriate medical and nutritional advice can also be given to pregnant women to improve both their own and their infants' birth outcomes.

This investigation of pregnant women in a peri-urban setting has provided some evidence for an association between GBMI and several SEV (age, height, marital status, parity, employment, income and HIV status). There was no evidence for an association with other SEV (smoking, education, household member count, housing type, water source, toilet type and TB status). No association was found between

GHPT and any of the SEV. Although there was a borderline significance between GHPT and age ( $p \leq 0.07$ ). There were too few participants who had GDM to analyse the results. Women who were older, shorter, married, had more previous pregnancies, HIV negative and had a higher socio-economic status, tended to have a greater GBMI. This can lead to adverse birth outcomes and increases the risk of women developing maternal morbidities and other chronic diseases later in their lives. Optimal nutrition and health promotion strategies targeting women with these specific SEV before conception should be implemented to help reduce the risk of morbidities developing during and after pregnancy.

In conclusion, there was no significant difference found between the three different prediction methods. The GRS prediction method accurately predicted two birth outcomes but no maternal morbidities. A correlation was found between various socioeconomic variables and gestational BMI. No correlation was found between socioeconomic variables and maternal morbidities.

## **5.2 RECOMMENDATIONS**

As stated before previously, it is recommended that both the GBMI and GRS methods are looked at in a bigger sample size. It may also be beneficial to gain access to the participants' medical records to see actual blood results as most of the biochemical information was self-reported. Women with the SEV that have been found to be associated with a greater GBMI should be monitored more carefully at antenatal clinics and during and after labour to help improve maternal and child mortality and maternal morbidity rates.

**CHAPTER 6**  
**REFERENCES**

## 6.1 REFERENCES

1. Dharmalingam A, Navaneetham K, Krishnakumar CS. Nutritional status of mothers and low birth weight in India. *Matern Child Health J.* 2009;7:290-298.
2. Veena SR, Kumaran K, Swarnagowri MN, Jayakumar MN, Leary SD, Stein CE et al. Intergenerational effects on size at birth in South India. *Paediatr Perinat Epidemiol.* 2004;18(5):361-370.
3. Kleinman KP, Oken E, Radesky JS, Rich-Edwards JW, Peterson KE, Gillman MW. How should gestational weight gain be assessed? A comparison of existing methods and a novel method, area under the weight gain curve. *Int J Epidemiol.* 2007;36(6):1275-1282.
4. Kruger HS. Maternal anthropometry and pregnancy outcomes: a proposal for the monitoring of pregnancy weight gain in outpatient clinics in South Africa. *Curationis.* 2005 Nov;28(4):40-9.
5. Department of Health. South Africa Demographic and Health Survey 2003. Pretoria: National Department of Health 2008. Available from <http://www.doh.gov.za/facts/sadhs2003/main.html>. (Accessed October 2010)
6. Department of health statistics. Available from: <http://www.hst.org.za/healthstats>. (Accessed October 2010)
7. Lunde A, Melve KK, Gjessing HK, Skjaerven R, Irgens LM. Genetic and environmental influences of birth weight, birth length, head circumference, and gestational age by use of population based parent offspring data. *Am J Epidemiol.* 2007 Feb;165:734-741.
8. Stellenberg EL, Welmann EB, Groenewald JC. Investigation into the relationship between the socio-economic and health status of the coloured people of the Western Cape in an urban setting. *Curationis.* 2008 Jun;31(2):50-9.
9. Malhotra R, Hoyo C, Ostbye T, Hughes G, Schwartz D et al. Determinants of obesity in an urban township of South Africa. *S Afr J Clin Nutr.* 2008;21(4):315-320.
10. United Nations Development Programme. Millennium Development Goals Available from: <http://www.undp.org/mdg/> (Accessed October 2010)



11. Mhlanga RE Maternal, Newborn and Child Health: 30 years on. Chapter 8. South African Health Review. 2008:115-128.
12. Nguyen Ngoc NT, Merialdi M, Abdel-Aleem H, Carroli G, Purwar M, Zavaleta N et al. Causes of stillbirths and early neonatal deaths: data from 7993 pregnancies in six developing countries. Bulletin of the World Health Organization. 2006;84(9):699-705.
13. Chopra M, Daviaud E, Pattinson R, Fonn S, Lawn JE. Saving the lives of South Africa's mothers, babies and children: can the health system deliver? Lancet. 2009; 374: 835–46.
14. Khan K, Wojdyla D, Say L, Gulmezoglu A, Van Look PFA. WHO analysis of causes of maternal death: a systematic review. Lancet. 2006;367:1066-1074.
15. WHO and UNICEF. Taking stock of maternal, newborn & child survival 2000-2010 decade report. Available form: <http://www.countdown2015mnch.org/documents/2010report/CountdownReportAndProfiles.pdf> (Accessed August 2010)
16. Schneider H, Gilson L. The impact of free maternal health care in South Africa In: Berer M, Sundari Ravindran TK. Reproductive health matters safe motherhood initiatives. Critical Issues. 1999:93-101.
17. Hoffman M, Pick WM, Cooper D and Myers JE. Women's health status and use of health services in a rapidly growing peri-urban area of South Africa. Soc. Sci. Med. 1997;45(1):149-157.
18. National Department of Health SA. Saving Babies 2006–2007. Sixth report perinatal care survey of South Africa. Pretoria, South Africa: National Department of Health, South Africa, 2009.
19. Steyn NP, Labadarios MB, Mauder E, Nel J, Lombard C. Secondary anthropometric data analysis of the national food consumption survey in South Africa: the double burden. Nutrition. 2005;21: 4–13.
20. Countdown Coverage Writing Group, on behalf of the Countdown to 2015 Core Group. Countdown to 2015 for maternal, newborn, and child survival: the 2008 report on tracking coverage of interventions. Lancet. 2008;371:1247–58.

21. Rollins NC, Coovadia HN, Bland RM, Coutsooudis A, Bennish ML, Patel D, et al. Pregnancy outcomes in HIV-infected and uninfected women in rural and urban South Africa. *J Acquire Immune Defic Syndr*. 2007 Mar 1;44(3):321-328.
22. Lawn JE, Cousens S, Zupan J. 4 million neonatal deaths: when? Where? Why? *Lancet*. 2005;364:891-900.
23. Fitzgibbons JC, Ching Y, Yu D, Carpenter J, Kenny M, Weldon C, Lillehei C, et al. Mortality of necrotizing enterocolitis expressed by birth weight categories. *J Pediatr Surg*. 2009 Jun;44(6):1072-1075.
24. Formiga CK, Linhares MB. Assessment of preterm children's early development. *Rev Esc Enferm USP*. 2009 Jun;43(2):472-480.
25. Panaretto K, Melvina Mitchel HL, Larkins S, Manassis V, Buettner P and Watson D. Risk factors for preterm, low birth weight and small for gestational age birth in urban Aboriginal and Torres Strait Islander women in Townsville. *Australian and New Zealand Journal of Public Health*. 2006;30(2):163-170.
26. Bachman M, London L, Barron P. Infant mortality rate inequalities in the Western Cape province of South Africa. *International Journal of Epidemiology*. 1996;25(5):966-971.
27. Rondo PHC, Ferreira RF, Nogueira F, Ribiero MCN, Lobert H, Artes R. Maternal psychological stress and distress as predictors of low birth weight, prematurity and intrauterine growth retardation. *Eur. J. Clin Nutr*. 2003;57:266-272.
28. Viswanathan M, Siega-Riz AM, Moos MK, Deierlein A, Mumford S, Knaack J, et al. Outcomes of maternal weight gain. *Evid Rep Technol Assess (Full Rep)*. 2008 May;(168):1-223.
29. Tome FS, Cardoso VC, Barbieri MA, Silva AA, Simoes VM, Garcia CA Bettiol H. Are birth weight and maternal smoking during pregnancy associated with malnutrition and excess weight among school age children? *Braz J Med Biol Res*. 2007;40(9):1221-1230.
30. Li CI, Daling JR, Emanuel I. Birthweight and risk of overall and cause-specific childhood mortality. *Pediatr Perinat Epidemiol*. 2003;17:164-170.

31. Gillman MW, Rich-Edwards JW. The fetal origin of adult disease: from septic to convert. *Paediatr Perinat Epidemiol*.2000;14:192-193.
32. Cruz MLS, Harris DR, Read JS, Mussi-Pinhata MM, Succi RCM, NICHD International Site Development Initiative (NISDI) perinatal Study Group. Association of Body Mass Index of HIV-1-Infected Pregnant Women and Infant Weight, Body Mass Index, Length, and Head Circumference: The NISDI Perinatal Study. *Nutr Res*. 2008 November;27(11):685-691.
33. Power C, Li L, Manor O, Davey Smith G. Combination of low birth weight and high adult body mass index: at what age is it established and what are its determinants. *J Epidemiol Community Health*. 2003;57(12):969-973.
34. Peacock JL, Bland JM, Anderson HR. Preterm delivery: effects of socioeconomic factors, psychological stress, smoking, alcohol, and caffeine. *BMJ*. 1995;311:531-535.
35. Albuquerque CA, Smith KR, Johnson C, Chao R, Harding R. Influence of maternal tobacco smoking during pregnancy on uterine, umbilical, and fetal cerebral artery blood flows. *Early Hum Dev*. 2004;80:31-42.
36. Boney CM, Verma A, Tucker R, Vohr BR. Metabolic syndrome in childhood: Association with birth weight, maternal obesity, and gestational diabetes mellitus. 2005;115(3):290-295.
37. Dietz PM, Callaghan WM, Sharma AJ. High pregnancy weight gain and risk of excessive fetal growth.*AJOG*.2009;201:51-57.
38. Stotland NE, Caughey AB, Breed EM, Escobar GJ. Risk factors and obstetric complications associated with macrosomia.*Int J Gynaecol Obstet*. 2004;87:220-226.
39. Goy J, Dodds L, Rosenberg MW, King WD. Health-risk behaviours: examining social disparities in the occurrence of stillbirth. *Paediatric and Perinatal Epidemiology*. 2008;22:314-320.
40. Callaway LK, Prins JB, Chang AM, McIntyre HD. The prevalence and impact of overweight and obesity in an Australian obstetric population. *Med J Aust*. 2006;184:56-59.

41. Jolly MC, Sebire NJ, Harris JP, Regan L, Robinson S. Risk factors for macrosomia and its clinical consequences: a study of 350,311 pregnancies. *Eur J Obstet Gynecol Reprod Biol.* 2003;111:9-14.
42. Wolfe HM, Zador IE, Gross TL, Martier SS, Sokol RJ. The clinical utility of maternal body mass index in pregnancy. *Am J Obstet Gynecol.* 1991;164:1306-1310.
43. Joy S, Istwan N, Rhea D, Desch C, Stanziano G. The Impact of Maternal Obesity on the Incidence of Adverse Pregnancy Outcomes in High-Risk Term Pregnancies. *American Journal of Perinatology.* 2009;26(5):345-349.
44. Banda Y, Chapman V, Goldenber RL, Chi BH, Vermund SH, Stringer JSA. Influence of body mass index on pregnancy outcomes among HIV-infected and HIV-uninfected Zambian women. *Trop Med Int Health.* 2007 July;12(7):856-861.
45. Sarker RK, Cooley SM, Donnelly JC, Walsh T, Collins C, Geary MT. The incidence and impact of increased body mass index on maternal and fetal morbidity in the low-risk primigravid population. *J Matern Fetal Neonatal Med.* 2007;20(12):879-893.
46. Colletto GMDD, Segre CAM. Lack of effect of maternal body mass index on anthropometric characteristics of newborns in twin gestations. *Genetics and Molecular Research.* 2005;4(1):47-54.
47. Rosenberg TJ, Garbers S, Lipkind H, Chiasson MA. Maternal obesity and diabetes as risk factors for adverse pregnancy outcomes: differences among 4 racial/ethnic groups. *Am J Public Health.* 2005;95:1545-1551.
48. World Health Organisation. Obesity: preventing and managing the global epidemic report of a WHO consultation. WHO Press; Geneva: 2000. WHO Technical Report Series 894.
49. May R. Prepregnancy weight, inappropriate gestational weight gain, and smoking: relationship to birth weight. *American Journal of Human Biology.* 2007;19:305-310.
50. Cheng CJ, Bommarito K, Noquchi A, Holcomb W, Leet T. Body mass index change between pregnancies and small for gestational age births. *Obstet Gynecol.* 2004;104(2):286-292.

51. Puoane T, Steyn K, Bradshaw D, Laubsher R, Fourie J, Lambert V et al. Obesity in South Africa: the South African demographic and health survey. *Obesity Research*. 2002;10(10): 1038-1048.
52. A Oelofse, JMA Van Raaij, AJS Benade, MA Dhansay, JJM Tolboom and JGAJ Hautvast. Disadvantaged black and coloured infants in two urban communities in the Western Cape, South Africa differ in micronutrient status. *Public Health Nutrition*. 1996;5(2):289–294.
53. Barker DJ. A new model for the origins of chronic disease. *Med Health Care Philos*. 2001;4:31-35.
54. Barker DJ, Osmond C, Duggleby S. Weight in infancy and prevalence of coronary heart disease in adult life. *BMJ*. 1995;310:17-19.
55. Chang SC, O'Brien KO, Nathanson MS, Mancini J, Witter FR. Characteristics and risk factor for adverse birth outcomes in pregnant black adolescents. *J Pediatr*. 2003;143(2):250-257.
56. A WHO collaborative study of maternal anthropometry and pregnancy outcomes. *International Journal of Gynecology & Obstetrics*. 1997;57:1-15.
57. Uthman OA. Prevalence and pattern of HIV-related malnutrition among women in sub-Saharan Africa: a meta-analysis of demographic health surveys. *BMC Public Health*. 2008;8:226.
58. Steyn K, Bourne LT, Jooste PL, Fourie JL, Rossouw K, Lombard C. Anthropometric profile of black population of the Cape Peninsula in South Africa. *East African Medical Journal*. 1998;75(1):35–40.
59. Metzger BE, Coustan DR. Summary and recommendations of the Forth International Workshop-Conference on Gestational Diabetes Mellitus. *Diabetes*. 1998;40:197–201.
60. Ferrara A. Increasing prevalence of gestational diabetes mellitus: a public health perspective. *Diabetes Care*. 2007;30(Suppl.2):S141-S146.
61. Levitt NS, Katzenellenbogen JM, Bradshaw D, Hoffman MN, Bonnici F. The prevalence and identification of risk factors for NIDDM in urban Africans in Cape Town, South Africa. *Diabetes Care*. 1993;16:601–607.
62. Huddle KR. Audit of the outcome of pregnancy in diabetic women in Soweto, South Africa, 1992-2002. *SAMJ*. 2005;95(10):789-794.

63. Catalano PM, Kirwan JP, Haugel-de Mouzonz S, Kingz J. Gestational Diabetes and Insulin Resistance: Role in Short- and Long-Term Implications for Mother and Fetus. *Journal of Clinical Endocrinology & Metabolism*. 2003;88(8):3505-3506.
64. Kerényi, Z, Tamás, G, Kivimäki, M, Péterfalvi, A, Madarász et al. Maternal Glycaemia and Risk of Large-for-Gestational-Age Babies in a Population-Based Screening. *Diabetes Care*. 2009;32(12):2200-2205.
65. Dode MASO, Santos I. Risk factors for gestational diabetes mellitus in the birth cohort in Pelotas, Rio Grande do Sul State, Brazil, 2004. *Cad.Saude Publica, Rio de Janeiro*. 2009;25(S):1141-1152.
66. Mamabolo R, Alberts N.S, Levitt H.A, Delemarr-van de Waal H.A and Steyn N.P. Prevalence of gestational diabetes mellitus and the effect of weight on measures of insulin secretion and insulin resistance in their-trimester pregnant rural women residing in the Central Region of Limpopo Province, South Africa. *Diabetic Medicine*. 2007;24:233-239.
67. Petry C. Gestational diabetes: risk factors and recent advances in its genetics and treatment. *British Journal of Nutrition*.2010;21:1- 13.
68. King H. Epidemiology of glucose intolerance and gestational diabetes in women of childbearing age. *Diabetes Care*. 1998;21(S):B9-B13.
69. Solomon CG, Willett WC Carey VJ, Rich-Edwards J, Hunter DJ, Colditz GA et al. A prospective study of pregravid determinants of gestational diabetes mellitus. *JAMA*. 1997;278:1078-1083.
70. Naylor CD, Sermer M, Chen E, Farine D. Selective screening for gestational diabetes mellitus. *N Engl J Med*. 1997;337:1591-1596.
71. Stevens-Simon C, Thureen P, Barrett J, Stamm E. Regional body fat distribution and insulin resistance during adolescent pregnancy. *Journal of the American Dietetic Association*. 2002;102(4):563-565.
72. Torloni MR, Betran AP, Horta BL, Nakamura MU, Atallah AN, Moron AF, Valente O. Prepregnancy BMI and the risk of gestational diabetes: a systematic review of the literature with meta-analysis. *Obesity reviews*. 2008;10:194-203.

73. Branchtein L, Schmidt MI, Matos MCG, Yamashita T, Pousada JMD C, Duncan BB. Short stature and gestational diabetes in Brazil. *Diabetologia*. 2000;43:848-851.
74. Jang H C, Min H K, Lee H K, Cho N H, Metzger B E. Short stature in Korean women: A contribution to the multifactorial predisposition to gestational diabetes mellitus. *Diabetologia*. 1998;41(7):778-783.
75. Kousta E, Lawrence N.J, Penny A, Millauer B A, Robinson S, Johnston D G, McCarthy M I: Women with a history of gestational diabetes of European and South Asian origin are shorter than women with normal glucose tolerance in pregnancy. *Diabet Med*. 2000;17:792-797.
76. England LJ, Kendrick JS, Gargiullo PM. Measures of maternal tobacco exposure and infant birth weight at term. *Am J Epidemiol*. 2001;153:954-960
78. Henkin,L, Zaccaro,D, Haffner,S, Karter,A, Rewers,M, Sholinsky,P, et al.Cigarette smoking, environmental tobacco smoke exposure and insulin sensitivity: the insulin resistance atherosclerosis study. *Ann Epidemiol*. 1999;9:290–296.
79. Nilsson, PM, Hofvendahl, S, Hofvendahl, E, Brandt,L , Ekbohm, A. Smoking in pregnancy in relation to gender and adult mortality risk in offspring: The Helsingborg Birth Cohort Study. *Scandinavian Journal of Public Health*. 2006;34(6):660-664.
80. Mayosi BM, Flisher AJ, Lalloo UG, Sitas F, Tollman SM, Bradshaw D. Burden of non-communicable disease in South Africa. *Lancet*. 2009;374:934–47.
81. Kensara OA, Wootton SA, Phillips DI, Patel M, Jackson AA, Elia M. Fetal programming of body composition: relation between birthweight and body composition measured with dual-energy X-ray absorptiometry and anthropometric methods in older Englishmen. *Am J Clin Nutr*. 2005;82:980-287.
82. Brunner Huber LR. Validity of self-reported height and weight in women of reproductive age. *Matern Child Health J*. 2007;11:137–144.
83. Moodley J. Maternal deaths due to hypertensive disorders in pregnancy. *Best Practice & Research Clinical Obstetrics and Gynaecology*. 2008;22(3):559–567.

84. Xiong X, Demianczuk NN, Saunders LD, Wang FL, Fraser WD. Impact of preeclampsia and gestational hypertension on birth weight by gestational age. *Am J Epidemiol.* 2002;155:203-209.
85. Brown MA, Lindheimer MD, de Swiet M, Van Assche A, Moutquin JM. The classification and diagnosis of the hypertensive disorders of pregnancy: statement from the International Society for the Study of Hypertension in Pregnancy (ISSHP). *Hypertens Pregnancy.* 2001;20:IX-XIV.
86. Duley L. Maternal mortality associated with hypertensive disorders of pregnancy in Africa, Asia, Latin America and the Caribbean. *Br J Obstet Gynaecol.* 1992;99:547-553.
87. Berg CJ, Atrash HK, Koonin LM, Tucker Conde-Agudelo A, Kafury-Goeta AC. Epidemiology of eclampsia in Colombia. *Int J Gynecol Obstet.* 1998;61:1-8.
88. Moodley J. Maternal deaths due to hypertensive disorders in pregnancy: Saving Mothers report 2002-2004. *Cardiovasc J Afr.* 2007;18:358-361.
89. Wolf M, Shah A, Jimenez-Kimble R, Sauk J, Ecker JL, Thadhani R. Differential Risk of Hypertensive Disorders of Pregnancy among Hispanic Women. *J Am Soc Nephrol.* 2004;15:1330–1338.
90. Bourne LT, Lambert EV, Steyn K. Where does the black population of South Africa stand on the nutrition transition? *Public Health Nutrition.* 2002;5(1A):157-162.
91. Mulatero P, Verhovez A, Morello F, Veglio F. Diagnosis and treatment of low-renin hypertension. *Clinical Endocrinology.* 2007;67:324–334.
92. Charlton K, Steyn K, Levitt NS, Zulu J V, Jonathan D, Veldman F J, Nel J H. Diet and blood pressure in South Africa: Intake of foods containing sodium, potassium, calcium, and magnesium in three ethnic groups *Nutrition.* 2005;21(1):39-50.
93. Lake JK, Power C, Cole T. Women's reproductive health: the role of BMU in early and adult life. *International Journal of Obesity.* 1997;21(6):432-438.
94. Silva L, Coolman M, Steegers E, Jaddoe V, Moll H, Hofman A, Mackenbach J, Raat H J Hum Maternal educational level and risk of gestational hypertension: the Generation R Study. *Journal of Human Hypertension.* 2008 July;22(7):483-92.



95. Ananth-Karumanchi, S; Levine J. How Does Smoking Reduce the Risk of Preeclampsia? *Hypertension*. 2010;55:1100-1101.
96. Wikström A; Stephansson O; Cnattingius S. Tobacco Use During Pregnancy and Preeclampsia Risk. *Effects of Cigarette Smoking and Snuff. Hypertension*. 2010;55:1254-1259.
97. Buga G A, Lumu S B. Hypertensive disorders of pregnancy at Umtata General Hospital: perinatal and maternal outcomes. *East Afr Med J* 1999;76(4):217-222.
98. Van Heek E, Peeters LLH. Pathogenesis of preeclampsia: a comprehensive model. *Obstet Gynecol Surv*. 1998;53:233-239.
99. Conde-Audelo A, Belizan JM. Risk factors for pre-eclampsia in a large cohort of Latin American and Caribbean women. *BJOG*. 2000;107:75-83.
100. Ness RB, Zhang J, Bass D, Klebanoff, MA. Interactions between smoking and weight in pregnancies complicated by pre-eclampsia and small-for-gestational-age birth. *Am J Epidemiol*. 2008;168:427-433.
101. Magee BD, Hattis D, Kivel NM. Role of smoking in low birth weight. *J Reprod med*. 2004;49:23-27.
102. Newman MG, Lindsay MK, Graves W. Cigarette smoking and pre-eclampsia: their association and effects on clinical outcomes. *J matern Fetal Med*. 2001;10:166-170.
103. Bodnar LM, Catov JM, Klebanoff MA. Prepregnancy body mass index and the occurrence of severe hypertensive disorders of pregnancy. *Epidemiology*. 2007;18:234-239.
104. Hofmeyr GJ, Atallah ÁN, Duley L. Calcium supplementation during pregnancy for preventing hypertensive disorders and related problems (Review) 2010 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.
105. Odendaal, ES, Steyn, DW, Odendaal, HJ. Obstetric causes for delivery of very-low-birth-weight babies at Tygerberg Hospital. *SAMJ*. 2003;93(1):61-64.
106. Villar J, Carroli G, Wojdyla D, Abalos E, Giordano D, Ba'aqeel H et al. Preeclampsia, gestational hypertension and intrauterine growth restriction, related or independent conditions? *Am J Obstet Gynecol*. 2006;194:921-931.

107. World Health Organization. The World Health Report 1998. Life in the 21st Century: A Vision For All. Geneva: WHO, 1998. Available from [http://www.who.int/whr/1998/en/whr98\\_en.pdf](http://www.who.int/whr/1998/en/whr98_en.pdf) (Accessed June 2009).
108. Chaim SRP, Vasconcellos de Oliveira SMJ, Kimura AF. Pregnancy-induced hypertension and the neonatal outcome. *Acta Paul Enferm.* 2008;21(1):53-58.
109. Sieger Riz AN, Adair LS, Hobel CJ. Institute of Medicine maternal weight gain recommendations and pregnancy outcome in a predominantly Hispanic population. *Obstetrics and Gynaecology.* 1994 Oct;84(4):565-573.
110. Institute of Medicine website. Weight gain during pregnancy: Re-examining the guidelines. Available from: <http://www.iom.edu/Object.File/Master/68/230/Report%20Brief%20-%20Weight%20Gain%20During%20Pregnancy.pdf>. (Accessed October 2010).
111. Caulfield LE, Witter FR, Stoltzfus RJ. Determinants of gestational weight gain outside the recommended ranges among black and white women. *Obstet Gynecol.* 1996;87:760-6.
112. Feig DS, Naylor D. Eating for two: are guidelines for weight gain during pregnancy too liberal? *Lancet.* 1998;351(9108):1054-1055.
113. Wong, W, Nelson, MPH, Tang, LS, Lau, TK, Wong TW. A new recommendation for maternal weight gain in Chinese women. *J Am Diet Assoc.* 2000;100:791-796.
114. Murakami M, Qhmichi M, Takahashi T, Shibata A, Fukao A, Morisaki N, Kurachi H. Prepregnancy body mass index as an important predictor of perinatal outcomes in Japanese. *Arch Gynecol Obstet.* 2005;271(4):311-315.
115. Krasovec K, Anderson MA, eds. Maternal nutrition and pregnancy outcomes. Anthropometric assessment. Scientific Publication No 529. Washington DC: Pan American Health Organization. 1991.
116. Neggers Y and Goldenberg RI. Some thoughts on body mass index, micronutrient intakes and pregnancy outcome. *J Nutr.* 2003;133(S):1737-1740.
117. Piperata BA, Durour DL, Reina JC. Anthropometric characteristics of pregnant women in Cali, Colombia and relationship to birth weight. *American Journal of Human Biology.* 2002;14:29-38.

118. Elishibly EM Schmalisch G. The effect of maternal anthropometric characteristics and social factors on gestational age and birth weight in Sudanese newborn infants. *BMC Public Health*. 2008;8:244.
119. Adair LS and Bisgrove EZ. 1991 Maternal anthropometry during pregnancy, pregnancy weight gain, and pregnancy outcome. In: Himes JH, editor. *Anthropometric assessment of nutritional status*. New York: Wiley-Liss. P233-257.
120. Pickett KE, Abrams B, Selven S. Maternal height, pregnancy weight gain, and birthweight. *American Journal of Human Biology* 2000;12(5):682-687.
121. Baqui AH, Arifeen SE, Amin S, Black RE. Levels and correlates of maternal nutritional status in urban Bangladesh. *Eur J Clin Nutr*. 1994;48:349-357.
122. Santos IS, Barros AJD, Matijasevich A, Tomasi E, Medeiros RS, Domingues MR et al. Mothers and their pregnancies: a comparison of three population-based cohorts in Southern Brazil. *Cad.Saude Publica, Rio de Janeiro*. 2008;24(Sup3):381-389.
123. Ojha N, Malla DS. Low birth weight at term: relationship with maternal anthropometry. *JNMA J Nepal Med Assoc*. 2007;46(166):52-56.
124. Nestel P, Shea R. Defining nutritional status of women in developing countries. *Public Health Nutrition*. 2002;5(1):17-27.
125. Bolzan AG, Guimarey LM. Relationship between body mass index during pregnancy in adolescent and adult women, anthropometric indicators of fetal growth and intrauterine growth retardation. *Arch Latinocum.Nutr*. 2001;51:145-150.
126. Thame M, Wilks RJ, McFarlane-Anderson N, Bennet FI and Forrester T. Relationship between maternal nutritional status and infant's weight and body proportions at birth *Eur J Clin Nutr*. 1997;51:134-138.
127. Chamberlain G et al. *British births 1970*. Vol 2: Obstetric care. London, Heineman, 1978: 39-53.
128. Barros FC, Victora CG, Vaughan JP, Capellari MM. Perinatal risk in third world cities. *World Health Forum*. 1985;6:322-324.

