POSTPARTUM DEPRESSION AND ITS ASSOCIATION WITH BREASTFEEDING PRACTICES AND INFANT DEVELOPMENT IN THE BUEA HEALTH DISTRICT, CAMEROON

BY

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DECLARATION

I hereby declare that this research project is my original work and that it has not been submitted in part or whole to any other institution for the attainment of a degree or diploma.

Where other sources of information have been used, the authors were duly acknowledged and listed in the references.

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CERTIFICATION

I hereby certify that this research project was written by Tamambang Rita .F. a student of Centre for Child and Adolescent Mental Health, University College Hospital, University of Ibadan and has been reviewed and approved.

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KEY OF ABBREVIATIONS

BTLF: Bottle Feeding

CIDI: Composite International Diagnostic Interview

DSM: Diagnostic statistical manual

EBF: Exclusive Breastfeeding

EIBF: Early Initiation of Breastfeeding

EPDS: Edinburg Postpartum depression

LMIC: Low and Middle Income Countries

SSA: Sub-Saharan Africa

PDF: Predominant Feeding

PPD: Postpartum Depression

ABSTRACT

Background:

According to the World Health Organization (WHO), Maternal Mental Health is "a state of well-being in which a mother realizes her own capabilities, can cope with the normal stresses of life, can work productively and fruitfully and is able to make contributions to her community". The presence of "Mother" is a core feature in child survival strategies because she is the one who is supposed to begin health promotive and preventive measures such as breast-feeding, weaning, hygiene and sanitation. The state of the mother's mental health largely determines how she performs these functions, which are all important for a child's physical, cognitive and emotional development. A child with developmental delay is more likely to have academic difficulties and become less productive as an adult leading to a vicious cycle described in literature as inter-generational transmission of poverty. We therefore sought to, determine the prevalence and correlates of depression in mothers in the postpartum period, characterized the developmental profile and prevalence of under-nutrition in their infants and ascertained the association between maternal depression, infant development and breastfeeding practices

Methods:

This was descriptive cross-sectional study carried out in selected Infant Welfare Clinics (IWCs) in the Buea Health District (BHD) in Cameroon. One (1) Private and one (1) public health fascilities was randomly selected from the 4 health areas. A consecutive recruitment of 408 mother-infant pair was then carried out at the selected health fascilities. The Edinburgh Post-Natal Depression Scale (EPDS) was used to screen mothers for depression. Mothers who scored seven (7) and above on the EPDS were administered the Composite International Diagnostic Interview (WMH-CIDI) to make a definitive diagnosis of depression. The Ages and Stages Questionnaire was used to

assess child development and the Breastfeeding Practices and Intent Questionnaire explored breast-feeding practices.

Data was analysed using SPSS version 21. Categorical variables were described using frequencies and proportions, continuous variables were described using means. Chi–square was used to determine associations between maternal depression, infant development and breastfeeding practices. Logistic regression was used to determine the predictors of postpartum depression and developmental delay. Level of significance was set at 5%.

Results:

Four hundred and eight (408) mother-infant pairs who presented at the IWCs for immunization were recruited into this study. The mean age of the mothers was 27 ± 5.2years while that of their infants was 5 ± 3.2 months**.** The prevalence of postpartum depression (PPD) was 26.7% with peak prevalence during the first 10 weeks postpartum. The predictors found to be independently associated with postpartum depression were being an adolescent (aOR=3.47, CI=1.07-11.36), having an unplanned pregnancy (aOR=2.67, CI=1.05-6.73), exposure to socio-political crisis (aOR=2.69, CI:1.46-4.95) and marital conflict (aOR=11.04, CI=4.9-24.82) in the last 6 months. Also, having a male child (aOR=0.49, CI=0.29-0.89) and being married (aOR=0.31, CI=0.29-0.87) were protective. The prevalence of developmental delay was 23.8% while 44.8% of the mothers reported they carried out optimum practice of breastfeeding. There was no association between postpartum depression and developmental delay (x^2= 2.56**,** p=0.11) and neither was there any association between postpartum depression and breastfeeding practice (x^2= 0.45**,** p=0.57)**.** The mean duration of breastfeeding of mothers who were depressed was 8.37 ± 3.9 months while the mean duration of breastfeeding for mothers who were not depressed was 9.64 ± 3.8 months.

This difference was statistically significant (t-value= -3.05, p-value= 0.003).

Conclusion: This study contributes to filling the knowlegde gap regarding the adverse effects of PPD on infant health and breastfeeding practices. The prevalence of PPD in the BHD is quite high with 3 out of every 10 woman diagnosed of depression in the postpartum period. The study identifies the need for CAMH training of helath care providers by the government in primary health care setting to ensure routine screening, early identification and management of cases of PPD and developmental delay. Our study also found a strong cross-sectional association between the well being of mothers, duration of breastfeeding and health of their babies. This emphasises the need to provide mothers with the psychosocial support they require to carry out their roles as mothers. Thus consideration should be given to the integration of maternal mental health into the child survival and feeeding programs.

Keywords: Maternal mental health, Infant development, Breastfeeding practices

CHAPTER ONE

INTRODUCTION

1.1 Background

The World Health Organization (WHO) defines maternal mental health as "a state of well-being in which a mother realizes her own capabilities, can cope with the normal stresses of life, can work productively and fruitfully and is able to make contributions to her community"(WHO, 2005). Maternal mental health is a major public health challenge as approximately 10% of pregnant women and 13% of women in the post-natal period will experience a mental health condition (WHO, 2008). The prevalence of mental health conditions is reported to be higher in developing countries with rates as high as 15.6% during pregnancy and 19.9% post-partum. The most common mental health condition reported in the post-natal period is depression (Engle, 2009) although prevalence rates have been found to vary significantly across different settings in developing countries (Fisher *et al.*, 2012). For example, in a study carried out by *Cooper et al* in South Africa in 1999, the prevalence of post-natal depression was 30% (Cooper *et al.,* 1999), while a study carried out in Ethiopia recorded a low prevalence of 5% (Hanlon *et al.,* 2010). Several methodological differences such as instruments used for screening and making a diagnosis, sample size and location could account for these differences (Hanlon *et al.,* 2010). In addition, the rates of exposure to perinatal risk factors could account for these differences (Adewuya *et al.,* 2005). Documented risk factors of postpartum depression include, young maternal age, birth of a child of the non-preferred sex, maternal HIV/AIDS, and increased stressors in the environment such as disasters, violence and migration (Broadhead & Abas, 1998; Dhanda & Narayan, 2007; Stein *et al.,* 2005)

During early childhood development, there is rapid growth in the physical, cognitive and sociocultural domains(Walker *et al.*, 2011). Childhood is also a phase of vulnerability where negative experiences the child is exposed to can have lifetime consequences for development. In childhood, the foundation is laid for growth and it is thus a very critical period in the child's life(Elder & Shanahan, 2007; Lerner *et al.*, 2011). Several factors have been identified that influence child development but they can be summarized by the Human Ecology Theory (Bronfenbrenner, 1979). The Human Ecology Theory proposes that a person's development is affected by everything in the surrounding environment and divides the environment in which a person lives into 5 domains. These five domains are the microsystem, the mesosystem, the exosystem, the macro system and the chronosystem. Bronfenbrenner opined that the microsystem is the closest system to the child and includes individual factors such as inherent biological characteristics, the family, school and day-care. Some authors have argued that the way in which the family functions is the most important factor in the microsystem that the family influences how and child fares in the early periods of life (Bornstein *et al.*, 2011; McCrae *et al.*, 2000).

A systematic review carried out a 12 low and middle income countries (LMIC) showed that 250 million children younger than 5 years fail to reach their developmental potential over a period of 1 year (Grantham-McGregor *et al.*, 2007). Grantham McGregor *et al* attributed this to 2 main factors, which are malnutrition and exposure to poverty. Contrary to the notion that malnutrition is due to inadequate nutritional intake, studies have recently shown that the prevalence of malnutrition is also high even in food-sufficient areas (Rahman *et al.*, 2004a). The implication of this is that, malnutrition may not only be a consequence of food insufficiency but could be secondary to depression in the mother (Rahman *et al.*, 2004a).

The field of perinatal psychiatry and mental health is a relatively novel field that deals with the mental health of mothers and aims at promoting the appropriate development of infants (Le Treut *et al.*, 2018). Postpartum depression is the most frequent maternal disorder seen in the post-

partum period (Glangeaud-Freudenthal *et al.,* 2011). Several articles have documented the relationship between maternal depression and poor infant growth and development. Research carried out in Nigeria, showed that infants of depressed mothers had significant delays in growth when compared with infants of non-depressed mothers (Adewuya, Ola, Aloba, Mapayi, & Okeniyi, 2008). Patel *et al* in their study in India (Patel *et al*, 2004) found out that babies who had under-nutrition at 6 months were 2.3 times more likely to have mothers who were depressed at 6 weeks post-partum (Patel *et al.,* 2002). Several possible mechanisms could link maternal depression with poor infant development. Firstly, low mood is associated with poor antenatal attendance which could lead to adverse outcomes like low birth weight and preterm birth (Grote *et al.,* 2010). Depressed mothers are at also at risk of adopting risky behaviours such as alcohol consumption and smoking (Hedegaard *et al*., 1994; Zuckerman *et al.,* 1989). Secondly, depression has a direct impact on the emotional quality of care and parenting practices thereby affecting the growth of the infant (Bettes, 1988) especially in LMIC where the environment may to be hostile.

The mother plays a central role in the care of the child (Patel *et al.,* 2004). During the first few months of life, she is saddled with the responsibility of initiating preventive measures such a hygiene and the uptake of good practices such as immunization and efficient breastfeeding practices (Rahman *et al.*, 2004a). Studies have shown that mothers who have low mood are less likely to believe that breastfeeding is important for their babies (Gallera *et al.*, 2006). The United Nations (UN) recommends exclusive breastfeeding for up to 6 months, with gradual introduction of complementary foods at 6 months while breastfeeding is continued to 2 years or beyond (UNICEF, 1990). Breastfeeding does not only provide the nutritional requirements needed for the child's development but also promotes the emotional development of the child through interactions it creates between the mother and child (Ng'andu & Watts, 1990).

There is therefore a relationship between maternal mental health, child development and breast-feeding practices. To the best of the knowledge of the author, this is the first study that assesses this relationship between these themes in Cameroon. We therefore set out to determine the prevalence of post-natal depression in mothers and to assess its association with infant development and breastfeeding practices in a semi-urban setting in Cameroon.

1.2 Statement of the problem

One in every six children entering school in South East Asia and Sub-Saharan Africa has a developmental delay (Grantham-McGregor *et al.,* 2007). Though poor health and nutrition had been one of the factors associated with this trend, recent evidence suggests that even in food sufficient regions in these parts of the world, there is significant delay in child development(Madeghe *et al*, 2016; Rahman *et al.,* 2004a). This therefore suggests that there are other factors and cultural practices that influence child development (Rahman *et al.,* 2004a). The quality of the mother's mental health has been reported to be a factor that can affect the process of development and growth in the child. Maternal depression impacts negatively on children's growth and development (Murray & Cooper, 1997).

A review of literature of studies conducted in 3 western countries(Brazil,Phillipines and Jamaica) showed that, for each standard deviation increase in the in early intelligence or developmental scores there was an associated substantial improvement in school outcomes later in life (Victoria *et al.,* 2003: Daniels & Adair., 2004: Walker *et al.,* 2005). A child with developmental delay is more likely to have academic difficulties and become less productive as an adult, (Adeniyi, 2018a) leading to a vicious cycle described in literature as the inter-generational transmission of poverty (Grantham-McGregor *et al.,* 2007). The future generation is affected and national development is substantially hampered making it less likely for developing countries to emerge as a large proportion of their human capital would not be productive (Omigbodun, 2018).

1.3 Justification and relevance of the study to Cameroon

Despite increasing evidence of an association between post-natal depression and impaired child growth, little or nothing is known about the situation in Cameroon. It is therefore important to establish whether the themes described above are consistent with what has been established in other LMIC.

Nkuo *et al* (2006) showed that the prevalence of malnutrition among under-fives in a semi urban setting in Cameroon was 58.1% (Nkuo-Akenji *et al.*, 2008), but the association of maternal mental health was not explored. A study carried out in the Limbe Health District in Cameroon (Ghogomu *et al*, 2016) found a high prevalence of (61.8%) depressive symptoms in mothers during the post-partum period(Ghogomu *et al.*, 2016). If an association between infant development and maternal mental health is established, it will not only identify risks but also will also inform policymaking.

The first UN sustainable development goal (SDG 1) is eradicating poverty, while the third is to ensure healthy lives and promote the wellbeing of all people (Thornicroft & Votruba, 2018). These two goals are directly linked to child development and therefore public health interventions that show more commitment to mental health will help to move towards their attainment (Rahman *et al.*, 2013). Moreover, accumulating evidence has shown that the neglected issue of maternal mental health could have contributed to reasons why LMIC did not achieve the millennium development goals (MDGs) (Miranda & Patel, 2005).

1.4 Research questions

This study was conducted with the following research questions;

1) What is the prevalence of maternal depression among mothers of children between 1 and 12 months attending Infant welfare clinics (IWCs) during the postpartum period?

2) What are the correlates of Postpartum depression (PPD) among mothers of children between 1 and 12 months attending IWCs during the postpartum preiod?
3) What is the prevalence of developmental delay among children between 1 and 12 months attending IWCs during the postpartum period?
4) What is the prevalence of undernutrition among chldren between 1 and 12 months attending IWCs during the postpartum period?
5) What is the association between maternal depression and infant development?
6) What is the association between maternal depression and breastfeeding practices?

1.5 Aim

The aim of this study was to determine the prevalence of postpartum depression among mothers of infants attending the infant welfare clinics in the Buea Health District of Cameroon and to evaluates the association between postpartum depression, reported breastfeeding practices and infant development.

1.6 Specific objectives

This study was conducted with specific 6 objectives as follows:

1. To determine the prevalence of maternal depression among mothers of children between 1 and 12 months attending IWCs during the postpartum period.
2. To determine the correlates of postpartum depression among mothers of children between 1 and 12 months attending IWCs during the postpartum period .
3. To determine the prevalence of developmental delay of children between 1 and 12 months attending IWCs.
4. To determine prevalence of under-nutrition in children between 1 and 12 months attending IWCs.

5. To determine the association between maternal depression and infant development.
6. To determine the association between maternal depression and breast feeding practices.

CHAPTER TWO

LITERATURE REVIEW

2.1 Maternal Mental Health

2..1.1 History of Maternal Mental Health

Although maternal mental health has received more focused attention in this present decade, its history dates back to more than 50 years ago (Widdowson, 1951). There was a fascinating historical report in the Lancet series about a naturalistic experiment which revealed the impact of the mother's mental health on the child's health and development (Widdowson, 1951). This experiment took place in two orphanages referred to as "Bienenheuse" and "Volgennest" in the post-war era in Germany. These orphanages housed children of both sexes between the ages of 4 and 14 years (Widdowson, 1951). According to Widdowson (1951), the children in both orphanages had some degree of undernutrition but those in Bienenhause were a little worse than their counterparts in Volgennest. The researchers then decided to follow up the children for a period of one year during which they took anthropometric parameters (height and weight) every fortnight. The first year period was divided into 2 phases namely, the first 6 months and second 6 months. During the first 6 months, neither homes received any additional food, but during the second half, the Volgennest orphanage received additional food in form of bread. The results showed that, during the first 6 months, the rate of weight gain in Volgennest was higher than the rate of weight gain in Bienenhause but surprisingly in the second half, this position was reversed despite provision of additional food in the Volgennest orphanage. An additional factor that neutralized the effect of the additional food was discovered as the researchers realized that just at the time when the additional food was provided, something else happened. The house mother of the Volgennest orphanage left and was replaced by the housemother of the Bienenhause orphanage while a new matron took over the Bienenhause orphanage. The new housemother of the

Bienenhause orphanage had the same temperament as the mother who used to take care of the Volgennest orphanage in that they were both happy people, fond of children and the children were also fond of them too. The researchers therefore concluded that happy mothers who were fond of their children would complement the food and nutrition given to them but harsh handling of children by mothers can slow down the growth and development of children and ruin well planned nutritional programmes (Widdowson, 1951).

2.1.2 Definition of Maternal Mental Health

So what then is maternal mental health? There is no standard definition for maternal mental health. However, Rahman *et al* (2008) modified the WHO definition for mental health and defines maternal mental health as" a state of well-being in which a mother realizes her own abilities, can cope with the normal stresses of life, can work productively and fruitfully and is able to make a contribution to her environment (Rahman *et al*, 2008, WHO, 2005).

2.2 Maternal mental health conditions in the post-partum period

The post-partum period in psychiatry refers to the first one year after child birth (Kumar *et al.*, 2016). Maternal mental disorders occur both during pregnancy and after childbirth. This study focuses on the postpartum period defined as the first year after birth and there is ample evidence of increased prevalence rates of mental health conditions in women in the first year following delivery (Hahn-Holbrook *et al.*, 2018). The perinatal period which includes the postpartum period is widely considered as a period of increased vulnerability to mental health conditions (Cox, 1979; Regmi *et al.*, 2002). The postpartum period has the highest risks and although the mechanism by which risk factors lead to an increase in mental health conditions in this period is not fully understood, some researchers have attempted to explain this trend. Aderibigbe *et al* (1993) explained that during the postpartum period, in addition to the intense maternal emotional involvement that occurs at childbirth, there are anxieties from the mother related to the health of

the newborn. Childbirth also presents many challenges to the woman as she assumes the role of a mother which comes with some sleep deprivation, breastfeeding and adjustments in relationships and is thus is a major life transforming and developmental process (Kumar *et al.*, 2016). Nott *et al* (1976) explained this at the molecular level by arguing that, the emotional changes lead to hormonal changes, which are responsible for the biochemical changes that are seen during this period. These biochemical changes are therefore responsible for the mother's susceptibility to mental disorders in the post-partum period. The post-partum period is therefore a very critical period in a mother's life especially during the early weeks following delivery and has thus become a period were a lot of research work is being targeted presently (Nott *el al*, 1976).

After more than 50 years and four revisions, post-partum disorders were incorporated into the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition text revised (DSM-IV-TR) (Kumar *et al.*, 2016). In this classificatory system, the postpartum period is restricted to the first 4 weeks after delivery. Kumar also explained that, in the International Classification of Diseases-10th edition (ICD 10), this period is extended to 6 weeks. Research however, suggests that postpartum mental disorders may also manifest beyond the first month or even 6 months following delivery (Kumar *et al.*, 2016).

The range of mental health conditions following childbirth is wide. In the past, the term postpartum mental disorders referred to just three conditions, which were maternity blues, depression, and psychosis (Kumar *et al.*, 2016). This was however an over simplification of mental health conditions in the postpartum as more recent studies have shown that anxiety disorders are even more common than depression in the postpartum period (Matthey *et al.*, 2003).

2.2.1 Maternity blues

Maternity blues also known as "baby blues" and "postnatal blues" are very common during the postnatal period with prevalence rates ranging from 50 to 75% (Kumar *et al.*, 2016). Maternity

blues is characterized by a spectrum of symptoms, which most commonly include mood changes fluctuating between euphoria and misery, heightened sensitivity, tearfulness often with or without sadness, restlessness, poor concentration, anxiety and irritability (Steiner, 1998). These symptoms are evident in the first few days following delivery and may sometimes extend to the tenth day postpartum or even longer(Adewuya, 2005). Controversies however exist, on the timing of the peak day of the occurrence of symptoms and on which days it is most severe (Adewuya., 2005). For example, far back as in the 1980's among 37 women in London, Stein (1980) found that low mood, crying, headaches, dreaming, irritability and restlessness peaked around 4 to 6 days postpartum (Stein, 1980). Adewuya (2005) in Nigeria recorded a peak in the symptoms on the fifth day post-partum in a study conducted amongst mothers within the first ten days following delivery (Adewuya, 2005). Despite these disparities in describing the peak period, the peak incidence in the different studies fell around the mid period of the first 10 days postpartum (Adewuya *et al*., 2006; Steiner, 1998; Watanabe *et al*., 2008). This condition is self-limiting and usually resolves within the first few days following delivery (Adewuya, 2005). However, there is increasing evidence that maternity blues is a strong predictor of developing postnatal depression later on in the postpartum period (Watanabe *et al.*, 2008; Yamashita *et al.*, 2000).

Other authors have argued that, maternity blues is a cross-cultural phenomenon affecting both the western and non-western societies though with varying prevalence rates (Adewuya, 2005). Studies carried out in Western societies have shown varying prevalence within the range 40 to 60% (Kendell *et al.*, 1981; Łukasik *et al.*, 2003; Stein, 1980). The prevalence in Japan, a non-western culture, was an outlier with comparatively lower rate of 15% (Murata *et al.*, 1998). Based on this finding, Adewuya (2005) questioned whether maternity blues was actually a transcultural issue as had been previously stated. They further explained that maternity blues might not be a trans-cultural phenomenon because Africans are known to somatize their distress (Goldberg & Bridges, 1988) and therefore may not express emotional distress outwardly.. Also in Western cultures, the

traditional roles which prepare the female child for motherhood (Cox, 1979) may be fading this may affect the readiness of the woman to take up the role as the mother and therefore may influence the occurrence of psychological discomfort in western societies (Adewuya, 2005). Adewuya (2005), recorded a prevalence of 30% in an urban setting in Nigeria among 523 women within the first 10 days postpartum (Adewuya, 2005). An earlier study carried out in East Africa obtained a higher prevalence of up to 76% (Watanabe *et al.,* 2008).The study in Kenya had methodological issues, as it was of retrospective design and the women were asked to recall their experiences, so it could have been subjected to recall bias. Furthermore, the sample size which was limited to 50 mothers was small.

2.2.2 Maternal depression

Maternal depression also known as postpartum depression (PPD) is the most common of the maternal mental health disorders encountered in the postpartum period and some authors have coined this the "common cold" of mental health conditions (Rahman *et al,* 2008). Like maternity blues, PPD is characterized by mood swings, low mood and crying but unlike maternity blues, PPD is not transient, it occurs a few weeks after delivery and may last for a few weeks or months more (O'hara & Swain, 1996a). Studies have shown that by the third month after birth, 10-20% of women both in Western (O'hara & Swain, 1996a) and African cultures (Adewuya *et al.,* 2005; Cooper *et al.,* 1999; Uwakwe & Okonkwo, 2003b) will suffer from postpartum depression. However, the prevalence of PPD varies from place to place. Postpartum depression has been observed to occur 3 times more in developing than in developed countries. Studies in Western countries have reported a prevalence of 10% or more (Bergant *et al.,* 1999; Warner *et al.,* 1996). In a peri-urban population of Khayelitsha, Cape Town in South Africa, the prevalence of major depressive disorders at 2 months post-partum was 34.7%. Nakku *et al (2006)* recorded a much lower prevalence in an urban setting in Uganda. They carried out a cross-sectional study on women

at six weeks post-partum. They found that the prevalence of postpartum depression was 6.1% (Nakku *et al.*, 2006).

PPD is generally difficult to distinguish from depression occurring at any other time in a women's life (Cooper *et al.*, 1999). Diagnosis of postpartum depression like other psychiatric disorders had been erratic over the years resulting in under diagnosis (Rai *et al.*, 2015). This did not only happen in LMIC where there is limited human and financial resources but also in developed countries with excellent psychiatric and specialist facilities (Cox, 1989). This has led to the development of a population specific tool called the Edinburg Post Natal Depression Scale (EPDS) which could help increase awareness among professionals and also aid in the early diagnosis of post-partum depression and anxiety (Hirschfeld *et al.*, 2003; Morris-Rush & Bernstein, 2003).

2.2.3 Postpartum psychosis

Although postpartum psychosis is the least frequent of all postpartum condition, is the most severe form of mental disorder in this period (Kumar *et al.*, 2016). It is therefore an obstetric and psychiatric emergency and usually occurs within the first 2 weeks or at most 3 months following delivery (Altshuler *et al.*, 1996). A retrospective file analysis carried out by Kendel *et al* (1987) in London over a 3 year period showed that the prevalence of postpartum psychosis was 1-2% per 1000 live births (Kendel *et al.*, 1987). This prevalence is however old and cannot be generalized because it was determined in a Western setting. A systematic review published in 2017 by Vanderkruik *et al* has given a more recent picture of the global estimates of postpartum psychosis (VanderKruik *et al.*, 2017). Their review included studies both in developing countries (Nigeria and India) and developed countries. The prevalence of postpartum psychosis in this review ranged from 0.89-3.6% with lowest prevalence recorded in developing countries. The prevalence recorded in Nigeria by Adefuye *et al* was 2.9% (Adefuye *et al.*, 2008) while Bang *et al* recorded a prevalence of 1.0% in India (Bang *et al.*, 2004).

Presentations of postpartum psychosis include, elation, liability of mood, rambling speech, disorganized behaviour, thought processes and insomnia. In addition there are psychotic symptoms mood-incongruent delusions, hallucinations and delusions of control (Monzon *et al.,* 2014). However the presentation of postpartum psychosis can be very atypical and it may not be very classical as in non-postpartum women (Rai *et al.,* 2015). For example, the psychotic symptoms are usually transient and delusions which are usually persecutory revolve around the infant (Rai *et al.,* 2015). This increases both the risk of infanticide and self-harm. In fact, 5 of every 100 patients with postpartum psychosis will kill their babies if early diagnosis is not made and accurate measures put in place (Friedman *et al.,* 2012; Spinelli, 2009). These deleterious consequences therefore makes postpartum psychosis a peculiar condition that needs special attention (Jones *et al.,,* 2014).

2.2.4 Postpartum anxiety

Though the postpartum period is recognized as a period of vulnerability to affective disorders, the prevalence and clinical presentation of anxiety disorders has received little research attention (Ross & McLean, 2006). Recent studies have however proven that anxiety disorders related to the post-partum period are under diagnosed and are in fact more common than PPD (Giakoumaki *et al.,* 2009). Generally prevalence of anxiety ranges from 6.1 to 27.9% in the postpartum (Ross & McLean, 2006). A systematic review conducted by Ross *et al* (2006) including studies published in both developing and developed countries from the year 1996-2005, concluded that anxiety disorders are common during the perinatal period with higher rates of obsessive compulsive disorders and generalized anxiety disorders in women in the post-partum period than in the general population (Ross & McLean, 2006).

Clinically the diagnosis of anxiety and depression usually overlap (Stuart *et al.,* 1998; Wenzel *et al.,* 2005). As a result of the frequent co-morbidity with depression, anxiety was considered either

as a symptom of depression or of lesser importance (Himmelhoch *et al.*, 2001). The new findings are that symptoms of each disorder differ and so should be regarded separately (Giakoumaki *et al.*, 2009). Anxiety is a response to perceived stress. Generally, 2 forms of anxiety occur in the postpartum period, state anxiety or trait anxiety (Allport , 1937). State anxiety refers to transitory anxiety that mothers experience due to events like labour while trait anxiety refers anxiety which occurs in women who have a personality predisposition to developing anxiety (Allport., 1937). According to Allport (1937), postpartum research usually targets state anxiety. Fear of cot death is an example of state anxiety. The mother becomes extremely worried that the child might die in the cot such that it reaches pathological levels (Rai *et al.*, 2015). This usually manifests as nocturnal vigilance with the mother constantly checking the child's respiration resulting in sleep deprivation. Diagnosis of anxiety disorders can be conveniently established using the EPDS (Uwakwe & Okonkwo, 2003a).

2.3 Child Development

When babies are born they can do very little (Sabanathan *et al.*, 2015). Has it ever crossed your mind to think of how you learned to crawl or play? Or how you learned to talk?

This process of acquiring these skills is very fascinating and brings joy to parents as they watch their children grow (Sabanathan *et al.*, 2015). The process by which a child acquires skills and functional competences can be described in these 2 simple words, "child development" (Adeniyi, 2018a). Child development can also be defined as the gradual unfolding of biologically determined characteristics and traits that arise as the child learns from experiences (Keating, 2010).

Child development can be categorized into 5 main domains of development namely:

a. Sensory-motor domain
b. Cognitive domain
c. Language domain

d. Social-emotional domain and

e. Adaptive (See Table 2.3).

It is worth noting that these domains are not mutually exclusive, that is achieving one depend largely on whether or not other skills pertaining to other domains have been achieved (Sabanathan *et al.*, 2015). For example, if a child is asked to write down a particular letter, he/she can only do so, if he/she understands the instruction (domain of language) and has developed fine motor skills (motor domain), which will enable him/her to write.

Table 2.3: Domains of child development

Domains	Description
Cognitive	Strategies and processes children develop to interpret and respond to their environment e.g memory. Attention New-borns experience mouthing objects then later experience the world by imitating actions, manipulating objects and planning 2 step strategies
Language	
Receptive	Understanding spoken language and sentence structure
Expressive	Spoken vocabulary
Motor	
Fine	Able to manipulate small objects
Gross	Ability to walk, run and coordinate complex activities
Social and Emotional	Ability to understand ones feelings To accurately read and comprehend the feelings of others Regulate one's own behaviour and maintain relationships
Adaptive/ Behaviour	Collection of conceptual, practical and social skills that have been learned by other people in order to function in their social

Source: Sabanathan et al, 2015. Child development assessment tools in low income and middle income countries; How can we use them more appropriately?

2.3.1 Epidemiology of developmental delay and malnutrition

Epidemiology of developmental delay

Things could go wrong during the process of development making it difficult for some children to reach their developmental potential (Adeniyi, 2018b). Developmental delay is said to exist when a child fails to reach developmental milestones at the expected age (Simeonsson & Sharp, 1992) and it is reportedly more prevalent in developing countries..

Several factors account for developmental delays in developing countries. More children are surviving childhood as a result of the increased attention on child survival strategies in the last decades (Sabanathan *et al.*, 2015). Nevertheless, the corresponding interventions to ensure the quality of life of these surviving children are still wanton Poverty, malnutrition, poor health and poorly stimulating home environment are common multiple risk factors in developing countries, and which have detrimental impacts on child development (Grantham-McGregor *et al.*, 2007).

Grantham-McGregor *et al* (2007) reported that over 200 million children under the age of 5 years in Africa and Asia fail to reach their developmental potential. In a systematic analysis conducted using data collected from the demographic health survey of 35 low and middle income countries, McCoy *et al* (2016) reported that an estimated of 80 million children in LMIC have developmental delay, with 20 million of these living in sub-Saharan Africa (McCoy *et al.*, 2016). More specifically, McCoy *et al.* (2016), found that one in every three preschool children failed to meet basic milestones either in their cognitive and socio-emotional development, with the largest number of affected children living in Sub-Saharan Africa (McCoy *et al.*, 2016). Few studies exist on the state of motor, language and social domains of development of children in LMIC. A hospital based study carried out by Aina *et al* (2001) in the Southwest region of Nigeria found that mixed specific developmental disorders were more common in their study sample followed by specific delay in language and speech (Aina & Morakinyo, 2001). Aina and Morakinyo (2001) also found that for the specific developmental disorders, delay in the acquisition of speech was 4 times more

common among their study sample than delay in the acquisition of motor functions. This finding is in keeping with what has been described in literature (Konbloch & Pasamanick, 1974; Mayou, & Geddes, 1999; Simeonsson & Sharp, 1992). Another study carried out by Oguntoyinbo (2015) in a community study carried out among under-fives in Ogun state, Nigeria showed that, the prevalence of developmental delay was 26.5% (Oguntoyinbo., 2015). While a cross sectional hospital based study carried out at infant welfare clinics in Ghana among children in the age range 3-5months, showed that the prevalence of delay was lower (21.0%) (Bello, Quartey, & Appiah, 2013).

Epidemiology of malnutrition

According to UNICEF (2012a), malnutrition is a major public health problem in developing countries and it accounts for 50% of deaths among children aged 0-3 years old. Almost 11 million children die before the reach the age of 4 years and 4 million of them in first year of life (UNICEF, 2012a). UNICEF (2012a) also reports that, in developing countries approximately 25% of children are moderately or severely malnourished. In 2012, Cameroon was ranked 43rd out of 136 countries in terms of prevalence of stunting (Unicef, 2012a). Undernourished children between birth and two years of age are at increased risk of impaired development (Grantham-McGregor *et al.*, 2007). This is because malnutrition and infection among children causes diffuse cerebral atrophy and subsequent poor development in psychomotor functions (Houscham & Devilliers, 1987). There is therefore a relationship between nutritional status and development of children. The systematic review conducted by McCoy *et al* showed that 16% of children between 3 and 4 years who had developmental delay also had setbacks in their physical growths (McCoy *et al.*, 2016).

2.3.2 Factors affecting child development and growth

Some decades ago, scientists postulated the concept of "nature versus nurture" as one of the main mechanisms which contributes to child development (Lerner et al., 2011). According to Lerner *et al* (2011), nurture refers to the day to day interactions children encounter in their environment while nature can be defined as the genetic material that controls an individual's physical appearance, temper and it is usually inherited in from the parents. There is a lot of controversy and debate as to which of nurture (environmental factors) or nature (genetic factors) is more important in determining child development (Keating, 2010). The nature theory states that genetics determine the personality of the child in that when the child is born, they are in a clean state. Their genetic characteristics remain stable throughout the years. However, the environment around them could influence and determine what type of person they will grow up to be (Keating, 2010). On the other hand, the nurture theorists states that individual and environmental factors determine who an individual will become in future, for example, those that have been abused have a higher chance of being abusers themselves (Keating., 2010). So, "how much of the infants behaviour is biological and how much can actually be modified?", the answer in both instances is quite a lot (Richmond, 2009). Nature and nurture work together to produce a personality the same way humidity and cold come together to generate snow says Jerome Kegan author of the temperamental thread: '*How gene, culture, time and luck makes us who we are"*(Richmond, 2009).

Overall the debate on nurture versus nature has created various ways to view child development. Factors that influence child development can be grouped into biological and psychosocial factors (Adeniyi, 2018a). A global progress report published by UNICEF in 2003 showed that 15 of the top 24 countries with the highest stunting prevalence worldwide are in Sub-Saharan Africa (UNICEF, 2013). Poverty and the sociocultural context increase the children's exposure to biological and psychosocial risks which in turn affect child development through changes in brain functions (Benzies *et al.*, 2017). According to the 2007 and 2011 Lancet series on child development, the major risk factors for child development are, intra-uterine growth restriction,

stunting, iodine deficiency, iron deficiency anaemia, lead exposure, HIV, maternal depression and inadequate cognitive stimulation (Grantham-McGregor *et al.*, 2007). Many of these risks are inter-related and can cumulate to cause long-term and enduring impacts on child development (Grantham-McGregor *et al.*, 2007). These risk factors will be summarized in 4 major topics as described in the next section.

2.3.2.1 Maternal nutrition

The role of maternal nutrition in infant growth and development cannot be overemphasized (Rahman *et al.*,2004b). Maternal nutrition is the most influential non-genetic factor in infant development (Barker, 1997). Low maternal body mass index (BMI) is a reliable indicator for protein energy malnutrition which affects the infant not only during pregnancy but also during the first years of life (Deki, 2015).

Bhutta *et al (2003)* carried out a systematic review on nutritional interventions in women of reproductive age in developing and developed countries. They found out that, women with BMI below 19 were 5 times more likely to have a child with low birth weight which is usually as a consequence of intra-uterine retardation (Bhutta *et al.*, 2013). According to Bhutta *et al* (2003), these low birth weight (LBW) infants are prone to adverse perinatal outcomes such as neonatal infections and asphyxia which could have sequelae on central nervous system leading to poor development (Bhutta *et al.*, 2013). LBW babies are more likely to be stunted at 2 years of age (Benzies *et al.*, 2017). Poor maternal nutrition could have a direct impact on the brain development in-utero (Walker *et al.*, 2007). Hader and Bhutta carried out a Meta analyses involving 17 randomized control trials with 15 LMIC inclusive. The objective of this review was to evaluate the benefits of oral multiple micronutrient supplementation during pregnancy on maternal, foetal, and infant health outcomes (Haider & Bhutta, 2017). In this same series, supplementation with multiple micronutrients during pregnancy in Bangladesh and in pregnant women in Tanzania led

to little benefits in infant development when compared to just supplementation with iron and folic acid alone (Abioye *et al.*, 2016). In Nepal Christine *et al* (2010), found that the children whose mothers received iron and folate supplementation during pregnancy had better intelligent quotient as well as executive and motor functions at 6-7 years of age when compared to a placebo group (Christian *et al.*, 2010). In addition, a study carried out in Jamaica in children between 5 and 7 years showed that infants born at term with LBW had poor problem solving ability at 7 months of age (Gardner *et al*, 2003)

2.3.2.2 Childhood nutrition

The 2007 Lancet series on developmental delay identifies infant malnutrition as one of multiple risks that children in developing countries experience, contributing to the high rate of development delay (Grantham-McGregor *et al.*, 2007). The effect of nutrition on development starts from when the child is born (UNICEF, 1990). UNICEF recommends exclusive breastfeeding for up to 6 months, with gradual introduction of complementary foods at 6 months while breastfeeding is continued to 2 years or beyond (UNICEF, 1990). Exclusive breastfeeding up to 6 months of age helps to improve the health and development of the child (Deki, 2015). The fatty acids in breast milk develop the brain and therefore enhance cognitive development of children (Owen *et al.*, 2002). According to Issaka *et al* (2017), many mothers still do not breastfeed their infants efficiently. In a systematic review to evaluate breastfeeding practices in 29 Sub-Saharan countries in women between 15-45 years, Central Africa, had the lowest prevalence of early initiation of breast feeding with only 40% of mothers putting their babies to breast 1 hour after delivery, and only 30% of mothers breastfed exclusively (Issaka *et al.*, 2017a). However, this does not end at breastfeeding, but also continues to complementary feeding with the mother is required to timely and appropriately introduce foods other than breast milk to the diet (Deki, 2015). Like exclusive breastfeeding, adequate and timely introduction of complementary feeding is required for normal child development (Deki, 2015). If complementary feeding is not adequately done, the child may

not receive the appropriate nutrient resulting in resultant growth restrictions (Issaka *et al.,* 2017b). Micronutrient deficiencies could then occur at as result as by 6 months most of the body stores obtained in utero from mother are depleted with iron being the major micronutrient deficiency that has been reported in literature (Grantham-McGregor *et al.,* 2007). Iron deficiency is the most common micronutrient deficiency affecting 10-20% of the world's population (Belmont, 2000). In addition to iron, many other micronutrients are deficient in children in low and middle income countries including vitamin A, B12, E, Riboflavin, Zinc and iodine in some regions (Tofail *et al.,* 2008).

2.3.2.3 Mother-child interactions

Young children are totally dependent on the care they receive from their care givers thus the quality of care they receive from their care-giver can influence their growth directly (Deki, 2015). Poor maternal mental health is now recognized as risk for poor child development (Rahman *et al.*, 2008). It is has been noticed that depressed women interact poorly with their children leading to poor cognitive stimulation (UNICEF, 2012b). Several experimental studies have shown that children who experience cognitive stimulation show higher cognitive functioning or learning experiences than their peers with no stimulation (Pairman *et al.*, 2006). Language and cognitive development are especially important during the first 2 years of life (Sherr *et al.,* 2009). When children live in a less stimulating environment during the early stages of their life, brain development is affected and this could lead to cognitive, social and behavioural delay (Deki, 2015).

2.3.2.4 Environment

In keeping with the nurture theory, the environment in which children live has the ability of either shaping their lives positively or negatively (Bornstein *et al.*, 2012). Malaria, HIV and lead

exposure have been identified as the major environmental risk factors for child development (McGrath *et al.,* 2006).

Malaria is virulent, it causes high rates of mortality and mortality amongst children living in Sub-Saharan Africa (WHO, 2010). Exposure to malaria does not only lead to bouts of fever but also increases the risk of malnutrition and anaemia in children (Boivin *et al.,* 2007). Studies carried out in sub Saharan Africa in children between the ages of 3 to 7 years showed that severe malaria negatively affects early childhood development (Boivin, 2002; Boivin *et al.,* 2007; John *et al.,* 2008). The results of most of these studies showed that malaria had a significant impact on the cognitive domain of development. This finding was however contrary to study carried out by Al Serouri *et al* in Yemen (Al serouri *et al.,* 2000). They found out that preschool children infected with malaria performed worse on motor skills 2 weeks after initial infection but their cognitive functions were not affected (Graetz *et al.,* 2001). Recent evidence now suggests that even repeated episodes of uncomplicated malaria and asymptomatic parasitemia (experienced by millions of children worldwide) also affects children's development (Thuilliez, 2009).

Two million, one hundred thousand children (2.1) below 15 years are infected with HIV and not all of these children are receiving appropriate care with only 28.1% of them in low and middle income countries on antiretroviral treatment (Walker *et al.,* 2011). HIV as a medical condition has direct impact on both the physical and cognitive development of the child. Thirty-six out of 42 studies carried out in developing countries showed that HIV has detrimental effects on cognitive development of children (Sherr *et al.,* 2009). In most of these studies, children with HIV had significantly lower mental and physical scores when compared to children without HIV infection (Sherr *et al.,* 2009).

The effects of these infectious diseases are accentuated by associated illnesses, poor nutritional status and adverse living conditions which are all conditions that make the environment in developing countries hostile (Rahman *et al.,* 2004).

2.4 Assessment of child development

The monitoring of psychomotor development especially in the first year of life is one of the most important aspects in child health care services (Aina & Morakinyo, 2005). There are several instruments that can be used for such monitoring and most of these instruments were developed in Western countries. Using the mean developmental scores, normative data can be obtained for childhood psychomotor development among children in various countries (Kuppuswany, 1980). Instruments can then be developed using normative data obtained from a group of children (Iloeje *et al.*, 1991). Since there is variation in the rate at which children attain the different developmental milestones as a result of environmental factors such as culture, race and geographical location, it is important that normative data be established and instruments validated in African countries before they are used (Werner, 1972). Some of these instruments have been validated in African setting.

Aina and Morakinyo (2001) in Nigeria established normative data for psychomotor development in Nigerian children and validated 2 instruments: Developmental screening inventory (DSI) and Bayley's scale of infants development (BSID) which are screening and performance instruments respectively (Aina & Morakinyo, 2005). The ages and stages questionnaire (ASQ) is also a widely used instrument that has been validated in several African countries. ASQ was developed in 2009 by Squires and Bricker. It was proven to be reliable and cost-effective with excellent psychometric properties: its validity ranges between 76 to 88% and its overall sensitivity and specificity are 75 and 85% respectively (Squires & Bricker, 2009). A multinational trial involving 18 countries in Africa and some parts of Europe showed that the sensitivity and specificity of the ASQ was 88% and 82% respectively. It is the most widely used parent-completed questionnaire used to assess the development of young children below 60 months.

2.5 Association between maternal depression, child development and nutritional status

Depression is characterized by low mood, lack of energy, poor concentration, low self-esteem and lack of interest in the environment (Adewuya *et al.,* 2005). This results to long term behavioural, cognitive and emotional problems that interferes with the mother's emotional quality of care to the infant, which is a known risk factor for poor infant growth (Adewuya *et al.,* 2008). In developing countries, the presence of "Mother" is a core figure in the development of the child (Rahman et al, 2004) and she is saddled with the responsibility to initiate preventive measures such as breastfeeding and hygiene. Clearly the mother's mental health is an important determinant of how she can perform these functions (Rahman *et al.,* 2004b). There is significant evidence from both developing and developed countries to support this point. Rahman *et al* (2004), sort to find out the relationship between maternal distress and risk of undernutrition in infants in Pakistan. They carried out a cross-sectional study during which they recruited mothers and children presenting for 9 months immunisation vaccines at the infant welfare clinic (Rahman *et al*, 2004). Rahman *et al* found out that, high levels of maternal distress were associated with infant malnutrition. A strength of this paper is that it explored both the biological, socioeconomic, and family environment of the infants. Its findings therefore have implications for public health interventions in developing countries as the success of these programmes is related to the functional capacities of mothers (Rahman *et al.,* 2004). However, the authors did not screen for specific mental health disorders like depression but rather used the broad term "distress" which is not specific. In addition, it was a cross- sectional study and therefore not possible to establish a clear directional relationship or association between the mother's mental health and infant growth. That is we cannot tell whether it was maternal distress which lead to poor infant growth or whether the poor nutritional status of the children is what predisposed their mothers to developing mental distress.

Recent studies have taken this weakness into account by adopting a longitudinal design. Rahman *et al* (2004b) carried out a study in India to determine the burden of malnutrition in Asia. They explain that the recent increase in the number of malnourished infants might therefore not be as a consequence of decrease in nutritional intake but due to some household behaviours which could be secondary to depression (Rahman *et al.,* 2004b). Rahman *et al* therefore sort to find out the association between pre and post-natal depression and infant physical outcomes. They carried out a longitudinal study on nursing mothers and the mothers were assessed for depression while the babies were assessed for malnutrition and episodes of diarrhoea. They found out that infants of mothers diagnosed with pre and postnatal depression, were at more risk of malnutrition and diarrhoea episodes (Rahman *et al.,* 2004). The strength of this article is that it explored aspects on both maternal and child health and therefore has implications on both maternal and infant health. However, just like many other articles it focused mainly on depression and did not explore the relationship between other maternal mental health problems and child health. This is also consistent with a case control study carried out by Adewuya *et al* in Nigeria (2008). The aim of the study was to examine the impact of maternal depression on infant's physical growth in the first 9 months of life. They therefore followed up these infants during their first 9 months and took anthropometric measurements at regular time intervals. They found out that, infants of depressed mothers had significant poor growth at 3rd month and 6th month post-partum. They also found out that infants of depressed mothers were more likely to have episodes of diarrhoea and infectious diseases (Adewuya *et al.,* 2008). These therefore show that maternal depression can lead to poor infant growth and provides evidence that the growth of children does not only depend on their nutritional intake but also on the adequate mental functioning of their mothers.

There is considerable evidence in developed countries that PPD has a negative influence on child development. A systematic review of studies conducted by Slomain *et al* (2019) assessing the impact of maternal mental health on the five domains of development showed that postpartum

depression stress can have an adverse effect on cognitive and socio-emotional development (Slomian *et al*, 2019). There is a paucity of data on the relationship between infant development and maternal depression in developing countries. A community based study carried out by Luke (2016) in Sierra Leone on under-fives showed that there was no association between infant development and maternal depression (Luke Ronita, 2017).

2.6 Association between maternal depression and breastfeeding practices

"My baby deserves the best so I breastfeed her longer". The decision of a woman to breastfeed is clearly determined by her attitude, which is influenced by the state of her mental health. WHO infant guidelines recommends that all infants should be breast feed within 1 hour after birth and exclusively breastfeed from birth until 6 months (UNICEF, 1990). It is of prime importance for especially low-income countries to adhere to such recommendations. This is because in areas of poor water and sanitation, early initiation of complementary food may be associated with increased episodes of diarrhoea illnesses and development of malnutrition. The WHO also recommends 4 indicators for assessing breast-feeding practices. These indicators include; Early initiation of breastfeeding (EIBF), exclusive breastfeeding (EBF), predominant breastfeeding (PDF) and bottle feeding (BTLF). EIBF and EBF offer protective effects to the baby (Clemens *et al.*, 1999; Ladomenou, Moschandreas, Kafatos, Tselentis, & Galanakis, 2010) while PDF and BTLF offer risk effects (McCormick., 2016). This is because in the course of PDF and BTLF, the baby may be introduced to other fluids such as water, which may increase the likelihood of Diarrheal related mortality and morbidity (Issaka *et al.*, 2017a). A meta-analysis carried out by Issaka *et al* (2009) in four sub-regions of 29 Sub-Saharan African countries showed that both West Africa and Central Africa had the lower overall prevalence of early initiation of breastfeeding and exclusive breastfeeding than the WHO recommended target of 50% by 2025 (Issaka *et al.*, 2017). One

question of utmost importance is “could maternal depression be one of the factors accounting for the low values in these regions?”

Studies have shown that mothers who have low mood are less likely to believe that breastfeeding is important for their babies (Gallera et al., 2006). Initially the relationship between breastfeeding and maternal depression was described as unidirectional with post-partum depression leading to late breastfeeding initiation and early cessation. But recent data suggest that this relationship could also bidirectional. That is while postpartum depression may reduce rates of breast-feeding, not engaging in breastfeeding might increase the risk of postpartum depression. Studies that have been carried out to show this association are elaborated below.