129. Information and Knowledge Management Department. A population profile of Khayelitsha: Socio-economic information from the 2001 Census. 2005. Available from:  
[http://web.capetown.gov.za/eDocuments/A\\_Population\\_Profile\\_of\\_Khayelitsha\\_1052006142120\\_359.pdf](http://web.capetown.gov.za/eDocuments/A_Population_Profile_of_Khayelitsha_1052006142120_359.pdf) (Accessed June 2010)
130. Cooper D, Pick WM, Myers JE, Hoffman MN, Sayed AR, Klopper JML. Urbanisation and women's health in Khayelitsha. Part II, Health status and use of health services. *SAMJ*. 1991;79:428-432.
131. Yach D, Coetzee N, Hugo-Hamman CT, Fisher SA, Kibel MA. Identifying children at risk in peri-urban Cape Town. *South African Journal of Epidemiology and Infections*. 1990; 5(1):6-8.
132. Mfenyana K, Griffin M, Yogeswaran P, Modell B, Modell M, Chandia J, Nazareth I. Socio-economic inequalities as a predictor of helath in South Africa- the Yenza cross-sectional study. *SAMJ*. 2006;96(4):323-330
133. Murrin C, Segonds-Pichon A, Fallon UB, Hannon F, Bury G, Loftus BG, et al. Lifeways Cross Generation Cohort Study Steering Group. Self-reported pre-pregnancy maternal body mass index and infant birth weight. *Med J*. 2007 Sep;100(8 Sup):20-3.
134. Dubois L, Girard M. Determinants of birthweight inequalities: Population-based study. *Pediatrics International*. 2006;45:470-478.
135. Davis EM, Zyzanski SJ, Olson CM, Stange KC, Horwitz RI. Racial, ethnic and socioeconomic differences in the incidence of obesity related to childbirth. *Am J Public Health*. 2009 Feb;99(2):294-299.
136. Department of Education, 2007. Available from  
<http://www.nuffic.nl/international-organizations/docs/niche/programme-outlines/south-africa/strategic-plan-2007-2011.pdf>. (Accessed June 2010).
137. Furuno JP, Gallicchio L, Sexton M. Cigarette smoking and low maternal weight gain in Medicaid-eligible pregnant women. *J Womens Health*. 2004;13:770-777.
138. Secker-Walker RH, Vacek PM. Relationships between cigarette smoking during pregnancy, gestational age, maternal weight gain and infant birthweight. *Addict behaviour*. 2002;28:55-66.

139. Steyn K, Yach D, Stander I, Fourie JM. Smoking in urban pregnant women in South Africa. SAMJ.1997;87:460-463.
140. South African Department of Home Affairs. Registration of customary marriages. Available on [http://www.home-affairs.gov.za/custom\\_marriage.asp](http://www.home-affairs.gov.za/custom_marriage.asp) (Accessed May 2010).
141. Clyral mobile research company. <http://www.clyral.com/>)
142. Lee RD, Nieman DC. Nutritional Assessment. 4<sup>th</sup> ed. Macraw Hill: Boston. 2007.
143. Tomasi E, Barros FC, Victora CG. Situação sócioeconômica e condições de vida: comparação de duas coortes de base populacional no sul do Brasil. Cad Saúde Pública. 1996;12(Supl1):15-9.
144. Fenton TR. A new growth chart for preterm babies: Babson and Benda's chart updated with recent data and a new format. BMC Pediatr.2003 Dec 16;3(1):13
145. Tramo MJ, Loftus WC, Stukel TA, Green RL, Weaver JB, Gazzaniga MS. Brain size, head size, and intelligence quotient in monozygotic twins. Neurology. 1998;50:1246–1252.
146. Ronnenberg AG, Wang X, Xing Hm Chen C, Chen D, et al. Low preconception Body Mass Index is associated with birth outcome in a prospective cohort of Chinese women. J. Nutr. 2003;133:3449-3455.
147. Bhargava A. Modelling the effects of maternal nutritional status and socioeconomic variables on the anthropometric and psychological indicators of Kenyan infants from age 0-6 months. Am J Phys Anthropol. 2000; 111(1):89-104.
148. Vodafone Policy Paper Series: Africa: the impact of mobile phones. Vodafone Policy Paper Series, No. 2 2005
149. Chisholm L. 2004 The quality of primary education in South Africa. Background paper prepared for UNESCO education for all Global Monitoring Report. Available from [http://www.hsra.ac.za/research/output/outputDocuments/2872\\_Chisholm\\_The\\_qualityofprimary.pdf](http://www.hsra.ac.za/research/output/outputDocuments/2872_Chisholm_The_qualityofprimary.pdf) (Accessed October 2010)

150. Department of Social Development, Provincial Government of the Western Cape. Khayelitsha population register update (KPRU) Project. health register. Available from [http://www.capegateway.gov.za/eng/publications/reports\\_research/K/142132](http://www.capegateway.gov.za/eng/publications/reports_research/K/142132) (Accessed October 2010)
151. Coetzee D, Hilderbrand K, Boule A, Draper B, Abdulah F, Goemaere E. Effectiveness of the first district-wide programme for the prevention of mother-to-child transmission of HIV in South Africa. *Bulletin of the World Health Organization* 2005;83:489-494.
152. Cooper P, Tomlinson M, Swartz L, Landman M, Moltano C et al. Improving quality of mother-infant relationship and infant attachment in socioeconomically deprived community in South Africa: randomised controlled trial. *BMJ* 2009; 338:974-977.
153. Engelbrecht M, Summerton J, Meyer K, Heunis C, Janse van Rensburg-Bonthuyzen. PHC delivery in the Khayelitsha Urban Renewal Site, Western Cape Mapping gaps in the IMCI, Women's Health, TB, STI, HIV/AIDS and EDL programmes. Available from <http://www.uovs.ac.za/faculties/humanities/chsrd> (Accessed October 2010)
154. Roberts RJ, Leary SD, Davey Smith G, Ness AR and The ALSPAC Study Team. Maternal age in pregnancy and offspring blood pressure in childhood in the Avon Longitudinal Study of Parents and Children (ALSPAC) *Journal of Human Hypertension* (2005) 19, 893–900
155. Benzie K. Advanced maternal age: Are decisions about the timing of child-bearing a failure to understand the risks? *CMAJ* 2008; 178(2):183-184
156. Branchtein L, Schmidt MI, Matos MCG, Yamashita T, Pousada JMDC, Duncan BB Short stature and gestational diabetes in Brazil. *Diabetologia* (2000) 43: 848-851
157. Jang HC, Min HK, Lee HK, Cho NH, Metzger BE. Short stature in Korean women: a contribution to the multifactorial predisposition to gestational diabetes mellitus. *Diabetologia*.1998;41(7):778-83.
158. Kousta E, Lawrence NJ, Penny A, Millauer BA, Robinson S, Johnston DG, McCarthy MI: Women with a history of gestational diabetes of European and

- South Asian origin are shorter than women with normal glucose tolerance in pregnancy. *Diabet Med* 17:792-797, 2000
159. South African Department of Home Affairs. Registration of customary marriages. Available on [http://www.home-affairs.gov.za/custom\\_marriage.asp](http://www.home-affairs.gov.za/custom_marriage.asp) (Accessed July 2010)
  160. Mishra V, Arnold F, Semenov G, Hong R, Mukaria A. Epidemiology of obesity and hypertension and related risk factors in Uzbekistan. *Eur J Clin Nutr.* 2006;60(12):1355-1366.
  161. Bradbury RA, Samaras K. Antiretroviral therapy and the human immunodeficiency virus--improved survival but at what cost? *Diabetes Obes Metab.* 2008 Jun;10(6):441-50.
  162. Tien PC, Schneider MF, Cole SR, Levine AM, Cohen M, DeHovitz J, Young M, Justman JE. Antiretroviral therapy exposure and incidence of diabetes mellitus in the Women's Interagency HIV Study. *AIDS.* 2007 Aug 20;21(13):1739-45.
  163. Hitti J, Andersen J, McComsey G, Liu T, Melin ASmithL et al. Protease inhibitor-based antiretroviral therapy and glucose tolerance in pregnancy: AIDS Clinical Trials Group A5084 *American Journal of Obstetrics and Gynecology* 2007; 196( 4):331-337.
  164. Abu-Heija A, Ali AM, Al-Dakheil S. Obstetric and perinatal outcome of adolescent nulliparous pregnant women. *Gynecol Obstet Invest* 2002;53:90–2.

**CHAPTER 7**  
**APPENDICES**



## **APPENDIX A**

# Baseline Part 1 (English)

Last Modified by: Clyral Support on 22 May 2009 13:38:34 Revision number: 64 Field Count: 101

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## 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 members.

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 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. 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]

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

#### 7.4 Household monthly income

What is the average household monthly income?

Expects a single option response (required)

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

## 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]



Branches

If response Not Equal 'Yes [1]' then skip to *TB test this pregnancy (9.8)*

---

#### 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]
-

## Section 10. Mental Health

### 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]

- ê An organization for HIV+ persons [6]
  - ê AIDS activities outside your neighbourhood [7]
  - ê Other [95]
  - ê Decline to answer [91]
  - ê 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)

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

- ê Yes [1]
- ê No [2]
- ê 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)

- ê Never [1]
  - ê Sometimes [2]
  - ê Always [3]
  - ê 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)

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

#### 11.10 Partner practical help

Does he give you practical help?

Expects a single option response (required)

- ê Never [1]
- ê Sometimes [2]

- è Always [3]
  - è 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)

- è Never [1]
- è Sometimes [2]
- è Always [3]
- è Mother is deceased [4]
- è 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)

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

#### 11.13 Mother practical help

Does your mother give you practical help?

Expects a single option response (required)

- è Never [1]
  - è Sometimes [2]
  - è Always [3]
  - è Mother is deceased [4]
  - è 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)

- è Never [1]
- è Sometimes [2]
- è Always [3]
- è Father is deceased [4]
- è 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)

- è Never [1]
  - è Sometimes [2]
  - è Always [3]
  - è Father is deceased [4]
  - è 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]
- 

## 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.

---

# Baseline Part 2 (English)

Last Modified by: Clyral Support on 29 Jul 2009 12:11:44 Revision number: 126 Field Count: 140

---

## 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. Relationship Status

### 2.1 Current Partner BS2

Do you have a current partner?

Expects a single option response (required)

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

## Section 3. Use of Tobacco & Other Substances

### 3.1 Smoking Prompt

The next few questions are about smoking.

### 3.2 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 (3.4)*

---

### 3.3 Tobacco Frequency

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

Expects a numeric response (required)

*Constraints*

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

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

---

### 3.4 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 (3.6)*

---

### 3.5 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'*

---

### 3.6 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 (4.1)*

---

### 3.7 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 4. Use of Traditional Medicines

### 4.1 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]

- ê Medicines for social health (e.g. love potions, bewitchment) [3]
  - ê Medicines for pregnancy (e.g. pregnancy enemas, contraction stimulants) [4]
  - ê Medicines for spiritual health (e.g. liquids for protecting baby) [5]
  - ê Medicines for children (muti wenyoni, lennon's medicines) [6]
  - ê Decline to answer [91]
- 

## Section 5. Use of Alcohol

### 5.1 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.

---

### 5.2 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)

### 5.3 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)

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

Branches

If response Equals 'Never [1]' then skip to *Alcohol during pregnancy after learning of pregnancy. (5.7)*

If response Equals 'Decline to answer [91]' then skip to *Alcohol during pregnancy after learning of pregnancy. (5.7)*

---

### 5.4 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)

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

### 5.5 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)

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

#### 5.6 Frequency of three 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 THREE or MORE drinks in a single day?

Expects a single option response (optional)

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

#### 5.7 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)

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

Branches

If response Equals 'Never [1]' then skip to *Previous Pregnancies Prompt (6.1)*

If response Equals 'Decline to answer [91]' then skip to *Previous Pregnancies Prompt (6.1)*

---

#### 5.8 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)

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

#### 5.9 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]
- 

**5.10 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]
- 

**5.11 Number drinks to feel high**

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

Expects a numeric response (required)

**5.12 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]
- 

**5.13 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]
- 

**5.14 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]
-

#### 5.15 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]
- 

## Section 6. Reproductive Health

### 6.1 Previous Pregnancies Prompt

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

---

### 6.2 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 (6.5)*

---

### 6.3 Number live births

How many live babies have you given birth to?

Expects a numeric response (required)

### 6.4 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 (6.3)'*

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

---

### 6.5 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]
- 

### 6.6 Current Pregnancy Prompt

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

---

### 6.7 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]
-

#### 6.8 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]

---

#### 6.9 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 7. Reproductive Health – HIV & STI's

### 7.1 HIV Prompt

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

---

### 7.2 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 (8.1)*

---

### 7.3 Date last tested

When were you last tested for HIV?

Expects a date response (required)

---

### 7.4 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.

---

### 7.5 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 8. Partnerships – Previous Sexual behaviour

### 8.1 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



### 8.2 Lifetime sexual partners

In your lifetime, with how many different people have you had sex? If you cant recall the exact number, please give a best guess.

Expects a numeric response (required)

Constraints

Response must be Greater Than or Equal '0'

---

### 8.3 Sexual partners in previous year

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

Expects a numeric response (required)

Constraints

Response must be Less Than or Equal 'Lifetime sexual partners (8.2)'

Response must be Greater Than or Equal '0'

---

### 8.4 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]
- 

### 8.5 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 (8.3)'

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 (8.7)

---

### 8.6 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 (8.3)'

Response must be Greater Than or Equal '0'

---

### 8.7 Any partners engaged in HIV status discussion past year

Of the **Sexual partners in previous year (8.3)** 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 (8.3)'

Response must be Greater Than or Equal '0'

---

### 8.8 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 (8.3)'

---

## Section 9. Partnerships – Current Sexual Behaviour

### 9.1 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.

---

### 9.2 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 (8.3)'

---

### 9.3 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]
- 

Repeat this section for value of *Sexual partners last 3 months (9.2)*

## Section 10. Partnerships - Current Sexual Behaviour (Part 2)

### 10.1 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]
- 

### 10.2 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]
- 

### 10.3 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]
-

#### 10.4 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]

#### 10.5 Partner Condom Use

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 11. Disclosure & Protection

Prerequisites

Skip when *HIV test result (7.5)* Not Equal 'HIV Positive [1]'

#### 11.1 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 (7.5)* Not Equal 'HIV Positive [1]'

#### 11.2 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 (7.5)* Not Equal 'HIV Positive [1]'

Skip when *Current Partner BS2 (2.7)* Not Equal 'Yes [1]'

#### 11.3 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 (7.5)* Not Equal 'HIV Positive [1]'

#### 11.4 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 (7.5)* Not Equal 'HIV Positive [1]'

#### 11.5 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 (7.5)* Not Equal 'HIV Positive [1]'

#### 11.6 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 (7.5)* Not Equal 'HIV Positive [1]'

#### 11.7 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 (7.5)* Not Equal 'HIV Positive [1]'

Skip when *Current Partner BS2 (2.1)* Not Equal 'Yes [1]'

#### 11.8 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 (7.5)* Not Equal 'HIV Positive [1]'

### 11.9 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  
Skip when *HIV test result (7.5)* Not Equal 'HIV Positive [1]'

### 11.10 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 (7.5)* Not Equal 'HIV Positive [1]'  
Skip when *Disclosed to Partner (11.3)* Not Equal 'Yes [1]'

### 11.11 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 (7.5)* Not Equal 'HIV Positive [1]'

### 11.12 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 12. Relationships and violence

Prerequisites  
Skip when *Current Partner BS2 (2.1)* Not Equal 'Yes [1]'

### 12.1 Relationship Prompt

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

---

Prerequisites

Skip when *Current Partner BS2 (2.1)* Not Equal 'Yes [1]'

#### 12.2 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 *Current Partner BS2 (2.1)* Not Equal 'Yes [1]'

#### 12.3 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 *Current Partner BS2 (2.1)* Not Equal 'Yes [1]'

#### 12.4 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]
- 

#### 12.5 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.

---

#### 12.6 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]
- 

#### 12.7 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)

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

#### 12.8 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)

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

---

#### 12.9 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)

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

#### Prerequisites

Skip when *Slap (12.6)* Not Equal 'Never [1]'

Skip when *Shove (12.7)* Not Equal 'Never [1]'

Skip when *Punch (12.8)* Not Equal 'Never [1]'

Skip when *Weapon (12.9)* Not Equal 'Never [1]'

#### 12.10 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), Default: Yes

- Yes [1]
- No [2]

#### Branches

If response Equals 'Yes [1]' then skip to *Antenatal Health Prompt (13.1)*

---

#### 12.11 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 (12.13)*

#### Prerequisites

Skip when *No physical violence confirmation (12.10)* Equals 'Yes [1]'

#### 12.12 Most recent violence

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

Expects a date response (optional)

---

#### 12.13 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)

#### Prerequisites

Skip when *Current Partner BS2 (2.1)* Not Equal 'Yes [1]'

#### 12.14 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 13. Baseline Knowledge – Antenatal Health

### 13.1 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.

---

### 13.2 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]

---

### 13.3 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]

---

### 13.4 Vitamins Prompt

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

---

### 13.5 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]

---

### 13.6 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'

---

### 13.7 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'

---



**13.8 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'*

---

**13.9 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'*

---

**13.10 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'*

---

**13.11 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'*

---

**13.12 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'*

---

**13.13 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'*

---

**13.14 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'*

---

**13.15 Beans and lentils**

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

Expects a numeric response (required)

## Section 14. Baseline Knowledge – Delivery Health

### 14.1 Delivery Prompt

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

---

### 14.2 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 (14.7)*

---

Prerequisites

Skip when *Know where will deliver (14.2)* Not Equal 'Yes [1]'

### 14.3 Delivery Facility

Please select the delivery facility

Expects a single option response (required)

- 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]
- 

### 14.4 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]
- 

### 14.5 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]
- 

### 14.6 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]

#### 14.7 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 15. Maternal Knowledge of Vertical Transmission

Prerequisites

Skip when *HIV test result (7.5)* Equals 'HIV Positive [1]'

#### 15.1 Skip Section- Interviewer Instruction Only

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 (16.1)*

If response Not Equal 'Continue [1]' then skip to *Baby Feeding Prompt (16.1)*

#### 15.2 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.

#### 15.3 Maternal Knowledge Statements Prompt

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

#### 15.4 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]

#### 15.5 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]

## 15.6 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]

## 15.7 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 16. Feeding Strategies and Prevention of Infections

## 16.1 Baby Feeding Prompt

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

## 16.2 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 (17.1)*

## 16.3 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 17. Routines

### 17.1 Routine Prompt

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

---

### 17.2 Wake-up time yesterday

What time did you get up yesterday morning?

Expects a time response (required)

### 17.3 Wake up time 2 days ago

What time did you get up two days ago?

Expects a time response (required)

### 17.4 Wake up time 3 days ago

What time did you get up three days ago?

Expects a time response (required)

### 17.5 Bed time yesterday

What time did you go to bed yesterday evening?

Expects a time response (required)

### 17.6 Bed time 2 days ago

What time did you go to bed two days ago?

Expects a time response (required)

### 17.7 Bed time 3 days ago

What time did you go to bed three days ago?

Expects a time response (required)

### 17.8 Main meal yesterday

What time did you cook the main meal yesterday?

Expects a time response (required)

### 17.9 Main meal 2 days ago

What time did you cook the main meal two days ago?

Expects a time response (required)

### 17.10 Main meal 3 days ago

What time did you cook the main meal three days ago?

Expects a time response (required)

### 17.11 Meal together yesterday

How many times did your family eat a meal together yesterday?

Expects a numeric response (required)

---

**17.12 Meal together 2 days ago**

How many times did your family eat a meal together two days ago?

Expects a numeric response (required)

---

**17.13 Meal together 3 days ago**

How many times did your family eat a meal together three days ago?

Expects a numeric response (required)

---

**17.14 Household chores yesterday**

When did you start your household chores yesterday?

Expects a time response (required)

---

**17.15 Household chores 2 days ago**

When did you start your household chores two days ago?

Expects a time response (required)

---

**17.16 Household chores 3 days ago**

When did you start your household chores three days ago?

Expects a time response (required)

---

**17.17 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 18. Baseline Stated Future Plans

**18.1 Future Plans Prompt**

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

---

**18.2 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]
-

### 18.3 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]
- 

### 18.4 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 19. End of Survey

### 19.1 Voucher given

Was the participant given R80 food voucher?

Expects a single option response (required)

- Yes [1]
  - No [2]
- 

### 19.2 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 B**



# Baseline Part 1 (Xhosa)

Last Modified by: Clyral Support on 22 May 2009 13:38:34 Revision number: 64 Field Count: 101

## Section 1. Interview Identification

### 1.1 Interviewer code

Nceda ubhale ikhowudi yomPhathi wodliwano-ndlebe.

Expects a numeric response (required)

### 1.2 Neighbourhood code

Nceda ubhale ikhowudi yengingqi yakho.

Expects a single line text response (required)

### 1.3 Date of Interview

Nceda uqinisekise ngomhla wolu dliwano-ndlebe.

Expects a date response (required)

### 1.4 Time of Interview

Nceda uqinisekise ngexesha lolu dliwano-ndlebe.

Expects a time response (required)

### 1.5 Participant ID

Nceda ubhale ikhowudi yomthathi-nxaxheba, leyo imchongayo njengowahlukileyo nofana yedwa.

Expects a valid GS1 Identifier (required)

## Section 2. Informed Consent

### 2.1 Informed consent granted

Ifomu yemvumo engengqiqo ichaziwe yaza yamkeleka?

Expects a single option response (required)

ë Ewe [1]

ë Hayi [2]

Branches

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

If response Equals 'Hayi [2]' then skip to *Home visits (2.2)*

### 2.2 Home visits

Ukuba ingingqi yakho isendaweni ekusebenza kuyo uMama ongumCebisi, ungathanda ukuphinda utyelelwe kwikhaya lakho nangona ukhethe ukuba ungayithathi inxaxheba kudliwano-ndlebe olumalunga nophando?

Expects a single option response (required)

ë Ewe [1]

ë Hayi [2]

Branches

If response Equals 'Hayi [2]' then skip to *End (13.2)*

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

## Section 3. Participant Demographics

### 3.1 GQ Prompt

Siyabulela ngokuthatha kwakho inxaxheba kolu dliwano-ndlebe. Ndiza kuqalisa ngokukubuza imibuzo eqhelekileyo ngesiqu sakho.

---

### 3.2 Identity Document

Unayo incwadana esisazisi?

Expects a single option response (required)

- Ewe [1]
  - Hayi [2]
  - Ndiyala ukuphendula [91]
- 

### 3.3 Mother's age

Umdala kangakanani (ngokweminyaka epheleleyo yakho)?

Expects a numeric response (required)

---

### 3.4 Mother's date of birth

Wazalwa ngowuphi umhla, inyanga nonyaka?

Expects a date response (required)

---

### 3.5 Mother's home language

Uthetha oluphi ulwimi lweenkobe?

Expects a single option response (required)

- isiNgesi [1]
  - isiZula [2]
  - isiXhosa [3]
  - Enye [95]
  - Ndiyala ukuphendula [91]
- 

### 3.6 Participant education

Leliphi elona nqanaba lemfundo liphezulu oligqibileyo?

Expects a single option response (required)

- Andifundanga [0]
  - Greyidi 1 [1]
  - Greyidi 2 [2]
  - Greyidi 3 [3]
  - Greyidi 4 [4]
  - Greyidi 5 [5]
  - Greyidi 6 [6]
  - Greyidi 7 [7]
  - Greyidi 8 [8]
  - Greyidi 9 [9]
  - Greyidi 10 [10]
  - Greyidi 11 [11]
  - Greyidi 12 / iMatriki [12]
  - ISatifikethi emva kweMatriki / iDiploma [13]
  - Imfundo enomsila [14]
  - Ndiyala ukuphendula [91]
-

### 3.7 Marital status

Akukatshati okanye utshatile (nokuba kungayiphi na indlela)?

Expects a single option response (required)

- Anditshatanga [1]
- Nditshatile [2]
- Anditshatanga, ndihlala neqabane [3]
- Ndiyala ukuphendula [91]

### 3.8 Favourite Colour

Ngowuphi owona mbala uwuthandayo?

Expects a single line text response (required)

## Section 4. Household Overview

### 4.1 Household Overview Prompt

Enkosi. Ngoku ndithanda ukukubuza imibuzo embalwa ngabantu abahlala nawe.

### 4.2 Participant lives with others

Uhlala nabanye abantu endlwini okuyo (abantu abalala apho ngaphezulu kweentsuku ezi-2 kwiveki nganye)?

Expects a single option response (required)

- Ewe [1]
- Hayi [2]
- Ndiyala ukuphendula [91]

### 4.3 HH Member Count

Bangaphi abanye abantu, kudibene nawe, nabantu abadala kunye nabantwana, abahlala kuloo ndlu? Nceda uqaphele ukuba, ukuba kwelo khaya kukho abantu abangaphezulu kwe-15, apha kufuneka ubhale abali-15 kuphela yaye khetha amalungu okuqala ali-15.

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

Icandelo elilandelayo liza kuthatha iinkcukacha ezimalunga namalungu akule ndlu.

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

## Section 5. Household People Count

### 5.1 HH Member Name

Ngubani igama lalo mntu?

Expects a single line text response (required)

### 5.2 HH Member Age

Buyintoni ubu\_{q4455}\_kubudala bakhe?

Expects a numeric response (required)

### 5.3 HH Member Gender

Ingaba ##ERROR: Missing question reference##ngumntu oyindoda okanye libhinqa?

Expects a single option response (required)

- Yindoda [1]
- Ngumntu obhinqileyo [2]

## Section 6. Demographic Information about Housing

### 6.1 Housing Prompt

Kweli candela lilandelayo imibuzo imalunga nendawo ohlala kuyo.

### 6.2 Housing description

Indlu yakowenu iloluphi uhlobo?

Expects a single option response (required)

- Sisakhiwo sezitena esizeni esisodwa [1]
- Yindlwana egxunyekeziweyo esemva kwendlu enkulu esizeni [2]
- Lityotyombe elisemva kwendlu enkulu esizeni [3]
- Lityotyombe elizimeleyo esizeni. Umzekelo: Kwindawo yamatyotyombe [4]
- Yihosteli, apho abaqeshwa behlala beyintlanganisela [5]
- Ndiyala ukuphendula [91]

### 6.3 Water source

Amanzi eniwaselayo niwafumana kowuphi umthombo?

Expects a single option response (required)

- Amanzi akhoyo endlwini [1]
- Amanzi akhoyo apha esizeni [2]
- Amanzi aphuma kumpompi / kwitanki esetyenziswa nguwonke-wonke [3]
- Amanzi omlambo [4]
- Ndiyala ukuphendula. [91]

### 6.4 Household toilet

Nisebenzisa oluphi uhlobo lwezindlu zangasese?

Expects a single option response (required)

- Esizeni kukho indlu yangasese egungxulwayo [1]
- Yindlu yangasese yangasese apho kusetyenziswa inkonkxa egutyulwayo ngobusuku ukuze ibe likhamte [2]
- Yindlu yangasese kawonke-wonke [3]
- Yindlu yangasese engumngxuma onzulu [4]
- Ayikho [5]
- Enye [95]
- Ndiyala ukuphendula [91]

### 6.5 Electricity

Ninawo umbane kule ndlu yenu?

Expects a single option response (required)

- Ewe [1]
- Hayi [2]
- Ndiyala ukuphendula [91]

### 6.6 Cooking fuel

Zeziphi izibaso enizisebenzisela ukupheka?