In a study in Pakistan, Henderson *et al* (2003) clarified the association between postnatal depression in mothers and the duration of breastfeeding. They argued that though previous studies had been carried out to identify these associations, they had some loopholes mainly related to the type of methodology employed. Henderson *et al* therefore carried out a prospective study over a 12 months period. During this period mothers were questioned about their breastfeeding status and screened for depression. They found out that, postnatal depression had a significant negative impact on breastfeeding duration (Henderson *et al*, 2003). A strength of this study is that, it describes in detail and identifies the particular time in the post-natal period at which depression sets in. One of its strengths also lies in the fact that it also identifies some social determinants associated with reduced duration of breastfeeding. This study however failed to explore the effects of maternal depression or breastfeeding practices on both the physical and mental health of the infant. In addition, it focused only on maternal depression and did not describe other maternal mental health problems such as anxiety. The article sheds light on the association between maternal health and an aspect of infant mental health, which is a relatively void field in mental health in terms of research. Their finding is also consistent with that obtained by Madegbe *et al* (2016) in Kenya. They carried out a cross sectional study in a low-income urban setting in Kenya where the

prevalence of child malnutrition was known to be high (Madeghe *et al.*, 2016). The aim of their study was to investigate the association between post-partum depression, infant feeding practices and malnutrition in Kenya. They therefore recruited infants between the ages of 6 weeks and 16 weeks whose mothers presented for infant vaccination at the infant welfare clinics. The results showed that, the prevalence of post-partum depression was 19%, and non-depressed mothers were 6 times more likely to practice exclusive breastfeeding than depressed mothers (Madeghe *et al*, 2016). The main strength of this paper is that it identifies maternal depression as one of the potential risk factors for infant feeding practices thereby contributing to malnutrition.

2.7 Relevance of this study to child and adolescent mental health in Cameroon

According to data from UNICEF, the prevalence of chronic malnutrition in Cameroon is high with 4 out of every 10 child in the country classified as being malnourished (UNICEF, 2012b). Recent evidence even suggests an increase in this prevalence to 58.1% in some areas in the Cameroon (Nkuo-Akenji *et al.*, 2008). The consequences of this high rate of poor development are not only short term but also long term as a child with poor development is more likely to do have school performance concerns and, therefore becomes less productive as an adult (Grantham-McGregor *et al.*, 2007). This leads to a vicious cycle which has been described in literature as the inter-generational transmission of poverty (Adeniyi, 2018a). The future generation is then affected and national development will also be substantially hampered. This therefore will make it less likely for countries like Cameroon to emerge as much of its human capital would not be productive (Omigbodun, 2018). There is therefore need for identification of new risk such as the mental health risk contributing to this high rate of poor development. This will inform policy making with the institution of appropriate public health interventions such as regular screening of women in child bearing age in pre and postnatal care for depression.

CHAPTHER THREE

METHODOLOGY

3.1 Study Area

Buea is the capital of the South West region of Cameroon. It is a semi-urban setting located at the foot of the Cameroon Mountain covering an area of 870 square kilometres (km) and houses a population of about 200.000 inhabitants (South West Regional delegation of Public health, Cameroon., 2016). The inhabitants of Buea comprise mainly of Bakweri indigenes but there are people from other ethnic groups such as Bantu, semi-Bantu, Foulbe as well as foreigners. The main stay of activities carried out by the inhabitants are farming, business and education. However, tea cultivation constitutes a significant local industry in the study area.

The Buea Health District is located within the administrative borders of Buea sub-division and has a population of 133,092 inhabitants with 5647 women in the reproductive age group. Children between the ages 0 to 12 months constitutes 3.8% of this population. The Buea Health District is made up of 7 health areas and has 25 health centres (private and public), which are inequitably distributed in terms of population coverage. Immunization services are offered in all the government and some of the private health facilities (South West Regional delegation of Public health, Cameroon., 2016). Immunization is carried out on week days with health facilities having specific days of the week on which children are immunized. However, the Buea Regional Hospital, which is largest health facility in the health district offers immunization services on a daily basis.

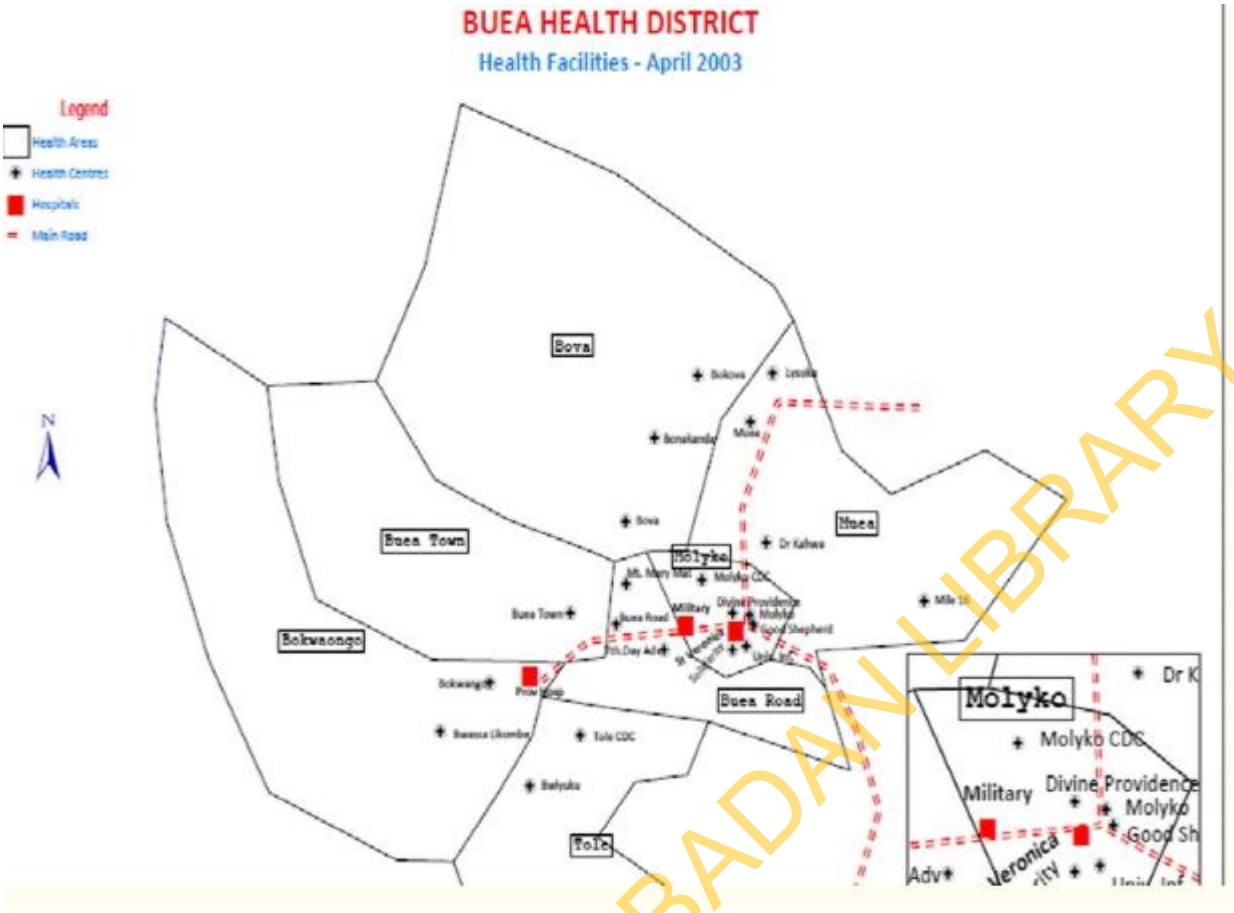

Figure 1: Map of the Buea Health District, source: UPEC 2009

3.2 Study Design

A cross-sectional descriptive study was carried out in Infant Welfare Clinics (IWCs) in the Buea Health District in Cameroon to determine the association between maternal mental health, infant growth and reported breastfeeding practices. Data was collected from the 10th of January to the 15th of March 2019.

3.3 Study Population

The study was limited to mother-infant pairs who presented with their children for vaccination at infant welfare clinics in health facilities in the Buea Health District.

Inclusion criteria

1) Mother-infants pairs who consented to be part of the study

Exclusion criteria

1) Infants with an established diagnosis of developmental delay
2) Women diagnosed and receiving treatment for mental disorders in the pre-partum period as evidenced by documentation of a diagnosis in their medical records or psychotropic medication prescription.

3.4 Sample Size Calculation

The minimum sample size was calculated using this formula

$$n = \frac{Z\alpha^2 P(1-P)}{D^2}$$

Where N= the minimum sample size required

Zα= standard normal deviation corresponding to two-sided level of significance (α) of 5% (1.96)

P= proportion of outcome (post-partum depression)

D= degree of precision at 5%.

P is the estimate of the prevalence of post-partum depression, which is 61.8% from study carried out by Ghogomu *et al* (2016) in the Limbe Health District in the southwest region of Cameroon.

N = (1.96) (1.96) x0.62 x0.382/0.05 (0.05)

N= 364

It is adjusted to a non- respondent of 10%;

364 x 100/ (100-10) = 404

Which give a minimum calculated sample size of **404 participants** for the study.

3.5 Sampling Technique

A 3-stage sampling technique was adopted. The Buea Health District is made up of seven health areas. Due to the current socio-political situation of the country, 3 of the health areas were not accessible so we used 4 health areas for the sampling.

STAGE 1: SELECTION OF HEALTH FACILITIES FROM HEALTH AREAS

Step 1: Groupings of health centres into health areas

The list of all the health facilities in each of the 4 health districts was obtained from the delegation of public health in the South West region. A list of health centres, which offered immunization services, within each respective health area was obtained.

Step 2: Stratification into public and private health facilities

The health facilities in each health area were then stratified into 2 groups, public and private health facilities. However, there were two health areas with no private health facilities. Such health areas had just public health facilities.

Step 3: Random selection of health facilities

One health centre was randomly selected from the 2 health areas which had just public health facilities. While one (1) public and one (1) private health centre were randomly selected from the other health areas, which had both public and private health facilities offering immunization services. So, in total six (6) health facilities: two (2) private health facilities and 4 (four) public health facilities were selected and used for data collection.

STAGE 2: SELECTION OF MOTHER-INFANT PAIRS FROM FACILITIES

Step 4: Consecutive recruitment of mother-infant pairs at selected health facility

Proportional allocation was used to get the number of patients which would be recruited from each randomly selected IWC based on the patient load of the clinic as shown in the equation below.

Number of patients recruited for each health centre selected = (patient load of health centre/ total patient load of all selected health facilities 'N') * sample size

Table 3.5 : Selected health facilities and number of participants recruited per facility(N=470*)

Selected Health Facility	Patient load	Number recruited
Health Facility A	190	163
Health Facility B	30	26
Health Facility C	70	60
Health facility D	60	52
Health Facility E	60	52
Health Facility F	60	52

*Total patient load of the selected health facilities

At the level of the selected IWCs, a consecutive sampling was used where each mother-infant pair who presented at the IWC was assessed for post-partum depression and development.

3.6 STUDY PROCEDURE

3.6.1 Pretesting the instruments

A pre-test study was conducted on 20 mother-infant pairs in one of the IWCs in the health district. The health facility in which the pre-test was conducted was amongst the health facilities that was randomly selected for data collection. The feasibility of the procedures in terms of time and ease of understanding of the contents by the study population were assessed. All questions in the

questionnaire and instrument were retained after the pre-test. Ten (50%) of mothers did not understand some questions in the communication domain of the Ages and stages questionnaire. Based on this a decision was made to show a video clip to the mothers who demonstrated the questions and this improved their understanding of this section.

3.6.2 Study Instruments

Data was collected using the following instruments:

- The Socio-Demographic Questionnaire……Appendix 2A
- The Edinburgh Post-Natal Depression Scale…… Appendix 2C
- The World Mental Health Survey Initiative version of the Composite International Diagnostic Interview (CMH-CIDI)……..……..Appendix 2E
- The Ages and Stages Questionnaire……..…….Appendix 2F
- Breastfeeding Practices and Intent Questionnaire……..Appendix 2B

3.6.2.1 The Socio-Demographic Questionnaire

This is a 44-item questionnaire designed to collect socio-demographic information of respondents adapted from a 40-item socio-demographic questionnaire used in a Nigerian study on Child and Adolescent Mental Health (Omigbodun *et al*, 2008). The questionnaire was interviewer administered. Questions that were not relevant to the population under study such as information about experiences at school were removed because participants were infants and their mothers.

3.6.2.2 The World Mental Health Survey Initiative version of the Composite International Diagnostic Interview (WMH-CIDI)

The World Mental Health Survey Initiative version of the Composite International Diagnostic Interview (WMH-CIDI) is a comprehensive fully structured interview developed by WHO. The WMH-CIDI ascertains lifetime disorder and generates diagnoses according to ICD 10 and DSM-IV criteria. For respondents with lifetime occurrence of disorder, follow up questions that help to determine whether they had also experienced such disorders in the prior 12 months are also

included in the questionnaire. It has been used in a variety of cultures including Nigeria and reliability and validity have been demonstrated in major international WHO field trials (Kessler., 1994: Bella and Omigbodun, 2010). The first section of the WHO WMH-CIDI is a screening section, which includes a series of introductory questions that ask questions about the respondent's general health. This is followed by a set of diagnostic stem questions for the several primary or core disorders assessed by the survey, which are namely anxiety disorders, mood disorders, substance use disorders and personality disorders. It however also assesses non-core disorders such as eating disorders, posttraumatic stress disorder (PTSD), psychosis, gambling and conduct disorder. The CIDI is interviewer administered.

The depression screening section enquires about a period of time during which the respondent has felt unhappy, empty or lost interest in previously pleasurable activities. If the respondent screens positive for depression then, the depression module is used to confirm the diagnosis. The module probes for core symptom of depression and also associated symptoms like insomnia, poor appetite, weight loss, inability to concentrate and suicidal ideation which has been going on for at least 2 weeks.

3.6.2.3 Edinburgh Post-Natal Depression Scale

The Edinburgh Postnatal Depression Scale is the most widely used and consistently recommended screening tool for postpartum depression (Boyd *et al.*, 2005; Neiman *et al.*, 2010; Wisner *et al.*, 2002). It was developed in the United Kingdom where it was shown to have good validity and internal consistency (Cox, 1989). After its development, the EPDS has been translated into over 23 languages and is thus widely used both in developing and developed countries. It has been validated for use in Nigerian community by Uwakwe et al where it showed a good internal consistency (Uwakwe & Okonkwo, 2003b). Administering and scoring the EPDS is relatively simple and requires only basic familiarity with the tool.

The EDPS is a self-report semi-structured questionnaire that assesses a mothers prevailing mood in the past 7 days. It contains 10 questions, with 4 possible answers on a Likert scale which gives a score of 0 to 3 points per question. The minimum score a participant can have is 0 while the maximum score is 30. If a patient scores 10 and above, then she is considered as having "possible depression" and a clinical interview is then necessary to confirm that symptoms meet the DSM-IV-TR diagnostic criteria. However, in a study carried out in northern region of Nigeria showed that an EPDS value of 7 as the best cut-off for postpartum depression in their setting (Obindo and Omigbodun, 2007). A cut-off on the EPDS of 7 was selected in this study.

3.6.2.4 The Ages and stages questionnaire

The Ages and Stages Questionnaire (ASQ) is currently the most widely used parent-completed questionnaire used to assess the development of young children below 60 months. It was interviewer administered in this study by the Researcher. The ASQ consists of 19 different questionnaires covering the age-range of 4 to 60 months divided into twenty-one age groups namely: 2, 4, 6, 8, 10 12, 14, 16, 18,20, 22, 24, 27, 30, 33, 36, 42,48, 54 and 60 months. The reading level that is needed to fill in the various ASQ questionnaires is grade 4–6 which is equivalent to primary 4-6 in the Cameroonian educational system, thus ensuring easy parental comprehension. It is quick to administer taking about 10–15 minutes to complete. The questionnaires cover five different domains: communication, gross motor, fine motor, problem solving and personal social skills. Each domain is assessed by six questions on developmental milestones, which are easy to understand. Parents can answer the questions with "yes", "sometimes" or "not yet", with scores of 10, 5 or 0 points respectively. Referral for further assessment is advised when the score on any domain falls below the cut-off point, which is set at 2 standard deviations below the mean of the reference group.

ASQ was developed by Squires and Bricker (2009) and it has proven to be reliable and cost-effective with excellent psychometric properties: its validity ranges between 76 to 88% and its overall sensitivity and specificity are 75 and 85% respectively (Squires & Bricker, 2009). A multinational trial was carried out involving 18 countries including Nigeria and some other African countries. The results of this study showed that the sensitivity 88% and specificity was 82%. Test-retest reliability within 2 weeks was 94% and inter-observer reliability between the parents and the professional examiners was 94% (Squires *et al.*, 1997).

3.6.2.5 Breast feeding Questionnaire

In 2017, a questionnaire for assessing breastfeeding practices and intent was validated and standardised for use in the Nigerian population (Leshi, 2018).

The questionnaire is semi-structured containing 30 question divided into 3 sections. It was interviewer administered in this study.

The first section (section A) assesses knowledge on breastfeeding; the second section assesses the mother's attitude towards breastfeeding while the third section asks specific questions related to breastfeeding practices. The third section of the questionnaire, which probed the mother's breastfeeding practices was used for data collection in this study. This section has 10 structured questions which probes about breastfeeding initiation, current breastfeeding status, bottle feeding, introduction of complementary food and continued breastfeeding. Each question is rated either "1" or "0" with 1 question having a score tally of up to 2. The maximum score on the instrument is 10 and categorisation of the breastfeeding scale is either sub-optimum breastfeeding (0-5pionts) or optimum breastfeeding (≥ 6).

3.6.3 Data collection process

The Researcher trained two research assistants in the use of all study instruments and in the study procedure. Mother-infant pairs who presented at the IWCs for immunization were approached and mothers were invited to participate in the study. Written and/or verbal informed consent was obtained and mothers who agreed to participate in the study were recruited after thumb printing or signing the consent forms. The following activities were then carried out sequentially:

1) Administration of socio-demographic questionnaire
2) Administration of the breastfeeding questionnaire
3) Screening for post-partum depression using CIDI and EPDS
4) Administration of diagnosis section of the CIDI
5) Administration of ages and stages questionnaire
6) Nutritional assessment of infants

All instruments were administered in English, French or Pidgin English. The French version was derived by iterative-back translation method. Though the questionnaires were meant to be self-administered, we read aloud to all of the mothers and their responses were ticked by the research assistant. This was because most of the study participants complained that the questionnaires and the instruments were lengthy and they were "in a hurry". It took 30 to 45 minutes to complete filling the questionnaires and administering diagnostic section of the CIDI. There were no break periods in between.

3.6.3.1 Administration of socio-demographic and health questionnaire

The adapted socio-demographic questionnaire was administered and information obtained on the respondents personal life and family life was recorded

3.6.3.2 Administration of breastfeeding questionnaire

Having obtained socio-demographic and health information from the respondents, the 10 question breastfeeding questionnaire was then administered.

3.6.3.3 Screening for post-partum depression using CIDI and EPDS

Depression was screened for using both the CIDI and EPDS, in order not miss any mother with probable depression.

Mothers who scored 7 and above on the EPDS as well as those who answered yes to any questions on the screening section of the CIDI were then administered the diagnosis section of the CIDI. Only the Researcher administered the diagnosis section of the CIDI.

3.6.3.4 Assessment of child's nutritional status

After administration of the questionnaire, anthropometric measures such as the infant's weight and height were used to assess the nutritional status of the infants. They were measured as described below.

Their weights were measured to the nearest 0.1 kg using a standardised battery powered scale. The accuracy of the scale was checked each morning and the scale calibrated to zero before the weights were taken. After all clothes were removed, the infant's weight was taken in either the supine or sitting position (CDC, 2013.).

The length of the infant was then measured in the supine position. The child was placed bare feet without head covering on a locally calibrated infantometer with head against the non-movable end. An assistant held the child's head so the eyes were pointed straight up and gentle traction was applied to bring the top of the child's head into contact with the fixed end of the infantometer. The child's knees were then held together and pressed down gently. With the other hand, the movable footboard was slid to make contact with the sole of the child's feet and the heels of both feet touched the movable end with the toes pointing upwards (CDC, 2013.).

The heights and weights were then interpreted through growth monitoring charts as z-scores. Three main indicators of nutritional status were focused on;

1) weight for age ------ “underweight”
2) weight for height---------- “wasting”
3) height for age ---------- “stunting”

According to WHO growth charts used

Z score between -2SD and +2SD was rated normal

Z-score of < -2SD was rated mild/moderate malnutrition

Z-score of < -3SD was rated severe malnutrition (See Appendix 2D)

3.7 Data Analysis

After data were collected, it was entered into a SPSS spread sheet containing the various variables. It was cross-checked for errors before analysis using SPSS version 21. The information was also backed up in different storage devices to avoid loss of data if the system got corrupted or crashed.

Categorical data were presented in frequencies and continuous variables were presented as means and standard deviations.

Table 3.7 : Analysis of specific objectives

Objective	Analysis
Objective 1	$\frac{number\ of\ participants\ diagnosed\ with\ depression}{total\ number\ of\ mothers\ interviewed}$
Objective 2	Predictors were obtained using bivariate and multiple regression logistic model. The multivariate model included all variables in the bivariate analysis with p-values less than 0.05.
Objectives 3 and 4	Overall prevalence of malnutrition and developmental delay in infants were expressed as percentages
Objectives 5 and 6	Association between maternal depression, infant growth and breastfeeding practices was determined by using the Chi square test at a statistical significance level of 5%. The mean duration of breastfeeding was also compared between those with maternal depression and those without using independent t-tests.

3.8 Ethical Considerations

3.8.1 Ethical approval

Ethical approval was obtained from the institutional review board of the Faculty of Health Sciences of the University of Buea, Cameroon (Appendix 4). After ethical clearance was granted, administrative approval was obtained from the Delegate of Public Health for the South West Region in Cameroon.

Consent was sought from mothers at presentation at the IWCs. The Researcher explained all the details of the research procedure to the participants including its aims, procedure, potential risks, advantages and benefits. Participants who consented to be part of the study were administered questionnaires. Their children were also examined upon completion of the questionnaires. The principles of good ethical research were addressed as follows:

3.8.2 Respect for autonomy

The study was explained to all participants in detail: the nature, benefits and risks of the study. Participants were then provided with written consent which they signed before being included in the study.

The participants had the right to withdraw from the study at any time they so wished.

3.8.3 Confidentiality

The data collection forms only had the identification codes of the patients.

3.8.4 Beneficence

Mothers who were diagnosed of depression were given psychotherapy sessions and pharmacological managements as the situation demanded. Children diagnosed with probable developmental delay were referred to a paediatrician for management.

3.8.5 Non-maleficence

There was minimal risk associated with the study in that it was time consuming for the mothers. This was managed by converting all the questionnaires to interviewer administered.

3.8.6 Justice

All participants were treated equally and fairly.

Incentives: A thank you pack containing detergents was given to all mother-infant pairs who participated in the study.

CHAPTER FOUR

RESULTS

Data collection for this study was carried out between the 10th of January 2019 and the 15th of March 2019. During this period, 439 mother-infant pairs presented at selected IWCs for immunization and post-natal follow up. Of these, 408 were included in this study yielding a response rate of 97.3%. For those who did not participate, the reasons were, refusal of consent, ineligibility to take part of the study and incomplete questionnaires (see Figure 2).