Expects a single option response (required)

- è Umbane [1]
  - è Iparafini [2]
  - è Igesi [3]
  - è Amalahle [4]
  - è Iinkuni [5]
  - è Ezinye izibaso [95]
  - è Ndiyala ukuphendula [91]
- 

## 6.7 Household items

Indlu okuyo inayo na nayiphi na kwezi zinto ndiza kukufundela zona?

Expects multiple selected options (required)

- è Sisitovu (samalahle, sombane, yiprayimasi esebenza ngeparafini, sesegesi) [1]
  - è Yiselfowuni / ngunomyayi [2]
  - è Yibhayisekile [3]
  - è Ngunomathotholo / yireyido [4]
  - è Sisibandisi / sisikhenkcezisi [5]
  - è Yithelevishini / ngumabonwakude [6]
  - è Yimoto esebenzayo engenazingxaki [7]
  - è Yifowuni (ese-ofisini / esekhaya, isezintanjeni endaweni yayo) [8]
  - è Yikhompyutha [9]
  - è Ngumnathazwe / yi-internet (ekwikhompyutha) [10]
  - è Ngumnathazwe / yi-internet (ekwiselfowuni) [11]
  - è Ndiyala ukuphendula. [91]
  - è Asiyiyo nanye kwezi [12]
- 

## Section 7. Income and Employment

### 7.1 Income Prompt

Ngoku ndithanda ukukubuza imibuzo embalwa ngomsebenzi wakho nemali oyizuzayo.

---

### 7.2 Participant employed

Uqeshiwe?

Expects a single option response (required)

- è Ukusebenza okanye ukwenza into ngamaxesha athile xa kufuneka [1]
  - è Ukusebenza isigxina [2]
  - è Umntu ongxungxayo / ubizelwa uhlobo oluthile lomsebenzi [3]
  - è Hayi [4]
  - è Ukuziqesha uzenzele imali [5]
  - è Ndiyala ukuphendula [91]
- 

### 7.3 Household income sources

Endlwini yakho ifumaneka njani imali?

Expects multiple selected options (required)

- è Umvuzo ofumaneka qho, mhlawumbi ngenyanga [1]
- è Imali engafumaneki ngalo lonke ixesha, iza ngamaxesha athile [2]
- è Umsebenzi ozenzela ngokwakho ungaqeshwa mntu [3]
- è Igalelo / ama.lizo avela kwabanye abantu [4]
- è Umhlala-phantsi [5]
- è Indodla efumaneka ngenxa yobudala bomntu [6]
- è Igranti / isibonelela sokukhubazeka [7]
- è Igranti yenkxaso yabantwana [8]

- ê Igranti efunyanwa ngumondli ononelelayo [9]
  - ê Igranti yononophelo oluzimele geqe [10]
  - ê Asiyiyo nanye kwezi [11]
  - ê Andazi [99]
  - ê Enye [95]
  - ê Ndiyala ukuphendula [91]
- 

#### 7.4 Household monthly income

Endlwini yakho yimalini efumanekayo ngenyanga ngokomndilili?

Expects a single option response (required)

- ê Into engekho kude kufikwe kuma -R499 [1]
  - ê I-R500 kude kufikwe kwi -R1000 [2]
  - ê I-R1001 ukuya kwi -R2000 [3]
  - ê I-R2001 ukuya kwi -R5000 [4]
  - ê I-R5001 ukuya kwi -R8000 [5]
  - ê I-R8000 nangaphezu kwaleyo [6]
  - ê Andazi [99]
  - ê Ndiyala ukuphendula [91]
- 

#### 7.5 Participant days of hunger

Kwiveki ephelileyo zingaphi iintsuku obulambile ngazo? (Ndithetha ngeentsuku oziqondileyo wena ukuba khange utye ngokwaneleyo).

Expects a numeric response (required)

*Constraints*

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

---

#### 7.6 Household children hunger

Zingaphi iintsuku kwiveki ephelileyo apho bekukho abantwana abebelambile? (Ndithetha ngeentsuku apho wena uqondileyo ukuba abantwana bebefuna okunye ukutya).

Expects a numeric response (required)

*Constraints*

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

---

## Section 8. This Pregnancy

#### 8.1 Pregnancy Prompt

Ngoku ndinemibuzo embalwa nemifutshane ngosana osaza kulufumana.

---

#### 8.2 Baby due date

Usana lwakho uya kuluzala ngowuphi umhla?

Expects a date response (required)

#### 8.3 Weeks pregnant

Zingaphi iiveki zokukhulelwa kwakho?

Expects a numeric response (required)

*Constraints*

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

---

#### 8.4 Booked at Antenatal Clinic

Usifakile isicelo sokwamkelwa eklinikhi phambi kokuba uzale?

Expects a single option response (required)

- Ewe [1]
- Hayi [2]
- Ndiyala ukuphendula [91]

## Section 9. General Health - Participant

#### 9.1 General Health Prompt

Emkosi. Imibuzo elandelayo embalwa imalunga nempilo yakho ngokuqhelekileyo, ngokunxulumene nezigulo ezifana neSifo seSwekile, ngokuKhubazeka nangesifo sePhepha.

#### 9.2 Participant Height

Nceda ubhale ubude bomthathi-nxaxheba (ngokweemitha):

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

Nceda ubhale ubunzima bomthathi-nxaxheba (ngokweekilogram):

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

Ubukhe waxilongwa wafunyaniswa unesinye sezi zifo zilandelayo zingapheliyo?

Expects multiple selected options (required)

- Isifo seSwekile [1]
- Isifo sokunyukelwa ligazi [2]
- ukuKhubazeka [3]
- Umbefu [4]
- Asikho [5]
- Esinye [95]
- Ndiyala ukuphendula [91]

#### 9.5 Ever Tested TB

Wakha waxilongwa kukhangelwa isifo sePhepha?

Expects a single option response (required)

- Ewe [1]
- Hayi [2]
- Ndiyala ukuphendula [91]

#### 9.6 Previous TB result

Wakha waxilongwa wafunyaniswa unaso isiFo sePhepha?

Expects a single option response (required)

- Ewe [1]
- Hayi [2]

ê Ndiyala ukuphendula [91]

Branches

If response Not Equal 'Ewe [1]' then skip to *TB test this pregnancy (9.8)*

---

#### 9.7 Previous treatment TB

Wakha walufumana unyango xa emva kwengxilongo kwafunyaniswa ukuba unesifo sePhepha?

Expects a single option response (required)

ê Ewe [1]

ê Hayi [2]

ê Ndiyala ukuphendula [91]

---

#### 9.8 TB test this pregnancy

Ngeli xesha ukhulelweyo sowukhe waya kwingxilongo ekhangela isifo sePhepha?

Expects a single option response (required)

ê Ewe [1]

ê Hayi [2]

ê Ndiyala ukuphendula [91]

Branches

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

---

#### 9.9 Current TB test result

Ngeli xesha ukhulelweyo, uxilongiwe kwafunyaniswa ukuba unesifo sePhepha?

Expects a single option response (required)

ê Ewe [1]

ê Hayi [2]

ê Ndiyala ukuphendula [91]

Branches

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

---

#### 9.10 Current treatment TB

Ngoku uyalufumana unyango lwesifo sePhepha?

Expects a single option response (required)

ê Ewe [1]

ê Hayi [2]

ê Ndiyala ukuphendula [91]

---

#### 9.11 HH member TB test

Ngeli xesha ukhulelweyo ukhona umntu ONGOMNYE kowenu okhe waya kuxilongwa wafunyanwa enesifo sePhepha?

Expects a single option response (required)

ê Ewe [1]

ê Hayi [2]

ê Andazi. [99]

ê Ndiyala ukuphendula [91]

Branches

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

---

#### 9.12 HH member current treatment

Abo bantu ngoku bayalufumana unyango lwesifo sePhepha?

Expects a single option response (required)

ê Ewe [1]

ê Hayi [2]

ê Andazi. [99]

ê Ndiyala ukuphendula [91]

---



## Section 10. Mental Health

### 10.1 Mental Health Prompt

Ngoku ndinemibuzo ekufuneka ndikubuze yona ngovakalelo lwakho lweveki ephelileyo. Nceda undinike impendulo esondele kakhulu kwindlela ozive ngayo EZINTSUKWINI EZISI-7 EZIGQITHILEYO, andilufuni uvakalelo lwakho lwanamhlanje.

---

### 10.2 Laugh

Ndikwazile ukuhleka, ndakubona nokumangalisayo ezintweni.

Expects a single option response (required)

- Kangangoko bendikwenza ngaphambili [0]
- Hayi kangako, okwangoku [1]
- Ngokuqinisekileyo ayikho kangako okwangoku [2]
- Akunjalo [3]

---

### 10.3 Enjoyment

Ndikhe ndajonga phambili ndisonwatyiswa zizinto.

Expects a single option response (required)

- Kangangoko bendinokwenza [0]
- Kungaphantsi kunoko bendisenza [1]
- Ngokuqinisekileyo kungaphantsi kunoko bendisenza [2]
- Akwenzeki kwaphela [3]

---

### 10.4 Self Blame

Ndizigxekile ngokungekho mfuneko xa izinto bezingahambi kakuhle .

Expects a single option response (required)

- Ewe, kumaxesha amaninzi [3]
- Ewe, ngamanye amaxesha [2]
- Akusoloko kusenzeka qho [1]
- Hayi, zange kwenzeke [0]

---

### 10.5 Anxious/worry

Bendinexhala okanye ndikhathazekile kungekho sizathu.

Expects a single option response (required)

- Hayi, akunjalo. [0]
- Zange kwenzeke [1]
- Ewe, ngamanye amaxesha [2]
- Ewe, kwenzeka qho [3]

---

### 10.6 Panicky

Ndizive ndibuhlungu okanye ndisoyika kungekho sizathu.

Expects a single option response (required)

- Ewe, kwenzeka kakhulu [3]
- Ewe, ngamanye amaxesha [2]
- Hayi, akwenzeki ngamandla [1]
- Hayi, akunjalo [0]

---

### 10.7 Things piled up

Imeko ibindongamele.

Expects a single option response (required)

- Ewe, kumaxesha amaninzi bendingakwazi kumelana naloo nto [3]
- Ewe, ngamanye amaxesha bendingakwazi ukumelana naloo nto njengesiqhelo [2]
- Hayi, kumaxesha amaninzi bendimelana kakuhle naloo nto [1]

è Hayi, bendisoloko ndikwazi ukumelana naloo nto njengakuqala [0]

---

#### 10.8 Difficulty sleeping

Bendingonwabanga kunzima nokuba ndilale.

Expects a single option response (required)

- è Ewe, kumaxesha amaninzi [3]
  - è Ewe, ngamanye amaxesha [2]
  - è Bekungenzeki qho [1]
  - è Hayi, akunjalo [0]
- 

#### 10.9 Sad/miserable

Bendilusizi okanye bendixakanisekile.

Expects a single option response (required)

- è Ewe, kumaxesha amaninzi [3]
  - è Ewe, ngamanye amaxesha [2]
  - è Bekungenzeki qho [1]
  - è Hayi, akunjalo [0]
- 

#### 10.10 Crying

Bendingonwabanga ndada ndamana ndilila.

Expects a single option response (required)

- è Ewe, kumaxesha amaninzi [3]
  - è Ewe, bekusoloko kusenzeka [2]
  - è Bekusenzeka kuphela ngamaxesha athile [1]
  - è Hayi, zange kwenzeke [0]
- 

#### 10.11 Self harm

Ikhe yandifikela ingcinga yokuba mandizenzakalise.

Expects a single option response (required)

- è Ewe, bekusenzeka qho [3]
  - è Ngamanye amaxesha [2]
  - è Zange kwenzeke [1]
  - è Zange [0]
- 

#### 10.12 General Health Questionnaire (GHQ) Prompt

Singathanda ukwazi ukuba impilo yakho ibinjani na kwiimeko eziqhelekileyo KWEZI VEKI ZIMBALWA ZIDLULILEYO. Nceda uphendule YONKE imibuzo ngokuxela ukuba yeyiphi eyona mpendulo isondeleyo malunga nesiqu sakho KWEZI VEKI ZIMBALWA ZIDLULILEYO. Khumbula ukuba sifuna ukwazi NGEZIKHALAZO ZANGOKU NEZAKUTSHANJE, (Inkcukumiso yeyomPhathi wodliwano-ndlebe: kwiiveki ezimbalwa ezigqithileyo njengoko inyanga neentsuku ofuna ukuxoxa ngazo) akufuneki zikhalazo zexesha elidlulileyo. Kubalulekile ukuzama ukuyiphendula yonke imibuzo.

---

#### 10.13 GHQ Concentrate

Ukwazile ukuba nyameko kuyo yonke into oyenzayo?

Expects a single option response (required)

- è Kubhetele kunesiqhelo [3]
  - è Kunje ngesiqhelo [2]
  - è Kungaphantsi kwendlela eqhelekileyo [1]
  - è Kungaphantsi kakhulu kunesiqhelo [0]
- 

#### 10.14 GHQ Lost sleep

Kutshanje ukhe waziva ungenakulala ngenxa yokukhathazeka?

Expects a single option response (required)

- è Kubhetele kunesiqhelo [3]
- è Akungaphezulwanga kwesiqhelo [2]

è Kungaphaya kwesiqhelo [1]

è Kungaphantsi kakhulu kunesiqhelo [0]

---

#### 10.15 GHQ Useful part

Kutshanje ukhe waziva ungumntu odlala indima eluncedo ezintweni?

Expects a single option response (required)

è Kungaphezulu kunesiqhelo [3]

è Kuyafana nesiqhelo [2]

è Uncedo lungaphantsi kolwesiqhelo [1]

è Luncinci kakhulu uncedo [0]

---

#### 10.16 GHQ Decisions

Kutshanje ukhe waziva unakho ukwenza izigqibo ngezinto?

Expects a single option response (required)

è Bendithe chatha kunesiqhelo [3]

è Bekufana nesiqhelo [2]

è Bekunganeno kwesiqhelo [1]

è Bekungafani tu, kungaphantsi kwesiqhelo [0]

---

#### 10.17 GHQ Under strain

Kutshanje ukhe waziva usoloko uphantsi koxinzelelo?

Expects a single option response (required)

è Bekungenjalo tu kwaphela [3]

è Akungaphezulwanga kwesiqhelo [2]

è Kungaphezulwana kunesiqhelo [1]

è Bekuthe chatha kunesiqhelo [0]

---

#### 10.18 GHQ Unable overcome difficulties

Kutshanje ukhe waziva ungenakho ukuboyisa ubunzima okubo?

Expects a single option response (required)

è Bekungenjalo tu kwaphela [3]

è Akusangaphezulwanga kwesiqhelo [2]

è Kungaphezulu kunesiqhelo [1]

è Bekuthe charha kunesiqhelo [0]

---

#### 10.19 GHQ Enjoy activities

Kutshanje ukhe waziva wonwabile kwimisebenzi yakho yemihla ngemihla?

Expects a single option response (required)

è Imisebenzi indonwabise ngaphezu kwesiqhelo [3]

è Ukonwaba kuyafana nesiqhelo [2]

è Kungaphantsi kunesiqhelo [1]

è Andisonwabanga njengeko bendinjalo [0]

---

#### 10.20 GHQ Face problems

Kutshanje ukhe waziva ukwazi ukuhlangabezana neengxaki zakho?

Expects a single option response (required)

è Ngaphezulu kunesiqhelo [3]

è Njgesiqhelo [2]

è Akufani nesiqhelo [1]

è Andisamelani kakuhle neengxaki [0]

---

#### 10.21 GHQ Unhappy/depressed

Kutshanje ubukhe waziva ungonwabanga, udakumbile?

Expects a single option response (required)

- Akusenjalo [3]
- Akusenjalo tu kwaphela [2]
- Andonwabanga njengoko bendinjalo [1]
- Ndinxunguphele, akusenje ngakuqala [0]

---

#### 10.22 GHQ Loosing confidence

Kutshanje ubukhe akwabinakho ukuzithemba?

Expects a single option response (required)

- Akusenjalo [3]
- Akukho ukungazithembi okungaphezu kwesiqhelo [2]
- Andizithembanga ngakumbi [1]
- Andizithembanga tu kwaphela [0]

---

#### 10.23 GHQ Worthless person

Kutshanje ubukhe wazithatha njengomntu ongenaxabiso?

Expects a single option response (required)

- Andizithathi njengongantweni [3]
- Andingongantweni ngokungaphezu kwesiqhelo [2]
- Ndisuke ndangungantweni kakhulu [1]
- Ndingungantweni ngokubalaseleyo [0]

---

#### 10.24 GHQ Reasonably happy

Kutshanje ubukhe waziva wonwabile xa ububona izinto ebezisandula ukwenzeka?

Expects a single option response (required)

- Ndonwabe ngokungaphezulu [3]
- Ndonwabe ngendlela eqhelekileyo [2]
- Andonwabanga njengesiqhelo [1]
- Andisonwabanga njengesiqhelo [0]

---

## Section 11. Social Support

### 11.1 Social Support Prompt

Elandelayo yimibuzo emalunga nabahlobo kunye nezalamane zakho ezisoloko zikuxhasa.

---

### 11.2 Close friends and relatives

Bangaphi abahlobo abasondeleyo kunye nezalamane onazo? Ndithetha ngabantu ekulula wena ukuba uthethe nabo ngezinto ezisengqondweni kuwe.

Expects a numeric response (required)

---

### 11.3 Frequency Contact

Kule nyanga iphelileyo, phantse abe mangaphi amaxesha uqhagamshelana nabahlobo kunye nezalamane zakho (kuqukwa utyelelo, ukutsalelwa umnxeba, ukuthunyelwa imiyalezo emifutshane kwiselfowuni kunye neendibano-zolonwabo)?

Expects a numeric response (required)

---

### 11.4 Participation in groups or organisations

Ngowuphi (ukuba ukhona) kule mibutho ilandelayo, othatha kuwo inxaxheba?

Expects multiple selected options (required)

- Itempile / isakhiwo esiyicawa [1]
- Iziganeko / imisitho yabahlali [2]

- è [Lintlanganiso zabahlali](#) [3]
  - è [Iqela elixhasayo](#) [4]
  - è [Iqela lezefundo ngesifo uGawulayo](#) [5]
  - è [Umbutho womntu onentsholongwane i-HIV](#) [6]
  - è [Imisebenzi ejongene nesifo uGawulayo engekho kwingngqi yenu](#) [7]
  - è [Ezinye](#) [95]
  - è [Ndiyala ukuphendula](#) [91]
  - è [Asiyiyo nanye kwezi](#) [8]
- 

#### 11.5 Recreation time

Kwinyanga ephelileyo, kukangaphi usenza izinto zokukonwabisa okanye zokukuphumza ezifana nokubukela umabonwakude, ukuya ecaweni, ukuya kulungisa iinwele zakho, ukuya emculweni nokudanisa?

Expects a single option response (required)

- è [Zange](#) [1]
  - è [Kanye/kabini ngenyanga](#) [5]
  - è [Kanye okanye kabini ngeveki](#) [2]
  - è [Kaninzi evekini](#) [3]
  - è [Yonke imihla](#) [4]
  - è [Ndiyala ukuphendula](#) [91]
  - è [Andazi](#) [99]
- 

#### 11.6 Practical support

Mangaphi amaxesha kwiveki ephelileyo , apho bekukho umntu okunika inkxaso ngokukwenzela izinto? (Umzekelo: unikwa imali yokukhwela izithuthi, uncediswa emsebenzini wendlu, ugcinelwa umntwana)

Expects a numeric response (required)

#### 11.7 Current partner

Khona ngoku unalo iqabane?

Expects a single option response (required)

- è [Ewe](#) [1]
- è [Hayi](#) [2]
- è [Ndiyala ukuphendula](#) [91]

Branches

If response Not Equal 'Ewe [1]' then skip to [Trust, talk to Mother \(11.11\)](#)

---

#### 11.8 Trust and share with partner

Umyeni wakho / iqabane lakho ungalithemba, ungathetha nalo ukuze nabelane ngovakalelo?

Expects a single option response (required)

- è [Zange](#) [1]
  - è [Ngamanye amaxesha](#) [2]
  - è [Qho](#) [3]
  - è [Ndiyala ukuphendula](#) [91]
- 

#### 11.9 Turn to partner in difficulty

Umyeni wakho okanye iqabane lakho ungayama kulo ucele noncedo ngamaxesha obunzima?

Expects a single option response (required)

- è [Zange](#) [1]
  - è [Ngamanye amaxesha](#) [2]
  - è [Qho](#) [3]
  - è [Ndiyala ukuphendula](#) [91]
- 

#### 11.10 Partner practical help

Lukhona uncedo akunika lona lweefuno ezimandla?

Expects a single option response (required)

- è Zange [1]
- è Ngamanye amaxesha [2]
- è Qho [3]
- è Ndiyala ukuphendula [91]

---

#### 11.11 Trust, talk to Mother

Umama wakho ungamthemba, ungathetha naye ngokungafihlisiyo, ungabelana naye ngezimvo zakho?

Expects a single option response (required)

- è Zange [1]
- è Ngamanye amaxesha [2]
- è Qho [3]
- è Umama wabhubha. [4]
- è Ndiyala ukuphendula [91]

Branches

If response Equals 'Umama wabhubha. [4]' then skip to *Trust, talk to father (11.14)*

---

#### 11.12 Turn to mother in difficulty

Ngamaxesha obunzima ungaya ujike ucele uncedo kumama wakho?

Expects a single option response (required)

- è Zange [1]
- è Ngamanye amaxesha [2]
- è Qho [3]
- è Umama wabhubha [4]
- è Ndiyala ukuphendula [91]

---

#### 11.13 Mother practical help

Lukhona uncedo olumandla olufumanayo kumama wakho?

Expects a single option response (required)

- è Zange [1]
- è Ngamanye amaxesha [2]
- è Qho [3]
- è Umama wabhubha. [4]
- è Ndiyala ukuphendula [91]

---

#### 11.14 Trust, talk to father

Utata wakho ungamthemba, ungathetha naye ngokukhululekileyo wabelane naye ngeengcamango zakho?

Expects a single option response (required)

- è Zange [1]
- è Ngamanye amaxesha [2]
- è Qho [3]
- è Utata wabhubha. [4]
- è Ndiyala ukuphendula [91]

Branches

If response Equals 'Utata wabhubha. [4]' then skip to *Father Prompt (12.1)*

---

#### 11.15 Turn to father in difficulty

Ngamaxesha obunzima ungakwazi ukwayama ujike ucele uncedo kutata wakho?

Expects a single option response (required)

- è Zange [1]
- è Ngamanye amaxesha [2]
- è Qho [3]
- è Utata wabhubha. [4]

è Ndiyala ukuphendula [91]

---

#### 11.16 Father practical help

Uyalufumana uncedo lomsebenzi okanye lwento oyifunayo kutata wakho?

Expects a single option response (required)

è Zange [1]

è Ngamanye amaxesha [2]

è Qho [3]

è Utata wabhubha [4]

è Ndiyala ukuphendula [91]

---

## Section 12. Father of the Child

#### 12.1 Father Prompt

Enkosi. Ngoku ndithanda ukukubuza imibuzo ngoyise walo mntwana.

---

#### 12.2 Fathers knowledge of pregnancy

Uyise walo mntwana ukhe wamxelela ngokukhulelwa kwakho?

Expects a single option response (required)

è Ewe [1]

è Hayi [2]

è Ndiyala ukuphendula [91]

---

#### 12.3 Fathers acknowledgement of baby

Utata lo uza kumazisa (njengowakhe) lo mntwana ebantwini bakowabo?

Expects a single option response (required)

è Ewe [1]

è Hayi [2]

è Andazi [99]

è Ndiyala ukuphendula [91]

---

#### 12.4 Fathers financial support

Uyise wolu sana uyakuxhasa na ngezimali?

Expects a single option response (required)

è Ewe [1]

è Hayi [2]

è Ndiyala ukuphendula [91]

---

#### 12.5 Father staying with you

Uyise wolu sana uhlala nawe?

Expects a single option response (required)

è Ewe [1]

è Hayi [2]

è Ndiyala ukuphendula [91]

---

#### 12.6 Father opinions on feeding

Uyise wolu sana uneembono anazo ngendlela yokondliwa kosana?

Expects a single option response (required)

è Ewe [1]

è Hayi [2]

è Andazi [99]

ê Ndiyala ukuphendula [91]

Branches

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

---

### 12.7 Father feeding suggestion

Phofu lo mfo uthanda ukulondla njani olu sana?

Expects a single option response (required)

ê Ukuncancisa usana [1]

ê Ukondla ngeformula [2]

ê Ubisi lwebele nokunye ukutya [3]

ê Andazi [99]

ê Ndiyala ukuphendula [91]

Branches

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

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

---

## Section 13. End of Survey

### 13.1 Expected Birth Date No ICF

Ngowuphi owona mhla ulindele ukulubeleka ngawo usana lwakho?

Expects a date response (required)

### 13.2 End

Ufikelele esiphelweni solu phando. Ungabuyela emva uhlolisise indlela obuphendule ngayo okanye ungazikhethela OLULANDELAYO ukuze ugqibezele icandelo.

Prerequisites

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

### 13.3 End Part 1

Ufikelele ekugqibeleni kwisifundo sokuqala. Buyela umva ujonge impendulo okanye khetha elandelayo ukugqibezela esisahluko. Xa uthe wasigqiba esesahluko nceda uye kwicandela lesibini le Baseline

---

---



# Baseline Part 2 (Xhosa)

Last Modified by: Clyral Support on 29 Jul 2009 12:11:44 Revision number: 126 Field Count: 140

---

## Section 1. Interview Identification

### 1.1 Interviewer code

Nceda ubhale ikhowudi yomPhathi wodliwano-ndlebe.

Expects a numeric response (required)

### 1.2 Neighbourhood code

Nceda ubhale ikhowudi yengingqi yakho.

Expects a single line text response (required)

### 1.3 Date of Interview

Nceda uqinisekise ngomhla wolu dliwano-ndlebe.

Expects a date response (required)

### 1.4 Time of Interview

Nceda uqinisekise ngexesha lolu dliwano-ndlebe.

Expects a time response (required)

### 1.5 Participant ID

Nceda ubhale ikhowudi yomthathi-nxaxheba, leyo imchongayo njengowahlukileyo nofana yedwa.

Expects a valid GS1 Identifier (required)

## Section 2. Relationship Status

### 2.1 Current Partner BS2

Khona ngoku unalo iqabane?

Expects a single option response (required)

Ewe [1]

Hayi [2]

Ndiyala ukuphendula [91]

## Section 3. Use of Tobacco & Other Substances

### 3.1 Smoking Prompt

Imibuzo emitsha imalunga nokutshaya.

### 3.2 Use of Tobacco

Uyalisebenzisa icuba?

Expects a single option response (required)

Ewe [1]

è Hayi [2]

è Ndiyala ukuphendula [91]

Branches

If response Not Equal 'Ewe [1]' then skip to *Use of Dagga (3.4)*

---

### 3.3 Tobacco Frequency

Kwiinyanga ezi-3 ezidlulileyo, icuba ulisebenzise kangangeentsuku ezingaphi?

Expects a numeric response (required)

*Constraints*

Response must be Greater Than or Equal '0'

Response must be Less Than or Equal '92'

---

### 3.4 Use of Dagga

Uyawusebenzisa umya?

Expects a single option response (required)

è Ewe [1]

è Hayi [2]

è Ndiyala ukuphendula [91]

Branches

If response Not Equal 'Ewe [1]' then skip to *Use of Tik (3.6)*

---

### 3.5 Dagga Frequency

Umya uwusebenzise kangangeentsuku ezingaphi KWIINYANGA EZI-3 ezigqithileyo?

Expects a numeric response (required)

*Constraints*

Response must be Greater Than or Equal '0'

Response must be Less Than or Equal '92'

---

### 3.6 Use of Tik

Uyayisebenzisa iTik?

Expects a single option response (required)

è Ewe [1]

è Hayi [2]

è Ndiyala ukuphendula [91]

Branches

If response Not Equal 'Ewe [1]' then skip to *Type of traditional medicines used (4.1)*

---

### 3.7 Tik Frequency

ITik uyisebenzise kangangeentsuku ezingaphi KWIINYANGA EZI-3 ezigqithileyo?