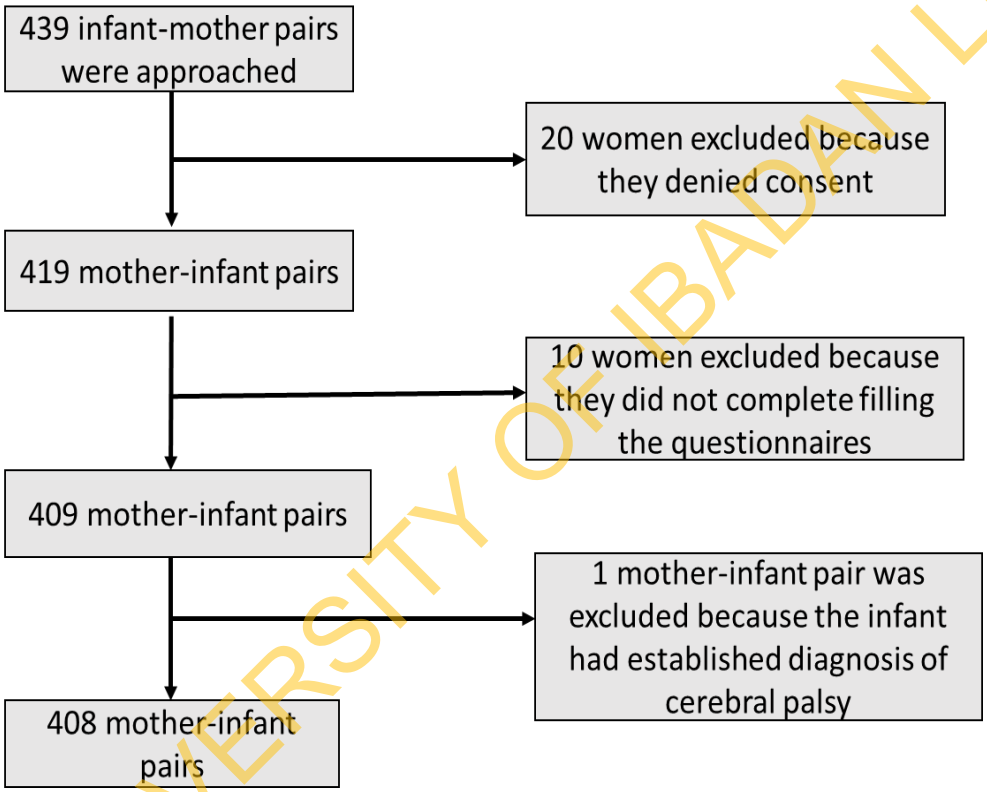

Figure 2: Selection of mother-infant pairs

4.1 Socio-demographic and general health characteristics of respondents and their children

4.1.1 Socio-demographic characteristics: Personal Information

The mean age of the mothers was 27 ± 5.25years. With the age ranging from 15 to 55 years. One hundred and eighteen (28.9%) of the mothers were aged 25 to 29 years. Two hundred and twenty two mothers (67.9%) were married and 169 (41.4%) were unemployed. Seven mothers (1.7%) had no formal education.

The average amount of money spent per day by the study participants ranged from 66 – 25000FCFA (0.12-45.5USD) with the mean being 2107 ± 2273 FCFA (3.8 ± 4.1 USD). Ninety-two out of 408 (22.5%) participants lived below 1000FCFA (2USD) per day.

As concerns the infants, 208 (51%) were females and 200 (49%) were males. The age of the infants ranged from 1 to 12 months with mean age of 5 ± 3.2 months. (See Table 4.1.1)

Table 4.1.1: Personal characteristics of respondents attending IWCs in the Buea Health District from the 10th of January to the 15th of March (N=408)

Characteristics	Categories	Number	Frequency
Age of mothers (years)	15-19	22	5.4
	20-24	118	28.9
	25-29	145	35.5
	30-34	84	20.6
	≥ 35	39	9.6
Marital status	Married	277	67.9
	Single/divorced/widow	131	32.1
Employment status	Employed	239	58.6
	Unemployed	169	41.4
Level of education	No formal education	7	1.7
	Primary	50	12.3
	Secondary	186	45.6
	Tertiary	165	40.4
Income groups	< 1000FCFA	92	22.5
	>10000FCFA	316	77.5
Gender of infant	Male	200	49.0
	Female	208	51.0

4.1.2 Socio-demographic characteristics of the study population: Family related

Two hundred and seventy-two (66.7%) of the respondents had a monogamous type of marriage, 132 (32.4%) were single mothers and 4 (1%) were in polygamous marriage. Three hundred and ninety-five (98.6%) of the participants reported that they received some form of financial, emotional and physical support from either a husband, family member or friend during the period of breastfeeding the index child. One hundred and fifty-eight 158 (39.9%) mothers rated the level of support received as fair and 136 (34.3%,) rated the level of support received as good. One

hundred and two (25.8%) mothers rated the support received as poor. The mean number of children that each participant had was 2 ± 1.2 with range from 1 to 8 (See Table 4.1.2).

Table 4.1.2: Family related socio-demographic characteristics of postpartum women attending IWCs in the Buea Health District from the 10th of January to the 15th of March (N=408)

Characteristics	Categories	Number	Percentage (%)
Family Type	Monogamous	272	66.7
	Polygamous	4	1.0
	Single parents	132	32.4
Whether support is received from husband and family	Yes	395	96.8
	No	13	3.2
Level of support* received from husband and family	Poor	102	25.0
	Fair	158	38.7
	Good	135	33.1
Number of children of Mother	1	292	71.6
	2-4	100	24.6
	>4	16	3.9

4.1.3 Child health information: General health

The birth weight of the infants ranged from 1700 to 4800g with the mean being 3412 ± 568g. Two hundred and ninety-one (71.3 %) infants had a normal birth weights falling into the range of 2500-3900g. Thirty-four (8.3%) had low birth weight and 83 (20.3%) had macrosomia with a birth weight greater than 4000g. Febrile illnesses were the most frequent childhood illness reported with 140 (34.3%) of the infants having at least 1 episode of febrile illness in the 6 months prior to the study. The second most common childhood illness reported was acute diarrhoea with 121 (29.7%) of the infants having at least 1 episode in the 6 months prior to the study. Fifty (12.3 %) infants had at least 1 episode of persistent vomiting in the 6 months prior to the study and 114 (27.9%) had 1 or more episodes of acute respiratory infection (ARI) the 6 months period prior to the study. (See Table 4.1.3)

Table 4.1.3: Child health information: General health (N= 408)

Characteristics	Categories	Number	Percentage (%)
Birth weight(grams)	<2500	34	8.3
	2500 -3999	291	71.3
	>4000	83	20.3
Persistent vomiting in last 6 months	Yes	50	12.3
	No	358	87.7
Episodes of vomiting	None	358	87.7
	1-2 episodes	39	9.6
	3-4 episodes	11	2.7
Diarrhoea in last 6 months	Yes	121	29.7
	No	287	70.3
Episodes of diarrhoea			
	None	287	70.3
	1-2 episodes	91	22.3
	3-4 episodes	24	5.9
	>4 episodes	6	1.5
Febrile illness in the last 6 months	Yes	140	34.3
	No	268	65.7
Number of episodes of febrile illness	None	268	65.7
	1-2 episodes	87	21.3
	3-4 episodes	46	11.3
	>4 episodes	7	1.7
Acute respiratory illness in the last 6 months	Yes	114	27.9
	No	294	72.1
Number of episodes of ARI	None	294	72.1
	1-2 episodes	65	15.9
	3-4 episodes	32	7.8
	>4 episodes	17	4.2
Frequency of hospital visits in the last 6 months	None	278	68.1
	1-2 visits	105	25.7
	3-4 visits	21	5.1
	>4 visits	4	1.0

4.2 Prevalence and Correlates of Post-Partum Depression (PPD) among mothers

4.2.1 Prevalence of PPD among mothers

The mean score on the EPDS was 4.86 ± 5.03 and 140 out of 408 (34.3%) of mothers in this study screened positive for postpartum depression having a score of 7 and above.

Using the CIDI, 222 (54.4%) of the participants responded 'YES' to at least one of the questions on the screening section on depression representing a positive screen (See Table 4.2.1).

After the interview using the diagnostic section of the CIDI, 109 mothers were diagnosed with depression giving a prevalence of 26.7%. The severity of depression varied from mild to severe based on their performance on the CIDI. Eighty-two (20.1%) of the respondents had mild depression, 21 (5.1%) moderate depression and 8 (1.5%) severe depression (Figure 3).

Table 4.2.1: Mothers response to questions on depressive symptoms in the screening section of the CIDI (N=408)

Questions	YES Frequency (%)	NO Frequency (%)	DON'T KNOW Frequency (%)
Have you ever in your life had a period lasting day or longer when most of the days you felt unhappy empty or depressed?	222 (54.4)	186 (45.6)	0 (0)
Have you ever had a period lasting several days or longer when most of the days where most of the days you were discouraged about how things were going on in your life?	198 (48.5)	209 (51.2)	1 (0.2)
Have you ever had a period lasting several days or longer when you lost interest in most things you usually enjoy?	190 (46.6)	218 (53.4)	0 (0)

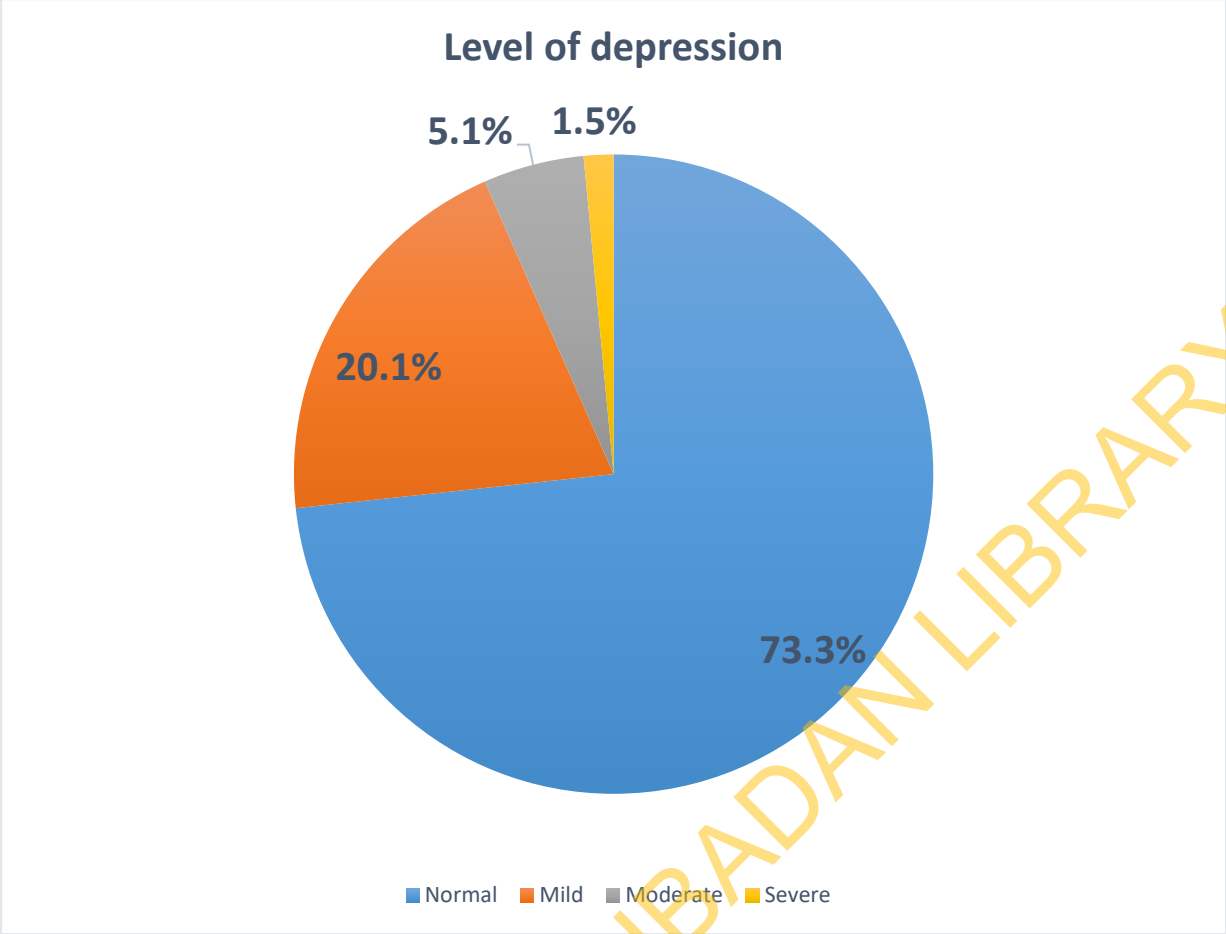

Figure 3: Percentage distribution of participants based on level of depression

4.2.2 Trend of Postpartum Depression from 1 to 48 weeks postpartum

The highest prevalence (7.8%, 32) of PPD was recorded within 1- 10 weeks postpartum and there was a progressive fall in the prevalence to 2.2% (9) at 41-50 weeks postpartum (See figure 4)

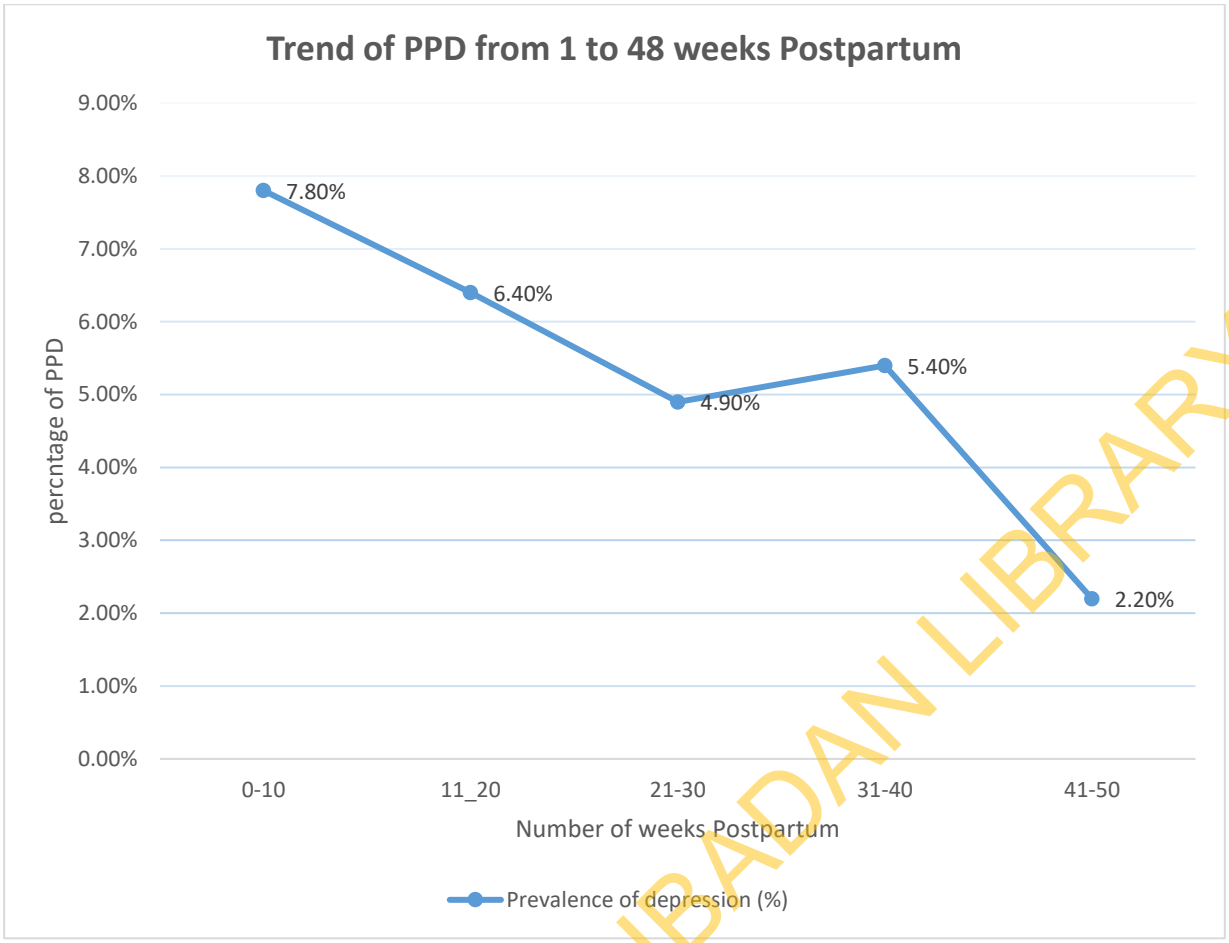

Figure 4: Trend of PPD from 1 to 48 weeks postpartum among respondents attending IWCs in the BHD from the 10th of January to the 15th of March 2019

4.2.3. Correlates of PPD

4.2.3.1 Socio-demographic correlates of PPD

Table 4.2.3.1 below reveals the correlates of PPD.

Ten (10) out of 22 (45.5%) mothers aged below 19 years were diagnosed of depression compared 87 out of 347 (25.1%) of mothers aged between 20-34 years and 12 out of 39 (30.8%) of mothers above 35years old: this association was statistically significant ($x^2 = 4.75$, P=0.041).

Sixty-seven out of 208 (32.3%) of mothers who had female children were depressed and 21.0% (42 out of 200) of mothers who had male children were depressed. This difference was statistically significant ($x^2 = 6.54$, p=0.01). Sixty-six (66) out of 277 (23.8%) mothers who were married were depressed compared 43 out of 131 (32.8%) mothers who were unmarried: The association was however not statistically significant ($x^2 = 3.68$, P=0.072)

Fifty-seven (57) out of 239 (23.9%) mothers who were employed were depressed compared to 52 out of 169 (30.8%) mothers were unemployed; this difference was however not statistically significant ($x^2=2.42$, p=0.143).

There was also no significant association between PPD and educational status (p-value=0.536) and socioeconomic status (p-value=0.592) (See Table 4.3.2.1).

Table 4.2.3.1: Association between socio-demographic characteristics and postpartum depression

Characteristics	Categories	Postpartum Depression		Total	χ^2	p
		Present	Absent			
		n (%)	n (%)	n (%)		
Age	≤ 19	10 (45.5)	12 (54.5)	22 (100)	4.75	0.041*
	20-34	87 (25.1)	260 (74.9)	347(100)		
	≥35	12 (30.8)	27 (69.2)	39 (100)		
Marital status	Married	66 (23.8)	211 (76.2)	277 (100)	3.68	0.072
	Unmarried/divorced/widow	43 (32.8)	88 (67.2)	131 (100)		
Occupational status	Employed	57 (23.8)	182 (76.2)	239 (100)	2.42	0.143
	Unemployed	52 (30.8)	117 (69.2)	169 (100)		
Educational status	No formal education	0 (14.3)	6 (85.7)	7 (100)	2.31	0.536
	Primary education	16 (32.0)	34 (68.0)	50 (100)		
	Secondary education	53 (28.5)	133 (71.5)	186 (100)		
	Tertiary	39 (23.6)	126 (76.4)	165 (100)		
Income	< 1000frs/day	27 (29.3)	65 (70.7)	92 (100)	0.42	0.592
	>10000frs/day	82 (25.9)	234 (74.1)	316 (100)		
Gender of Child	Male	42 (21.0)	158 (79.0)	200 (100)	6.54	0.01*
	Female	67 (32.3)	141 (67.8)	208 (100)		

*** Significant at p < 0.05**

4.2.3.2. Obstetric and clinical correlates of PPD in mothers

Table 4.2.3.2 below shows the obstetric and clinical correlates of PPD.

The results showed that 34 out of 102 (33.3%) mothers who reported that they had low levels of support from their husband and family were depressed compared to 45 out of 158 (28.5%) mothers who reported that they received a fair level of support and 26 out of 136 (19.1%) who reported they received good level of support from their families. This difference was statistically significant (x^2=6.53, p=0.038).

One hundred and eight (108) out of 329 (32.8%) mothers who reported being exposed to a stressor such as marital conflict, socio-political crisis, stress of motherhood, divorce or death of a loved one, 6 months prior to the study were depressed compared to 1 out of 79 (1.3%) who did not report being exposed to any stressor 6 months prior to the study; this difference was also statistically significant (x^2 = 196.2, p<0.001)

Eighty-three (83) out of 295 (29.1%) mothers who had normal delivery were depressed compared to 22 out of 109 (20.2%) of mothers who had either instrumental or caesarean deliveries. This difference was however not statistically significant (x^2=3.24, p=0.078).

Eighty-six (86) out of 343 (25.1%) mothers who had term deliveries were depressed compared to 23 out of 65 (35.4%) of mothers who had preterm deliveries. This difference was however not statistically significant (x^2=2.91, p=0.090).

Seventy-one (71) of 278 (25.7%) mothers who reported planning for their pregnancies were depressed compared to 38 out of 130 (29.2%) of mothers who reported that they did not plan for their pregnancies. This difference was however not statistically significant (x^2=0.61, p=0.463). (See Table 4.2.3.2)

Table 4.2.3.2: Association between Obstetric/clinical characteriatics and postpartum depression

Correlates	Categories	Postpartum depression		Total	χ^2	p
		Present	Absent			
		n (%)	n (%)			
Type of deliveries	Normal	83 (29.1)	212 (70.9)	295 (100)	3.24	0.078
	Others[#]	22 (20.0)	87 (79.8)	109 (100)		
Gestational Age	Term	86 (25.1)	257 (74.9)	343 (100)	2.92	0.094
	Preterm	23 (35.4)	42 (64.6)	65 (100)		
Level of support	Low	34 (33.3)	68 (66.7)	102 (100)	6.53	0.038*
	Fair	45 (28.5)	113 (71.5)	158 (100)		
	Good	26 (19.1)	110 (80.9)	136 (100)		
Parity	1	75 (25.7)	217 (74.3)	292 (100)	1.19	0.534
	2-4	28 (28)	72 (72)	100 (100)		
	≥5	26 (19.1)	110 (80.9)	16 (100)		
Pregnancy	Planned	71 (25.7)	207 (74.3)	278 (100)	0.61	0.463
	Unplanned	38 (29.2)	92 (70.8)	130 (100)		
Stressor	Present	108 (32.8)	221 (67.2)	329 (100)	196	<0.001*
	Absent	1 (1.3)	78 (98.7)	79 (100)		

F=Fischer's exact correction

**significant at p<0.05, # Caesarean section and instrumental delivery*

4.3.3 Independent predictors of postpartum depression

In the multivariate analysis, after adjusting for possible confounders, age, marital status, socioeconomic status, educational level and mode of delivery the following factors were found to be associated with PPD in mothers.

Mothers who failed to plan for their pregnancy were 3 times more likely (aOR=2.67, CI=1.05-6.78) to have postpartum depression than mothers who planned for their pregnancy.

The odds of being depressed among participants who were adolescence were 3.4 times more when compared to adult women (aOR=4.9, CI=1.24-19.27).

Mothers who were married were 70% less likely to be depressed than mothers who were unmarried (aOR=0.3, CI=0.13-0.75)

Mothers who reported socio-political instability (aOR=2.69, CI=0.05-0.89) and marital conflict (aOR=8.29, CI= 1.79-37.78) as stressors within the last 6 months were 2 times and 8 times more likely to be depressed respectively.

Mothers who had male children were 60% less likely to have depression than mothers who had female children (aOR= 0.49, CI= 0.29-0.87).

Table 4.3.3 : Factors associated with PPD on logistic regression analysis

Predictors	Adjusted odds ratio	95% C.I	P-value
Pregnancy (unplanned Vs planned)	2.67	1.05-6.73	0.039*
Age (<20 Vs ≥20)	3.47	1.07-11.36	0.039*
Educational status (High Vs Low)	1.15	0.50-2.63	0.743
Marital status (married Vs Unmarried)	0.31	0.13-0.75	0.010*
Occupation (Employed Vs Unemployed)	0.71	0.39-1.29	0.261
Socioeconomic status (Low Vs High)	1.15	0.57-2.30	0.691
Sex of child (Male Vs Female)	0.49	0.29-0.87	0.013*
Caesarean Section (Yes Vs No)	1.89	0.14-24.64	0.614
Normal delivery (Yes Vs No)	2.13	0.17-26.54	0.546
Gestational age (<37 Vs >37 weeks)	0.56	0.27-1.16	0.115
Socio-political instability (Yes Vs No)	2.69	1.46-4.95	0.001*
Marital conflict (Yes Vs No)	11.04	4.9 -24.82	<0.001*
Level of support			
Good	1		
Fair	0.32	0.16-0.67	0.002*
low	0.51	0.26-1.01	0.052

*significant at p<0.05

4.4 Developmental characteristics

4.4.1 Prevalence of developmental delay

Ninety-seven (23.8%) infants had a delay in at least 1 domain of development. Twenty-six (6.4%) had delay in more than 1 domain of development and 50 (12.3%) had delay in 1 domain only. Forty-one (10.0%) infants had delay in the acquisition of fine motor skills and 32 (7.8%) infants had delay in acquisition of problem-solving skills. Twenty-five (2.1%) had a delay in the acquisition of personal and social skills, 14 (3.4%, 14) had delay in acquisition of communication and 13 (3.2%) in gross motor skill acquisition. (See Table 4.4.1)

Table 4.4.1: Prevalence of developmental delay among infants attending IWCs in the BHD from the 10th of January to the 15th of March 2019

Characteristic	Categories	Number	Percentages (%)
Developmental delay	At least 1 domain	97	23.8
	No	311	76.2
Domains of developmental delay	Communication	14	3.4
	Gross motor	13	3.2
	Fine motor	41	10.0
	Problem solving	32	7.8
	Personal and social	25	2.1

4.4.2 Correlates of child mental and physical development

4.4.2.1 Socio-demographic correlates of child mental and physical development

Table 4.4.2.1 below shows the correlates of child mental and physical delay

Eleven (50%) out of 22 of mothers less than 19 years had children with developmental delay compared to 22.5% of mothers who were aged between 20 to 34 years and 20.5% of mothers aged greater than 35 years. (p=0.003)

Sixty-four (64) out of 213 (23.1%) mothers who were married had children with developmental delay compared to 33 out of 98 (25.2%) of mothers who were not married: this difference was however not statistically significant (x^2=0.21, p=0.709).