Expects a numeric response (required)

*Constraints*

Response must be Greater Than or Equal '0'

Response must be Less Than or Equal '92'

---

## Section 4. Use of Traditional Medicines

### 4.1 Type of traditional medicines used

Nceda usixelele ngezi zinto zilandelayo, ukuba ikhona, oyisebenzisileyo ngezi xesha sowukhulelwe.

Expects multiple selected options (optional)

è Ukucima ngeyeza [1]

è Iivithamini eziqhelekileyo okanye izongezelelo ezifumaneka kulwelo [2]

- è Amayeza okuphila kwintlalo (umzekelo: ivamna, ukuthakatha) [3]
  - è Amayeza afanele abakhulelweyo (umzekelo: awokucima, awokuvuselela ukulunywa) [4]
  - è Amayeza okuphilisa ngokwasemoyeni (umzekelo: ulwelo lokukhusela usana) [5]
  - è Amayeza abantwana (umuti wenyoni, ibhotile ye-lennons) [6]
  - è Ndiyala ukuphendula [91]
- 

## Section 5. Use of Alcohol

### 5.1 Alcohol Prompt

Ngoku ndingathanda ukukubuza eminye imibuzo embalwa ngokusela utywala. Ndiyazi ukuba ngamanye amaxesha le mibuzo ingakuxakanisa, kodwa khumbula ukuba iimpendulo zakho zakugcinwa ziyimfihlelo yaye akakho onokwazi ukuba ezo ziimpendulo zakho. Igama lakho alizokuvela kuzo naziphi na iifom zophando yaye iimpendulo zakho asizokwabelana ngazo naye nabani na, ngaphandle kwabasebenzi aba bophando. Le mibuzo ibalulekileyo siyibuza kwabaninzi abantu abahhinqileyo, yaye siyabulela kuwe ngokuzama kangango ekubeni uyiphendule unyanisekile.

### 5.2 Weeks pregnant when found out about pregnancy

Uziqonde sekuziiveki ezingaphi ukuba wena ukhulelwe?

Expects a numeric response (required)

### 5.3 Alcohol in pregnancy before knowledge of pregnancy

Utywala ubusebenzise rhoqo kangakanani enyangeni phambi kokuba uzifumanise ukhulelwe? [UMPHATHI WODLIWANO-NDLEBE UZA KUSEBENZISA IKOMITYANA EQHELEKILEYO NEBONAKALA INGUMLINGANISELO WESISELO ESINYE].

Expects a single option response (required)

- è Zange [1]
- è Kungaphantsi kwexesha lakanye ngenyanga [2]
- è Kanye ngenyanga [3]
- è Kabini okanye kathathu ngenyanga [4]
- è Kanye ngeveki [5]
- è Amaxesha ama-2 ngeveki [6]
- è Amaxesha ama-3 nalawo ama-4 ngeveki [7]
- è Phantse yonke imihla [8]
- è Yonke imihla [9]
- è Ndiyala ukuphendula [91]

Branches

If response Equals 'Zange [1]' then skip to *Alcohol during pregnancy after learning of pregnancy. (5.7)*

If response Equals 'Ndiyala ukuphendula [91]' then skip to *Alcohol during pregnancy after learning of pregnancy. (5.7)*

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

Ngalaa nyanga ephambi kokuzibhaqa kwakho ukuba ukhulelwe, xa ubala zonke iintlobo zotywala zidibene, zingaphi iziselo OBUDLA ngokuzisela ngeentsuku zokusela kwakho utywala?

Expects a single option response (required)

- è 1 okanye 2 [1]
- è 3 okanye 4 [2]
- è 5 okanye 6 [3]
- è 7, 8 okanye 9 [4]
- è Ali-10 nangaphezu koko [5]
- è Ndiyala ukuphendula [91]

### 5.5 Frequency of four or more drinks per day before knowledge of pregnancy

Ngalaa nyanga ephambi kokuzibhaqa kwakho ukuba ukhulelwe, kumalunga kaninzi kangakanani apho ubufumana iziselo EZINE okanye NGAPHEZU KOKO ngosuku olunye?

Expects a single option response (required)

- è Zange [1]
  - è Kungaphantsi kwexesha lakanye ngenyanga [2]
  - è Kanye ngenyanga [3]
  - è Kabini okanye kathathu ngenyanga [4]
  - è Kanye ngeveki [5]
  - è Amaxesha ama-2 ngeveki [6]
  - è Amaxesha ama-3 nalawo ama-4 ngeveki [7]
  - è Phantse yonke imihla [8]
  - è Yonke imihla [9]
  - è Ndiyala ukuphendula [91]
- 

#### 5.6 Frequency of three or more drinks per day before knowledge of pregnancy

Ngalaa nyanga ephambi kokuzibhaqa kwakho ukuba ukhulelwe, kukaninzi kangakanani apho ubufumana iziselo EZITHATHU okanye NGAPHEZU KOKO ngosuku olunye?

Expects a single option response (optional)

- è Zange [1]
  - è Kungaphantsi kwexesha lakanye ngenyanga [2]
  - è Kanye ngenyanga [3]
  - è Kabini okanye kathathu ngenyanga [4]
  - è Kanye ngeveki [5]
  - è Amaxesha ama-2 ngeveki. [6]
  - è Amaxesha ama-3 nalawo ama-4 ngeveki [7]
  - è Phantse yonke imihla [8]
  - è Yonke imihla [9]
  - è Ndiyala ukuphendula [91]
- 

#### 5.7 Alcohol during pregnancy after learning of pregnancy.

Njengokuba sowusazi ukuba ukhulelwe, kukaninzi kangakanani usela NALUPHI NA uhlobo lotywala?

Expects a single option response (optional)

- è Zange [1]
- è Kungaphantsi kwexesha lakanye ngenyanga [2]
- è Kanye ngenyanga. [3]
- è Kabini okanye kathathu ngenyanga [4]
- è Kanye ngeveki [5]
- è Amaxesha ama-2 ngeveki [6]
- è Amaxesha ama-3 nalawo ama-4 ngeveki [7]
- è Phantse yonke imihla [8]
- è Yonke imihla [9]
- è Ndiyala ukuphendula [91]

Branches

If response Equals 'Zange [1]' then skip to *Previous Pregnancies Prompt (6.1)*

If response Equals 'Ndiyala ukuphendula [91]' then skip to *Previous Pregnancies Prompt (6.1)*

---

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

Njengokuba sowusazi ukuba ukhulelwe, xa ubala zonke iindidi zotywala zidibene, zingaphi iziselo ODLA ngokuzifumana ngeentsuku zokusela kwakho utywala?

Expects a single option response (required)

- è 1 okanye 2 [1]
- è 3 okanye 4 [2]
- è 5 okanye 6 [3]
- è 7, 8 okanye 9 [4]
- è Ali-10 nangaphezu koko [5]
- è Ndiyala ukuphendula [91]

---

**5.9 Frequency of four or more drinks per day after knowledge of pregnancy**

Njengokuba sowusazi ukuba ukhulelwe, kukaninzi kangakanani uufumana iziselo EZINE okanye NGAPHEZU KOKO ngosuku?

Expects a single option response (optional)

- Zange [1]
- Kungaphantsi kwexesha lakanye ngenyanga [2]
- Kanye ngenyanga [3]
- Kabini okanye kathathu ngenyanga [4]
- Kanye ngeveki [5]
- Amaxesha ama-2 ngeveki. [6]
- Amaxesha ama-3 nalawo ama-4 ngeveki [7]
- Phantse yonke imihla [8]
- Yonke imihla [9]
- Ndiyala ukuphendula [91]

---

**5.10 Frequency of three or more drinks per day after knowledge of pregnancy**

Njengokuba sowusazi ukuba ukhulelwe, kukaninzi kangakanani ufumana iziselo EZITHATHU okanye EZINGAPHEZU KOKO ngosuku?

Expects a single option response (optional)

- Zange [1]
- Kungaphantsi kwexesha lakanye ngenyanga [2]
- Kanye ngenyanga [3]
- Kabini okanye kathathu ngenyanga [4]
- Kanye ngeveki [5]
- Amaxesha ama-2 ngeveki [6]
- Amaxesha ama-3 nalawo ama-4 ngeveki [7]
- Phantse yonke imihla [8]
- Yonke imihla [9]
- Ndiyala ukuphendula [91]

---

**5.11 Number drinks to feel high**

Kufuneka ufumane iziselo ezingaphi ukuze uzive unxilile?

Expects a numeric response (required)

---

**5.12 Friend/relatives complained about drinking**

Abahlobo nezalamane zakho ezisondeleyo sebekhe bakukhalazela ngokusela kwakho?

Expects a single option response (required)

- Ewe [1]
- Hayi [2]
- Ndiyala ukuphendula [91]

---

**5.13 Alcohol upon waking**

Ngamanye amaxesha ukhe usele kwakusasa xa usandula ukuvuka?

Expects a single option response (optional)

- Ewe [1]
- Hayi [2]
- Ndiyala ukuphendula [91]

---

**5.14 Memory loss with alcohol**

Umlhlobo okanye omnye wabakowenu wakha wakuxelela na ngezinto ozithethileyo okanye ozenzileyo ngexesha obusela nobungenakho wena ukuzikhumbula?

Expects a single option response (optional)

- Ewe [1]

ê Hayi [2]

ê Ndiyala ukuphendula [91]

---

#### 5.15 Need to cut down drinking

Ngamanye amaxesha ukhe uzive ukuba umele ukusela kancinci?

Expects a single option response (optional)

ê Ewe [1]

ê Hayi [2]

ê Ndiyala ukuphendula [91]

---

## Section 6. Reproductive Health

### 6.1 Previous Pregnancies Prompt

Enkosi. Imibuzo embalwa elandelayo imalunga nexesha eligqithileyo owawukhulelwe ngalo nangabantwana onokuba ubunabo.

---

### 6.2 Total number pregnancies

Ukhe wakhulelwa kangaphi, xa udibanisa neli ixesha ukhulelwe ngalo?

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 (6.5)*

---

### 6.3 Number live births

Uzele iintsana ezingaphi eziphilileyo?

Expects a numeric response (required)

### 6.4 Previous LBW babies

Zingaphi (ukuba lukhona) kwezo ntsana wazizalayo, ezazinobunzima besikali, ( ezazalwa zinobunzima obabungaphantsi kwee-2500g)?

Expects a numeric response (required)

*Constraints*

*Response must be Less Than or Equal 'Number live births (6.3)'*

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

---

### 6.5 Previous treat of STI

Wakha walufumana unyango lweZIFO EZIFUMANEKA NGOSULELO KWEZESONDO?

Expects a single option response (required)

ê Ewe [1]

ê Hayi [2]

ê Ndiyala ukuphendula [91]

---

### 6.6 Current Pregnancy Prompt

Ngoku ndineminye imibuzo ngolu sana uluthweleyo.

---

### 6.7 Attempt to terminate pregnancy

Ukhe wazama ukusikhupha esi sisu?

Expects a single option response (required)

ê Ewe [1]

è Hayi [2]

è Ndiyala ukuphendula [91]

---

#### 6.8 Baby planned

Olu sana ubulucwangcisele? (Qaphela: ukucwangciselwa kuthetha ukuzifunela ngokwakho okanye wena neqabane lakho benimfunu umntwana).

Expects a single option response (optional)

è Ewe [1]

è Hayi [2]

è Ndiyala ukuphendula [91]

---

#### 6.9 Treatment of STI during this pregnancy

Ngeli xesha ukhulelweyo ukhe walufumana unyango lweZIFO EZINGENA NGOSULELELO KUMGCA WESONDO?

Expects a single option response (optional)

è Ewe [1]

è Hayi [2]

è Ndiyala ukuphendula [91]

---

## Section 7. Reproductive Health – HIV & STI's

#### 7.1 HIV Prompt

Ngoku ndithanda ukukubuza imibuzo ngentsholongwane i-HIV.

---

#### 7.2 Tested for HIV ever

Wakha waxilongelwa intsholongwane i-HIV?

Expects a single option response (required)

è Ewe [1]

è Hayi [2]

è Ndiyala ukuphendula [91]

Branches

If response Not Equal 'Ewe [1]' then skip to *Previous Partners Prompt (8.1)*

---

#### 7.3 Date last tested

Wagqibela nini ukuxilongelwa intsholongwane i-HIV?

Expects a date response (required)

#### 7.4 HIV test prompt

Umbuzo olandelayo umalunga neziphumo zokuxilongelwa i-HIV. Ndiyazi ukuba lo mbuzo uyaxakanisa. Nceda uqiniseke ukuba impendulo yakho iya kuhlala iyimfihlelo, ayisoze ihlanganiswe negama lakho okanye neenkukacha zakho nangayiphi na indlela. Akukho mntu uyakuze ayazi impendulo yalo mbuzo, nangona kunjalo, le projekhthi iya kuncedakala kakhulu xa wena unokwabelana nathi ngezi nkukacha.

---

#### 7.5 HIV test result

Zibe yintoni iziphumo zengxilongo yakho?

Expects a single option response (required)

è HIV Positive [1]

è HIV Negative [2]

è Ndiyala ukuphendula [91]

---

## Section 8. Partnerships – Previous Sexual behaviour

### 8.1 Previous Partners Prompt

Imibuzo embalwa elandelayo imalunga namaqabane akho owawusabelana nawo ngesondo kwixesha eladlulayo. Kwakhona, qiniseka ukuba ezi nkukacha zakuhlala ziyimfihlelo.

### 8.2 Lifetime sexual partners

Ebomini bakho bangaphi abantu abahlukeneyo owakha wabelana nabo ngesondo? Xa ungasakhumbuli ngelo nani, nceda uqashisele kakuhle.

Expects a numeric response (required)

#### Constraints

Response must be Greater Than or Equal '0'

### 8.3 Sexual partners in previous year

Kunyaka ophelileyo bangaphi abantu owakha wabelana nabo ngesondo?

Expects a numeric response (required)

#### Constraints

Response must be Less Than or Equal 'Lifetime sexual partners (8.2)'

Response must be Greater Than or Equal '0'

### 8.4 Concurrent sexual partners past year

Kwakha kwakho ixesha kunyaka ophelileyo apho wawusabelana ngesondo namaqabane amabini okanye angaphezu kwelo nani kwangelo xesha linye? (Qaphela mPhathi wodliwano-ndlebe: Oku kuthetha ukuba neqabane elingaphezu kwesinye ngaxesha-nye, ingelilo iqela odibana nalo ngesondo).

Expects a single option response (required)

Ewe [1]

Hayi [2]

Ndiyala ukuphendula [91]

### 8.5 Knowledge of partners HIV status past year

Kumaqabane okhe wadibana nawo ngesondo kunyaka ophelileyo, mangaphi kuwo onolwazi ngemeko yawo ye-HIV?

Expects a numeric response (required)

#### Constraints

Response must be Less Than or Equal 'Sexual partners in previous year (8.3)'

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 (8.7)

### 8.6 Number partners HIV+ past year

Mangaphi ekuthiwa a-HIV+ kuloo maqabane akho esondo onyaka ophelileyo?

Expects a numeric response (required)

#### Constraints

Response must be Less Than or Equal 'Sexual partners in previous year (8.3)'

Response must be Greater Than or Equal '0'

### 8.7 Any partners engaged in HIV status discussion past year

Kuloo maqabane akho esondo ##ERROR: Missing question reference## , mangaphi okhe wathetha nawo ngemeko yeHIV?

Expects a numeric response (required)

#### Constraints

Response must be Less Than or Equal 'Sexual partners in previous year (8.3)'

Response must be Greater Than or Equal '0'

### 8.8 Knowledge of sexual partners other sexual relationships last year



Kumaqabane onyaka ophelileyo, mangaphi ocinga ukuba nawo ebedibene namanye amabhinqa kwangelo xesha ebedibana nawe ngesondo?

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 (8.3)'*

---

## Section 9. Partnerships – Current Sexual Behaviour

### 9.1 Current Partners Prompt

Kweli candela lilandelayo ndiza kukubuzza imibuzo ngeqabane okanye ngamaqabane odibene nawo ngesondo kutshanje. Kutshanje kuthetha nabani na okhe wadibana naye ngesondo kwiinyanga ezintathu ezigqithileyo.

### 9.2 Sexual partners last 3 months

Bangaphi abantu odibene nabo ngesondo ezinyangeni ezintathu ezigqithileyo?

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 (8.3)'*

### 9.3 Concurrent sexual partners last 3 months

Kwakha kwakho ixesha, ezinyangeni ezi-3 ezigqithileyo apho wawunamaqabane esondo amabini okanye ngaphezu kwelo nani ngexesha elinye? (Qaphela mPhathi wodliwano-ndlebe: Ngaphezu kweqabane elinye ngaxeshanye, akuthethwa ngeqela odibana nalo ngesondo).

Expects a single option response (required)

- Ewe [1]
- Hayi [2]
- Ndiyala ukuphendula [91]

---

Repeat this section for value of *Sexual partners last 3 months (9.2)*

## Section 10. Partnerships - Current Sexual Behaviour (Part 2)

### 10.1 Partner HIV Status

Ngokokwazi kwakho, eli qabane linayo intsholongwane kaGawulayo eyi-HIV?

Expects a single option response (required)

- Ewe [1]
- Hayi [2]
- Andazi [99]
- Ndiyala ukuphendula [91]

### 10.2 Discussed Own Status with Partner

Ingaba wena neqabane lakho benikhe nathetha ngesimo sakho seNtsholongwane kaGawulayo?

Expects a single option response (required)

- Ewe [1]
- Hayi [2]
- Ndiyala ukuphendula [91]

### 10.3 Asked Partner to Test

Ulibongozile eli qabane ukuba maliyokuxilongwa kukhangelwe intsholongwane i-HIV?

Expects a single option response (required)

- Ewe [1]
- Hayi [2]

è Ndiyala ukuphendula [91]

---

#### 10.4 Partner had Other Partners

Ucinga ukuba eli qabane belinabo abanye ababhinqileyo ebelisabelana nabo ngesondo?

Expects a single option response (required)

è Ewe [1]

è Hayi [2]

è Andazi [99]

è Translate to Xhosa: Decline to answer [91]

---

#### 10.5 Partner Condom Use

Kumaxesha oqibele ngawo ali-10 okudibana kwakho ngesondo neli qabane, kuloo maxesha ali-10 uyisebenzise amaxesha angaphi ikhondom?

Expects a single option response (required)

è 0 [0]

è 1 [1]

è 2 [2]

è 3 [3]

è 4 [4]

è 5 [5]

è 6 [6]

è 7 [7]

è 8 [8]

è 9 [9]

è 10 [10]

è Ndiyala ukuphendula [91]

---

## Section 11. Disclosure & Protection

Prerequisites

Skip when *HIV test result (7.5)* Not Equal 'HIV Positive [1]'

#### 11.1 Support Prompt

Enkosi. Kwimibuzo embalwa elandelayo ndiza kuthetha ngokunika ingxelo nangenkxaso, malunga nemeko yakho ye-HIV.

---

Prerequisites

Skip when *HIV test result (7.5)* Not Equal 'HIV Positive [1]'

#### 11.2 Able to disclose

Ukuba ungafuna ukuthetha ngemeko yakho ye-HIV, ubusenokuyenza loo nto?

Expects a single option response (required)

è Ewe [1]

è Hayi [2]

è Andiqinisekanga [99]

è Ndiyala ukuphendula [95]

---

Prerequisites

Skip when *HIV test result (7.5)* Not Equal 'HIV Positive [1]'

Skip when *Current Partner BS2 (2.7)* Not Equal 'Ewe [1]'

#### 11.3 Disclosed to Partner

Iqabane lakho sowukhe walixelela ngemeko yakho ye-HIV?

Expects a single option response (required)

è Ewe [1]

è Hayi [2]

è Andinalo iqabane. [3]

Prerequisites  
Skip when *HIV test result (7.5)* Not Equal 'HIV Positive [1]'

#### 11.4 Disclosed to Family

Mangaphi amalungu osapho osele uwaxelele ngemeko yakho ye-HIV?

Expects a numeric response (required)

Constraints

Response must be Greater Than or Equal '0'

---

Prerequisites  
Skip when *HIV test result (7.5)* Not Equal 'HIV Positive [1]'

#### 11.5 Disclosed to Others

Ngaphandle kwabakowenu, bangaphi abantu bangaphandle obaxeleleyo ngemeko yakho ye-HIV?

Expects a numeric response (required)

Constraints

Response must be Greater Than or Equal '0'

---

Prerequisites  
Skip when *HIV test result (7.5)* Not Equal 'HIV Positive [1]'

#### 11.6 Inform sister of status at delivery

Uziva uzithembile ukuba ungamxelela umongikazi onguSister weklinikhi yakho ngemeko yakho ye-HIV xa usiya kubeleka usana?

Expects a single option response (required)

- è Ewe [1]
  - è Hayi [2]
  - è Andiqinisekanga [99]
  - è Ndiyala ukuphendula [91]
- 

Prerequisites  
Skip when *HIV test result (7.5)* Not Equal 'HIV Positive [1]'

#### 11.7 Prevention of further infection

Njengoko sowuyazi imeko yakho, uzimisele ukuzikhusela njani ukuze ungabe uphinde usulelwe nge-HIV?

Expects multiple selected options (required)

- è Thembeka [1]
  - è Sebenzisa iikhondom [2]
  - è Zila / yeka [3]
  - è Yiya kwingxilongo ye-HIV [4]
  - è Akukhonto [5]
  - è Enye into [95]
  - è Ndiyala ukuphendula [91]
- 

Prerequisites  
Skip when *HIV test result (7.5)* Not Equal 'HIV Positive [1]'

Skip when *Current Partner BS2 (2.1)* Not Equal 'Ewe [1]'

#### 11.8 Comfortable talking to partner

Kwezi meko zilandelayo yeyiphi, (ukuba ikhona) oziva ukhululekile ukuthetha ngayo neqabane lakho?

Expects multiple selected options (required)

- è Malunga nokukhulelwa [1]
- è Malunga nentsholongwane i-HIV [2]
- è Malunga nokucela uncedo xa ulufuna [3]
- è Malunga nokuthetha ngokungafihlisiyo xa izinto zingalunganga [4]
- è Malunga nokuyixela imeko yakho ye-HIV [5]
- è Akukho nanye kwezi mpendulo zingentla [6]
- è OKO AKUSEBENZI, andinalo iqabane [7]

è Ndiyala ukuphendula [91]

---

Prerequisites

Skip when *HIV test result (7.5)* Not Equal 'HIV Positive [1]'

#### 11.9 Comfortable talking to clinic sister or nurse

Kwezi meko zilandelayo yeyiphi, (ukuba ikhona) oziva ukhululekile ukuthetha ngayo nomongikazi okanye nosister weklinikhi yakho?

Expects multiple selected options (required)

- è Malunga nokukhulelwa [1]
  - è Malunga nentsholongwane i-HIV [2]
  - è Malunga nokucela uncedo xa ulufuna [3]
  - è Malunga nokuthetha ngokungafihlisiyo xa izinto zingalunganga [4]
  - è Malunga nokuyixela imeko yakho ye-HIV [5]
  - è Akukho nanye kwezi mpendulo zingentla [6]
  - è Ndiyala ukuphendula [91]
- 

Prerequisites

Skip when *HIV test result (7.5)* Not Equal 'HIV Positive [1]'

#### 11.10 Comfortable talking to female relative/friend

Kwezi meko zilandelayo yeyiphi, (ukuba ikhona) oziva ukhululekile ukuthetha ngayo nomama wakho/ nodadewenu osisizalwana okanye nomhlobokazi wakho?

Expects multiple selected options (required)

- è Malunga nokukhulelwa [1]
  - è Malunga nentsholongwane i-HIV [2]
  - è Malunga nokucela uncedo xa ulufuna [3]
  - è Malunga nokuthetha ngokungafihlisiyo xa izinto zingalunganga [4]
  - è Malunga nokuyixela imeko yakho ye-HIV [5]
  - è Akukho nanye kwezi mpendulo zingentla [6]
  - è Ndiyala ukuphendula [91]
- 

Prerequisites

Skip when *HIV test result (7.5)* Not Equal 'HIV Positive [1]'

Skip when *Disclosed to Partner (11.3)* Not Equal 'Ewe [1]'

#### 11.11 Conflict due to status

Phakathi kwakho neqabane lakho, nixabene kangakanani emva kokuba uxilongiwe wafunyaniswa ukuba une-HIV?

Expects a single option response (required)

- è Ayikho [1]
  - è Kancinci [2]
  - è Kaninzi kakhulu. [3]
  - è Ininzi ingxabano [4]
  - è Ndiyala ukuphendula [91]
- 

Prerequisites

Skip when *HIV test result (7.5)* Not Equal 'HIV Positive [1]'

#### 11.12 Conflict in the home

Ingakanani ingxabano phakathi kwakho nabakowenu?

Expects a single option response (required)

- è Ayikho [1]
  - è Kancinci [2]
  - è Kaninzi kakhulu. [3]
  - è Ininzi ingxabano [4]
  - è Ndiyala ukuphendula [91]
- 

## Section 12. Relationships and violence

Prerequisites  
Skip when *Current Partner BS2 (2.1)* Not Equal 'Ewe [1]'

### 12.1 Relationship Prompt

Imibuzo embalwa elandelayo imalunga nobudlelwane osenabo neqabane lakho.

Prerequisites  
Skip when *Current Partner BS2 (2.1)* Not Equal 'Ewe [1]'

### 12.2 Frequency quarrels

Kobu budlelwane usenabo, kukaninzi kangakanani unokutsho ukuba senikhe naxabana? Ungathi zange nixabane, kunqabile ukuxabana kwenu, ngamanye amaxesha niyaxabana okanye nixabana qho?

Expects a single option response (required)

- è Zange [1]
- è Kunqabile oko. [2]
- è Ngamanye amaxesha [3]
- è Yenzeka qho [4]

Prerequisites  
Skip when *Current Partner BS2 (2.1)* Not Equal 'Ewe [1]'

### 12.3 Talk about relationship to friend

Uyathetha nomhlobo wakho okanye nesalamane sakho ngeengxaki zobudlelwane bakho?

Expects a single option response (required)

- è Ewe [1]
- è Hayi [2]

Prerequisites  
Skip when *Current Partner BS2 (2.1)* Not Equal 'Ewe [1]'

### 12.4 Quality current relationship

Ungatsho ukuba ubudlelwane bakho buqaqambile, bulungile, buhle nje, okanye bonakele?

Expects a single option response (required)

- è Ngokuqaqambileyo [1]
- è Kakuhle [2]
- è Kulungile [3]
- è Akulunganga [4]

### 12.5 Violence Prompt

Amadoda alwa qho nezithandwa zawo eziziintombi, le milo iba kukubethwa emzimbeni kumaxesha amaninzi. Ndiza kubuza imibuzo ngale nto ngoba sifuna ulwazi olulolunye ngamava abantu ababhinqileyo ebomini babo. Ndifuna uthethe ngokukhululekileyo, yaye ukhumbule ukuba yonke into oyithethayo izakuba yimfihlelo.

### 12.6 Slap

Kwiinyanga ezili-12 ezigqithileyo, iqabane onalo ngoku okanye nasiphi na isithandwa sikubethile na ngempama okanye sikugibisele ngento enokukwenzakalisa? Le nto yenzeke amaxesha amaninzi, amaxesha ambalwa, yenzeke kanye okanye khangenye yenzeke?

Expects a single option response (required)

- è Zange [1]
- è Kanye [2]
- è Amaxesha ambalwa [3]
- è Kaninzi / amaxesha amaninzi [4]

### 12.7 Shove

Kwiinyanga ezili-12 ezigqithileyo, iqabane onalo ngoku okanye nayiphi na indoda ikhe yakutyhala na okanye yakusunduzisa? Le nto yenzeke amaxesha amaninzi, amaxesha ambalwa, yenzeke kanye okanye khangenye yenzeke?

Expects a single option response (required)

- è Zange [1]
- è Kanye [2]

è Amaxesha ambalwa [3]

è Kaninzi / amaxesha amaninzi [4]

---

#### 12.8 Punch

Kwiinyanga ezili-12 ezigqithileyo, iqabane onalo ngoku okanye nayiphi na indoda, ikhe yakubetha ngenqindi okanye ngenye into enokukwenzakalisa? Le nto yenzeke amaxesha amaninzi, amaxesha ambalwa, yenzeke kanye okanye khange yenzeke?

Expects a single option response (optional)

è Zange [1]

è Kanye [2]

è Amaxesha ambalwa [3]

è Kaninzi / amaxesha amaninzi [4]

---

#### 12.9 Weapon

Kwiinyanga ezili-12 ezigqithileyo, iqabane onalo ngoku okanye nayiphi na indoda, ibikhe yakoyikisa na ngokuthi iza kusebenzisa umpu, imela okanye isixhobo esinokukwenzakalisa? Le nto yenzeke amaxesha amaninzi, amaxesha ambalwa, yenzeke kanye okanye khange yenzeke?

Expects a single option response (optional)

è Zange [1]

è Kanye [2]

è Amaxesha ambalwa [3]

è Kaninzi / amaxesha amaninzi [4]

---

#### Prerequisites

Skip when *Slap (12.6)* Not Equal 'Zange [1]'

Skip when *Shove (12.7)* Not Equal 'Zange [1]'

Skip when *Punch (12.8)* Not Equal 'Zange [1]'

Skip when *Weapon (12.9)* Not Equal 'Zange [1]'

#### 12.10 No physical violence confirmation

Xa kunjalo kulungile na ukuqinisekisa ukuba, kwiinyanga ezili-12 ezigqithileyo, khange wenzakaliswe ngokwasemzimbeni liqabane onalo ngoku okanye siso nasiphi na isithandwa?

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

è Ewe [1]

è Hayi [2]

#### Branches

If response Equals 'Ewe [1]' then skip to *Antenatal Health Prompt (13.1)*

---

#### 12.11 Willing to Tell Most Recent Date

Ungakwzi ukusixela ngemini yokugqibela apho uthe waxabana neqabane lakho naphela nisolwa?

Expects a single option response (required)

è Ewe [1]

è Hayi [2]

#### Branches

If response Not Equal 'Ewe [1]' then skip to *Number violent episodes (12.13)*

---

#### Prerequisites

Skip when *No physical violence confirmation (12.10)* Equals 'Ewe [1]'

#### 12.12 Most recent violence

Ibileliphilelona xesha lakutshanje apho ubukhe waphikisana nesithandwa sakho naza nabethana?

Expects a date response (optional)

#### 12.13 Number violent episodes

Kwiinyanga ezili-12 ezigqithileyo, bezingaphi izihlandlo wena uphikisana neli qabane unalo ngoku nada nabethana?

Expects a numeric response (required)

#### Prerequisites

Skip when *Current Partner BS2 (2.1)* Not Equal 'Ewe [1]'

#### 12.14 Violence from current partner in previous year

Kwiinyanga ezili-12 ezigqithileyo ubukhe waphikisana neqabane lakho eli u nalo nade nabethana?

Expects a single option response (required)

- Ewe [1]
- Hayi [2]
- Akusebenzi oko (ngoku andinalo iqabane) [3]
- Ndiyala ukuphendula [91]

## Section 13. Baseline Knowledge – Antenatal Health

### 13.1 Antenatal Health Prompt

Ngoku ndiza kukubuzisa imibuzo ngempilo yakho phambi kokuba ufumane usana. Nangona usenokungabinazo iimpendulo zemibuzo yonke, nceda uphendule umbuzo ngamnye ngendlela eyanelisayo.

### 13.2 Ok to have little alcohol

INGxelo: Kulungile ukuba umama okhulelweyo makasele utywala ukuze aphumle.

Expects a single option response (required)

- Ndiyavuma [1]
- Andivumi [2]
- Andazi [3]
- Ndiyala ukuphendula [91]

### 13.3 Weight gain is healthy

INGxelo: Okukhona busongezeleleka ubunzima bomama okhulelweyo, kokukhona lusempilweni usana.

Expects a single option response (required)

- Ndiyavuma [1]
- Andivumi [2]
- Andazi [3]
- Ndiyala ukuphendula [91]

### 13.4 Vitamins Prompt

Enkosi. Ngoku sibuzisa ngazo naziphi na iivithamini okanye izimbiwa onokuba uyazitya.

### 13.5 V&M Supplementation

Xa ukhulelweyo uyazitya na naziphi na kwezi zinto zilandelayo?

Expects multiple selected options (required)

- i-multivithamini [1]
- Nayiphi na ivithamini ka-B complex efumaneka emifunweni [2]
- Iipilisi / ayoni thonikhi [3]
- Ikhalsiyam / yenza inxalenye yamathambo namazinyo [4]
- Asiyiyo nanye kwezi [5]

### 13.6 Milk and Dairy

Kwiveki ephelileyo, kukaninzi kangakanani usitya ubisi nezinye izityo ezenziwe ngalo? (umzekelo: amasi, iyoghurt netshizi).

Expects a numeric response (required)

*Constraints*

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

### 13.7 Fruit and vegetables

Kwiveki ephelileyo, kukaninzi kangakanani usitya iziqhamo nemifuno?

Expects a numeric response (required)

*Constraints*

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

---

### 13.8 Meats

Kwiveki ephelileyo, kukaninzi kangakanani usitya inyama? (umzekelo: eyenkuku, eyenkomo, eyehagu)

Expects a numeric response (required)

*Constraints*

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

---

### 13.9 Fish

Kwiveki ephelileyo, kukaninzi kangakanani usitya intlanzi?

Expects a numeric response (required)

*Constraints*

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

---

### 13.10 Eggs

Kwiveki ephelileyo, kukaninzi kangakanani usitya amaqanda?

Expects a numeric response (required)

*Constraints*

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

---

### 13.11 Margarine and oil

Kwiveki ephelileyo, kukaninzi kangakanani usitya imajarini ne-oyille?

Expects a numeric response (required)

*Constraints*

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

---

### 13.12 Sugar and chocolates

Kwiveki ephelileyo, kukaninzi kangakanani usitya iswekile neetshokoletshi?

Expects a numeric response (required)

*Constraints*

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

---

### 13.13 Fizzy cold drinks

Kwiveki ephelileyo, kukaninzi kangakanani usela iziselo ezibandayo nezihwahlwazayo?

Expects a numeric response (required)

*Constraints*

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

---

### 13.14 Breads, samp and porridge

Kwiveki ephelileyo, kukaninzi kangakanani usitya isonka, umngqusho ongenazimbotyi nesidudu esiphekiweyo?

Expects a numeric response (required)

*Constraints*

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



### 13.15 Beans and lentils

Kwiveki ephelileyo, kukaninzi kangakanani usitya iimbotyi neelentile?

Expects a numeric response (required)

*Constraints*

Response must be Greater Than or Equal '0'

---

## Section 14. Baseline Knowledge – Delivery Health

### 14.1 Delivery Prompt

Ngoku ndiza kukubuzza imibuzo ngexesha oluza kuzalwa ngalo usana lwakho.

---

### 14.2 Know where will deliver

Uyazazi ukuba uza kubelekela kweliphi iziko lempilo?

Expects a single option response (required)

- Ewe [1]
- Hayi [2]
- Ndiyala ukuphendula [91]

Branches

If response Equals 'Hayi [2]' then skip to *Post birth follow-up for mother (14.7)*

---

Prerequisites

Skip when *Know where will deliver (14.2)* Not Equal 'Ewe [1]'

### 14.3 Delivery Facility

Nceda uzikhethela indawo oza kubelekela kuyo.

Expects a single option response (required)

- I-Michael Mapongwana Day Hospital [1]
  - i-Site B Hospital / isiBhedlele sase-Site B [2]
  - IsiBhedlele saseTygerberg [3]
  - IMowbray Maternity Hospital / isiBhedlele sokuBelekisa esiseMowbray [4]
  - Ikhaya (ngaphandle kwesibhedlele) [5]
  - IMpuma-Koloni [6]
  - IBishop Lavis [7]
  - Ezinye [95]
- 

### 14.4 Travel means during day

Uyenzile indlela yokuya esibhedlele xa uqalisayo ukulunywa ngexesha lasemini?

Expects a single option response (required)

- Ewe [1]
  - Hayi [2]
  - Ndiyala ukuphendula [91]
- 

### 14.5 Travel means during night

Uyenzile indlela yokufikelela esibhedlele xa uqalisayo ukulunyelwa ukuzala ngokuhlwa?

Expects a single option response (required)

- Ewe [1]
  - Hayi [2]
  - Ndiyala ukuphendula [91]
- 

### 14.6 Delivery companion

Ukhona umntu omcelileyo ukuze akukhapse xa usiya kubeleka?

Expects a single option response (optional)

- è Ewe [1]
- è Hayi [2]
- è Andazi [99]
- è Ndiyala ukuphendula [91]

---

#### 14.7 Post birth follow-up for mother

Emva kokuba ubelekile, lelphi ixesha kanye elilandelayo umama alindeleke ngalo ukuba aye eklinikhi?

Expects a single option response (required)

- è 1 iveki [1]
- è 2 iiveki [2]
- è 3 iiveki [3]
- è 4 iiveki [4]
- è 5 iiveki [5]
- è 6 iiveki [6]
- è 7 iiveki [7]
- è 8 iiveki [8]
- è 9 iiveki [9]
- è 10 iiveki [10]
- è Andazi [99]

---

## Section 15. Maternal Knowledge of Vertical Transmission

Prerequisites

Skip when *HIV test result (7.5)* Equals 'HIV Positive [1]'

#### 15.1 Skip Section- Interviewer Instruction Only

Oku kwenzelwa umPhathi wodliwano-ndlebe: Nceda UNGAFUNDELI UKUBA MAWUVAKALE EBANTWINI: Eminye imibuzo iza kutsitywa ngoba ifanele kuphela oomama abaphenduleyo ngelithi banayo intsholongwane i-HIV.

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

- è Qhuba [1]

Branches

If response Equals 'Qhuba [1]' then skip to *Baby Feeding Prompt (16.1)*

If response Not Equal 'Qhuba [1]' then skip to *Baby Feeding Prompt (16.1)*

---

#### 15.2 Medicine Prompt

Ngoku kukho imibuzo emalunga namayeza afanele wena nosana lwakho. Nangona usenokungabinazo iimpendulo zemibuzo yonke, nceda uphendule umbuzo ngamnye ngendlela eyanelisayo.

---

#### 15.3 Maternal Knowledge Statements Prompt

Ngoku ndiza kukufundela iingxelo. Nceda undixelele ukuba uyandivumela.

---

#### 15.4 HIV+ mother =HIV+ baby

INGxelo: Ukuba umama unayo i-HIV, ngokuqinisekileyo nosana lwakhe lwakubanayo i-HIV.

Expects a single option response (required)

- è Ewe / yinyaniso [1]
- è Hayi / bubuxoki [2]
- è Andazi. [99]
- è Ndiyala ukuphendula [91]

---

#### 15.5 Mothers can act to protect child

INGxelo: Oomama abane-HIV akukho mpembelelo ingako banokubanayo ekuncedeni iintsana zabo ukuze zingabinayo i-HIV.

Expects a single option response (optional)

- è Ewe / yinyaniso [1]
- è Hayi / bubuxoki [2]
- è Andazi. [99]
- è Ndiyala ukuphendula [91]

---

### 15.6 Mixed feeding

INgxelo: Ukutya okuxutyiweyo usana lungekabi ludala kangangeenyanga ezi-6 akunyusi mathuba okuba usana malufunyanwe yintshongwane i-HIV.

Expects a single option response (optional)

- è Ewe / yinyaniso [1]
- è Hayi / bubuxoki [2]
- è Andazi. [99]
- è Ndiyala ukuphendula [91]

---

### 15.7 Healthy behaviours to protect baby

[UMPHATHI WODLIWANO-NDLEBE: KULO MBUZO CELA UMAMA AKUXELELE UKUBA ZIINTONI NA, FAKA UPHAWU KUZO ZONKE EZICHAPHAZELEKAYO] Zintoni ezi unokuzenza uqinisekisa ukuba usana lwakho lwakuzalwa lungenayo i-HIV?

Expects multiple selected options (required)

- è Akukhonto [1]
- è Sebenzisa kuphela indlela enye yokondla [2]
- è Kukuncancisa qha [3]
- è Kukuncancisa ngebhotile qha [4]
- è Uqhaqho xa umama abeleka usana [5]
- è Kangangeenyanga ezili-18 usana lunike i-cotrimoxazole [6]
- è Ukunonophela iingono xa ndincancisayo [7]
- è Makuyiwe kwingxilongo ye-HIV xa usana luludala ngeeveki ezi-6 [8]
- è Usana xa luzalwayo malunikwe i-NVP [9]
- è Enye into [95]
- è Andazi [99]
- è Ndiyala ukuphendula [91]

---

## Section 16. Feeding Strategies and Prevention of Infections

### 16.1 Baby Feeding Prompt

Enkosi. Ngoku sesisondelela esiphelweni solu dliwano-ndlebe. Kukho eminye imibuzo embalwa endinayo ngokondliwa kosana.

---

### 16.2 Feeding plan first 6 months

Usana lwakho uzimisele ukulondla njani kwiinyanga zokuqala ezi-6 luzelwe?

Expects a single option response (required)

- è Ngokuncancisa kuphela [1]
- è Ngesondlo seformula kuphela [2]
- è Ngokuncancisa nange-formula (nokunye ukutya okufana nendengana, amanzi ne-glucose= isindlo esixutyiweyo) [3]
- è Ndiyala ukuphendula [91]

Branches

If response Equals 'Ngokuncancisa kuphela [1]' then skip to *Routine Prompt (17.1)*

---

### 16.3 Formula feed resources

Xa unikwe ukuba ulungiselele isondlo seformula, (okanye isondlo esixutyiweyo), uyafikelela kuyo nayiphi na kwezi zinto zilandelayo?

Expects multiple selected options (required)

- è Imali okanye ezinye iindlela zokuzisa i-formula xa ingafumanekiyo eklinikh [1]
- è Amanzi aphuma endlwini yakho [2]

è Umbane wokubilisa amanzi [3]

è Asiyiyo nanye kwezi [4]

è Ndiyala ukuphendula [91]

---

## Section 17. Routines

### 17.1 Routine Prompt

Ngoku ndithanda ukukubuza imibuzo eqhelekileyo ngemisebenzi yakho kwiintsuku ezimbalwa ezidlulileyo.

---

### 17.2 Wake-up time yesterday

Kusasa izolo uvuke ngaliphi ixesha?

Expects a time response (required)

---

### 17.3 Wake up time 2 days ago

Kwiintsuku ezimbini ezidlulileyo uvuke ngaliphi ixesha?

Expects a time response (required)

---

### 17.4 Wake up time 3 days ago

Kwiintsuku ezintathu ezidlulileyo uvuke nini?

Expects a time response (required)

---

### 17.5 Bed time yesterday

Izolo ngokuhlwa ulele ngaliphi ixesha?

Expects a time response (required)

---

### 17.6 Bed time 2 days ago

Kwiintsuku ezimbini ezidlulileyo ulele ngaliphi ixesha?

Expects a time response (required)

---

### 17.7 Bed time 3 days ago

Kwiintsuku ezintathu ezidlulileyo ulele nini?

Expects a time response (required)

---

### 17.8 Main meal yesterday

Isidlo esiyintloko usipheke ngaliphi ixesha izolo?

Expects a time response (required)

---

### 17.9 Main meal 2 days ago

Isidlo esiyintloko usipheke ngaliphi ixesha kwiintsuku ezimbini ezidlulileyo?

Expects a time response (required)

---

### 17.10 Main meal 3 days ago

Isidlo esiyintloko usipheke ngaliphi ixesha kwiintsuku ezintathu ezidlulileyo?

Expects a time response (required)

---

**17.11 Meal together yesterday**

Izolo abakowenu ebemangaphi amaxesha besitya kunye?

Expects a numeric response (required)

---

**17.12 Meal together 2 days ago**

Kwiintsuku ezimbini ezidlulileyo abakowenu ebemangaphi amaxesha besitya kunye?

Expects a numeric response (required)

---

**17.13 Meal together 3 days ago**

Kwiintsuku ezintathu ezidlulileyo abakowenu ebemangaphi amaxesha besitya kunye?

Expects a numeric response (required)

---

**17.14 Household chores yesterday**

Izolo uqalise nini ukwenza umsebenzi wendlu?

Expects a time response (required)

---

**17.15 Household chores 2 days ago**

Kwiintsuku ezimbini ezidlulileyo uqalise nini ukwenza umsebenzi wendlu?

Expects a time response (required)

---

**17.16 Household chores 3 days ago**

Kwiintsuku ezintathu ezidlulileyo uqalise nini ukwenza umsebenzi wendlu?

Expects a time response (required)

---

**17.17 Conflict at meal times**

Ezintsukwini ezintathu ezidlulileyo ibingakanani ingxabano ngexesha lokutya?

Expects a single option response (required)

Ayikho [1]

Kancinci [2]

Kaninzi [3]

Ininzi ingxabano [4]

Ndiyala ukuphendula [91]

---

## Section 18. Baseline Stated Future Plans

**18.1 Future Plans Prompt**

Eli licandelo lokugqibela lolu dliwano-ndlebe. Ngoku ndiza kukubuzza imibuzo ngezicwangciso onazo zexesha elizayo.

---

**18.2 Return to work**

Uzimisele ukubuyela emsebenzini okanye esikolweni emva kokuba luzelwe usana lwakho?

Expects a single option response (required)

- ê Ewe / yinyaniso [1]
  - ê Hayi bubuxoki [2]
  - ê Andazi [3]
  - ê Akwenzeki oko (akasebenzi / akaqeshwanga) [4]
  - ê Ndiyala ukuphendula [91]
- 

### 18.3 Time return work

Uza kubuyela emsebenzini xa luludala kangakanani (usana lwakho)?

Expects a single option response (required)

- ê Kungaphantsi kwenyanga enye [1]
  - ê 1 inyanga [2]
  - ê 6 iiveki [3]
  - ê 3 iinyanga [4]
  - ê 6 iinyanga [5]
  - ê 9 iinyanga [6]
  - ê Ngunyaka omnye [7]
  - ê Eminye / enye [99]
  - ê Andazi [95]
  - ê Ndiyala ukuphendula [91]
- 

### 18.4 Caregiver in mothers absence

Ngubani ozakuba ngoyena nompilo ugcina usana lwakho xa ungekhoyo?

Expects multiple selected options (required)

- ê Lusapho lwakhe / lusapho lwam [1]
  - ê NguMazala noBawozala [2]
  - ê UNonophelo oluhlawulelwayo [3]
  - ê Abahlobo [4]
  - ê Ngummelwane [5]
  - ê Andazi [99]
  - ê Ndiyala ukuphendula [91]
- 

## Section 19. End of Survey

### 19.1 Voucher given

Umthathi-nxaxheba uyinikiwe na ivawutsha ye-R80 ukuze athenge ukutya?

Expects a single option response (required)

- ê Ewe [1]
  - ê Hayi [2]
- 

### 19.2 End

Ufikelele esiphelweni solu phando. Ungabuyela emva uhlolisise indlela obuphendule ngayo okanye ungazikhethela OLULANDELAYO ukuze ugqibezele icandelo.

---

---

## **APPENDIX C**

**Questions used from PMMS for this sub-study from baseline questionnaire**

Questions to be used from part 1 of baseline assessment (both English and Xhosa versions) for this sub-study	Questions to be used from part 2 of baseline assessment (both English and Xhosa versions) for this sub-study
3.2	2.2
3.3	5.2
3.4	5.3
3.5	5.4
3.7	5.5
4.2	5.7
4.3	5.9
6.2	6.2
6.3	6.3
6.4	6.5
6.5	
6.6	
6.7	
7.2	
7.3	
7.4	
7.5	
7.6	
8.2	
8.3	
8.4	
9.2	
9.3	
9.4	
9.8 and 9.9	



## **APPENDIX D**

# Birth Assessment (English)

Last Modified by: Clyral Support on 12 May 2009 16:01:20 Revision number: 320 Field Count: 140

---

## Section 1. Participant Identifier

### 1.1 Participant ID

Please enter the participants 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 numeric 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 *Infant birth count (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 (19.2)*

If response Not Equal 'Fear of stigma [1]' then skip to *End (19.2)*

---

## Section 3. Baby - Birth

### 3.1 Infant birth count

How many infants did you give birth to?

Expects a numeric response (required)

---

Repeat this section for value of *Infant birth count (3.1)*

## Section 4. Baby – Demographics

### 4.1 Demographics Prompt

Now I have a few questions about the baby and your delivery at the hospital or birth facility.

---

### 4.2 Delivery facility

At what hospital was the baby delivered?

Expects a single option response (required)

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]

---

### 4.3 Delivery Type

Type of delivery:

Expects a single option response (required)

Vaginal [1]

Caesarian [2]

---

### 4.4 Birth hospital duration

How many days did you spend in the hospital?

Expects a single option response (required)

Less than 1 day [1]

1 day [2]

More than one day [3]

---

### 4.5 Baby spent more than 24 hrs hospital

Did your baby spend more than 24 hours in hospital?

Expects a single option response (required)

Yes [1]

No [2]

Branches

#### 4.6 Baby hospital duration

How many days did your baby spend in the hospital?

Expects a single option response (required)

- Less than 3 days [1]
  - More than 3 days, less than 2 weeks [2]
  - More than 2 weeks [3]
- 

#### 4.7 Baby Birth Date

On what date was your baby born?

Expects a date response (required)

#### 4.8 Baby Gender

Is your baby a boy or a girl?

Expects a single option response (required)

- Male [1]
  - Female [2]
- 

#### 4.9 Baby Current Weight

Baby's current weight (kg):

Expects a numeric response (required)

*Constraints*

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

*Response must be Less Than or Equal '15'*

---

#### 4.10 Baby Current Length

Baby's current length (cm):

Expects a decimal response (required)

*Constraints*

*Response must be Greater Than or Equal '15'*

*Response must be Less Than or Equal '100'*

---

#### 4.11 Baby Current Head Circumference

Enter babys 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'*

---

#### 4.12 Clinic Card Available

Is your babys clinic card available for me to have a look at?

Expects a single option response (required)

- Yes [1]
- No [2]

Branches

If response Equals 'No [2]' then skip to *Feeding prompt (5.1)*

---

#### 4.13 Apgar Score (1min)

Apgar score (1 minute):

Expects a numeric response (optional)

---

#### 4.14 Apgar score (5 min)

Apgar score (5 minutes):

Expects a numeric response (optional)

---

#### 4.15 Birth Weight

Birth weight (kg):

Expects a decimal response (optional)

*Constraints*

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

*Response must be Less Than or Equal '10'*

---

#### 4.16 Birth Length

Birth length (crown-heel) (cm):

Expects a decimal response (optional)

*Constraints*

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

*Response must be Less Than or Equal '100'*

---

#### 4.17 Baby Birth Head Circumference

Enter babys head circumference at birth (cm):

Expects a decimal response (optional)

*Constraints*

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

*Response must be Less Than or Equal '100'*

---

## Section 5. Feeding

### 5.1 Feeding prompt

Thank you. Now I have a few questions about how you are feeding your baby.

---

### 5.2 Breast Milk Ever

Have you ever given your baby breast milk?

Expects a single option response (required)

Yes [1]

No [2]

Branches

If response Equals 'No [2]' then skip to *Feeding items (5.8)*

---

### 5.3 Breast after birth

Did you put your baby to the breast immediately after it was born?

Expects a single option response (required)

Yes [1]

No [2]

---

### 5.4 Fed colostrum

Did you feed your baby the first milk from your breast?

Expects a single option response (required)

- Yes [1]
- No [2]

---

### 5.5 When baby start breast milk

When did you put the baby to the breast after birth?

Expects a single option response (required)

- Within the first hour [1]
- After the first hour and up to 12 hours [2]
- After 12 hours and up to 24 hours [3]
- After 24 hours and up to 48 hours (2nd day) [4]
- After 48 hours and up to 72 hours (3rd day) [5]
- After 72 hours (after the 3rd day) [6]

---

### 5.6 Breast problem

Have you had any infection, or problem with your breasts since the child has been born?

Expects a single option response (required)

- Yes [1]
- No [2]

Branches

If response Equals 'No [2]' then skip to *Feeding items (5.8)*

---

### 5.7 Type breast problem

What problems did you have?

Expects multiple selected options (required)

- Engorgement [1]
- Cracked nipples [2]
- Painful nipples [3]
- Bleeding nipples [4]
- Full, lumpy, painful breasts [5]
- Red, painful nipples with fever [6]
- Other [95]

---

### 5.8 Feeding items

Have you ever given your baby any of the following items?

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]
- 

#### 5.9 Other responsible feeding choice

Was anyone else responsible for making a decision on how to feed your baby?

Expects a single option response (required)

- Yes [1]
- No [2]

Branches

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

---

#### 5.10 Person responsible

Who was responsible?

Expects a single option response (required)

- Partner / Husband [1]
  - Mother in law [2]
  - Mother [3]
  - Nurse [4]
  - Other [5]
- 

## Section 6. Child Care

### 6.1 Child Care Prompt

Now there are a few questions about child care issues and business things to do as a mother.

---

### 6.2 Child registration

Did you register the baby's birth?

Expects a single option response (required)

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

Branches

If response Not Equal 'Yes [1]' then skip to *Help when unavailable (6.4)*

---

### 6.3 Birth Certificate

Does your baby have a birth certificate?

Expects a single option response (required)

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

#### 6.4 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]
  - Decline to answer [91]
- 

## Section 7. Father of the child

### 7.1 Father of Child Prompt

Now I have one question about the father of your child.

---

### 7.2 Father acknowledged baby

Has the father of this baby acknowledged the baby to his family?

Expects a single option response (required)

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

## Section 8. Mental Health (EPDS)

### 8.1 Thoughts and Feelings 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.

---

### 8.2 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]
- 

### 8.3 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]
- 

### 8.4 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]



---

**8.5 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]
- 

**8.6 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]
- 

**8.7 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]
- 

**8.8 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]
- 

**8.9 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]
- 

**8.10 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]
- 

**8.11 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 9. Mental Health (GHQ)

### 9.1 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.

---

### 9.2 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]
- 

### 9.3 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]
- 

### 9.4 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]
- 

### 9.5 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]
- 

### 9.6 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]
-

**9.7 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]
- 

**9.8 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]
- 

**9.9 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]
- 

**9.10 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]
- 

**9.11 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]
- 

**9.12 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]
- 

**9.13 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 10. Enjoyable activities

### 10.1 Past month enjoyable activities

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?

Expects a single option response (required)

Never [1]

Once or twice a week [2]

Several times a week [3]

Daily [4]

---

### 10.2 Favourite Colour

What is your favourite colour?

Expects a single line text response (required)

---

## Section 11. General health

### 11.1 Self regarded health - mother

How do you regard your general health?

Expects a single option response (required)

Very Good [1]

Good [2]

Fair [3]

Poor [4]

---

### 11.2 Standard Diabetes - mother

Were you diagnosed with Diabetes before pregnancy?

Expects a single option response (required)

Yes [1]

No [2]

Decline to answer [91]

Branches

If response Not Equal 'Yes [1]' then skip to *Gestational diabetes - mother (11.5)*

---

### 11.3 Standard Diabetes medication - mother

Do you receive medication for your Diabetes?

Expects a single option response (required)

Yes [1]

No [2]

Decline to answer [91]

Branches

If response Equals 'No [2]' then skip to *Gestational diabetes - mother (11.5)*

---

### 11.4 Standard Diabetes TYPE medication - mother

Are you treated with tablets or injections for your Diabetes?

Expects a single option response (required)

Tablets [1]

Injections [2]

---

**11.5 Gestational diabetes - mother**

Were you diagnosed with Gestational Diabetes during pregnancy?