Fifty-six (56) out of 239 (25.1%) mothers who were employed had children with developmental delay compared to 41 out of 169 (24.3%) of mothers who were not employed; this difference was however not statistically significant (x^2=0.38, p=0.906).

Forty-six (46) out of 154 (23.0%) of male infants had developmental delay compared to 51 out of 157(24.5%) of female infants; this difference was however not statistically significant (x^2=0.13, p=0.734).

Sixty-one (61) out of 183 (25.0%) children less than 6 months had developmental delay compared to 36 out of 128 (22.0%) of children greater than 6 months old; this difference was however not statistically significant (x^2=0.50, p=0.553).

Twenty-Five (25) out of 92 (27.2%) mothers with low socio-economic status had infants with developmental delay to 72 out of 316 (22.8%) of mothers with high socio-economic status: this difference was however not statistically significant (x^2=0.76, p=0.040). (see Table 4.4.2.1)

Table 4.4.2.1: Socio-demographic characteristics associated with child mental and physical development among infants

Characteristics	Categories	Delay in one or more Domain		Total	χ^2	P-value
		Yes	No			
		n (%)	n (%)	n (%)		
Mother's Age (in years)	≤ 19	11 (50.0)	11(50.0)	22 (100)	9.97	0.003*
	20-34	78 (22.5)	269 (77.5)	347(100)		
	≥35	8 (20.5)	31 (79.5)	39 (100)		
Mother's Educational Level	No formal	1(4.3)	6 (85.7)	7 (100)	0.27	0.741
	Primary	11(22)	39 (78)	50 (100)		
	Secondary	50 (26.9)	136 (73.1)	186(100)		
	Tertiary	35 (21.2)	130 (78.8)	165(100)		
Mother Marital Status	Married	64 (23.1)	213 (76.9)	277 (100)	0.21	0.709
	Unmarried	33 (25.2)	98 (74.8)	131 (100)		
Mother's Occupation	Employed	56 (23.4)	183 (76.6)	239 (100)	0.38	0.906
	Unemployed	41 (24.3)	128 (75.7)	169 (100)		
Income Groups	<1000frs	25 (27.2)	67 (72.8)	92 (100)	0.76	0.401
	>1000frs	72 (22.8)	244 (77.2)	316 (100)		
Family Type	Monogamous	62 (22.8)	210 (77.2)	272 (100)	1.77	0.327f
	Polygamous	2 (50.0)	2 (50.0)	4 (100)		
	Single parent	33 (25.0)	99 (75.0)	132 (100)		
Level of support from family and husband	Low	27 (26.5)	75 (73.5)	102 (100)	0.65	0.723
	Fair	39 (24.7)	119 (95.3)	158 (100)		
	Good	30 (22.1)	106 (77.9)	136 (100)		
Childs Age	≤ 6 months	61 (25.0)	183 (75.0)	244 (100)	0.50	0.553
	>6 months	36 (22.0)	128 (78.0)	164 (100)		
Gender of Child	Male	46 (23.0)	154 (77.0)	200(100)	0.13	0.734
	Female	51 (24.5)	157 (75.5)	208(100)		

F=Fischer's exact correction, * statistically significant at p<0.05

4.4.2.2 Child health correlates of child physical and mental development

Eighteen (18) out of 358 (22.1%) infants who had at least 1 episode of vomiting in the last 6 months prior to the study had developmental delay compared to 79 out of 108 (41.4%) of infants who had no episode of vomiting: this difference was statistically significant (x^2=4.72, p=0.026).

Fifty (50) out of 108 (46.3%) infants who had at least 1 episode of diarrhoea in the last 6 months prior to the study had developmental delay compared to 47 out of 295 (15.7%) of infants who had no episode of diarrhoea: this difference was statistically significant (x^2=41.1, p<0.001).

Fifty-five (55) out of 143 (46.3%) infants who had at least 1 episode of febrile illness in the last 6 months prior to the study had developmental delay compared to 42 out of 256 (15.8%) of infants who had no episode of febrile illness: this difference was statistically significant (x^2=26.2, p<0.001).

Eight (8) out of 349 (34.9%) infants who had low birth weight had developmental delay compared to 72 out of 291 (24.7%) of infants who had normal birth weight and 17 out of 83 (20.5) who had high birth weight: this difference was however not statistically significant (x^2=0.64, p=0.076).

Twenty-Two (22) out of 114 (22.4%) infants who had normal nutritional status had developmental delay compared to 75 out of 310 (24.2%) of infants who had under-nutrition: this difference was however not statistically significant (x^2=0.12, p=0.071).

Twenty-six (26) out of 114 (22.8%) infants who had at least 1 episode of upper respiratory tract infection in the last 6 months prior to the study had developmental delay compared to 71 out of 304 (24.2%) of did not have any episode of upper respiratory tract infection: this difference was however not statistically significant (x^2=0.82, p=0.797). (See Table 4.4.2.2).

Table 4.4.2.2: Association between child health related factors and developmental delay among infants

Factors	Categories	Delay in one or more Domain		Total	χ^2	P-value
		Yes	No			
		n (%)	n (%)	n (%)		
Birth Weight (grams)	<2500	8 (23.5)	26 (76.5)	349 (100)	0.64	0.762
	2500-3999	72 (24.7)	219 (75.3)	291 (100)		
	≥ 4000	17 (20.5)	66 (79.5)	83 (100)		
Persistent vomiting in the last 6 months	Yes	18 (36.0)	32 (64.0)	50 (100)	4.73	0.026
	No	79 (22.1)	279 (77.9)	358 (100)		
Diarrhea in the last 6 months	Yes	50 (46.3)	58 (53.7)	108 (100)	41.1	<0.001*
	No	47 (15.7)	253 (84.3)	295 (100)		
Febrile Illness in the last 6 months	Yes	55 (38.5)	88 (61.5)	143 (100)	26.2	<0.001*
	No	42 (15.8)	223 (84.2)	256 (100)		
Acute Respiratory Illness in the last 6 months	Yes	26 (22.8)	88 (77.2)	114 (100)	0.82	0.797
	No	71 (24.1)	233 (75.9)	304 (100)		
Number of hospital visits in the last 6 months	None	28 (11.4)	218 (88.6)	246 (100)	59.0	<0.001[f*]
	1-2	52 (38.8)	82 (61.2)	134 (100)		
	3-4	13 (56.5)	10 (43.5)	23 (100)		
	>4	4 (80.0)	1 (20.0)	41 (100)		
Nutritional status	Normal	22 (22.4)	76 (77.6)	98 (100)	0.12	0.791
	Undernutrition	75 (24.2)	235 (75.8)	310 (100)		

f=Fischer's exact correction

**significant at p<0.05*

4.4.2.3 Maternal health correlates of child physical and mental development

We found no statistical significant association between child developmental delay and the following maternal health variables: whether the pregnancy was planned or not (p= 0.214), whether the mother attended antenatal consultations during pregnancy (p= 0.214), gestational age (p=0.874), and type of delivery (p=076). (See Table 4.4.2.3)

Table 4.4.2.3: Association between maternal related health factors and child physical and mental development among infants

Factors	Categories	Delay in one or more Domain		Total	χ^2	P-value
		Yes	No			
		n (%)	n (%)	n (%)		
Pregnancy	Planned	61 (21.9)	217 (78.1)	278(100)	1.61	0.214
	Unplanned	36 (27.7)	94 (72.3)	130(100)		
Antenatal visits	Yes	97 (23.9)	309 (70.6)	406 (100)	0.63	0.581
	No	0 (0.0)	2 (100)	2 (100)		
Gestational age	< 37 weeks	81 (23.6)	262 (76.4)	343 (100)	0.03	0.874
	≥ 37 weeks	16 (24.6)	49 (74.4)	65 (100)		
Type of delivery	Normal	77 (25.8)	222 (74.2)	299 (100)	2.4	0.076
	Others	20 (18.3)	89 (81.7)	109 (100)		

4.4.3 Independent predictors of child physical and mental development

After adjusting for age, socioeconomic status, presence or absence of support, marital status and mothers educational level the following factors were independent predictors of developmental delay.

Mothers below 20 years were 5 times more likely to have children with developmental delay than mothers who were 20 years and above (aOR=5.92 CI=1.83-19.14).

Children who had diarrhoea in the last 6 months were 3 times more likely to have developmental delay than children who did not suffer from diarrhoea (aOR=3.2 CI=1.84-5.76).

The odds of having development delay in children who had had febrile illnesses in the past 6 months was 2 (aOR=2.45 CI=1.41-4.26)

Children who did not consult for an ailment in the last 6 months prior to the study were less likely to have developmental delay than children who had consulted at least once in the last 6 months (aOR=0.24, CI=0.13-0.41)

Persistent vomiting in the last 6 months was no longer significantly associated to developmental delay. (See Table 4.4.3)

Table 4.4.3: Predictors of child physical and mental delay on logistic regression analysis

Predictors	Adjusted odds ratio	95% C.I	P-value
Vomiting (Yes Vs No)	1.49	0.70-3.19	0.301
Age (<20 Vs ≥20)	5.92	1.83-19.14	0.020
Diarrhoea in the last 6months (Yes Vs No)	3.2	1.84-5.76	<0.001*
Febrile illness (Yes vs No)	2.45	1.41-4.26	0.001*
Hospital visits (None Vs Yes)	0.24	0.13-0.41	<0.001*

* significant at p <0.05

4.5 Infant Nutritional status

Three hundred and ten (76%,) infants had a normal nutritional status with Z scores in the range -2 to +2 and 98 (24%) where undernourished. The most common form of undernutrition was stunting (height for age) with 22.3% of participants having Z-scores less than -2. This was followed by wasting with 5.6% (22) of the participants having Z-scores < -2 and underweight with 4.6% (19) of the participants having Z-scores < -2. (See figure 3)

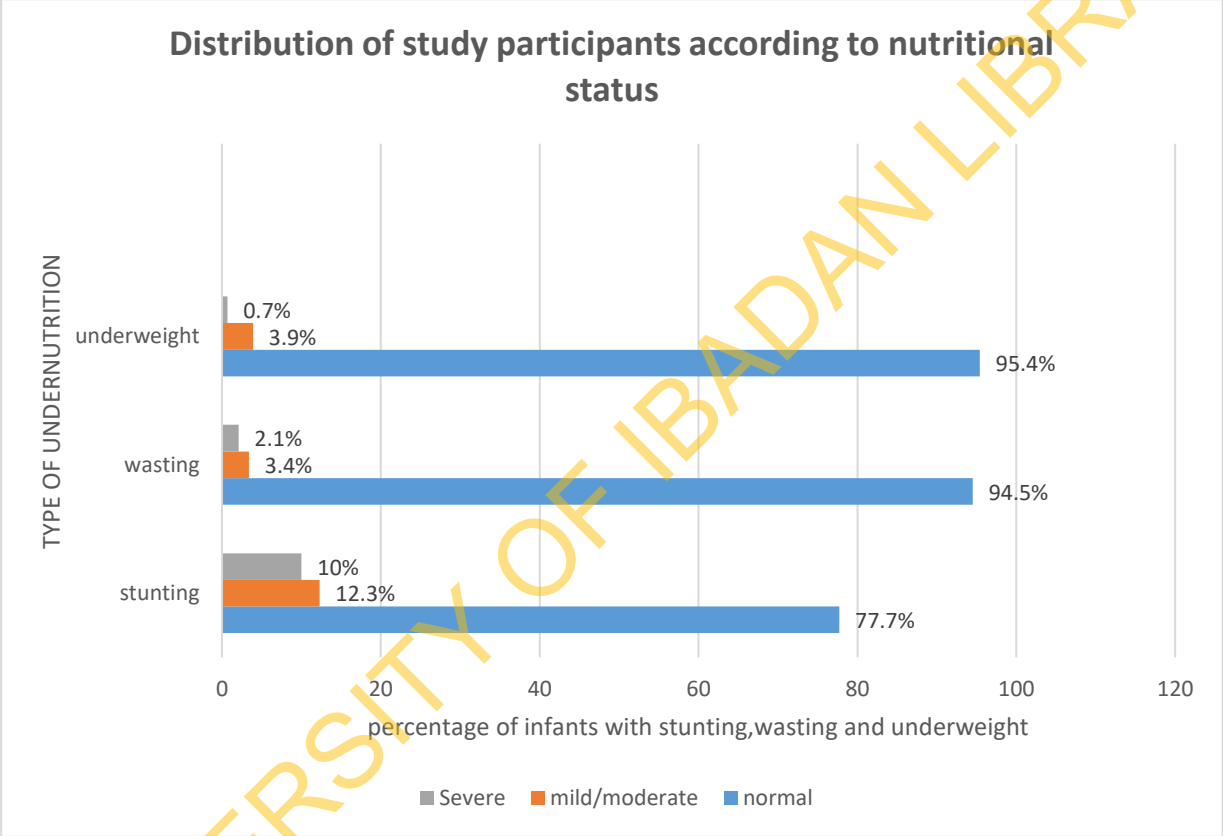

Figure 5: Child health information: Nutritional status

4.6 Breastfeeding practices and related characteristics

4.6.1 Prevalence of optimum breastfeeding practices

The mean duration of breastfeeding was 9.3 ± 3.8 months. As at the time when data was collected 59 (14.5%) out of the 408 participants had stopped breastfeeding. On probing about reason for cessation, 35 (8.5%) women reported that they had to resume work and school, 15 (3.7%) described low volumes of breast milk and so the infants were not satisfied while 9 (2.2%) said they were pregnant with another baby and therefore did not want the child to take "spoiled breast milk".

The scores on the breastfeeding scale ranged from 0 to 8 with a mean score of 4.8 ± 1.7. Two hundred and thirty-five out of 408 (57.8%) mothers had sub-optimum breastfeeding practices having a score of 5 and below.

4.6.2 Association between breastfeeding practices and maternal depression

Forty-three out of 109 (39.4%) mothers who were depressed reported that they practiced optimum breastfeeding practices while 129 out of 299 (43.1%) of mothers who were not depressed reported that they practiced optimum breastfeeding practices. This difference was however not statistically significant (p = 0.57). (Table 4.6.2)

Table 4.6.2a: **Association between maternal depression and breastfeeding practice**

Variable	Categories	Breastfeeding practices		Total	X^2	p-value
		Optimum N (%)	Suboptimum N (%)			
Depression	Yes	43 (39.4)	66 (60.6)	109 (100)	0.47	0.57
	No	129 (43.1)	170 (56.9)	299 (100)		

The mean duration of breastfeeding of mothers who were depressed was 8.37 ± 3.9 months while the mean duration of breastfeeding for mothers who were not depressed was 9.64 ± 3.8 months. This difference was statistically significant (P-value= 0.003). (Table 4.6.2b)

Table 4.6.2b: **Comparing mean duration of breastfeeding between depressed and non-depressed mothers**

Variable	Category	Frequency	Mean duration of breastfeeding	t-value	p-value
Depression	Yes	109	8.37	-3.059	0.002
	No	299	9.6		

4.6.3 Association between maternal health and infant development

Thirty-two out of 109 mothers who were depressed had infants with delay in one or more domains of development while 21.7% (65 out of 299) of mothers who did not have depression had infants with developmental delay. This difference was not statistically significant. (p=0.114)

Table 4.6.3: Association between maternal depression and child developmental delay

Variable	Categories	Infant developmental Delay			Total	X^2	p-value
		1 domain N (%)	2 or more N (%)	Absent N (%)			
Depression	Yes	26 (23.9)	6(5.5)	77 (70.6)	109 (100)	4.34	0.114
	No	45 (15.1)	20 (6.7)	234(78.3)	299 (100)		

CHAPTER FIVE

DISCUSSION, RECOMMENDATIONS AND CONCLUSION

5.1 Discussion

This study was a cross-sectional descriptive study carried out in infant welfare clinics (IWCs) in the Buea Health District. The study aimed to determine the prevalence of postpartum depression (PPD) in mothers and its association with infant development and reported breastfeeding practices. The results of this study established some interesting findings.

In this section, the results are discussed in light of the socio-demographic characteristics of the mother-infant pairs, the prevalence and correlates of PPD in mothers, developmental delay and under-nutrition in their infants. The pattern of breastfeeding practices and the association between PPD, breastfeeding and infant development are also deliberated on.

5.1.1 Sociodemographic characteristics of participants

The mean age of the mothers in this study was 27 years with majority (28.9%) of them within age group 25-29 years. A study that was done to determine the prevalence and correlates of postpartum depression in the Limbe Health District in Cameroon but which did not access their infants, obtained a mean age of 27.1± 5.4years with most of the study participants within the age group 25-30 years (Ghogomu *et al*., 2016). This similar age range in the two studies is probably because the age range of 25-29 years is the peak period for childbearing in Cameroon according to the 2011 Demographic Health Survey in Cameroon (MINSANTE, MINPAT, 2011). This finding is also in keeping with a study carried out by Adewuya *et al* (2008) in Nigeria, which showed that the mean age of women in the post-partum period was 27.5±12.09 years. A study carried out in the United States also showed almost similar findings as the mean age of the mothers was 26.7±5.6years (Barkin *et al.*, 2017).

The observation that just two thirds of the participants in this study were married reveals lower rates than that found in other studies in sub-Saharan Africa. In Kenya, a study of women in the postpartum period showed that over three-quarters (87%) were married (Madeghe *et al*, 2016). The reason for the lower rates of marriage in this study are not quite clear but the socio-political crisis with breakdown of communities and homes may account for more women getting pregnant outside of marriage.

Almost all (98.6%) of the mothers who were married in this study were in monogamous marriages. This is in contrast with a study carried out by Luke in Sierra Leone (2017), which showed that 41.1% of the mothers had monogamous marriages. This could be explained by religious affiliation of the Buea community. Buea is a predominant Christian community with most of the population being Catholics and polygamous marriages is not permitted in Christianity and the Catholic church in particular (CCUC, 2016), whereas the population of Sierra Leone is predominantly Muslim which accepts polygamous marriages (Luke Ronita, 2017).

Just 1.7% of the mothers had no formal education in contrast with study carried out by Agbaje *et al* in Enugu, Nigeria (Agbaje et al., 2019) where 20.6% of mothers had no formal education. Abiodun (2006) in a study carried out in Kwara state, North central Nigeria obtained a higher proportion of mothers with no formal education (18.0%) (Abiodun, 2006). This difference can be explained by the adult literacy rate in Cameroon of 75.1% which is much higher than that in Nigeria (59.5%) (Cameroon Institute of Statistics., 2019, Nigerian National Institute for Statistics, 2015).

Almost all the mothers reported that they received support from their husbands and/or friends though about a quarter (25.8%) reported the level of support they received as low. In a study of mother infant pairs in a slum in Freetown, Sierra Leone, Luke found that 50% of mothers reported a low level of support from their husbands and family members (Luke,, 2017). The finding in this study is closer to the finding of Ghogomu *et al* (2016) where 16.4% of mothers reported that they

received low level support from their family, husband and friends (Ghogomu *et al.*, 2016). The lower rates of reporting low support in Cameroon after the delivery process may be due to cultural practices in which the families of both parents usually send a representative who usually comes and live with the mother to render assistance in the postpartum period (Beninguisse & De Brouwere, 2004). In addition, the study in Sierra Leone, which had almost half of the women reporting low support, was carried out in the immediate post-Ebola era with its associated stressors (Luke, 2017). Sierra Leone is one of the 3 African countries that were severely affected by the Ebola virus outbreak (McNamara *et al.*, 2016). In Sierra Leone there were reports of over 14,000 Ebola cases resulting in over 3900 deaths therefore many people were directly or indirectly affected by the Ebola outbreak (Evans, Goldstein, & Popova, 2015). The Ebola outbreak left many children orphaned and disrupted economic and social activities (UNFPA, 2015). A national survey carried out by Jalloh *et al* (2015) to evaluate the mental health impact of the Ebola epidemic in Sierra Leone among survivors and family members showed that the prevalence of depressive and anxiety symptoms were high (48%) with the prevalence of PTSD being as high as 76% (Jalloh *et al.*, 2018). The psychosocial support the mothers would have liked would not have been possible, as their relatives would have been coping with many difficulties.

5.1.2 Prevalence of Postpartum depression

In this study one in four women (26.7%) had postpartum depression. This is higher than 17.7% reported by Holbrook *et al* in a systematic review involving 56 countries with African countries inclusive (Hahn-Holbrook *et al.*, 2018). It is also higher than previously reported prevalence of 14.6% in Western Nigeria (Adewuya *et al.*, 2005), 13.0% in Kenya (Madeghe *et al.*, 2016) and 16% in Uganda. The estimate however falls within the wide range of prior PPD prevalence rates ranging from 6.1-30.6% reported in African mothers (Fisher *et al.*, 2012; Ukaegbe *et al.*, 2012; Weobong *et al.*, 2015). The higher prevalence recorded in this study could be attributed to the

socio-political instability presently going on in the English-speaking regions in Cameroon. Almost two-thirds (62%) of the mothers recognized the socio-political crisis as a potential stressor as they were constantly being exposed to gunshots and other violent conditions making them uncertain about both their future and that of their children. Another possible explanation for the higher prevalence in this study could be the settings where the studies were carried out. Postpartum depression is very contextual and its prevalence varies across cultures and settings (Adewuya *et al.*, 2005). In addition, one other factor that could account for the higher prevalence in this study could be the screening instrument used and the cut-off values used to classify mothers as depressed. The EPDS is a widely used tool for screening of depression and cut-offs vary from 7 to 13. In this study the cut off of 7, a lower cut-off compared to that used in the other studies were used thereby reaching more women with depression for the second stage diagnostic interview on the CIDI.

On the other hand, the prevalence recorded in this study is lower than what was previously reported in a study carried out in a neighbouring health district in the Southwest region of Cameroon. In that study, Ghogomu *et al* obtained a prevalence of PPD as 61.6% (Ghogomu et al., 2016). This very high prevalence recorded could be due to the fact that the study by Ghogomu *et al* was a community-based study and so women who were depressed and who could not take their infants to the health facility were not missed out. This could also be due to the difference in instruments used. Ghogomu *et al* used the patient health questionnaire, which was administered by research assistants. In the current study the CIDI and EPDS were used for screening in order not miss any mother with probable depression. Mothers who scored 7 and above on the EPDS as well as those who answered yes to any questions on the screening section of the CIDI were then administered the diagnosis section of the CIDI by the researcher, who is a trained mental health professional. This could have led to generating more accurate diagnosis leading to the lower prevalence recorded in this study.

The highest prevalence (7.8%) of PPD was recorded within 1-10 weeks postpartum and there was a progressive fall in the prevalence to 2.2% at 41-50 weeks postpartum, but there was another peak within 31-40 weeks. These findings are consistent with a study carried out by Henderson *et al* in Australia who showed that most mothers developed depressive symptoms early in the postnatal period (Henderson *et al.,* 2003). Several theories have been postulated as regards why depression is more prevalent in the first 4 weeks postpartum. One of such theories is the cultural effect, which proffers that some cultural beliefs such as dietary restrictions in the postpartum period may have significant negative impact on the mother's mental health (Omigbodun & Olatawura, 2008). In addition, new parenthood and childbirth are significant stressors for the mothers as they have to assume new roles of motherhood with all its responsibilities (Yim *et al*, 2015). This is especially true for new mothers as their lifestyle suddenly changes after the delivery. For example not only can they not freely move about and attend gatherings as they used to, they will also have to wake up several times either because the baby is crying and needs to be cuddled or the baby needs to eat. This may be frustrating for young mothers and "new" mothers (O'hara & Swain, 1996b) .

5.1.3 Correlates of Postpartum Depression

In this study adolescents were 4 times more likely to be depressed in the postpartum period than mothers who were older. This is probably because young mothers are psychologically ill-prepared to handle the physical, social and mental changes associated with pregnancy and childbirth (Njim *et al.*, 2016). Also most of the adolescents (91%) in this study were still in school and so they had to integrate their schooling obligations alongside being an adolescent, daughter and partner with their maternal role. In so doing they would face role conflict, restriction and confusion (Birkeland *et al.*, 2005). This finding is consistent with several other studies that have been carried out in sub-Saharan Africa and developed countries (Aderibigbe *et al.,* 1993; Adewuya & Famuyiwa, 2007; Figueiredo *et al.,* 2007; Beatrice Madeghe *et al.*, 2016; Troutman & Cutrona, 1990).