Expects a single option response (required)

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

Branches

If response Not Equal 'Yes [1]' then skip to *Standard hypertension - mother (11.7)*

---

**11.6 Gestational Diabetes medication - mother**

Do you receive insulin for your Gestational Diabetes?

Expects a single option response (required)

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

---

**11.7 Standard hypertension - mother**

Were you diagnosed with Hypertension before falling pregnant?

Expects a single option response (required)

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

---

**11.8 Gestational hypertension – mother**

Were you diagnosed with Hypertension during pregnancy?

Expects a single option response (required)

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

---

**11.9 Hypertension medication - mother**

Are you taking medication for your Hypertension at present?

Expects a single option response (required)

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

---

**11.10 Other medication**

Are you taking medication for any other disease at present?

Expects a single option response (required)

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

---

**11.11 Post birth conditions - mother**

Since the birth of your child, have you had 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]

---

#### 11.12 Traditional medicine - mother

Please tell us which of the following, if any, you have used since the time of your last assessment.

Expects multiple selected options (required)

- 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, lennon 's medicines) [6]
  - Decline to answer [91]
  - None [7]
- 

#### 11.13 Infant health perception

Is your child feeding well?

Expects a single option response (required)

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

#### 11.14 Infant illness

Has your child been sick since birth?

Expects a single option response (required)

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

Branches

If response Not Equal 'Yes [1]' then skip to *Crying lots (11.17)*

---

#### 11.15 Type infant illness

In which way has your child been sick?

Expects multiple selected options (required)

- Diarrhoea [1]
  - Vomiting [2]
  - Temperature [3]
  - Rash [4]
  - Skin infection [5]
  - Infection of umbilicus [6]
  - Fits [7]
  - Cough [8]
  - Yellow jaundice [9]
  - Stomach cramps [10]
  - Other [95]
- 

#### 11.16 Seek health care – infant

Did you take your child to the clinic or doctor for this/these health problems?

Expects a single option response (required)

- Yes [1]
  - No [2]
- 

#### 11.17 Crying lots

Do you feel your child is crying more than what you think is normal?

Expects a single option response (required)

Yes [1]

No [2]

---

## Section 12. TB

### 12.1 Participant TB

Since our last meeting have you tested 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 *Participant HH TB (12.3)*

---

### 12.2 Participant TB Treatment

Are you currently receiving treatment?

Expects a single option response (required)

Yes [1]

No [2]

Decline to answer [91]

---

### 12.3 Participant HH TB

Since our last meeting has anybody ELSE (that we haven't already spoken about) in your household had a diagnosis of TB?

Expects a single option response (required)

Yes [1]

No [2]

Don't Know [99]

Decline to answer [91]

Branches

If response Not Equal 'Yes [1]' then skip to *Tobacco use (13.1)*

---

### 12.4 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]

Decline to answer [91]

---

## Section 13. Substances

### 13.1 Tobacco use

Did you use any tobacco during pregnancy?

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 (13.3)*

---

### 13.2 Tobacco frequency

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

Expects a numeric response (required)

### 13.3 Tik

Did you use any tik during pregnancy?

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 (13.5)*

### 13.4 Tik frequency

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

Expects a numeric response (required)

### 13.5 Dagga

Did you use dagga during pregnancy?

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 (14.1)*

### 13.6 Dagga frequency

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

Expects a numeric response (required)

## Section 14. Alcohol

### 14.1 Alcohol Prompt

Thank you. Now I would like to ask you a few questions about alcohol. Please remember that all of your answers will be kept secret.

### 14.2 Participant Alcohol Drinking Frequency - Pre-birth Month

Within the last month, before your baby was born, about how often did you drink ANY alcoholic beverage? (Interviewer: Use a local typical cup and ask

Expects a single option response (required)

- Never [0]
- Less than once a month [1]
- Once a month [2]
- 2 to 3 times a month [3]
- Once a week [4]
- 2 times a week [5]
- 3 to 4 times a week [6]
- Nearly every day [7]
- Every day [8]

Branches



#### 14.3 Participant Alcohol Drinking Volume - Pre-birth Month

Within the last month, before your baby was born, 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 [0]
  - 3 or 4 [1]
  - 5 or 6 [2]
  - 7, 8 or 9 [3]
  - 10 or more [4]
- 

#### 14.4 Participant Alcohol 4+ Drinks Frequency - Pre-birth Month

Within the last month, before your baby was born, about how often did you drink FOUR or MORE drinks in a single day?

Expects a single option response (required)

- Never [0]
  - Less than once a month [1]
  - Once a month [2]
  - 2 to 3 times a month [3]
  - Once a week [4]
  - 2 times a week [5]
  - 3 to 4 times a week [6]
  - Nearly every day [7]
  - Every day [8]
- 

#### 14.5 Participant Alcohol 3+ Drinks Frequency - Pre-birth Month

Within the last month, before your baby was born, about how often did you drink THREE or MORE drinks in a single day?

Expects a single option response (required)

- Never [0]
  - Less than once a month [1]
  - Once a month [2]
  - 2 to 3 times a month [3]
  - Once a week [4]
  - 2 times a week [5]
  - 3 to 4 times a week [6]
  - Nearly every day [7]
  - Every day [8]
- 

#### 14.6 Participant Alcohol Drinking Frequency - Post Birth

Now that your baby is born, about how often do you drink ANY alcoholic beverage?

Expects a single option response (required)

- Never [0]
- Less than once a month [1]
- Once a month [2]
- 2 to 3 times a month [3]
- Once a week [4]
- 2 times a week [5]
- 3 to 4 times a week [6]
- Nearly every day [7]
- Every day [8]

Branches

If response Equals 'Never [0]' then skip to *Sexual Partner Prompt (15.1)*

---

#### 14.7 Participant Alcohol Any Drink Number - Post Birth

Now that your baby is 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 [0]
  - 3 or 4 [1]
  - 5 or 6 [2]
  - 7, 8 or 9 [3]
  - 10 or more [4]
- 

#### 14.8 Participant Alcohol 4+ Drinks Frequency - Post Birth

Now that your baby is born, about how often do you drink FOUR or MORE drinks in a single day?

Expects a single option response (required)

- Never [0]
  - Less than once a month [1]
  - Once a month [2]
  - 2 to 3 times a month [3]
  - Once a week [4]
  - 2 times a week [5]
  - 3 to 4 times a week [6]
  - Nearly every day [7]
  - Every day [8]
- 

#### 14.9 Participant Alcohol 3+ Drinks Frequency - Post Birth

Now that your baby is born, about how often do you drink THREE or MORE drinks in a single day?

Expects a single option response (required)

- Never [0]
  - Less than once a month [1]
  - Once a month [2]
  - 2 to 3 times a month [3]
  - Once a week [4]
  - 2 times a week [5]
  - 3 to 4 times a week [6]
  - Nearly every day [7]
  - Every day [8]
- 

#### 14.10 Participant Number Drinks High

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

Expects a numeric response (required)

#### 14.11 Participant External Alcohol Concern

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

Expects a single option response (required)

- Yes [1]
  - No [2]
- 

#### 14.12 Participant Drink Morning

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

Expects a single option response (required)

- Yes [1]
  - No [2]
- 

#### 14.13 Participant Alcohol Memory Loss

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]

---

#### 14.14 Participant Alcohol Cut Down

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

Expects a single option response (required)

Yes [1]

No [2]

---

## Section 15. Sexual Partner

#### 15.1 Sexual Partner Prompt

In the following questions I will be asking you about the last person you have had sex with

---

#### 15.2 Sexual Partner Been for HIV Test

Do you know if your sexual partner has been for a HIV test?

Expects a single option response (required)

Yes [1]

No [2]

Don't Know [99]

Decline to answer [91]

Branches

If response Not Equal 'Yes [1]' then skip to *Asked Sexual Partner to Test (15.4)*

---

#### 15.3 Sexual Partner HIV Status

What is his HIV status?

Expects a single option response (required)

Positive [1]

Negative [2]

Don't Know [99]

Decline to answer [91]

---

#### 15.4 Asked Sexual Partner to Test

Have you asked him to go for a HIV test?

Expects a single option response (required)

Yes [1]

No [2]

Decline to answer [91]

---

#### 15.5 Could Ask Sexual Partner to Test

Could you ask him to go for a HIV test?

Expects a single option response (required)

Yes [1]

No [2]

Decline to answer [91]

---

#### 15.6 Sexual Partner Involved Other Women

Do you think your sexual partner is involved with any other women?

Expects a single option response (required)

Yes [1]

- No [2]
- Decline to answer [91]

---

### 15.7 Sexual Partner Has TB

Does your sexual partner have TB?

Expects a single option response (required)

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

Branches

If response Not Equal 'Yes [1]' then skip to *Clinic sessions (16.1)*

---

### 15.8 Sexual Partner Receiving TB Treatment

Is he receiving treatment for TB?

Expects a single option response (required)

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

---

## Section 16. Antenatal Clinic Visits & HIV Testing

### 16.1 Clinic sessions

How many antenatal clinic visits did you attend where you saw a health care worker?

Expects a numeric response (required)

---

### 16.2 Tested HIV in Antenatal Care

In this pregnancy were you tested for HIV during antenatal care?

Expects a single option response (required)

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

---

### 16.3 HIV Positive

Are you HIV Positive (confirmatory and / or if status changed since baseline)?

Expects a single option response (required)

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

Branches

If response Not Equal 'Yes [1]' then skip to *Voucher given (19.1)*

---

---

## Section 17. HIV Medication

### 17.1 Disclosed at Hospital

Did you tell any of the health care staff at the hospital you were HIV positive?

Expects a single option response (required)

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

#### 17.2 AZT Usage Prior to Labour

Please tell me about when you started, stopped, and how many times a day you took AZT prior to going into labour: (INTERVIEWER NOTE: Participants started AZT at any point from 28 weeks. She took one tablet twice a day for the entire period without skipping any days. SCORE AS COMPLETE. If she stopped taking the tablets before going into labour for any reason, SCORE AS INCOMPLETE. If she skipped any days between 28 weeks and labour or stopped and resumed treatment. SCORE AS INTERRUPTED.)

Expects a single option response (required)

- Complete [1]
  - Incomplete [2]
  - Interrupted [3]
  - Declined to answer [91]
- 

#### 17.3 Medication to Prevent HIV Transmission

Did you take your medication to prevent HIV transmission during labour?

Expects a single option response (required)

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

Branches

If response Not Equal 'Yes [1]' then skip to *NVP Tablet at Onset of Labour (17.5)*

---

#### 17.4 AZT Usage During Labour

Please tell me about when you started, stopped, and at what time intervals you took AZT once you went into labour: (INTERVIEWER NOTE: Start AZT 3 hourly for the duration of labor - SCORE AS COMPLETE. If did not meet 3 hour frequency criteria SCORE AS INCOMPLETE. If missed less than 2 of the 3 hourly doses but did increase dose frequency then SCORE AS INTERRUPTED.)

Expects a single option response (required)

- Complete [1]
  - Incomplete [2]
  - Interrupted [3]
  - Declined to answer [91]
- 

#### 17.5 NVP Tablet at Onset of Labour

Did you take one NVP tablet at the onset of labour?

Expects a single option response (required)

- Complete [1]
  - Incomplete [2]
  - Declined to answer [91]
- 

#### 17.6 NVP Syrup Within 24h

Was your baby given a dose of NVP syrup within 24 hours of birth? (INTERVIEWER NOTE: Baby got a stat dose of NVP within 24 hours after delivery SCORE AS COMPLETE. Did not get stat dose after delivery SCORE AS INCOMPLETE. Baby got a stat dose of NVP more than 24 hours after delivery SCORE AS DELAYED.)

Expects a single option response (required)

- Complete [1]
  - Incomplete [2]
  - Delayed [3]
  - Declined to answer [91]
- 

#### 17.7 AZT Dispensed

Were you given AZT for 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 *Disclosure and Protection Prompt (18.1)*

---

### 17.8 AZT Course Length

What was the length of the course you were prescribed?

Expects a single option response (required)

- 7 days [1]
  - 28 days [2]
  - Other [95]
  - Don't know [99]
- 

### 17.9 Medicating as Prescribed

Have you been giving the baby its medication as prescribed?

Expects a single option response (required)

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

## Section 18. Disclosure and Protection

### 18.1 Disclosure and Protection Prompt

Thank you. This is the last section of the interview. I just have a few short questions now about HIV disclosure.

---

### 18.2 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]
- 

### 18.3 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]
- 

### 18.4 Number family disclosed

How many family members have you disclosed to?

Expects a numeric response (required)

### 18.5 Number people outside family disclosed to

How many people outside your family have you disclosed to?

Expects a numeric response (required)

---

**18.6 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]
- Declined to answer [91]

---

**18.7 Participant Comfortable Disclosing Partner**

Please select which of the following (if any) you feel comfortable talking to your PARTNER about:

Expects multiple selected options (required)

- Pregnancy [1]
- HIV [2]
- Asking for help when you need it [3]
- Speaking up when things are wrong [4]
- Revealing your HIV status [5]
- Has no partner [6]
- None of the above [7]

---

**18.8 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)

- Pregnancy [1]
- HIV [2]
- Asking for help when you need it [3]
- Speaking up when things are wrong [4]
- Revealing your HIV status [5]
- None of the above [6]

---

**18.9 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)

- Pregnancy [1]
- HIV [2]
- Asking for help when you need it [3]
- Speaking up when things are wrong [4]
- Revealing your HIV status [5]
- None of the above [6]

---

---

**Section 19. End of Survey****19.1 Voucher given**

Was the participant given R80 food voucher?

Expects a single option response (required)

- Yes [1]
- No [2]

---

**19.2 End**

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

---

---



## **APPENDIX E**

# Birth Assessment (Xhosa)

Last Modified by: Clyral Support on 11 May 2009 14:11:30 Revision number: 319 Field Count: 140

## Section 1. Participant Identifier

### 1.1 Participant ID

Nceda ubhale ikhowudi ekhethekileyo nemchongayo umthathi-nxaxheba:

Expects a numeric response (required)

### 1.2 Interviewer code

Nceda ubhale ikhowudi yomphathi wodliwano-ndlebe:

Expects a numeric response (required)

### 1.3 Neighbourhood code

Nceda ubhale ikhowudi yommelwane:

Expects a numeric response (required)

### 1.4 Date of Interview

Nceda uqinisekise ngomhla wolu dliwanondlebe:

Expects a date response (required)

### 1.5 Time of Interview

Nceda uqinisekise ngexesha lodliwanondlebe:

Expects a time response (required)

### 1.6 Address

Nceda ubhale idilesi yomthathi-nxaxheba:

Expects a single line text response (required)

## Section 2. Informed Consent

### 2.1 Informed consent granted

Inikiwe inkcazelo ngemvumo yengqiqo yaza yamkelwa?

Expects a single option response (required)

ê Ewe [1]

ê Hayi [2]

Branches

If response Equals 'Ewe [1]' then skip to *Infant birth count (3.1)*

### 2.2 Refusal reason

Ukuba umama uyala ukuthatha inxaxheba, bhala isizathu sokwala kwakhe:

Expects a single option response (required)

ê Kukoyika ibala [1]

ê Akukho sizathu sibekiweyo [2]

è Ilungu losapho / iqabane alivumelananga nokuba umama makathathe inxaxheba [3]

è Ilungu losapho / iqabane aliyivumeli inkcazelo [4]

è Omnye [5]

Branches

If response Equals 'Kukoyika ibala [1]' then skip to *End (19.2)*

If response Not Equal 'Kukoyika ibala [1]' then skip to *End (19.2)*

---

## Section 3. Baby - Birth

### 3.1 Infant birth count

Uzele abantwana abangaphi?

Expects a numeric response (required)

Repeat this section for value of *Infant birth count (3.1)*

## Section 4. Baby – Demographics

### 4.1 Demographics Prompt

Ngoku ndinemibuzo embalwa ngosana nokulubeleka kwakho esibhedlele.

---

### 4.2 Delivery facility

Ubulubelekele kwesiphi esibhedlele?

Expects a single option response (required)

è I-Michael Mapongwana Day Hospital [1]

è Isibhedlele saseSite B [2]

è Isibhedlele saseTygerberg [3]

è Isibhedlele sokuBelekela esiseMowbray [4]

è Ekhaya Home (ngaphandle kwesibhedlele) [5]

è Mpuma-Koloni [6]

è IBishop Lavis [7]

è Enye [95]

---

### 4.3 Delivery Type

Ulubeleke njani:

Expects a single option response (required)

è Ukuya ngasesizalweni [1]

è Okwenzeke ngoqhaqho [2]

---

### 4.4 Birth hospital duration

Esibhedlele uhlaliswe iintsuku ezingaphi?

Expects a single option response (required)

è kungaphantsi kwimini enye [1]

è usuku olunye [2]

è Ngaphezulu kosuku olunye [3]

---

### 4.5 Baby spent more than 24 hrs hospital

Usana lwakho luhleli esibhedlele iiyure ezingaphezulu kwezingama-24?

Expects a single option response (required)

è Ewe [1]

è Hayi [2]

Branches

#### 4.6 Baby hospital duration

Zinga iintsuku usana lwakho lugciniwe esibhedlele?

Expects a single option response (required)

è ngaphantsi kweentsuku ezi-3 [1]

è ngaphezu kweentsuku ezi-3, ngaphantsi kweeveki ezi-2 [2]

è ngaphezuku kweeveki ezi-2 [3]

---

#### 4.7 Baby Birth Date

Luzelwe ngowuphi umhla usana lwakho?

Expects a date response (required)

---

#### 4.8 Baby Gender

Luyinkwenkwe okanye luyintombazana?

Expects a single option response (required)

è Yindoda [1]

è Libhinqa [2]

---

#### 4.9 Baby Current Weight

Ngoku bungakanani ubunzima bosana ngokweekilogrem?:

Expects a numeric response (required)

*Constraints*

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

*Response must be Less Than or Equal '15'*

---

#### 4.10 Baby Current Length

Ngoku lude kangakanani usanangokweesentimitha?:

Expects a decimal response (required)

*Constraints*

*Response must be Greater Than or Equal '15'*

*Response must be Less Than or Equal '100'*

---

#### 4.11 Baby Current Head Circumference

Singakanani isazinge sentloko yosana ngokweesentimitha?:

Expects a decimal response (required)

*Constraints*

*Response must be Greater Than or Equal '10'*

*Response must be Less Than or Equal '100'*

---

#### 4.12 Clinic Card Available

Ikhadi laseklinikhi losana lwakho ndingalifumana ukuze ndilijongisise?

Expects a single option response (required)

è Ewe [1]

è Hayi [2]

Branches

If response Equals 'Hayi [2]' then skip to *Feeding prompt (5.1)*

---

#### 4.13 Apgar Score (1min)

Apgar score (1 umzuzu):

Expects a numeric response (optional)

---

#### 4.14 Apgar score (5 min)

Apgar score (mi-5 imizuzu):

Expects a numeric response (optional)

---

#### 4.15 Birth Weight

Ubunzima ngexa luzalwa usana ngokweekilogrem:

Expects a decimal response (optional)

*Constraints*

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

*Response must be Less Than or Equal '10'*

---

#### 4.16 Birth Length

Belulude kangakanani usana, (ukuqalela entloko kuyiwe ezinzwaneni)? (ngokweesentimitha):

Expects a decimal response (optional)

*Constraints*

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

*Response must be Less Than or Equal '100'*

---

#### 4.17 Baby Birth Head Circumference

Bhala ubungakanani besazinge sentloko yosana ngokweesentimitha:

Expects a decimal response (optional)

*Constraints*

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

*Response must be Less Than or Equal '100'*

---

## Section 5. Feeding

### 5.1 Feeding prompt

Enkosi. Ngoku ndinemibuzo embalwa ngendlela olondla ngayo usana lwakho.

---

### 5.2 Breast Milk Ever

Wakha walunika usana lwakho amasi ebele?

Expects a single option response (required)

Ewe [1]

Hayi [2]

Branches

If response Equals 'Hayi [2]' then skip to *Feeding items (5.8)*

---

### 5.3 Breast after birth

Usana waluncancisa kanye usandula ukuluzala?

Expects a single option response (required)

Ewe [1]

Hayi [2]

---

### 5.4 Fed colostrum

Usana lwakho walondla ngobisi lokuqala lwamabele akho?

Expects a single option response (required)

- è Ewe [1]
- è Hayi [2]

---

### 5.5 When baby start breast milk

Waqalisa nini ukuluncancisa usana emva kokulubeleka?

Expects a single option response (required)

- è Ngeyure yokuqala [1]
- è Emva kweyure yokuqala kude kube ziyure ezili-12 [2]
- è Emva kweeyure ezili-12 kude kufikwe kwiiyure ezingama-24 [3]
- è Emva kweeyure ezingama-24 kude kufikwe kwezingama-48 (kusuku lwesi-2) [4]
- è Emva kweeyure ezingama-48 kude kufikwe kwezingama-72 (kusuku lwesi-3) [5]
- è Emva kweeyure ezingama-72 (emva kosuku lwesi-3) [6]

---

### 5.6 Breast problem

Wakha wanalu usulelo, okanye ingxaki esemabeleni oko luzelwe usana lwakho?

Expects a single option response (required)

- è Ewe [1]
- è Hayi [2]

Branches

If response Equals 'Hayi [2]' then skip to *Feeding items (5.8)*

---

### 5.7 Type breast problem

Zeziphi iingxaki obunazo?

Expects multiple selected options (required)

- è Amabele abhonxile ligazi [1]
- è Iingono ezicandekileyo [2]
- è Iingono ezibuhlungu [3]
- è Iingono ezophayo [4]
- è Amabele abhonxileyo, anezigaqa, abuhlungu [5]
- è Iingono ezibomvu, ezibuhlungu ngenxa yecesina [6]
- è Okunye [95]

---

### 5.8 Feeding items

Usana lwakho wakha walunika nayiphi na kwezi zinto zilandelayo?

Expects multiple selected options (required)

- è amanzi [1]
- è amanzi aneswekile okanye i-glucose [2]
- è incindi yeziqhamo [3]
- è amayeza anokombiwa phantsi [4]
- è iti engenalo ubisi [5]
- è iti enobisi [6]
- è inembe yerayisi [7]
- è ubisi lwenkomo olungxengiweyo [8]
- è ubisi lwenkomo olungangxengwanga [9]
- è i-formula yeentsana [10]
- è olunye ubisi lweentsana olungumgubo [11]
- è ubisi lwebhokhwe [12]
- è iisiriyali, indengana okanye isonka [13]
- è iziqhamo / imifuno [14]
- è inyama [15]
- è intlanzi [16]
- è amaqanda [17]

- è iimveliso zobisi (umzekelo: i-yoghurt, itshizi okanye i-ayisikhrim) [18]
- è i-Gripe Water [19]
- è I-Entrense, Rooilaventer, Behoodmiddel, Steindruppels, Okanye iSaccarooi [20]
- è Iquma [21]
- è iBorax [22]
- è ikastrooyile okanye iCastor Oil/ i-sweet oil [23]
- è I-Milk of magnesia [24]
- è Isicakathi / Umthombothi [25]
- è Umthuthuzeli mama [26]
- è Utywala [27]
- è Akukho nanye kwezi [28]

#### 5.9 Other responsible feeding choice

Ebekhona umntu ongomnye ebenoxanduva lokwenza izigqibo ngendlela yokondliwa kosana lwakho?

Expects a single option response (required)

- è Ewe [1]
- è Hayi [2]

Branches

If response Equals 'Hayi [2]' then skip to *Child Care Prompt (6.1)*

#### 5.10 Person responsible

Ngubani obejongene nalo msebenzi?

Expects a single option response (required)

- è liqabane / ngumyeni [1]
- è nguMamazala [2]
- è nguMama [3]
- è nguMongikazi [4]
- è ngomnye [5]

## Section 6. Child Care

#### 6.1 Child Care Prompt

Nngoku ndinemibuzo embalwa ngemibandela yokunonophelwa kosana nokunye okujongene nawe njengomama.

#### 6.2 Child registration

Ukubhalisile ukuzalwa kosana?

Expects a single option response (required)

- è Ewe [1]
- è Hayi [2]
- è Andazi [99]
- è Ndiyala ukuphendula. [91]

Branches

If response Not Equal 'Ewe [1]' then skip to *Help when unavailable (6.4)*

#### 6.3 Birth Certificate

Usana lwakho lunesatifikethi sokuzalwa?

Expects a single option response (required)

- è Ewe [1]
- è Hayi [2]
- è Andazi [99]
- è Ndiyala ukuphendula. [91]

#### 6.4 Help when unavailable

Unaye umntu wokuncedisa ekugcineni usana xa ufuna ukuphumla, ukuya ezivenkileni nokwenza ezinye izinto?

Expects a single option response (required)

- Ewe [1]
  - Hayi [2]
  - Ndiyala ukuphendula. [91]
- 

## Section 7. Father of the child

### 7.1 Father of Child Prompt

Ndinomnye umbuzo ngoyise vosana lwakho.

### 7.2 Father acknowledged baby

Uyise vosana ulwazisile ebantwini bakowabo?

Expects a single option response (required)

- Ewe [1]
  - Hayi [2]
  - Andazi [99]
  - Ndiyala ukuphendula. [91]
- 

## Section 8. Mental Health (EPDS)

### 8.1 Thoughts and Feelings Prompt

Ngoku ndinemibuzo malunga novakalelo lwakho kwiveki ephelileyo. Nceda unike impendulo esondeleyo kwindlela ovakalelwe ngayo KWIINTSUKU EZISI-7 EZIGQITHILEYO, hayi indlela ovakalelwa ngayo namhlanje.

### 8.2 Laugh

Ndikwazile ukuhleka nokubona izinto ezingaqhelekanga ezihlelisayo.

Expects a single option response (required)

- Kangangoko bendisoloko ndinakho [0]
  - Hayi kangako ngoku [1]
  - Ngokuqinisekileyo akukho kangako ngoku [2]
  - Akunjalo [3]
- 

### 8.3 Enjoyment

Bendijonge phambili ndinovuyo.

Expects a single option response (required)

- Kangangoko bendinokwenza [0]
  - Kungangaphantsi kunoko bendisenza [1]
  - Ngokuqinisekileyo kungaphantsi kunoko bendisenza [2]
  - Ndaphantse andakwenza oko [3]
- 

### 8.4 Self Blame

Xa izinto bezihamba gwenxa ndifane ndazigxeka kungekho mfuneko.

Expects a single option response (required)

- Ewe, ixesha elininzi [3]
- Ewe, ngelinye ixesha [2]
- Bekungenzeki qho [1]
- Hayi, zange kwenzeke [0]



---

### 8.5 Anxious/worry

Bendixhalabile kungekho mfuneko yaloo nto.

Expects a single option response (required)

- Hayi, akunjalo [0]
  - Kwaphantse akwenzeka oko [1]
  - Ewe, ngamanye amaxesha [2]
  - Ewe, bekusenzeka qho [3]
- 

### 8.6 Panicky

Bendiziva ndisoyika okanye ndiphaphazela kungekho sizathu.

Expects a single option response (required)

- Ewe, bekusenzeka rhoqo [3]
  - Ewe, ngamanye amaxesha [2]
  - Hayi kangako noko [1]
  - Hayi, zange kwenzeke [0]
- 

### 8.7 Things piled up

Imeko ibindongamele.

Expects a single option response (required)

- Ewe, ixesha elininzi bendingakwazi kumelana naloo nto [3]
  - Ewe, ngamanye amaxesha bendingakwazi kumelana noko njengesiqhelo [2]
  - Hayi, ixesha elininzi ndikwazile ukumelana naloo nto. [1]
  - Hayi, ndikwazile ukumelana naloo nto njengoko bekusoloko kunjalo [0]
- 

### 8.8 Difficulty sleeping

Bendingonwabanga kangangokuba bekunzima ukuba ndilale.

Expects a single option response (required)

- Ewe, ixesha elininzi [3]
  - Ewe, ngamanye amaxesha [2]
  - Bekungenzeki qho [1]
  - Hayi, akunjalo [0]
- 

### 8.9 Sad/miserable

Ndizive ndilusizi okanye ndixakanisekile.