In this study, we categorized education into low (no formal education plus primary education) and high education (secondary plus tertiary education) and there was no statistically significant difference in rates of postpartum depression between the 2 groups. This is similar to a study carried out by Ghogomu *et al* in a neighbouring district in Cameroon which showed that there were no significant associations between educational level and postpartum depression (Ghogomu *et al.*, 2016). This is however contrary to a study carried out by Mokwena *et al* (2014) in South Africa which showed that mothers with low level of education were 3 times more likely to have PPD (Mokwena & Shiba, 2014). Recent studies by Yator *et al* in Kenya also showed significant associations between low educational level and postpartum depression (Yator *et al*, 2016).

There was no significant association between unemployment and having postpartum depression. Ghogumu *et al* obtained a similar result in the south west region of Cameroon (Ghogomu *et al.*, 2016). The results are however not similar to other studies carried out in sub-Saharan Africa and South Africa. Stellenberg *et al* (2015) in South Africa found out that two-thirds (61.3%) of mothers in their study who were unemployed had postpartum depression (Stellenberg & Abrahams, 2015). This difference could be due to cultural factors and expectations. The mothers in this study although not employed outside the home would have still be quite busy taking care of their home and baby which would yield some feelings of satisfaction and if they were supported financially by the fathers of their children, the issues of not being employed would not be a significant stressor.

In this study, married women were less likely to be depressed than unmarried women. This is probably because married mothers would have more social support from their husbands and family than those who are not married (Ukpong & Owolabi, 2006). A cross sectional study carried out among 198 first-time mothers in North Carolina by Goyal *et al* (2010) showed that being unmarried was related to clinically high depression scores at 3 months postpartum (Goyal *et al.*, 2010). Adewuya *et al* (2005) in a study carried out in western Nigeria also showed that mothers

who were single were 3 times more likely to be depressed than mothers who were married (Adewuya *et al.*, 2005).

In this study, mothers who failed to plan for the pregnancy were 3 times more likely to be depressed than mothers who planned for their pregnancy. This finding is in line with results of other studies that have been carried out in low income countries (Mokwena & Shiba, 2014; Yehia *et al*, 2013) as well as a study carried in Cameroon which identified that unplanned pregnancies are associated with maternal depression (Ghogomu *et al.*, 2016).

The mode of delivery was not significantly associated with maternal depression in our study. Robertson *et al* (2004) in their synthesis of literature on predictors of postpartum depression did not record mode of delivery as a predictor of postpartum depression (Robertson *et al.*, 2004). Woebong *et al* in Ghana (2016) also had similar findings in their study where mode of delivery had no significant association with postpartum depression. The reason for this could probably be due to the fact that with the recent advancements in medicine, most operational procedures are done with minimal pains and increased supportive measures such that there is just a slight difference between caesarean deliveries and normal deliveries both in terms of pains and cost incurred (Douglas & Landesman, 1950). In fact the Cameroonian government has reduced the cost of caesarean section by over 60% such that all can afford this (United Nations Population Fund, 2014).

The level of support received from husband and or family also had a significant association with maternal depression. Mothers who reported receiving fair and high levels of support from their families or husbands during breastfeeding of the index child were significantly protected against developing maternal depression when compared to mothers who reported receiving a low level of support from their families. This is one predictor whose effect has been consistent in literature as almost all studies conducted around the world have shown significant positive association between level of support and maternal depression (Beck, 2001; Milgrom et al., 2008; Mokwena & Shiba,

2014; Stellenberg & Abrahams, 2015). The reason for this is quite obvious as when the mother receives support from the family she is less physically and psychologically overwhelmed and this has a positive impact on her mental health and wellbeing (Milgrom *et al.*, 2008).

As far as stressful life events are concerned, mothers who experienced marital conflict and socio-political instability in the last 6 months were more likely to be depressed than mothers who did not have any stressors. Many other studies have shown that being exposed to recent stressful life events increase the risk of developing postpartum depression (Milgrom *et al.*, 2008; Verreault *et al.*, 2014; Ghogomu *et al.*, 2016). About half (50%) of the mothers in this study expressed worries about the present socio-political crisis going on in the English speaking parts of the country and this made them have a bleak view of the future.

In this study we found that having a male baby was protective against developing PPD. This may be attributed to the fact that in many low and lower middle income countries there is a cultural preference for male babies (Fisher *et al.*, 2012). This finding is aligned with the study carried out by Adewuya *et al (* 2005) in Nigeria which showed that mothers who had female babies were 2 times more likely to be depressed than mothers who had male babies (Adewuya *et al.*, 2005).

5.1.4 Prevalence of undernutrition and developmental delay

One in every four infants (23.8%) failed to meet their developmental potential in this study. This is consistent with the Lancet series on child development by McCoy *et al* which postulated that 20 million preschool children in Sub-Saharan Africa failed to meet their developmental potential translating to a rate of 1 in every 4 children (McCoy *et al.*, 2016). The prevalence of developmental delay among children in their first year of life in the study was 23.8%. This is far higher than what Bakare *et al* recorded in Nigeria (Bakare *et al.*, 2016), where the prevalence of neurodevelopmental delays among children under the age of 3 years was 0.9%. This difference could be due to the

instruments used in data collection. Bakare *et al* used 3 instruments: Child Development Review, CDC Milestone Model, and Infant Development Inventory to assess child development while in this study, the Ages and Stages Questionnaire was used. The use of these 3 instruments could probably have increased the precision of diagnosis of developmental delay thereby decreasing the prevalence in their study. One other reason why Bakare *et al* recorded a lower prevalence could be due to their larger sample size. They interviewed and assessed over 3000 infants in selected communities in Lagos state, Nigeria, which could have reduced the degree of error in their study. On the other hand our prevalence of 23.8% is lower than the one third of infants (34.3%) found to have developmental issues in the Kroo Bay community, a slum area in Sierra Leone (Luke Ronita, 2017). This higher prevalence recorded by Luke *et al* would be accounted for the slum environment.

The most common domain of delay in this study was acquisition of fine motor skills. This is contrary to study carried out by Aina *et al* (2008) in Lagos, Nigeria (Aina *et al.,* 2008) in which they showed that, among the specific developmental disorders, delay in speech was about 4 times more common. Many other authors have also shown a preponderance of delay in acquisition of speech when compared to the other specific domains of development (Konbloch & Pasamanick, 1974; Mayou, & Geddes, 1999). The results in this study are however consistent with study carried out by Wei *et al* in China (2015) which showed that the prevalence of developmental delay in the fine motor domain was highest.

As concerns the nutritional status of the infants, one in four had under nutrition (24%). The rate in this study is much higher than the rate of 2.72% obtained by Chiabi *et al* in a study in Yaounde (Chiabi *et al*., 2017), in Cameroon and also higher than 3.75% found by Ehounzou *et al* at the Mother and Child centre of the Chantal Biya Foundation, Yaounde, Cameroon (Ehouzou., 2013). The differences could be due to the fact that the studies in Cameroon only looked at severe acute malnutrition and so children with mild and moderate malnutrition were not investigated. The

prevalence in our study was also lower than the 12.5% recorded by Aina *et al* (2001) in 10 months old infants in Nigeria. This difference could also be due to the age range included in the study. In this study we assessed children below 1 year while Aina *et al* (2001) assessed children as just 8 months (Aina & Morakinyo, 2001). The differences would also be due to the differences instruments used to assess child development.

5.1.5 Correlates of child developmental delay

There was a significant association between being an adolescent and having a child with developmental delay. This is probably because age was a significant predictor of maternal depression in this study and therefore a significant number of adolescence in this study were depressed. Depression in mother has been reported to have a negative impact on children's growth and development as mothers who are depressed are less likely to be engage with their children which will lead to slower cognitive development and behavioural problems (Robertson *et al.*, 2004; Wachs, Black, & Engle, 2009). The finding was however contrary to a study carried out by Bello *et al* (2013) in Ghana which found no significant association between mothers age and child development (Bello et al., 2013).

As far as marital status is concerned, there was no significant association between parents being married and presence of developmental delay in the children. This is contrary to findings of several studies, which have shown a negative consequence of family disruption on development of the child. It has been postulated that single mothers are more likely to be overwhelmed psychologically due to the stress involved in managing the home alone (Adewuya *et al.*, 2008).

This study did not find any association between social support and infant development, which is at variance with findings in other studies (Madeghe et al., 2016; Milgrom et al., 2008). A number of studies have linked absence or poor social support in the mother to child developmental

problems. Large scale studies from around the world have shown that mental health problems could develop in the mother due to lack of practical or social support. These mental health problems in the mother can lead to developmental problems (Cooper *et al.*, 1999; Parsons *et al.*, 2012). The difference observed in our study could be due to the confounding effect of other variables such as the socioeconomic status and educational level.

As concerns the nutritional status, one in four (24.2%) infants who were malnourished had developmental delay compared to 22.4% of children who had normal nutritional status. This finding is consistent with study carried out by Aina and Morakinyo (2001) in Nigeria which showed that most children with undernutrition scored above the normal on a developmental assessment scale (Aina & Morakinyo, 2001). This is probably because there are many other environmental factors, which act in synergy to cause developmental delay in children.

5.1.6 Association between PPD and infant mental and physical health

There was no association between postpartum depression and infant development as well as their nutritional status in this study. This finding is contrary to what had been previously reported as an association between maternal depression and infant undernutrition had been recorded mainly in hospital based studies while population based studies had shown no association. Rahman *et al* (2004) found out that high levels of maternal distress was associated with infant malnutrition (Rahman et al., 2004b). Adewuya *et al (2008)* in a longitudinal study carried out in Nigeria showed that, infants of depressed mothers had significantly poorer growth at the third and sixth month post-partum. They also found out that infants of depressed mothers were more likely to have episodes of diarrhoea and infectious diseases (Adewuya *et al.*, 2008). This difference could probably be due to difference in methodology used in this study. This is a cross sectional study which just gives a "snapshot" of what is happening while the longitudinal approach were mothers and infants are followed up for a period of time provides more information.

5.1.7 Breastfeeding practices and its association with PPD

The mean duration of breastfeeding was 9 months in this study with a prevalence of exclusive breastfeeding of one in three mothers (34.8%). The mean duration of breastfeeding in this study is lower than the 24 months duration recommended by UNICEF (UNICEF, 1990). It is also consistent with UNICEF's report of breastfeeding which states that in LMIC, only 39% of children aged less than 6 months are exclusively breastfeed and just about 58% of children 20-23 months old benefit from practice of continued breastfeeding (UNICEF, 2014). Several factors could account for the reduced duration of breastfeeding as evidenced by the qualitative part of this study. Some mothers explained they had to return to their work and/or school after 3 months of maternity leave and therefore due to the workload they had to either wean the infant early or completely stop breastfeeding. Others said their breast milk was not sufficient for the baby as the babies cried a lot even after sucking for minutes while others pointed some cultural beliefs like the breast milk was spoilt since they became pregnant with another baby.

The prevalence of optimum breastfeeding practices was 42.2%. This is far higher than 20% recorded by Leshi *et al* (2018) in Nigeria (Leshi, 2018). This is probably because the study by Leshi *et al* focused on mothers with twins who have double responsibility than mothers with single babies.

There was no association between breastfeeding practices and postpartum depression. This finding is consistent with a study carried out in Turkey which showed that there was no association between postpartum depression and infant feeding methods though they had a smaller sample size than this study (Annagür *et al.*, 2013). Several other studies around the world have recorded significant associations between postpartum depression and infant feeding practices (Adewuya *et al.*, 2008; Madeghe *et al.*, 2016; Abdul Raheem *et al.*, 2019a). The reason for the difference in this

study could be due to methodological differences. Most of these other studies were longitudinal studies during which the mothers and infants were followed up for several months.

As concerns the impact of postpartum depression on breastfeeding duration, this study showed that depression has a significant negative impact on breastfeeding duration as mothers who were depressed had a shorter duration of breastfeeding. This finding is similar to what has been reported in literature. Adewuya *et al* (2008), in their study in Nigeria found out that postnatal depression was significantly associated with early cessation of breastfeeding (Adewuya *et al.*, 2008). Similarly, Abdul Raheem *et al* in Malaysia also showed that postnatal depression is associated with shorter duration of breastfeeding(Abdul Raheem *et al.*, 2019b). It has been postulated that mothers who are depressed are less likely to believe that breastfeeding is important for their children so either they do not breastfeed at all or they stop breastfeeding early (Gallera *et al.*, 2006).

5.1.8 Study limitations

One of the limitations of our study was the instrument used to measure development. The ASQ is actually a screening tool for development and not a diagnostic tool. A low score on the tool is interpreted as a delay relative to other infants for the same age but not the same as diagnosis for a specific developmental delay. In addition, the cross sectional design of this study prevents understanding the reciprocal association between depression and other variables. That is, it is not possible to tell which condition came first: did depression lead to poor breastfeeding practice? Or did breastfeeding related factors led to depression. A longitudinal design could better evaluate potential mechanisms through which mother's depression can affect breastfeeding practices and infant development. Lastly, this study was based in Infant welfare Clinics and so women who were depressed and unable to bring their children to the hospital for immunisation must have been missed.

5.2 Conclusion

This study was the first attempt to assess the prevalence of postpartum depression in mothers and to evaluate its association wih breastfeeding practices and infant development. Thus contibutes to filling the knowlegde gap regarding the adverse effects of PPD on infant health and breastfeeding practices. The prevalence of PPD in the BHD is quite high with 3 out of every 10 woman diagnosed of depression in the postpartum period. This study identifies the need for CAMH training of helath care providers by the government in primary health care setting to ensure routine screening, early identification and management of cases of PPD and probable developmental delay. Our study also found a strong cross sectional association between the well being of mothers, duration of breastfeeding and health of their babies. This emphasises the need for providing mothers with the psychosocial support they require to carry out their roles as mothers. Thus consideration should be given to the integration of maternal mental health into the child survival and feeeding programs.

5.3 Recommendations

5.3.1 Recommendation to the administration of health facilities at the district level

1) There should be routine screening for PPD, other common mental health disorders and infant developmental delay at IWCs to allow for early identification and management.
2) Special attention should be paid to teenagers and children who are frequently brought to the hospital for consultation due to physical illnesses. They should be closely monitored and screened for depression and developmental delay.

5.3.2 Recommendations to the Ministry of Public Health in Cameroon

1) Other studies should be carried out in other regions of the country so a national estimate for postpartum depression can be generated to inform policy.

2) The prevalence of PPD and probable developmental delay is high hence the Ministry of Public Health should design health strategies advanced toward the prevention of PPD and developmental delay

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APPENDICES

Appendix 1: Informed Consent

INTRODUCTION:

My name is XXXX, a Masters student in the Centre for Child and Adolescent Mental Health, University of Ibadan, Nigeria. I am carrying out a study entitled "**MATERNAL MENTAL HEALTH, INFANT DEVELOPMENT AND REPORTED BREASTFEEDING PRACTICES IN THE 2 HEALTH DISTRICT IN SOUTH WEST REGION, CAMEROON"**. I wish and request that you be enrolled as one of the participants in this study.

THE AIM: The main aim of this study is to improve the quality of care given to mothers and their babies during the first year of development.

PROCEDURE: During the study you will be required to fill a questionnaire containing information about you, the development and breastfeeding practices of the baby. Your baby's height, mid-upper arm circumference and weight will also be measured.

POTENTIAL RISK: This procedure might be time consuming as it will require at least 30minutes of your time.

POSSIBLE BENEFITS: data obtained from this study will help in the better management of pregnant women during their antenatal visits and their babies in future.

CONFIDENTIALITY: In order to ensure confidentiality your name will not be needed.

PARTICIPATION: participation is voluntary and the participant may withdraw at any time she feels to.

COMPENSATION: There will be no financial compensation as regards participation to the research.

CONTACTS:

If you have any questions concerning the study, you can contact the following people:

Prof XXXXX,

Lecturer,
Department of psychiatry, University of Ibadan, Nigeria.
Co-supervisor.
Contact number: +234 XXXX .
XXXXXXX,
Principal investigator.
Contact number: XXXXXXX

CONSENT FORM NUMBER……..

CONSENT:

I ..... , after having the study thoroughly explained to me, haven been given the opportunity to ask questions, time to consider my participation in the study and the decision to withdraw from the study at any time it so pleases me, do hereby accept to enrol myself and my child to participate in this study.

APPENDIX 2: Study instruments in English

2A: Sociodemographic Questionnaire (Adapted)

Please write the answers to the questions or draw a circle where it applies to you.

This is not an examination it is only to find out about you and your health.

SECTION I

BACKGROUND INFORMATION

Family related questions

1. Where do you live? (Address of Present Abode):

2. How old are you?

3. What is your highest level of educational?

   a. No formal education

   b. Primary

   c. Secondary

   d. Tertiary

4. What's your Marital status:

(a) Married (b) Separated/Divorced (c) Father is dead (d) Mother is dead (e) Mother & Father are dead

5. How many children do you have? .....

6. What is your occupation? .....

7. How much do you earn averagely per month?

8. Family Type:

(a) Monogamous (b) Polygamous

9. How many children do you have? :

10. How many children does your partner and/or husband have?

11. What is the position your child among his/her father's children?

12. What is the position of this child among your children?

13. Do you practise any religion? No Yes

14. Please write down the exact place you attend for worship

_____

_____

(a) Islam (b) Orthodox Christian (c) Pentecostal Christian (d) Traditional religion (e) Other

15. How much does the teaching of your religion guide your behaviour?

(a) Very much (b) much (c) Just a little (d) Not at all

16. How much does the teaching of your religion guide your family life?

(a) Very much (b) much (c) Just a little (d) Not at all

2B: Questionnaire on breastfeeding intension and practices of women
INSTRUCTIONS

- If you had twins or multiple births, please answer these questions for the baby who was born first.
- Sometime you are asked to write in a number, please enter number as figure rather than words.
- Sometimes you will be asked to write the answer in your own words.
- For questions with options, tick (✓) or circle the option that best applies to you.(Please pick only one from the options)
- Please be honest with all your answers.

Section A: Background information.

1. What's your child's date of birth? Date of Birth: _____ _____ _____
2. "Age of your child …….....
3. In your previous pregnancy, did you have a single child, twins (or more)?
    a. Single birth
    b. Twins
    c. More than two

4. Is your child a boy or girl? Boy Girl

Section B: breastfeeding practice and related factors.

5. Before your last baby was born, how did you plan to feed him/her in the first six months?
    a) Breast milk

b) Formula

c) Combination of breast and formula

d) I didn't have any plans.

6. Why did you think you would feed your baby this way? Please write all reasons……..

……
…

……
…

……
…

……

7. How long after delivery did you put your baby to breast?
_____

8. Are you still breastfeeding your child? a) Yes [ ] b) No [ ] (*if Yes, go to Q28*)

9. If no, why?
_____
_____

10. How long did you breastfed your baby?
_____

11. If yes, when do you intend to stop breastfeeding?
_____

12. Which of the following did you give your baby in the first three (3) days after delivery? a) infant formula [ ] b) water/gripe water [ ] c) herbs/herbal drinks [ ] d) Breast milk [ ] e) others (specify) _____

13. Have you introduced water to your child? a) Yes [ ] b) No [ ]

14. a) If yes to Q30, how old was your child when you introduced water to him/her?

_____

b) If No to Q30, at what age of the child do you intend to introduce water to him/her?

_____

15. Did you give your baby colostrum? a) Yes [ ] b) No [ ]

16. If no, why?

_____

_____

17. What mode of breastfeeding do you practice? a) on demand [ ] b) At interval [ ] c) At mother's will [ ]

18. Have you ever used bottle to feed your child? a) Yes [ ] b) No [ ]

19. Who are those that supports/supported you during breastfeeding? (*Tick as many as applicable)*

a) Husband [ ] b) Mother/Mother in law [ ] c) Friends [ ] d) Siblings/Relatives [ ] e) Nurses/doctors [ ] f) housemaid [ ]

20. When did you start/intend to give semi solid or solid food to your child?

_____

21. How many times in a day do you feed/intend to feed your child with solid or semi-solid foods in a day? _____

22. Did you/ do you intend to continue to breastfeed your child beyond 12months? a) Yes [ ] b) No [ ]

23. Has your child had persistent vomiting in the last 6 months? Yes No

24. If yes, how many episodes?

25. Any episodes of diarrhea in the last 6 months? Yes No

26. If Yes, how many episodes

27. Any episodes of febrile illness in the last 6 months? Yes No

28. If Yes, how many episodes

29. Any episodes of acute respiratory illness in the last 6 months? Yes No

30. If yes, how many episodes

31. How many hospital presentations in the last 6 months? .....

32. Reasons for hospital presentations……

33. Was this pregnancy planned? Yes No

34. Did you attend ANC during the pregnancy? Yes No

2C: Edinburgh Postnatal Depression Scale

Since you are either pregnant or have recently had a baby, we want to know how you feel. Please place a **CHECK MARK** on the blank by the answer that comes closest to how you have felt **IN THE PAST 7 DAYS**—*not just how you feel today.* Please Complete all 10 items

1. I have been able to laugh and see the funny side of things:
   As much as I always could ___(0)
   Not quite so much now ___(1)
   Definitely not so much now ___(2)

Not at all ___(3)

2. I have looked forward with enjoyment to things:
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)

3. I have blamed myself unnecessarily when things went wrong:
Yes, most of the time ___(3)

Yes, some of the time ___(2)

Not very often ___(1)

No, never ___(0)

4. I have been anxious or worried for no good reason:
No, not at all ___(0)

Hardly ever ___(1)

Yes, sometimes ___(2)

Yes, very often ___(3)

5. I have felt scared or panicky for no good reason:
Yes, quite a lot ___(3)

Yes, sometimes ___(2)

No, not much ___(1)

No, not at all ___(0)

6. Things have been getting to me:
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)

7 . I have been so unhappy that I have had difficulty sleeping:

Yes, most of the time (3)

Yes, sometimes (2)

No, not very often (1)

No, not at all (0)

8.I have felt sad or miserable:

Yes, most of the time …. (3)

Yes, quite often …. (2)

Not very often …. (1)

No, not at all ….(0)

9. I have been so unhappy that I have been crying:

Yes, most of the time ___(3)

Yes, quite often ___(2)

Only occasionally ___(1)

No, never ___(0)

10. The thought of harming myself has occurred to me:*

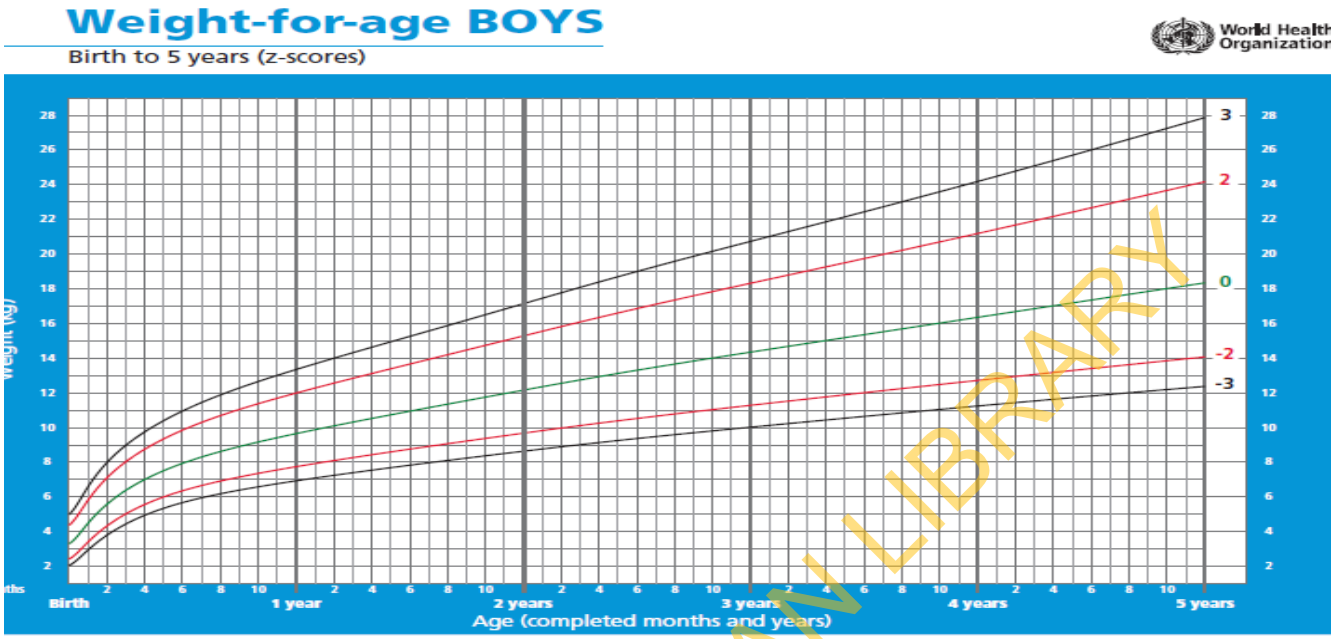
Yes, quite often ___(3)

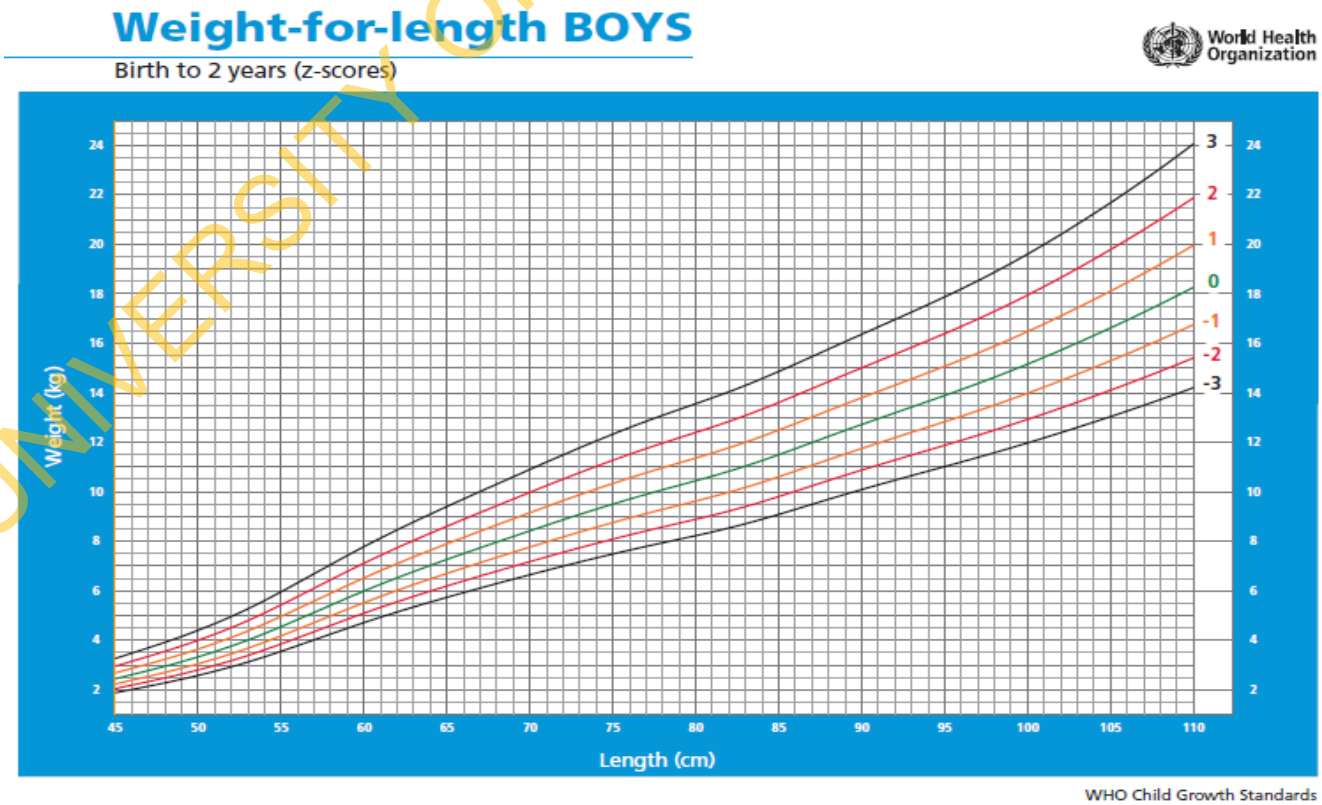
Sometimes ___(2)

Hardly ever ___(1)

Never ____**(0)**

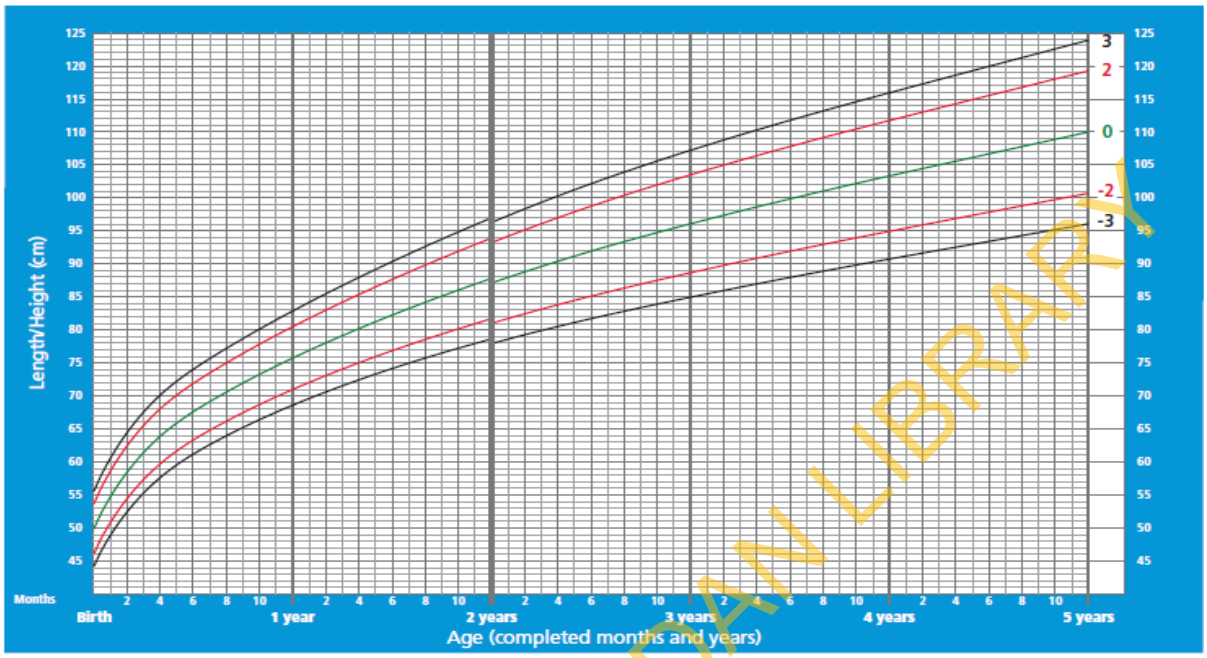
2D: Growth charts

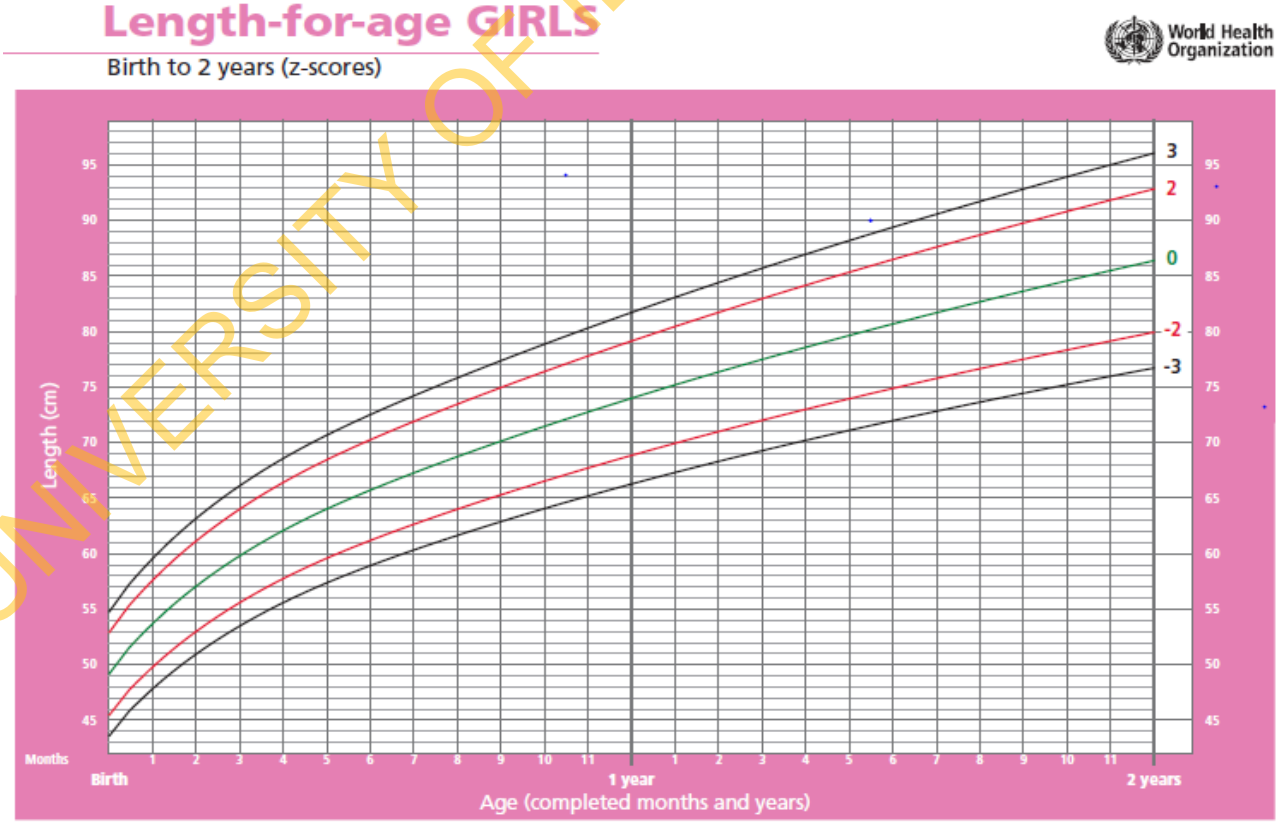




WHO Child Growth Standards

2D Growth charts

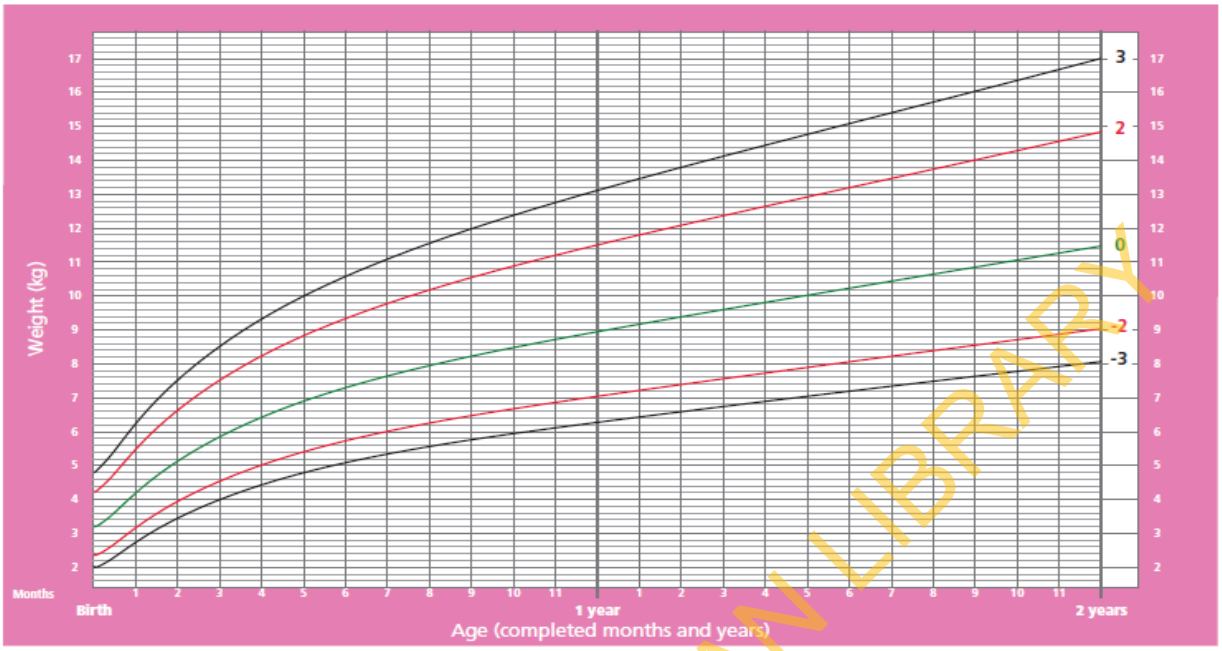




Weight-for-age GIRLS

Birth to 2 years (z-scores)

World Health Organization

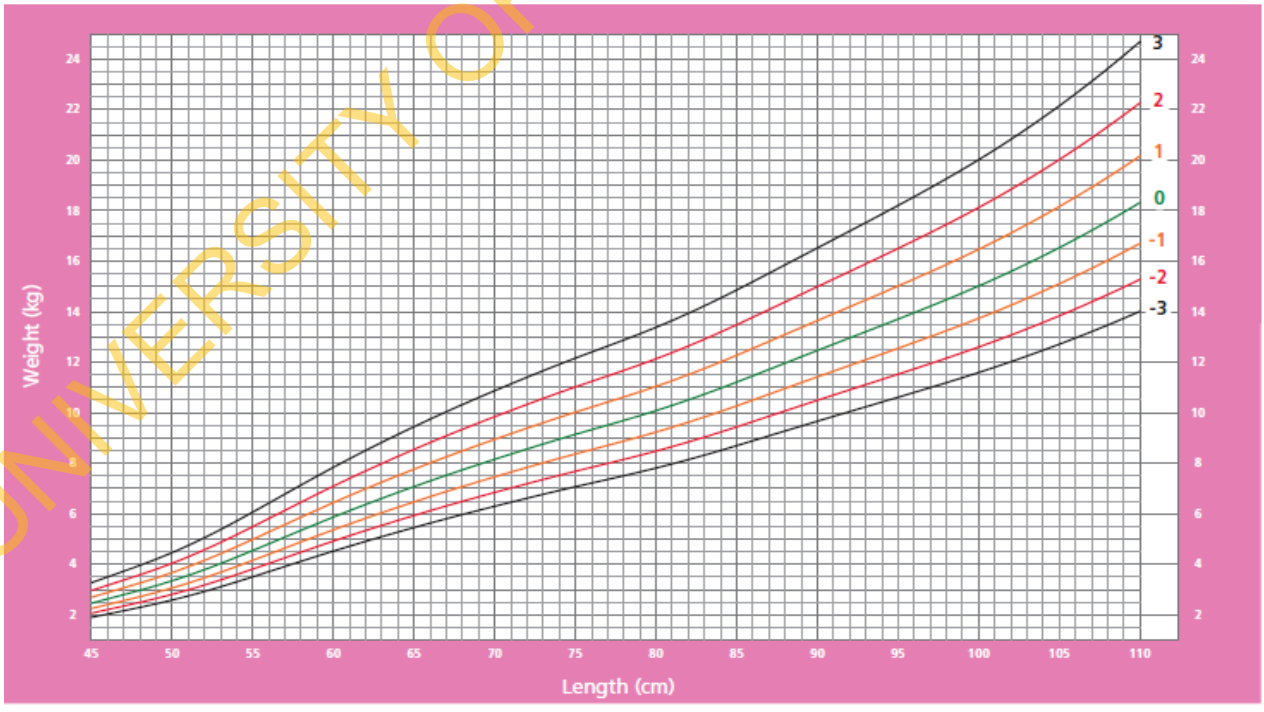


WHO Child Growth Standards

Weight-for-length GIRLS

Birth to 2 years (z-scores)

World Health Organization



WHO Child Growth Standards

2E: The World Mental Health Survey Initiative version of the Composite International Diagnostic Interview (CMH-CIDI)
Screening section

***D1. Earlier in the interview, you mentioned having periods that lasted several days or longer when you felt sad, empty, or depressed most of the day. During episodes of this sort, did you ever feel discouraged about how things were going in your life?**

YES 1

NO 5 GO TO *D1b

DON'T KNOW 8 GO TO *D1b

REFUSED 9 GO TO *D1b

***D1a. During the episodes of being sad, empty, or depressed, did you ever lose interest in most things like work, hobbies, and other things you usually enjoy?**

YES 1 GO TO *D3

NO 5 GO TO *D4

DON'T KNOW 8 GO TO *D4

REFUSED 9 GO TO *D4

***D1b. During the episodes of being sad, empty, or depressed, did you ever lose interest in most things like work, hobbies, and other things you usually enjoy?**

YES 1 GO TO *D5

NO 5 GO TO *D6

DON'T KNOW 8 GO TO *D6

REFUSED 9 GO TO *D6

***D2. Earlier in the interview you mentioned having periods that lasted several days or longer when you felt discouraged about how things were going in your life. During episodes of this sort, did you ever lose interest in most things like work, hobbies, and other things you usually enjoy?**

YES 1 GO TO *D7

NO 5 GO TO *D8

DON'T KNOW 8 GO TO *D8

REFUSED 9 GO TO *D8

***D3. INTERVIEWER INSTRUCTION:**

USE KEY PHRASE "SAD, DISCOURAGED, OR UNINTERESTED" THROUGHOUT THE SECTION

GO TO *D12

***D4. INTERVIEWER INSTRUCTION:**

USE KEY PHRASE "SAD OR DISCOURAGED" THROUGHOUT THE SECTION

GO TO *D12

***D5. INTERVIEWER CHECKPOINT: USE KEY PHRASE "SAD OR UNINTERESTED" THROUGHOUT THE SECTION**

GO TO *D12

***D6. INTERVIEWER CHECKPOINT:**

USE KEY PHRASE "SAD" THROUGHOUT THE SECTION

GO TO *D12

***D7. INTERVIEWER CHECKPOINT:**

USE KEY PHRASE "DISCOURAGED OR UNINTERESTED" THROUGHOUT THE SECTION

GO TO *D12

***D8. INTERVIEWER CHECKPOINT:**

USE KEY PHRASE "DISCOURAGED" THROUGHOUT THE SECTION

GO TO *D12

***D9. Earlier in the interview, you mentioned having periods that lasted several days or longer when you lost interest in most things like work, hobbies, and other things you usually enjoy. Did you ever have a period of this sort that lasted most of the day nearly every day for two weeks or longer?**

YES 1 GO TO *D11

NO 5

DON'T KNOW 8

REFUSED 9

***D9a. What is the longest period of days you ever had when you lost interest in most things you usually enjoy?**

INTERVIEWER: "LESS THAN ONE DAY" CODE '0'

PROBE DK: Was it three days or longer? _____ NUMBER

DON'T KNOW 998

REFUSED 999

D9aTu. CIRCLE UNIT OF TIME:

DAYS.....1 WEEKS.....2 MONTHS.....3 YEARS.....4

DON'T KNOW 998

REFUSED 999

USE THE KEY PHRASE "UNINTERESTED" THROUGHOUT THE SECTION GO TO *D10

***D10. INTERVIEWER CHECKPOINT: (SEE *D9a)**

DURATION OF 3 DAYS OR LONGER 1 GO TO *D14

ALL OTHERS 2 GO TO *D87.1

***D11. INTERVIEWER INSTRUCTION: USE KEY PHRASE "UNINTERESTED" THROUGHOUT THE SECTION GO TO *D16**

***D12. Did you ever have a period of being (sad/or/discouraged/or/uninterested in things) that lasted most of the day,**

nearly every day, for two weeks or longer?

YES 1 GO TO *D16

NO 5

DON'T KNOW 8

REFUSED 9

***D12a. How long was the longest period of days you ever had when you were (sad/or/discouraged/or/uninterested) most of the day?**

INTERVIEWER: "LESS THAN ONE DAY" CODE '0' _____ DAYS

DON'T KNOW 998

REFUSED 999

***D13. INTERVIEWER CHECKPOINT: (SEE *D12a)**

DURATION OF 3 DAYS OR LONGER 1 GO TO *D14

ALL OTHERS 2 GO TO *D87.

***D14. Did you ever have a year or more in your life when you had several different episodes of being (sad/or/discouraged/or/uninterested) each of which lasted several days or longer?**

YES 1

NO 5 GO TO *D87.1

DON'T KNOW 8 GO TO *D87.1

REFUSED 9 GO TO *D87.1

***D14a. Did you ever have a year or more in your life when just about every month you had an episode of this sort?**

YES 1

NO 5 GO TO *D87.1

DON'T KNOW 8 GO TO *D87.1

REFUSED 9 GO TO *D87.1

***D15. Think of times lasting several days or longer when (this problem/these problems) with your mood (was/were)**

most severe and frequent. During those times, did your feelings of (sadness/or/discouragement/or/lack of interest) usually last less than 1 hour, between 1 and 3 hours, between 3 and 5 hours, or more than 5 hours?

LESS THAN 1 HOUR 1 GO TO *D87.1

BETWEEN 1 AND 3 HOURS 2

BETWEEN 3 AND 5 HOURS 3

MORE THAN 5 HOURS 4

DON'T KNOW 8

REFUSED 9

INTERVIEWER: GO TO *D17 AND ASK ABOUT PERIODS LASTING "SEVERAL DAYS OR LONGER" FOR

THE REMAINDER OF THE SECTION.

***D16. Think of times lasting two weeks or longer when (this problem/these problems) with your mood (was/were) most severe and frequent. During those times, did your feelings of (sadness/or/discouragement/or/lack of interest) usually last less than 1 hour, between 1 and 3 hours, between 3 and 5 hours, or more than 5 hours**

LESS THAN 1 HOUR 1 GO TO *D87.1

BETWEEN 1 AND 3 HOURS 2

BETWEEN 3 AND 5 HOURS 3

MORE THAN 5 HOURS 4

DON'T KNOW 8

REFUSED…….. 9

INTERVIEWER: ASK ABOUT PERIODS LASTING "TWO WEEKS OR LONGER" FOR THE REMAINDER OF THE SECTION

***D17. How severe was your emotional distress during those times -- mild, moderate, severe, or very severe?**

MILD 1

MODERATE 2

SEVERE 3

VERY SEVERE 4

DON'T KNOW 8

REFUSED 9

***D18. How often, during those times, was your emotional distress so severe that nothing could cheer you up -- often, sometimes, rarely, or never?**

OFTEN 1

SOMETIMES 2

RARELY 3

NEVER 4

DON'T KNOW 8

REFUSED 9

***D19. How often, during those times, was your emotional distress so severe that you could not carry out your daily activities -- often, sometimes, rarely, or never?**

OFTEN 1

SOMETIMES 2

RARELY 3

NEVER 4

DON'T KNOW 8

REFUSED 9

***D20. INTERVIEWER CHECKPOINT: (SEE *D17, *D18, *D19)**

***D17 CODED '1' AND *D18 CODED '4' AND *D19 CODED '4' 1 GO TO *D87.1**

ALL OTHERS 2

***D21. People with episodes of being (sad/or/discouraged/or/uninterested) often have other problems at the same time. These include things like changes in sleep, appetite, energy, the ability to concentrate and remember, feelings of low self-worth, and other problems. Did you ever have any of these problems during one of your episodes of being (sad/or/discouraged/or/uninterested)?**

YES 1

NO 5 GO TO *D87.1

DON'T KNOW 8 GO TO *D87.1

REFUSED 9 GO TO *D87.1

***D22. (READ SLOWLY) Please think of an episode of being (sad/or/discouraged/or/uninterested) lasting (several days/two weeks) or longer when you also had the largest number of these other problems at the same time. Is there one particular episode of this sort that stands out in your mind as the worst one you ever had?**

YES 1

NO 5 GO TO *D22c

DON'T KNOW 8 GO TO *D22c

REFUSED. 9 GO TO *D22c

***D22a. How old were you when that worst episode started?_____ YEARS OLD**

DON'T KNOW 998

REFUSED 999

***D22b. How long did that worst episode last? _____ NUMBER GO TO *D23**

***D22bTu. CIRCLE UNIT OF TIME: DAYS.....1 WEEKS.....2 MONTHS.....3 YEARS.....4**

DON'T KNOW 98 GO TO *D23

REFUSED 99 GO TO *D23

***D22c. Then think of the last time you had a bad episode [of being (sad/or/discouraged/or/uninterested)] like this. How old were you when that last episode occurred?**

_____ YEARS OLD

DON'T KNOW 998

REFUSED 999

***D22d. How long did that episode last? _____ NUMBER**

***D22dTu. CIRCLE UNIT OF TIME:**

DAYS.....1 WEEKS.....2 MONTHS.....3 YEARS.....4

DON'T KNOW 98

REFUSED 99

D23. Was there something going on in your life shortly before that episode started that caused it to occur?