Expects a single option response (required)

- Ewe, ixesha elininzi [3]
  - Ewe, ngamanye amaxesha [2]
  - Akusoloko kusenzeka rhoqo [1]
  - Hayi, akunjalo tu [0]
- 

### 8.10 Crying

Bendingonwabanga ndada ndalila.

Expects a single option response (required)

- Ewe, ixesha elininzi [3]
  - Ewe, bekusoloko kunjalo [2]
  - Kuphela ngamaxesha athile [1]
  - Hayi, zange kwenzeke [0]
- 

### 8.11 Self harm

Ndikhe ndanengcinga yokuzenzakalisa.

Expects a single option response (required)

- Ewe, bekusoloko kusenzeka [3]

è Ngamanye amaxesha [2]

è Bekungaxhaphakanga oko [1]

è Zange kwenzeke [0]

---

## Section 9. Mental Health (GHQ)

### 9.1 GHQ Prompt

Sithanda ukwazi ukuba impilo yakho ibinjani KWIIVEKI EZIMBALWA EZIGQITHILEYO. Nceda uyiphendula ngokulula YONKE imibuzo ngokuxela ukuba yeyiphi impendulo esondele kakhulu kwimeko yakho KWIIVEKI EZIMBALWA EZIGQITHILEYO. Khumbula ukuba sinqwenela ukwazi ngemeko YANGOKU neyexesha ELISANDULA UKUDLULA (ukhawuleziso lomphathi wodliwanondlebe: kwiiveki ezimbalwa ezigqithileyo ukususela enyangeni nemihla obufujna ngayo ingxoxo) ngezikhalazo, hayi ezo ubunazo kwixa eladlulayo. Kubalulekile ukuba yonke imibuzo mawuyiphendule.

---

### 9.2 GHQ Concentrate

Ingaba ubukhe wakwazi ukunika ingqalelo koko ukwenzayo?

Expects a single option response (required)

è Kubhetele kunesiqhelo [3]

è Kunje ngesiqhelo [2]

è Kungaphantsi kwendlela eqhelekileyo [1]

è Kungaphantsi kakhulu kunesiqhelo [0]

---

### 9.3 GHQ Lost sleep

Kutshanje ubukhe womelwa bubuthongo ngenxa yokukhathazeka?

Expects a single option response (required)

è Kubhetele kunesiqhelo [3]

è Akungaphezulwanga kwesiqhelo [2]

è Kungaphaya kwesiqhelo [1]

è Kungaphantsi kakhulu kunesiqhelo [0]

---

### 9.4 GHQ Useful part

Kutshanje uyithathile inxaxheba, waza waluncedo ezintweni?

Expects a single option response (required)

è Kungaphezulu kunesiqhelo [3]

è Kuyafana nesiqhelo [2]

è Uncedo lungaphantsi kolwesiqhelo [1]

è Luncinci kakhulu uncedo [0]

---

### 9.5 GHQ Decisions

Kutshanje uzive unakho ukwenza izigqibo ngezinto?

Expects a single option response (required)

è Bendithe chatha kunesiqhelo [3]

è Bekufana nesiqhelo [2]

è Bekunganeno kwesiqhelo [1]

è Bekungafani tu, kungaphantsi kwesiqhelo [0]

---

### 9.6 GHQ Under strain

Kutshanje uzive usoloko uphantsi koxinzelelo?

Expects a single option response (required)

è Bekungenjalo tu kwaphela [3]

è Akungaphezulwanga kwesiqhelo [2]

è Kungaphezulwana kunesiqhelo [1]

è Bekuthe chatha kunesiqhelo [0]

---

#### 9.7 GHQ Unable overcome difficulties

Kutshanje uzive ungenakuzoyisa iingxaki zakho?

Expects a single option response (required)

- Bekungenjalo tu kwaphela [3]
  - Akusangaphezulwanga kwesiqhelo [2]
  - Kungaphezulu kunesiqhelo [1]
  - Bekuthe charha kunesiqhelo [0]
- 

#### 9.8 GHQ Enjoy activities

Kutshanje ukwazile na ukonwaba emisebenzini yakho yemihla ngemihla?

Expects a single option response (required)

- Imisebenzi indonwabise ngaphezu kwesiqhelo [3]
  - Ukonwaba kuyafana nesiqhelo [2]
  - Kungaphantsi kwesiqhelo [1]
  - Andisonwabanga njengeko bendinjalo [0]
- 

#### 9.9 GHQ Face problems

Kutshanje ukwazile na ukuhlangabezana neengxaki zakho?

Expects a single option response (required)

- Ngaphezulu kunesiqhelo [3]
  - Njgesiqhelo [2]
  - Akufani nesiqhelo [1]
  - Andisamelani kakuhle neengxaki [0]
- 

#### 9.10 GHQ Unhappy/depressed

Kutshanje ubuziva ungonwabanga, uxhalabile?

Expects a single option response (required)

- Akusunjalo [3]
  - Akusunjalo tu kwaphela [2]
  - Andonwabanga njengoko bendinjalo [1]
  - Ndinxunguphele, akusenje ngakuqala [0]
- 

#### 9.11 GHQ Loosing confidence

Kutshanje ubukhe waphelelwa kukuzithemba?

Expects a single option response (required)

- Akusunjalo [3]
  - Akukho ukungazithembi okungaphezu kwesiqhelo [2]
  - Andizithembanga ngakumbi [1]
  - Andizithembanga tu kwaphela [0]
- 

#### 9.12 GHQ Worthless person

Kutshanje ubuzithatha njengongantweni?

Expects a single option response (required)

- Andizithathi njengongantweni [3]
  - Andingongantweni ngokungaphezu kwesiqhelo [2]
  - Ndisuke ndangungantweni kakhulu [1]
  - Ndingungantweni ngokubalaseleyo [0]
- 

#### 9.13 GHQ Reasonably happy

Kutshanje ubuziva wonwabile, xa uqwalasele imeko?

Expects a single option response (required)

- Ndonwabe ngokungaphezulu [3]
- Ndonwabe ngendlela eqhelekileyo [2]

è Andonwabanga njengesiqhelo [1]

è Andisonwabanga njengesiqhelo [0]

---

## Section 10. Enjoyable activities

### 10.1 Past month enjoyable activities

Kwinyanga egqithileyo, ubusoloko uzonwabisa okanye uphumla amaxesha amangaphi ngezinto ezifana nokubukela umabonwakude, ngokuya ecaweni okanye ngokuya kulungisa iinwele zakho?

Expects a single option response (required)

è Zange ndizonwabise [1]

è Kanye okanye kabini ngeveki [2]

è Amaxesha maninzi evekini [3]

è Yonke imihla [4]

---

### 10.2 Favourite Colour

Ngowuphi owona mbala uwuthandayo?

Expects a single line text response (required)

## Section 11. General health

### 11.1 Self regarded health - mother

Impilo yakho uyithatha njani ngokwemeko eqhelekileyo?

Expects a single option response (required)

è Intle kakhulu [1]

è Intle [2]

è Iyancomeka [3]

è Ayiphucukanga, ayanelisi [4]

---

### 11.2 Standard Diabetes - mother

Wakha waxilongwa waza wafunyaniswa unesifo seSwekile phambi kokuba ukhulelwe?

Expects a single option response (required)

è Ewe [1]

è Hayi [2]

è Ndiyala ukuphendula. [91]

Branches

If response Not Equal 'Ewe [1]' then skip to *Gestational diabetes - mother (11.5)*

---

### 11.3 Standard Diabetes medication - mother

Uyalufumana unyango lwesifo seSwekile?

Expects a single option response (required)

è Ewe [1]

è Hayi [2]

è Ndiyala ukuphendula. [91]

Branches

If response Equals 'Hayi [2]' then skip to *Gestational diabetes - mother (11.5)*

---

### 11.4 Standard Diabetes TYPE medication - mother

Unyangwa ngeepilisi okanye ngesitofu kwisifo onaso seSwekile?

Expects a single option response (required)

è Ipilisi [1]

#### 11.5 Gestational diabetes - mother

Ngexesha ubusakhulelwe wakha waxilongwa kwafunyaniswa ukuba unesifo seSwekile?

Expects a single option response (required)

- è Ewe [1]
- è Hayi [2]
- è Ndiyala ukuphendula. [91]

Branches

If response Not Equal 'Ewe [1]' then skip to *Standard hypertension - mother (11.7)*

---

#### 11.6 Gestational Diabetes medication - mother

Ngexa ubusakhulelwe wayifumana incindi yedlala elithile elilawula iswekile egazini.

Expects a single option response (required)

- è Ewe [1]
- è Hayi [2]
- è Ndiyala ukuphendula. [91]

#### 11.7 Standard hypertension - mother

Wakha waxilongwa wafunyaniswa unenkxalabo yokunyukelwa ligazi phambi kokuba ukhulelwe?

Expects a single option response (required)

- è Ewe [1]
- è Hayi [2]
- è Ndiyala ukuphendula. [91]

#### 11.8 Gestational hypertension – mother

Wakha waxilongwa wafunyaniswa unesifo sokunyukelwe ligazi usakhulelwe?

Expects a single option response (required)

- è Ewe [1]
- è Hayi [2]
- è Ndiyala ukuphendula. [91]

#### 11.9 Hypertension medication - mother

Ngeli ixesha uyalufumana unyango lwesifo sokunyukelwa ligazi?

Expects a single option response (required)

- è Ewe [1]
- è Hayi [2]
- è Ndiyala ukuphendula. [91]

#### 11.10 Other medication

Ngoku lukhona unyango olufumanayo kwaso nasiphi na isifo?

Expects a single option response (required)

- è Ewe [1]
- è Hayi [2]
- è Ndiyala ukuphendula. [91]

#### 11.11 Post birth conditions - mother

Oko lwazalwayo usana lwakho , ukhe wanayo na enye kwezi zinto zilandelayo?

Expects multiple selected options (required)

- è Ukopha kakhulu ngaphantsi, (ebuntombini /ebufazini) [1]
- è Ivumba elibi elivela ngaphantsi, (ebuntombini/ebufazini) [2]
- è Ukuba nefiva/necesina [3]
- è Ukukhohlela okungqungqa kubuyelela [4]
- è Usulelo emabeleni [5]

è Enye ingulo [95]

è Khange ndigule [6]

---

#### 11.12 Traditional medicine - mother

Nceda usixelele ukuba yeyiphi kwezi zilandelayo, ukuba ikho, okhe wayisebenzisa oko kwakusisihlandlo sokugqibela sokuqikelelwa kwakho.

Expects multiple selected options (required)

è Ukuzicima [1]

è Iivithamini ezilinywayo okanye izongezelelo zolwelo [2]

è Amayeza esiNtu (umzekelo: ivamna, ukuthakatha) [3]

è Amayeza oomama abakhulelweyo (umzekelo: ukucinywa ngexesha lokukhulelwa, iziphehli zokubeleka komntu msinyane) [4]

è Amayeza aphilisayo ngokwasemoyeni, (umzekelo: ulwelo lokukhusela usana) [5]

è Amayeza eentsana (umuti wenyoni, ii-lennon 's medicines) [6]

è Ndiyala ukuphendula [91]

è Bendingasebenzisi mayeza [7]

---

#### 11.13 Infant health perception

Usana lwakho lutya kakuhle?

Expects a single option response (required)

è Ewe [1]

è Hayi [2]

è Ndiyala ukuphendula. [91]

---

#### 11.14 Infant illness

Belukhe lwagula usana lwakho oko lwazalwayo?

Expects a single option response (required)

è Ewe [1]

è Hayi [2]

è Ndiyala ukuphendula. [91]

Branches

If response Not Equal 'Ewe [1]' then skip to *Crying lots (11.17)*

---

#### 11.15 Type infant illness

Usana lwakho beluguliswa yintoni?

Expects multiple selected options (required)

è Usana belurhuda [1]

è Belukhupha [2]

è Belunyukelwe bubushushu [3]

è Belunerhashalala [4]

è Belunosulelo esikhumbeni [5]

è Belunosulelo kugqongo [6]

è Beluhlaselwa ngendlela engalawulekiyo [7]

è Belukhohlela [8]

è Belunesifo esibangela ukuba amehlo nesikhumba mawabe mthubi / belunejondisi [9]

è Belunesisu [10]

è Belunenyengulo [95]

---

#### 11.16 Seek health care – infant

Usana lwakho ubukhe walusa eklinikhi okanye kugqirha ngenxa yale ngxaki okanye ngenxa yezinye iingxaki zempilo?

Expects a single option response (required)

è Ewe [1]

è Hayi [2]

---

#### 11.17 Crying lots

Ucinga ukuba usana lwakho lulila ngaphezu kokuba belufanele?

Expects a single option response (required)

Ewe [1]

Hayi [2]

---

## Section 12. TB

### 12.1 Participant TB

Oko sagqibela ukubonana, ubukhe waxilongwa wafunyaniswa unesifo sePhepha?

Expects a single option response (required)

Ewe [1]

Hayi [2]

Ndiyala ukuphendula. [91]

Branches

If response Not Equal 'Ewe [1]' then skip to *Participant HH TB (12.3)*

---

### 12.2 Participant TB Treatment

Lukhona unyango olufumanayo ngoku?

Expects a single option response (required)

Ewe [1]

Hayi [2]

Ndiyala ukuphendula. [91]

---

### 12.3 Participant HH TB

Oko sigqibele ukubonana, ukhona umntu ONGOMNYE (esingekathethi ngaye) kwabakowenu oxilongiweyo wafunyaniswa enesifo sePhepha?

Expects a single option response (required)

Ewe [1]

Hayi [2]

Andazi [99]

Ndiyala ukuphendula. [91]

Branches

If response Not Equal 'Ewe [1]' then skip to *Tobacco use (13.1)*

---

### 12.4 Participant HH TB Treatment

Lukhona unyango lwesifo sePhepha abalufumanayo ngoku?

Expects a single option response (required)

Ewe [1]

Hayi [2]

Andazi [99]

Ndiyala ukuphendula. [91]

---

## Section 13. Substances

### 13.1 Tobacco use

Ngokuya ubukhulelwe ubukhe walitshaya icuba?

Expects a single option response (required)

Ewe [1]

Hayi [2]

Ndiyala ukuphendula. [91]

Branches

If response Not Equal 'Ewe [1]' then skip to *Tik (13.3)*

### 13.2 Tobacco frequency

Kwiinyanga ezi-3 ezigqithileyo, ubutshaya ngeentsuku ezingaphi?

Expects a numeric response (required)

### 13.3 Tik

Ngokuya ubukhulelwe ubukhe wayisebenzisa i-tik?

Expects a single option response (required)

- Ewe [1]
- Hayi [2]
- Ndiyala ukuphendula. [91]

Branches

If response Not Equal 'Ewe [1]' then skip to *Dagga (13.5)*

### 13.4 Tik frequency

Kwiinyanga ezi-3 ezigqithileyo, i-tik uyisebenzise iintsuku ezingaphi?

Expects a numeric response (required)

### 13.5 Dagga

Ngokuya ubukhulelwe ubuyisebenzisa intsangu?

Expects a single option response (required)

- Ewe [1]
- Hayi [2]
- Ndiyala ukuphendula. [91]

Branches

If response Not Equal 'Ewe [1]' then skip to *Alcohol Prompt (14.1)*

### 13.6 Dagga frequency

Kwiinyanga ezi-3 ezigqithileyo, intsangu uyisebenzise iintsuku ezingaphi?

Expects a numeric response (required)

## Section 14. Alcohol

### 14.1 Alcohol Prompt

Enkosi. Ngoku ndifuna ukukubiza imibuzo embalwa ngotywala. Nceda ukhumbule ukuba zonke iimpendulo zakho zakugcinwa ziyimfihlelo.

### 14.2 Participant Alcohol Drinking Frequency - Pre-birth Month

Phakathi kwinyanga ephelileyo, phambi kokuba luzalwe usana lwakho, kumalunga namaxesha amangaphi usela NALUPHI NA udidi lotywala? (Umphathi wodliwanondlebe: Sebenzisa iglasi/ikomityi eqhelekileyo ubuzise.

Expects a single option response (required)

- Zange ndisele [0]
- Kungaphantsi kwesihlandlo esinye enyangeni [1]
- Kanye ngenyanga [2]
- Izihlandlo ezi-2 ukuya kwezi-3 ngenyanga [3]
- Kanye ngeveki [4]
- Amaxesha ama-2 ngeveki [5]
- Amaxesha ama-3 ukuya kwama-4 times a week [6]
- Phantse yonke imihla [7]



è Yonke imihla [8]

#### Branches

If response Equals 'Zange ndisele [0]' then skip to *Participant Alcohol Drinking Frequency - Post Birth (14.6)*

---

#### 14.3 Participant Alcohol Drinking Volume - Pre-birth Month

Phakathi kwinyanga ephelileyo, phambi kokuba luzalwe usana lwakho, xa udibanisa zonke iindidi zotywala zidityanisiwe, zingaphi iiglas ODLA ngokuzisela ngeentsuku zokusela kwakho utywala?

Expects a single option response (required)

è Ixesha eli-1 okanye ama-2 [0]

è Amaxesha ama-3 okanye ama-4 [1]

è Amaxesha ama-5 okanye ama-6 [2]

è Amaxesha asi-7, asi-8 okanye asi-9 [3]

è Amaxesha ali-10 okanye ngaphezu koko [4]

---

#### 14.4 Participant Alcohol 4+ Drinks Frequency - Pre-birth Month

Phakathi kwinyanga ephelileyo, phambi kokuba luzalwe usana lwakho, kumalunga nakangaphi usoloko usela iiglas EZINE okanye EZINGAPHEZU KOKO ngosuku?

Expects a single option response (required)

è Zange ndisele [0]

è Kungaphansi kwesihlandlo esinye enyangeni [1]

è Kanye ngenyanga [2]

è Izihlandlo ezi-2 ukuya kwezi-3 ngenyanga [3]

è Kanye ngeveki [4]

è Amaxesha ama-2 ngeveki [5]

è Amaxesha ama-3 ukuya kwama-4 ngeveki [6]

è Phantse yonke imihla [7]

è Yonke imihla [8]

---

#### 14.5 Participant Alcohol 3+ Drinks Frequency - Pre-birth Month

Phakathi kwinyanga ephelileyo, phambi kokuba luzalwe usana lwakho, kumalunga nakangaphi usoloko usela iiglas EZINTA THU okanye EZINGAPHEZU KOKO ngosuku?

Expects a single option response (required)

è Zange ndisele [0]

è Kungaphansi kwesihlandlo esinye enyangeni [1]

è Kanye ngenyanga [2]

è Izihlandlo ezi-2 ukuya kwezi-3 ngenyanga [3]

è Kanye ngeveki [4]

è Amaxesha ama-2 ngeveki [5]

è Amaxesha ama-3 ukuya kwama-4 ngeveki [6]

è Phantse yonke imihla [7]

è Yonke imihla [8]

---

#### 14.6 Participant Alcohol Drinking Frequency - Post Birth

Njengoko seluzelwe usana lwakho, kumalunga nakangaphi usoloko ubusela NABUPHI NA utywala?

Expects a single option response (required)

è Zange ndisele [0]

è Kungaphansi kwesihlandlo esinye enyangeni [1]

è Kanye ngenyanga [2]

è Izihlandlo ezi-2 ukuya kwezi-3 ngenyanga [3]

è Kanye ngeveki [4]

è Amaxesha ama-2 ngeveki [5]

è Amaxesha ama-3 ukuya kwama-4 ngeveki [6]

è Phantse yonke imihla [7]

è Yonke imihla [8]

**14.7 Participant Alcohol Any Drink Number - Post Birth**

Njengoko seluzelwe usana lwakho, xa kubalwa zonkee iindidi zotywala budityanisiwe, zingaphi iiglaszi ODLA ngokuzisela ngeentsuku zokusela kwakho utywala?

Expects a single option response (required)

- è Ixesha eli-1 okanye ama-2 [0]
- è Amaxesha ama-3 okanye ama-4 [1]
- è Amaxesha ama-5 okanye ama-6 [2]
- è Amaxesha ama-7, ama-8 okanye ama-9 [3]
- è Amaxesha ali-10 okanye angaphezu koko [4]

**14.8 Participant Alcohol 4+ Drinks Frequency - Post Birth**

Njengoko seluzelwe usana lwakho, kumalunga nakangaphi usela iiglaszi EZINE okanyeEZINGAPHEZU KOKO ngosuku?

Expects a single option response (required)

- è Zange ndisele [0]
- è Kungaphantsi kwesihlandlo esinye enyangeni [1]
- è Kanye ngenyanga [2]
- è Izihlandlo zi-2 ukuya kwezi-3 ngenyanga [3]
- è Kanye ngeveki [4]
- è Amaxesha ama-2 ngeveki [5]
- è Amaxesha ama-3 ukuya kwama-4 ngeveki [6]
- è Phantse yonke imihla [7]
- è Yonke imihla [8]

**14.9 Participant Alcohol 3+ Drinks Frequency - Post Birth**

Njengoko seluzelwe usana lwakho, kumalunga nakangaphi usela iiglaszi EZINTATHU okanye EZINGAPHEZU KOKO ngosuku?

Expects a single option response (required)

- è Zange ndisele [0]
- è Kungaphantsi kwesihlandlo esinye enyangeni [1]
- è Kange ngenyanga [2]
- è Amaxesha ma-2 ukuya kwama-3 ngenyanga [3]
- è Kanye ngeveki [4]
- è Amaxesha ama-2 ngeveki [5]
- è Amaxesha ama-3 ukuya kwama-4 ngeveki [6]
- è Phantse yonke imihla [7]
- è Yonke imihla [8]

**14.10 Participant Number Drinks High**

Zingaphi iiglaszi ezifunekayo ukuze uzive usemqheleni?

Expects a numeric response (required)

**14.11 Participant External Alcohol Concern**

Bebekhe bakukhalazela na abahlobo okanye izalamane ezisondele kuwe ngokusela kwakho utywala?

Expects a single option response (required)

- è Ewe [1]
- è Hayi [2]

**14.12 Participant Drink Morning**

Ngamanye amaxesha akusasa ukhe uthathe ithamo xa uqalayo ukuvuka?

Expects a single option response (required)

Ewe [1]

Hayi [2]

---

#### 14.13 Participant Alcohol Memory Loss

Umhlobo okanye umntu wakowenu wakha wakuxelela na ngezinto ozithethileyo okanye ozenzileyo ongasenakho ukuzikhumbula?

Expects a single option response (required)

Ewe [1]

Hayi [2]

---

#### 14.14 Participant Alcohol Cut Down

Ngamanye amaxesha ukhe uzive unqwenela ukuthoba isantya ekuseleni?

Expects a single option response (required)

Ewe [1]

Hayi [2]

---

## Section 15. Sexual Partner

#### 15.1 Sexual Partner Prompt

Kule mibuzo ilandelayo ndiza kukubuzwa ngomntu wokugqibela owawudibene naye ngesondo.

---

#### 15.2 Sexual Partner Been for HIV Test

Unolwazi na ngokuba iqabane lakho odibana nalo ngesondo bekhe laya kuxilongwa na kukhangelwa ukuba linayo i-HIV?

Expects a single option response (required)

Ewe [1]

Hayi [2]

Andazi [99]

Ndiyala ukuphendula. [91]

Branches

If response Not Equal 'Ewe [1]' then skip to *Asked Sexual Partner to Test (15.4)*

---

#### 15.3 Sexual Partner HIV Status

Ithini imeko yakhe nge-HIV?

Expects a single option response (required)

Unayo i-HIV [1]

Akanayo i-HIV [2]

Andazi [99]

Ndiyala ukuphendula. [91]

---

#### 15.4 Asked Sexual Partner to Test

Ukhe walicela eli qabane ukuba liyokuxilongwa kukhangelwe ukuba linayo na i-HIV?

Expects a single option response (required)

Ewe [1]

Hayi [2]

Ndiyala ukuphendula. [91]

---

#### 15.5 Could Ask Sexual Partner to Test

Ungalicela ukuba liyokuxilongwa kukhangelwe i-HIV?

Expects a single option response (required)

Ewe [1]

Hayi [2]

Ndiyala ukuphendula. [91]

---

#### 15.6 Sexual Partner Involved Other Women

Ucinga ukuba iqabane lakho lesondo linamanye amabhinqa elithandana nawo?

Expects a single option response (required)

- Ewe [1]
- Hayi [2]
- Ndiyala ukuphendula. [91]

#### 15.7 Sexual Partner Has TB

Iqabane odibana nalo ngesondo linesifo sePhepha

Expects a single option response (required)

- Ewe [1]
- Hayi [2]
- Andazi [99]
- Ndiyala ukuphendula. [91]

Branches

If response Not Equal 'Ewe [1]' then skip to *Clinic sessions (16.1)*

#### 15.8 Sexual Partner Receiving TB Treatment

Liyalufumana unyango lwesifo sePhepha?

Expects a single option response (required)

- Ewe [1]
- Hayi [2]
- Andazi [99]
- Ndiyala ukuphendula. [91]

## Section 16. Antenatal Clinic Visits & HIV Testing

#### 16.1 Clinic sessions

Phambi kokuba ubeleke ubutyelele kwiiklinikhi ezingaphi apho ubonene khona nonompilo?

Expects a numeric response (required)

#### 16.2 Tested HIV in Antenatal Care

Njengokuba ukhulwe ubukhe waya kuxilongwa eklinikhi kukhangelwa i-HIV phambi kokubeleka?

Expects a single option response (required)

- Ewe [1]
- Hayi [2]
- Andiqinisekanga [99]
- Ndiyala ukuphendula. [91]

#### 16.3 HIV Positive

Ingaba unayo intsholongwane i-HIV (ngokuqinisekileyo yaye / okanye imeko seyitshintshile oko kwasekuqaleni)?

Expects a single option response (required)

- Ewe [1]
- Hayi [2]
- Andiqinisekanga [99]
- Ndiyala ukuphendula. [91]

Branches

If response Not Equal 'Ewe [1]' then skip to *Voucher given (19.1)*

## Section 17. HIV Medication

### 17.1 Disclosed at Hospital

Ubukhe wamxelela nawuphi na koonompilo besibhedlele ukuba une-HIV?

Expects a single option response (required)

- Ewe [1]
- Hayi [2]
- Andiqinisekanga [99]
- Ndiyala ukuphendula. [91]

### 17.2 AZT Usage Prior to Labour

Nceda undixelele ngexesha owaqalayo, owayekayo, nokuba ngosuku i-AZT uyithatha amaxesha amangaphi phambi kokuba ubeleke: (INQAKU KUMPHATHI WODLIWANONDLEBE: Abathathi-nxaxheba baqalisa nge-AZT nangaliphi na ixesha ukuqalela kwiiveki ezingama-28. Umthathi-nxaxheba wathatha ipilisi yanye kabini ngemini ngelo xesha lonke kungekho ntsuku azitsibayo. ISIKORA NJENGOKO SIPHELELE. Xa umthathi-nxaxheba ebeyekile ukuzisebenzisa iipilisi phambi kokuba abeleke ngenxa yaso nasiphi na isizathu, ISIKORA SAKUBA ASIPHELELANGA. Xa ebeneentsuku azitsibileyo phakathi kweeveki ezingama-28 nokubeleka kwakhe okanye ayekle aze aluqalise unyango, ISIKORA SIPHAZAMISEKILE.)

Expects a single option response (required)

- Ngokupheleleyo. [1]
- Ixesha elingaphelelanga [2]
- Bekukho ukuphazamiseka [3]
- Ndiyala ukuphendula. [91]

### 17.3 Medication to Prevent HIV Transmission

Amayeza akho uwasebenzisile okuthintela ukunwenwa kwe-HIV ngexesha lokubeleka?

Expects a single option response (required)

- Ewe [1]
- Hayi [2]
- Andiqinisekanga [99]
- Ndiyala ukuphendula. [91]

Branches

If response Not Equal 'Ewe [1]' then skip to *NVP Tablet at Onset of Labour (17.5)*

### 17.4 AZT Usage During Labour

Nceda undixelele ngexesha owaqalayo, owayekayo, nokuba bekuxesha liphi lekhefu ubuthathe ii-AZT xa ubusiya kubeleka: (INQAKU KUMPHATHI WODLIWANONDLEBE: Qalisa nge-AZT qho emva kweeyure ezi-3 kanye ngelixesha ubelekayo - ISIKORA NJENGOKO SIPHELELE. Xa engaluthathanga unyango ngaphantsi kweeyure ezi-2 zelo xesha lamathamathwa qho emva kweeyure ezi-3, kodwa amathamatho ebisoloko ewongeza, ISIKORA NGOKU SIPHAZAMISEKILE.)

Expects a single option response (required)

- Ngokupheleleyo [1]
- Ixesha elingaphelelanga [2]
- Bekukho ukuphazamiseka [3]
- Ndiyala ukuphendula. [91]

### 17.5 NVP Tablet at Onset of Labour

Ubukhe wasela ipilisi enye eyi-NVP xa ubuqalisa ukulunywa?

Expects a single option response (required)

- Ngokupheleleyo [1]
- Ixesha elingaphelelanga [2]
- Ndiyala ukuphendula. [91]

### 17.6 NVP Syrup Within 24h

Usana lwakho lusezwe ithamo le-NVP eyinyhobha-nyhobha ngexesha leeyure ezingama-24 ekuzalweni kwalo? (INQAKU KUMPHATHI WODLIWANONDLEBE: Usana lufumene ithamo le-NVP ngexesha leeyure ezingama-24 kanye emva kokuba luzelwe, ISIKORA SIPHELELE. Usana alufumenenga thamo emva kokuba luzelwe, ISIKORA ASIPHELELANGA. Usana lufumene ithamo le-NVP ixesha elingaphezulu kweeyure ezingama-24 emva kokuba luzelwe, ISIKORA SINJENGOKO BESIBAMBEZELEKILE.)

Expects a single option response (required)

- è Ngokupheleleyo [1]
  - è Ixesha elingaphelelanga [2]
  - è Kubekho ukubambezeleka [3]
  - è Ndiyala ukuphendula. [91]
- 

#### 17.7 AZT Dispensed

Ubuyinikiwe i-AZT kusenzelwa usana lwakho?

Expects a single option response (required)

- è Ewe [1]
- è Hayi [2]
- è Ndiyala ukuphendula. [91]

Branches

If response Not Equal 'Ewe [1]' then skip to *Disclosure and Protection Prompt (18.1)*

---

#### 17.8 AZT Course Length

Bebungakanani ubude bexesha obulinikiwe?

Expects a single option response (required)

- è Zisi-7 iintsuku [1]
  - è Zingama-28 iintsuku [2]
  - è Elinye ixesha [95]
  - è Andazi [99]
- 

#### 17.9 Medicating as Prescribed

Usana lwakho ubulunika amayeza ngendlela obuxelelwe ngayo?

Expects a single option response (required)

- è Ewe [1]
  - è Hayi [2]
  - è Ndiyala ukuphendula. [91]
- 

## Section 18. Disclosure and Protection

#### 18.1 Disclosure and Protection Prompt

Enkosi. Eli licandelo lokugqibela lolu dliwanondlebe. Ndinemibuzo enje embalwa ngoku malunga nenkcazelo endinokuyifumana nge-HIV.

---

#### 18.2 Able to disclose

Xa ubufuna ukunika inkcazelo ngemeko yakho emalunga ne-HIV, ubunokukwazi ukuyenza loo nto?

Expects a single option response (required)

- è Ewe [1]
  - è Hayi [2]
  - è Andiqinisekanga [99]
  - è Ndiyala ukuphendula. [95]
- 

#### 18.3 Disclosed to Partner

Iqabane lakho ulixelele ngemeko yakho emalunga ne-HIV?

Expects a single option response (required)

- è Ewe [1]
  - è Hayi [2]
  - è Andinalo iqabane [3]
  - è Ndiyala ukuphendula. [91]
- 

#### 18.4 Number family disclosed

Bangaphi abakowenu osele ubaxelele?

Expects a numeric response (required)

---

**18.5 Number people outside family disclosed to**

Bangaphi abantu abangengabo abakowenu ubaxeleleyo ngemeko yakho ye-HIV?

Expects a numeric response (required)

---

**18.6 Worry church disclosure**

Ungakhathazeka na xa ibandla okhonza nalo linokwazi ngemeko yakho ye-HIV?

Expects a single option response (required)

- Ewe [1]
- Hayi [2]
- Andiqinisekanga [3]
- Akwenzeki – akukho cawa [4]
- Ndiyala ukuphendula. [91]

---

**18.7 Participant Comfortable Disclosing Partner**

Nceda ukhethe ukuba kwezi zilandelayo, yeyiphi, (ukuba ikhona), oziva ukhululekile ukuthetha ngayo NEQABANE lakho:

Expects multiple selected options (required)

- Ukukhulelwa [1]
- Intsholongwane i-HIV [2]
- Ukucela uncedo xa ulufuna [3]
- Ukuthetha phandle xa izinto zihamba ngobugwenxa [4]
- Ukuthetha ungafihlisi ngemeko yakho yokuba ne-HIV [5]
- Akanamlingani [6]
- Akukho nanye kwezi zingentla [7]

---

**18.8 Participant Comfortable Disclosing Clinic Nurse**

Nceda ukhethe ukuba ngowuphi (ukuba ukhona), oziva ukhululekile ukuba ungathetha naye: UMONGIKAZI okanye ABANTU ABASEBENZAYO EKLINIKHI malunga:

Expects multiple selected options (required)

- Ukukhulelwa [1]
- Intsholongwane i-HIV [2]
- Ukucela uncedo xa ulufuna [3]
- Ukuthetha phandle xa izinto zihamba ngobugwenxa [4]
- Ukuthetha ungafihlisi ngemeko yakho yokuba ne-HIV [5]
- Akukho nanye kwezi zingentla [6]

---

**18.9 Participant Comfortable Disclosing Female Relative/Friend**

Nceda ukhethe ukuba ngowuphi (ukuba ukhona), oziva ukhululekile ukuba ungathetha naye: ngowakho UMAMA/ USISI/ ISIZALWANA SAKHO ESILIBHINQA/ UMHLOBOKAZI WAKHO malunga:

Expects multiple selected options (required)

- Ukukhulelwa [1]
  - Intsholongwane i-HIV [2]
  - Ukucela uncedo xa ulufuna [3]
  - Ukuthetha phandle xa izinto zihamba ngobugwenxa [4]
  - Ukuthetha ungafihlisi ngemeko yakho yokuba ne-HIV [5]
  - Akukho nanye kwezi zingentla [6]
-

## Section 19. End of Survey

### 19.1 Voucher given

Umthathi-nxaxheba ebeyinikiwe ivawutsha yokutya eyi-R80?

Expects a single option response (required)

Ewe [1]

Hayi [2]

---

### 19.2 End

Ngoku sowulufincile uphando. Ungabuyela apho ubukho, uhlole iindlela obukade uphendula ngayo okanye ukhethe OKULANDELAYO ukuze uligqibezele eli candelo.

---

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## **APPENDIX F**

**Questions used from PMMS for this sub-study from birth questionnaire**

Birth assessment (English and Xhosa)

Questions to be used for this sub-study

3.1

4.3

4.4

4.5

4.6

4.7

4.8

4.15

4.16

4.17

11.5

11.6

11.8

11.9

11.11

16.1

## **APPENDIX G**

## **Informed Consent Form (English Version)**

### **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. 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) and Dr. Mary O'Connor (UCLA) 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 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, haemaglobin, 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.

#### **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.

### **CONFIDENTIALITY**

The information collected in this study cannot be identified with you. It is confidential.

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, 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

## **APPENDIX H**

## **IFom yeMvumo engeNgqiqo (Consent form, Xhosa Verstion)**

### **ULamlo lokuTyelela amaKhaya kwiiLokishi zoMzantsi-Afrika: UThintelo lwentsholongwane i-HIV, loTywala nokungoNdleki kwabaNtwana**

#### **OKU KUMALUNGA NANTONI?**

Uyamenywa ukuba uthathe inxaxheba kwiprojekti yophando. Nceda uzinike ithuba ufunde iinkcukacha ozinikwayo apha, zizo eziza kunika inkcazelo ngeenkukacha zale projekti. Nceda ubuzise kumqokeleli weenkukacha nayiphi na imibuzo, ngayo nayiphi na inxalenye yale projekti obonayo ukuba akuyiqondi ngokupheleleyo. Ukuthatha kwakho inxaxheba kwesi sifundo **ukwenza ngokuthanda kwakho**. Oko kuthetha ukuba usenokwala ukuze ungayithathi inxaxheba, okanye nangaliphi na ixesha usenakho ukurhoxa kwesi sifundo. Loo nto ayisayi kukuchaphazela kakubi nangayiphi na indlela.

Esi sifundo samkelwe yiKomiti yoPhando ngezoLuntu kwiDyunivesithi yaseStellenbosch. Siza kuqhutywa ngokulandela imiqathango yesiBhengezo seHelsinki, iziKhokelo zoMzantsi-Afrika zemiSebenzi emiHle yeeKlinikhi neyeQumrhu eliPhanda ngezoNyango, (MRC), nangeziKhokelo zokuziPhatha kwimicimbi yoPhando.

#### **SINGOBANI THINA, KUTHENI LE NTO SILAPHA?**

Siphuma kumaZiko esoNdlo sePhilani nakwiDyunivesithi yaseStellenbosch. Sisebenza neZiko elimele iMpilo yoLuntu kwiDyunivesithi yaseCalifornia, eLos Angeles. Ngoku siqalisa isifundo esiza kuqhutywa kude kube yiminyaka embalwa. Siza kuqokelela iinkcukacha ezimalunga nokukhulelwa koomama abasebatsha nangabantwana babo, ukususela kwixesha lokukhulelwa kukamama lude usana lwakhe lube ludala kangangeenyanga ezili-18. Isizathu sokuxakeka kwethu ngesi sifundo sesokuba sifuna ukuqulunqa inkqubo yolamlo olusebenzayo ukuze sixhase impilo yoomama abakhulelweyo neentsana zabo kule ngingqi.

I-National Institute on Alcohol Abuse and Alcoholism, oko kukuthi, iziko likaZwelonke elijongene nokuSetyenziswa gwenxa koTywala, nokweNzakaliswa kweNtlalontle ngoTywala, elise-United States, lilo elisihlawulelayo esi sifundo.

UGqirha Mary Jane Rotheram-Borus weDyunivesithi yaseCalifornia, eLos Angeles (UCLA) nguye umPhandi oyiNtloko kwesi sifundo. UNjingalwazi Mark Tomlinson (weDyunivesithi yaseStellenbosch), uGqirha Ingrid le Roux (wePhilani) noGqirha Mary O'Connor (UCLA) nabo bakwangabaPhandi kwesi sifundo.

#### **ISIZATHU SOKUFUNA KWETHU UKUBA WENA UTHATHE INXAXHEBA**

**Uyamenywa ukuba ube yinxalenye yolu phando ngenxa yokuba:**

- Kule ngingqi ungumama okhulelweyo.
- Iminyaka yobudala bakho ili-18 okanye umdala ngaphezu koko.

#### **KOKUPHI OKUFUNEKAYO?**

Ukuba ulivolonti elithatha inxaxheba kwesi sifundo, singathanda ukuba wenze ezi zinto zilandelayo:

## Udliwanondlebe

Singathanda ukudlana iindlebe nawe ngemibandela emininzi neyahlukeneyo engobomi bakho, oko kubandakanya iinkcukacha ezimalunga nabantu bakowenu, ezingempilo yakho, ezingokuziphatha kwakho kumgca wesondo, ezingeengcinga onazo ngemibandela yentsholongwane i-HIV, ngokwenzayo imihla ngemihla, ngotywala, ngokusetyenziswa kweziyobisi, kunye nolwazi ngokubanzi ngokunonophelwa kwabantwana nangokondliwa kweentsana.. Eminye imibuzo ingangqala ngqo emicimbini yakho yabucala kunjalo ikutsarhe, kodwa konke oko ukwenza ngokuthanda kwakho. Nantsi eminye imizekelo yemibuzo onokuyibuzwa: “Uyabusela utywala?”, “Bangaphi abantwana onabo?” kwakhona “Kunyaka ophelileyo mangaphi amaqabane obudibana nawo ngomcimbi wesondo?” Xa ukulo udliwano-ndlebe soze silibuze igama lakho. Iimpendulo zakho soze zidityaniswe egameni lakho okanye kwiinkcukacha ezijongene nesiqu sakho. Siyaqonda ukuba udliwano-ndlebe lungathatha malunga nemizuzu engama-90.

Ukuba usavuma ukuba yinxalenye yesi sifundo, usaza kubuzwa imibuzo kangangezihlandlo ezi-3 ukusuka kwesi, xa usana lwakho luludala ngeentsuku ezi-6, xa luludala ngeenyanga ezi-6 naxa luludala kangangeenyanga ezili-18. Kwezi zihlandlo zodliwano-ndlebe, imibuzo iza kufana nale ndiza kukubuza yona namhlanje, yaye usana lwakho luza kubekwa esikalini kujongwe ubunzima balo, nobude bosana buza kuqwalaselwa.

Siza kuya ezindaweni ezahlukeneyo ezizezi: eHarare, eMfuleni, eNdlovini naseMakaza, kulapho siza kucela oomama abafana nawe ukuba bazibandakanye kulo lonke udliwanondlebe. Siza kucela oomama abakhulelweyo abamalunga ne-1800 bephelele ukuba mabathathe inxaxheba.

## Ulamlo

Kwesi sifundo kuza kufakwa amaqela angoomama abakhulelweyo abavela kwiindawo ezimbini. Kwindawo enye oomama abasesifundweni sethu baza kuqhuba ngokufumana ukunonophelwa kwicala lonyango ngale ndlela bekuza kwenziwa ngayo nakwiiklinikhi zikarhulumente. Abantu abavela kumaZiko eSondlo sakwaPhilani baza kutyelela abanye abakwezinye iindawo kumakhaya abo. Xa sifuna ukwenza izigqibo zokuba indawo yakho izakuba phi na, siza kuncedisa ngemali. Ukuba iqela lakho lelinye lalawo aza kutyelelwa kumakhaya abo yiPhilani, uza kucelwa ukuba wena uvumele uMama oQeqeshiweyo nokwangumcebisi ukuba makasoloko ekutyelela amaxesha amaninzi ngeli xesha usakhulelweyo, aphinde asoloko ekutyelela xa seluzelwe usana lwakho. Umsebenzi womcebisi ngowokuba makakuxhase ngeli xesha lonke usakhulelweyo, uza kuthetha nawe ngezinto ezininzi ezahlukeneyo, oko

kuquka indlela akunonophelo ngayo phambi kokufumana kwakho usana, ukutya, ukusela, ukusebenzisa amayeza akufaneleyo kunye neevithamini ngoku usakhulelweyo, ukondliwa kosana lwakho, ukukwazi ukumelana okanye ukuyithintela intsholongwane i-HIV kunye nesiFo sePhepha, ukunonophelwa kwempilo yosana lwakho nokulonwabisa. Ngamanye amaxesha otyelelo umcebisi uza kufika nomnye umntu ozakube ehamba neqela eliphandayo. Lo mntu kuziwe naye liqela uza kuqeqeshelwa imixholo emalunga nokutyelela amakhaya yaye uzakube eyinxalenye yeli qela liphandayo.

Nokuba kuyatyelelwa na kwikhaya lakho okanye akutyelelwa, usenokucelwa ukuba uphendule imibuzo xa usana lwakho seluneveki enye luzelwe, xa luludala kangangeenyanga ezintandathu okanye ezilishumi elinesibhozo.

### UHlolo lweRekhodi yoNyango

Siza kujonga kwiirekhodi zonyango lwakho nakwiKhadi loSana lwakho elimalunga neNdlela ebheka eMpilweni. Siza kuqokelela iinkcukacha kwezo rekhodi. Ezi nkcukacha zibandakanya:

- IRekhodi yeTB
- Iziphumo ze-ART
- Ii-CD4 Counts
- Ukusetyenziswa kwecuba
- Ukusetyenziswa koTywala
- Ukusetyenziswa kweziyobisi
- Ezinye iindlela zokondliwa kosana
- Iziphumo zokuXilongelwa izifo onokuzifumana ngomgca weSondo (iziFo eziFika ngoSulelo kumgca weSondo)
- Iziphumo zomchamo (i-glucose)
- Ingxilongo yeGazi (udidi lwegazi, isibomvisigazi /ihimoglobin, ne-ferritin)

Emva kokuba luzelwe usana lwakho, siza kuziqokelela ezi nkcukacha:

- Ubunzima bosana ekuzalweni kwalo
- Ubude balo
- Ubungakanani besazinge sentloko yosana
- I-APGAR
- Irekhodi yokugonywa

- Olu sana luliwele na.
- Ingaba kweli khaya wakha wakhona umntu one-TB okanye osenayo nangoku?
- Oodade okanye oobhuti bolu sana ubunzima babo bungaphantsi na kobu bolu sana?
- Ingaba usana olu luyayincanca na ibhotile?
- Usana lunaso isongezelelo esinguVitamin A?
- Ingxilongo yezifo nonyango lwazo

Ezi nkcukacha soze sizidibanise nawe okanye nosana lwakho.

### **IFOM EZA KUSINCELA UKUZE SIKUFUMANE**

Kufuneka sisoloko siqhagamshelana nawe ngeli xesha ukwesi sifundo. Uncedo lokuba oko kwenzeka, thina sinefom esinethemba lokuba uza kuyizalisa ngeenkukacha. Ifom le iyakucela ukuba ubhale amagama neenombolo zeemfonomfono zabantu abanakho ukuxela ukuba umntu angaqhagamshelana njani nawe. Abo bantu sakubafowunela kuphela xa inguwe ongafumanekiyo kuqala. Soze sitsho ukuba wena uyabandakanyeka kwesi sifundo, okanye soze sibaxelele nto ngawe. Iinkukacha osinika zona ezikule fom zakugcinwa kwindawo engadibenanga nezinye iinkukacha osinika zona.

### **UKUTHATHA INXAXHEBA NOKURHOXA**

Ngokwenene singathanda ukuba ubekhona kwesi sifundo sethu, kodwa ukubandakanyeka kwakho kuso kwenzeka **ngokuzithandela kwakho**. Soze wohlwaywe NANGALUPHI NA UHLOBO xa uziqondayo ukuba akufuni kuthatha nxaxheba, okanye xa ufuna ukurhoxa ungabi saqhuba ngokuthatha inxaxheba.

Aba Gqirha: uTomlinson no-le Roux baza kuphendula imibuzo emalunga nesi sifundo xa uthanda ukubuzisa kubo.

- ◆ UGqirha Tomlinson nantsi inombolo yakhe: 021 808 3446.
- ◆ UGqirha le Roux nantsi inombolo yakhe: 021 387-5124.
- ◆ Ukuba usenayo eminye imibuzo okanye unezikhaziso ngemibuzo engaphendulwanga kakuhle ngala malungu angentla aphantsi, ungatsalela umnxeba kwiKomiti ePhanda ngezoLuntu. Nantsi inombolo yemfono-mfono: 021-938 9207.
- ◆ UGqirha Rotheram-Borus nantsi inombolo yakhe: +310-794-8280.

Nantsi eyefeksi yakhe: +310-794-8297. Xa ufuna ibengabo abahlawulela ukubafowunela kwakho, loo nto ivumelekile. Nantsi idilesi yakhe:

UCLA Centre for Community Health  
10920 Wilshire Blvd., Suite 350



Los Angeles, California, 90024, USA.

### **KUZA KWENZEKA NTONI NGEENKCUKACHA EZIQOKELELWEYO?**

Iinkcukacha eziqokelelweyo ziza kusinceda senze izigqibo ngendlela yokuphucula inkxaso nempilo yabaqalayo ukuba ngoomama nabakhulelweyo boMzantsi-Afrika. Sinethemba lokuba ezi nkcukacha zakusetyenziselwa ukuphucula iinkonzo nenkxaso.

### **IMINGCIPHEKO ESENOKUVELA NOKUNGWABI**

Eminye yemibuzo esiza kuyibuza ingakwenza ungonwabi okanye uxakaniseke. Akukho mfuneko yokuba uphendule nawuphi na umbuzo xa ungafuniyo. Xa ufikelwa kukuxakaniseka, singakunika uluhlu lwabantu abafumanekayo nabangathethayo nawe, xa ufuna ngolo hlobo okanye naxesha liphi na xa ufuna.

### **ABAYIPHENDULEYO IMIBUZO KUNYE NABAHLALI BAFUMANA NTONI APHA?**

Wena usenokungalufumani uncedo kwesi sifundo, noxa kunjalo ukusoloko utyelelwa kwikhaya lakho kungakunceda ngokuthe ngqo xa ukhoyo apha ekuhlaleni nalapho kusebenza khona ooMama abangabaCebisi.

### **INTLAWULO YOKUTHATHA INXAXHEBA**

Akuzokuhlawula ngokubakho kwesi sifundo. Uza kufumana ivawutsha / iphepha elichaza imali onokuthenga ngayo, iya kufikelela kwi-R80 xa unakho ukuyiphendula imibuzo namhlanje. Ivawutsha yokutya uza kuyifumana xa ufikelele kwizigqibo zokuyiphendula imibuzo kwixesha elizayo.

### **IIFOTO**

Singathanda ukukufota phambi kodliwano-ndlebe lokuqala ukuze sincedakale ngokukwazi size sikuchonge xa ufika ngexesha lodliwano-ndlebe lwexesha elizayo emva kokuzalwa kosana lwakho. Ukuba uyavuma le foto yakho sakuyigcina kwikhompyutha etshixiweyo ukuze kungabikho mntu ufikelelayo kwiinkcukacha ngaphandle kwabo bantu baphandayo. Ifoto yakho ayisayi kudityaniswa neenkukacha zakho ubuqu ukuqalela kulo naluphi na udliwano-ndlebe.

## **UKUSHICILELWA KWAMAZWI UKUZE AVAKALE**

Imibuzo yanamhlanje iza kushicilelwa kumatshini wesandi. Imibuzo siyayishicilela ukuze siqonde ukuba kubuziswe ngokuchanekileyo na. Ngabantu abasebenza kolu phando kuphela abavumelekileyo ukuba bamamele olu shicilelo lwamazwi. Akusayi kuxelwa ukuba ngubani na lo uthethayo. Nolo shicilelo lwamazwi luza kutshixelwa ngexesha lesifundo. Kwakube kugqityiwe ukusetyenzwa ngale projekti, yonke loo nto iza kutshatyalaliswa.

Ukuba uyithathile inxaxheba kudliwano-ndlebe lwexesha elizayo, nangelo xesha amazwi aza kushicilelwa.

## **IMFIHLELO**

Iinkcukacha eziqokelelweyo kwesi sifundo azinakudityaniswa nawe. Konke oku kuyimfihlelo.

Kuphela ezi nkcukacha usinike zona sakuzisebenzisela uphando. Zakugcinwa kwiikhompyutha kwindawo ekhuselekileyo. Zakukhuselwa nge-password, oko kukuthi, ngendlela ethile yokutyhila ukwazi ukusebenzisa ikhompyutha. Zakugcinwa ezikhabhathini ezitshixwayo, bambalwa abavumelekileyo ukuba bafikelele kuzo. Kuphela ngabantu abakhoyo kuphando abanokuzibona bazifunde iinkcukacha osinike zona. Abantu abahlawulela olu phando, abaphononongi besifundo, abaphicothi-zincwadi okanye iKomiti yabaziiNtloko kwezoPhando (REC) kungafuneka baziphonononge zonke iirekhodi zesifundo kwilixa elithile, noxa kunjalo akukho mntu unakho ukukuchonga wena. Iziphumo zesi sifundo zingaziwa nguwonke-wonke, kodwa iinkcukacha ezijongene nesiqu sakho zakuhlala ziyimfihlelo.

Ukuba kukho imibuzo onayo wamkelekile ukuba uqhagamshelane neKomiti yemiKhwa esesikweni ye-Ofisi ekwiDyunivesithi yaseStellenbosch. Nantsi idilesi:

Private Bag X1

Matieland 7602

021-938-9075.

## IMVUMO YOKUTHATHA INXAXHEBA

Ndiyavuma ukuthatha inxaxheba kwesi sifundo sophando. Oko kuza kunceda ekuqulunqeni inkqubo yokuxhasa amakhosikazi akhulelweyo, oomama abaqalayo ukukhulelwa, nabantwana balo.

Ndakuyiphendula imibuzo yenu. Imibuzo leyo imalunga nemvelaphi yam, ngeengcinga, ngovakalelo, ngemeko, ngobunzima, ngolwazi nangempilo. Abasebenzayo ngophando bangazihlola iirekhodi zonyango lwam.

Xa kukho ooMama abangabaCebisi abathunyelweyo ukuba basebenze kwingingqi yam, ndakuthatha inxaxheba xa betyelela amakhaya.

Ndiyaqonda ukuba ndithatha inxaxheba ngokuthanda kwam, yaye ndingayeka ukuthatha inxaxheba nanini na.

Iphendulwe yonke imibuzo yam emalunga nesi sifundo sophando nokuthatha kwam inxaxheba kuso.

Ndiyayiqonda into yokuba ndisenokungancedakali mna ubuqu kolu phando.

Ndiyifumene inombolo yemfono-mfono yomntu xa ndifuna ukuthetha ngemibandela enokuvela ngexesha lemibuzo.

Ndiyayiqonda into yokuba le fom yemvumo ayisayi kudityaniswa nendlela endiphendule ngayo. Iimpindulo zam zakuhlala ziyimfihlelo.

.....

Ukusayina komthathi-nxaxheba: Igama lomthathi-nxaxheba:

.....

Umhla:

**UKUSAYINA KOMPHANDI OKANYE KOMYILI:**

Kwezam iimbono lo mbandela wenzeka ngokuthanda komntu ozaziyo ukuba uyinikezele ngengqiqo imvumo, ukwanawo namandla asemthethweni okunikezela ngemvumo eqiqa ukuze ayithathe inxaxheba kwesi sifundo sophando.

.....

Igama lomPhandi okanye lomYili:

.....

Ukusayina komPhandi okanye komYili:                      Umhla:

## **APPENDIX I**



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01 December 2009

**MAILED**

Prof M Tomlinson  
Department of Psychology  
Main Campus  
Univ of Stellenbosch  
7500

Dear Prof Tomlinson

**"Home visits interventions in south African townships: Prevention of HIV, Fetal Alcohol Syndrome and malnutrition"**

**ETHICS REFERENCE NO: N08/08/218**

**RE : APPROVAL**

It is a pleasure to inform you that the Chairman of the Health Research Ethics Committee has approved the sub-study to N08/08/218 on 30 November 2009, including the ethical aspects involved, for a period of one year from this date.

This project is therefore now registered and you can proceed with the work. Please quote the above-mentioned project number in ALL future correspondence.

Please note a template of the progress report is obtainable on [www.sun.ac.za/rds/](http://www.sun.ac.za/rds/) and should be submitted to the Committee before the year has expired. The Committee will then consider the continuation of the project for a further year (if necessary). Annually a number of projects may be selected randomly and subjected to an external audit.

Translations of the consent document in the languages applicable to the study participants should be submitted.

Federal Wide Assurance Number: 00001372  
Institutional Review Board (IRB) Number: IRB0005239

The Health Research Ethics Committee complies with the SA National Health Act No.61 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 Part 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes 2004 (Department of Health).

08 December 2009 08:59

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Fakulteit Gesondheidswetenskappe • Faculty of Health Sciences



Verbind tot Optimale Gesondheid • Committed to Optimal Health

Afdeling Navorsingsontwikkeling en -steun • Division of Research Development and Support

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Yours faithfully

**MRS EL ROHLAND**

**RESEARCH DEVELOPMENT AND SUPPORT**

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Fax: 021 931 3352

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