YES 1

NO 5 GO TO *D24

DON'T KNOW 8 GO TO *D24

REFUSED 9 GO TO *D24

***D23a.(RB, PG 3) (IF NEC: [Look at page 3 in your booklet.] Briefly, what was going on that caused the episode to occur?)**

CIRCLE ALL MENTIONS.

STRESS

OVERWORK 1

TENSION 2

DEATH OF LOVED ONE 3

MARITAL SEPARATION/DIVORCE 4

JOB LOSS 5

STRESS 6

OTHER STRESSFUL EXPERIENCE (SPECIFY BELOW) 7

PHYSICAL ILLNESS/INJURY/CONDITION

EXHAUSTION 10

MENSTRUAL CYCLE 11

PREGNANCY/POSTPARTUM 12

HEART DISEASE 13

THYROID DISEASE 14

CANCER 15

OVERWEIGHT 16

OTHER PHYSICAL ILLNESS OR INJURY

(SPECIFY BELOW)17

OTHER

OTHER (SPECIFY BELOW) 82

DON'T KNOW 98

REFUSED 99

***D23aOth.**_____

_____

***D24. (RB, PG 4. FOR EACH ITEM ENDORSED, ASK R TO MARK IT IN THE RB.) Look at page 4 in your booklet. In answering the next questions, think about the period of (several days/two weeks) or longer during that episode when your (sadness/and/discouragement/and/loss of interest) and other problems were most severe and frequent. During that period, which of the following problems did you have most of the day nearly every day:**

	YES (1)	NO (5)	DK (8)	RF (9)
***D24a. Did you feel sad, empty, or depressed most of the day nearly every day during that period of (several days/ two weeks) or longer?**	1	5 GO TO *D24c	8 GO TO *D24c	9 GO TO *D24c
***D24b. Did you feel so sad that nothing could cheer you up nearly every day?**	1	5	8	9
***D24c. During that period of (several days/ two weeks) or longer, did you feel discouraged about how things were going in your life most of the day nearly every day?**	1	5 GO TO *D24e	8 GO TO *D24e	9 GO TO *D24e
***D24d. Did you feel hopeless about the future nearly every day?**	1	5	8	9
***D24e. During that period of (several days/ two weeks) or longer, did you lose interest in almost all things like work and hobbies and things you like to do for fun?**	1	5	8	9
***D24f. Did you lose the ability to take pleasure in having good things happen to you, like winning something or being praised or complimented?**	1	5	8	9

***D25. INTERVIEWER CHECKPOINT: (SEE *D24a-*D24f)**

ONE OR MORE RESPONSES CODED '1' **1**

ALL OTHERS **2** **GO TO *D87.1**

*D26. (RB, PG 4-5. FOR EACH ITEM ENDORSED, ASK R TO MARK IT IN THE RB.)	YES (1)	NO (5)		DK (8)	RF (9)
*D26a. Did you have a much smaller appetite than usual nearly every day during that period of (several days/ two weeks)?	1 GO TO *D26e	5		8	9
*D26b. Did you have a much larger appetite than usual nearly every day?	1	5		8	9
*D26c. Did you gain weight without trying to during that period of (several days/ two weeks)? IF R REPORTS BEING PREGNANT OR GROWING, CODE '7' AND GO TO *D26g	1	5 GO TO *D26e	7 GO TO *D26g	8 GO TO *D26e	9 GO TO *D26e
*D26d. How much did you gain? ___ NUMBER GO TO *26g *D26dWu. CIRCLE UNIT OF WEIGHT: POUNDS.....1 GO TO *26g KILOS.....2 GO TO *26g				998	999
*D26e. Did you lose weight without trying to? IF R REPORTS BEING ON A DIET OR PHYSICALLY ILL, CODE 'NO' AND GO TO *D26g	1	5 GO TO *D26g		8 GO TO *D26g	9 GO TO *D26g
*D26f. How much did you lose? __ NUMBER				998	999

***D26fWu. CIRCLE UNIT OF WEIGHT:** **POUNDS.....1** **KILOS.....2**					
***D26g.Did you have a lot more trouble than usual either falling asleep,** **staying asleep, or waking too early nearly every night during** **that period of (several days/ two weeks)?**	**1** **GO TO *D26i**	**5**		**8**	**9**
***D26h. Did you sleep a lot more than usual nearly every night during that** **period of (several days/ two weeks)?**	**1** **GO TO *D26j**	**5**		**8**	**9**
***D26i. Did you sleep much less than usual and still not feel tired or sleepy?**	**1**	**5**		**8**	**9**

	YES (1)	NO (5)	DK (8)	RF (9)
***D26j. Did you feel tired or low in energy nearly every day during that period of (several days/ two weeks) even when you had not been working very hard?**	1 GO TO *D26l	5	8	9
***D26k. Did you have a lot more energy than usual nearly every day during that period of (several days/ two weeks)?**	1	5	8	9
***D26l. Did you talk or move more slowly than is normal for you nearly every day?**	1	5 GO TO *D26n	8 GO TO *D26n	9 GO TO *D26n
***D26m. Did anyone else notice that you were talking or moving slowly?**	1 GO TO *D26p	5 GO TO *D26p	8 GO TO *D26p	9 GO TO *D26p
***D26n. Were you so restless or jittery nearly every day that you paced up and down or couldn't sit still?**	1	5 GO TO *D26p	8 GO TO *D26p	9 GO TO *D26p
***D26o.Did anyone else notice that you were restless?**	1	5	8	9
***D26p. Did your thoughts come much more slowly than usual or seem mixed up nearly every day during that period of (several days/ two weeks)?**	1 GO TO *D26r	5	8	9
***D26q. Did your thoughts seem to jump from one thing to another or race through your head so fast you couldn't keep track of them?**	1	5	8	9

***D26r. Did you have a lot more trouble concentrating than is normal for you nearly every day?**	**1**	**5**	**8**	**9**
***D26s. Were you unable to make up your mind about things you ordinarily have no trouble deciding about?**	**1**	**5**	**8**	**9**
***D26t. Did you lose your self-confidence?**	**1**	**5**	**8**	**9**
***D26u. Did you feel that you were not as good as other people nearly every day?**	**1**	**5 GO TO *D26w**	**8 GO TO *D26w**	**9 GO TO *D26w**
***D26v. Did you feel totally worthless nearly every day?**	**1**	**5**	**8**	**9**

	YES (1)	NO (5)	DK (8)	RF (9)
*D26w. Did you have feelings of extreme guilt nearly every day?	1 GO TO *D26x	5	8	9
*D26w.1. Did you feel a lot more guilty than you should have nearly every day?	1	5	8	9
*D26x.Did you feel irritable, grouchy, or in a bad mood nearly every day?	1	5	8	9
*D26y.Did you feel nervous or anxious most days?	1	5	8	9
*D26z.During that time, did you have any sudden attacks of intense fear or panic?	1	5	8	9
*D26aa. Did you often think a lot about death, either your own, someone else's, or death in general?	1	5	8	9
*D26bb. During that period, did you ever think that it would be better if you were dead?	1	5	8	9
*D26cc. Did you think about committing suicide?	1	5 GO TO *D26ff	8 GO TO *D26ff	9 GO TO *D26ff
*D26dd. Did you make a suicide plan?	1	5	8	9
*D26ee. Did you make a suicide attempt?	1	5	8	9
*D26ff. Did you feel that you could not cope with your everyday responsibilities?	1	5	8	9
*D26gg. Did you feel like you wanted to be alone rather than spend time with friends or relatives?	1	5	8	9
*D26hh. Did you feel less talkative than usual?	1	5	8	9
*D26ii. Were you often in tears?	1	5	8	9

***D27. INTERVIEWER CHECKPOINT: (SEE *D24 - *D26ii)**

ZERO OR ONE RESPONSES CODED '1'	**1**	**GO TO *D87.1**
TWO TO FOUR RESPONSES CODED '1'	**2**	**GO TO *D28**
FIVE OR MORE RESPONSES CODED '1'	**3**	

***D27a. INTERVIEWER INSTRUCTION: CIRCLE LETTER 'A' IN LONG/SHORT GROUP OF REFERENCE CARD (SIDE TWO). GO TO *D28**

***D28. You mentioned having (two of the/a number of the) problems I just asked you about. How much did your (sadness/or/discouragement/or/lack of interest) and these other problems interfere with either your work, your social life, or your personal relationships during that episode– not at all, a little, some, a lot, or extremely?**

NOT AT ALL	**1**	**GO TO *D29**
A LITTLE	**2**	
SOME	**3**	
A LOT	**4**	
EXTREMELY	**5**	
DON'T KNOW	**8**	
REFUSED	**9**	

***D28a.How often during that episode were you unable to carry out your daily activities because of your (sadness/or/discouragement/or/lack of interest) – often, sometimes, rarely, or never?**

OFTEN	**1**
SOMETIMES	**2**
RARELY	**3**
NEVER	**4**
DON'T KNOW	**8**
REFUSED	**9**

***D29. When I use the word "episode" in the next questions, I mean a time lasting (several days/two weeks) or longer when nearly every day you were (sad/or/discouraged/or/uninterested) and also had some of the other problems we talked about. The episode ends when you no longer have the problems for**

two weeks in a row. With this definition in mind, about how many different episodes did you ever have in your entire life? _____NUMBER

DON'T KNOW 998

REFUSED 999

INTERVIEWER INSTRUCTION: ENTER # OF EPISODES ON REFERENCE CARD (SIDE ONE).

***D29a.Episodes of this sort sometimes occur as a result of physical causes such as physical illness or injury or the**

use of medication, drugs, or alcohol. Do you think your (episode/episodes) of (sadness /or /discouragement/ or/lack of interest) <u>ever</u> occurred as the result of such physical causes?

YES 1

NO 5 GO TO *D29d

DON'T KNOW 8 GO TO *D29d

REFUSED 9 GO TO *D29d

***D29b. Do you think your (episode/episodes) (was/were) <u>always</u> the result of physical causes?**

YES 1

NO 5 GO TO *D29d

DON'T KNOW 8 GO TO *D29d

REFUSED 9 GO TO *D29d

***D29c.Briefly, what do you think the physical cause was?**

D29d. INTERVIEWER CHECKPOINT (SEE *D29)

***D29 CODED '1' 1 GO TO *D37d**

ALL OTHERS 2

***D37. Think of the <u>very first time</u> in your life you had an episode lasting (several days or longer / two-weeks or longer) when <u>most of the day nearly every day</u> you felt (sad/or/discouraged/or/uninterested) and also had some of the other problems we just reviewed. Can you remember your exact age?**

YES 1

NO 5 GO TO *D37b

DON'T KNOW 8 GO TO *D37b

REFUSED 9 GO TO *D37

***D37a.(IF NEC: How old were you?)_____ YEARS OLD GO TO *D37c**

DON'T KNOW 998

REFUSED 999

***D37b. About how old were you (the first time you had an episode of this sort)?_ YEARS OLD**

IF "ALL MY LIFE" OR "AS LONG AS I CAN REMEMBER," PROBE:

***D37b1. Was it before you first started school?**

IF NOT YES, PROBE: Was it before you were a teenager?

BEFORE STARTED SCHOOL 4

BEFORE TEENAGER 12

NOT BEFORE TEENAGER 13
DON'T KNOW 998

REFUSED 999

***D37c. About how long did that first episode go on?_____ NUMBER**

***D37cTu. CIRCLE UNIT OF TIME:**

DAYS.....1 WEEKS.....2 MONTHS.....3 YEARS.....4

DON'T KNOW 98

REFUSED 99

***D37d. Episodes of feeling (sad/or/discouraged/or/uninterested) sometimes occur "out of the blue" and other times they occur after the death of someone close to you and sometimes they occur in response to some stressful experience. What about (your/the very first time you had an) episode of this sort – did it start out of the blue, after the death of someone close to you, or did it start in response to some stressful experience that occurred to you?**

OUT OF THE BLUE 1

DEATH OF SOMEONE CLOSE 2

RESPONSE TO STRESS 3
DON'T KNOW 8

REFUSED 9

***D37e. INTERVIEWER CHECKPOINT: (SEE *D29)**

***D29 CODED '1 – 3'1 GO TO *D37g**

ALL OTHERS 2

***D37f. As we just mentioned, episodes of feeling (sad/or/discouraged/or/uninterested) sometimes occur "out of the blue" and other times they occur in response to some stressful experience and sometimes they occur after the death of someone close to you. Including your first episode, about how many of your lifetime episodes started out of the blue, about how many episodes started in response to some stressful experience that occurred to you, and about how many started after the death of someone close to you?**

***D37f.1. _____NUMBER OUT OF THE BLUE**

DON'T KNOW 998

REFUSED 999

***D37f.2. _____NUMBER IN RESPONSE TO STRESS**

DON'T KNOW 998

REFUSED 999

***D37f.3. _____NUMBER AFTER THE DEATH OF SOMEONE CLOSE TO YOU**

DON'T KNOW 998

REFUSED 999

***D37g. INTERVIEWER CHECKPOINT: (SEE *D29)**

***D29 CODED '1' 1 GO TO *D38**

ALL OTHERS 2

***D37h. You already told me about your first episode. About how much time went on between (READ SLOWLY) the <u>end of your first</u> episode and the <u>beginning of your second</u> episode? __ NUMBER**

***D37hTu. CIRCLE UNIT OF TIME:**

DAYS.....1 WEEKS.....2 MONTHS.....3 YEARS.....4

DON'T KNOW 98

REFUSED 99

***D37i. About how long did the second episode go on?_____ NUMBER**

***D37iTu. CIRCLE UNIT OF TIME:**

DAYS.....1 WEEKS.....2 MONTHS.....3 YEARS.....4

DON'T KNOW 98

REFUSED 99

***D37k. Did that second episode start out of the blue, after the death of someone close to you, or did it start in response to some stressful experience that occurred to you?**

OUT OF THE BLUE 1

DEATH OF SOMEONE CLOSE 2

RESPONSE TO STRESS 3
DON'T KNOW 8

REFUSED 9

***D37l. INTERVIEWER CHECKPOINT: (SEE *D29)**

***D29 CODED '2' 1 GO TO *D38**

ALL OTHERS 2

***D37m. About how much time went on between (READ SLOWLY) the <u>end of your second</u> episode and the <u>beginning of your third</u> episode?**
_____ NUMBER

***D37mTu. CIRCLE UNIT OF TIME:**

DAYS.....1 WEEKS.....2 MONTHS.....3 YEARS.....4

DON'T KNOW 98

REFUSED 99

***D37n. About how long did the third episode go on?_____**
NUMBER

***D37nTu. CIRCLE UNIT OF TIME:**

DAYS.....1 WEEKS.....2 MONTHS.....3 YEARS.....4

DON'T KNOW 98

REFUSED 99

***D37p. Did your third episode start out of the blue, after the death of someone close to you, or did it start in response to some stressful experience that occurred to you?**

OUT OF THE BLUE 1

DEATH OF SOMEONE CLOSE 2

RESPONSE TO STRESS 3
DON'T KNOW 8

REFUSED 9

***D38. Did you have an episode of being (sad/or/discouraged/or/uninterested) lasting (several days or longer/ two weeks or longer) at any time in the past 12 months?**

YES 1 GO TO *D38a

NO 5

DON'T KNOW 8

REFUSED 9

***D38.1. INTERVIEWER CHECKPOINT: (SEE *D29)**

***D29 LIFETIME EPISODES CODED '1-3' 1 GO TO *D72**

ALL OTHERS 2 GO TO *D38c

***D38a.How recently were you in an episode of this sort – in the past month, two to six months ago, or more than six months ago?**

PAST MONTH 1

2-6 MONTHS AGO 2

MORE THAN 6 MONTHS AGO 3

DON'T KNOW 8

REFUSED 9

***D38a.1. Remember that the word "episode" means a time lasting (several days/two weeks) or longer when nearly every day you were (sad/or/discouraged/or/uninterested) and also had some of the other problems. The episode ends when you no longer have the problems for two weeks in a row. With this definition in mind, how many different episodes did you have in the past 12 months?**

_____NUMBER

DON'T KNOW 998

REFUSED 999

***D38a.2. INTERVIEWER CHECKPOINT: (SEE *D38a.1)**

***D38a.1 CODED '1'……..1**

ALL OTHERS…….2 GO TO *D38a.7

***D38a.3. In what month did that episode start? _____(MONTH)**

***D38a.3yr. _____ (YEAR)**

DON'T KNOW 998

REFUSED 999

***D38a.5. INTERVIEWER CHECKPOINT: (SEE *D38a)**

***D38a CODED '1'……..1**

ALL OTHERS…….2 GO TO *D38

***D38a.6. Has this episode ended or is it still going on?**

ENDED……1 GO TO *D38b

STILL GOING ON……...5 GO TO *D38b

DON'T KNOW…… 8 GO TO *D38b

REFUSED…….9 GO TO *D38b

***D38a.7. How long did the first of these (NUMBER FROM *D38a.1) episodes last? _____NUMBER**

***D38a.7Tu. CIRCLE UNIT OF TIME:**

DAYS.....1 WEEKS.....2 MONTHS.....3 YEARS.....4

DON'T KNOW 98

REFUSED 99

***D38a.8. INTERVIEWER CHECKPOINT: (SEE *D38a)**

***D38a CODED '1' 1**

ALL OTHERS 2 GO TO *D38

***D38a.9. Has the most recent episode ended or is it still going on?**

ENDED 1

STILL GOING ON 5

DON'T KNOW 8

REFUSED 9

***D38b. About how many days out of the last 365 were you in an episode?_____DAYS**

DON'T KNOW 998

REFUSED 999

D38b.1. INTERVIEWER CHECKPOINT: (SEE *D29

***D29 CODED '1-3'……1 GO TO *D62.2**

ALL OTHERS…….2 GO TO *D3

***D38c. How old were you the last time you had one of these episodes?**
_____ YEARS OLD

DON'T KNOW 998

REFUSED 999

***D39. What is the <u>longest</u> episode you ever had when you were (sad/or/discouraged/or/uninterested) and also had**

some of the other problems we reviewed <u>most of the day nearly every day</u>?_____ NUMBER

***D39Tu. CIRCLE UNIT OF TIME:**

DAYS.....1 WEEKS.....2 MONTHS.....3 YEARS.....4

DON'T KNOW 98

REFUSED 99

***D40. INTERVIEWER CHECKPOINT: (SEE *D39)**

LONGEST EPISODE WAS LESS THAN 14 DAYS 1

ALL OTHERS 2 GO TO *D54

***D41. Did you ever have at least one full year with episodes lasting several days or more <u>just about every month</u>?**

YES 1

NO 5 GO TO *D54

DON'T KNOW 8 GO TO *D54

REFUSED 9 GO TO *D54

***D42. How old were you the <u>first</u> time you had a year of this sort (when you had an episode just about every month)?_____ YEARS OLD**

DON'T KNOW 998

REFUSED 999

***D42.1. How many of these episodes were brought on by some stressful experience - all, most, some, or none?**

ALL 1

MOST 2

SOME 3

NONE 4

DON'T KNOW 8

REFUSED 9

***D43. About how many different years in your life did you have an episode [of being (sad/or/discouraged/or/uninterested)] just about every month?**
_____ YEARS

DON'T KNOW 998

REFUSED 999

***D44. INTERVIEWER CHECKPOINT: (SEE *D43)**

***D43 CODED '1' 1 GO TO *D46**

ALL OTHERS 2

***D45. What is the longest continuous number of years in a row in which you had an episode [of being (sad/or/discouraged/or/uninterested)] just about every month? _____ YEARS**

DON'T KNOW 998

REFUSED 999

***D46. Did you ever have a full year or longer when you were in an episode most days?**

YES 1

NO 5 GO TO *D54

DON'T KNOW 8 GO TO *D54

REFUSED 9 GO TO *D54

***D47. And how old were you the first time you had a year of this sort (when you were in an episode most days)? _____YEARS OLD**

DON'T KNOW 998

REFUSED 999

***D48. About how many different years in your life were you in an episode [of being (sad/or/discouraged/or/uninterested)] most days? _____ YEARS**

DON'T KNOW 998

REFUSED 999

***D49. INTERVIEWER CHECKPOINT: (SEE *D48)**

***D48 CODED '1' 1 GO TO *D54**

ALL OTHERS 2

***D50. What is the longest continuous number of years in a row in which you were in an episode most days? _____ YEARS GO TO *D62.1**

DON'T KNOW 998 GO TO *D62.1

REFUSED 999 GO TO *D62.

***D54. How many different years in your life did you have at least one episode? _____ YEARS**

DON'T KNOW 998

REFUSED 999

***D55. INTERVIEWER CHECKPOINT: (SEE *D54)**

***D54 CODED '1' 1 GO TO *D62.1**

ALL OTHERS 2

***D56. What is the longest <u>continuous</u> number of years in a row in which you had at least one episode per year? _____ YEARS**

DON'T KNOW 998

REFUSED 999

***D57. INTERVIEWER CHECKPOINT: (SEE *D39)**

***D39 CODED '12' MONTHS OR LONGER 1 GO TO *D59**

ALL OTHERS 2

***D58. Did you ever have a period lasting a full year or longer when you were in an episode <u>most days</u>?**

YES 1

NO 5 GO TO *D62.1

DON'T KNOW 8 GO TO *D62.1

REFUSED 9 GO TO *D62.1

***D59. About how many years in your life were you in an episode <u>most days</u>? _____ YEARS**

DON'T KNOW 998

REFUSED 999

***D59a. And how old were you the <u>first</u> time you had a year of this sort (when you were in an episode <u>most days</u>)? _____YEARS OLD**

DON'T KNOW 998

REFUSED 999

***D60. INTERVIEWER CHECKPOINT: (SEE *D59)**

***D59 CODED '1' 1 GO TO *D62.1**

ALL OTHERS 2

***D61. What is the longest continuous number of years in a row in which you were in an episode most days? _____ YEARS**

DON'T KNOW 998

REFUSED 999

***D62.1. INTERVIEWER CHECKPOINT: (SEE *D38)**

***D38 CODED '1' 1**

ALL OTHERS 2 GO TO *D72

***D62.2. INTERVIEWER CHECKPOINT**

R CAN READ 1

ALL OTHERS 2 GO TO *D64

***D62.3. (RB, PG 6-8) For the next questions I need you to think about the period of (several days/two weeks) or more during the <u>past 12 months</u> when your (sadness/or/discouragement/or/lack of interest) was most <u>severe and frequent</u>. Please read each of the fourteen sets of statements on page 6-8 in your booklet and circle the one response for each of the fourteen that best describes how you were during those (several days/two weeks). As you finish each set, please tell me the number of the statement you have circled.**	***D64. (RB, PG 6-8) For the next questions I need you to think about the period of (several days/two weeks) or more during the <u>past 12 months</u> when your (sadness/or/discouragement/or/lack of interest) was most <u>severe and frequent</u>. I'm going to read fourteen series of statements. Please pick the one statement in each series that comes closest to your experience during that worst (several days/two weeks).**

***D64a. Here's the first series, which deals with problems falling asleep:**

One: You never took longer than 30 minutes to fall asleep.

Two: You took at least 30 minutes to fall asleep, less than half the time.

Three: You took at least 30 minutes to fall asleep, more than half the time.

Four: You took more than 60 minutes to fall asleep, more than half the time.

(IF NEC: Which of these four statements was most true of you during your worst (several days/two weeks) of being (sad/or/discouraged/or/uninterested) in the past 12 months?) _____ NUMBER

DON'T KNOW 998

REFUSED 999

***D64b. Here's the next series, which deals with waking up at night:**

One: You did not wake up at night.

Two: You had a restless, light sleep with few brief awakenings each night.

Three: You woke up at least once a night, but you got back to sleep easily.

Four: You woke up more than once a night and stayed awake for 20 minutes or more, more than half the time.

(IF NEC: Which of these four statements was most true of you during your worst (several days/two weeks) of being (sad/or/discouraged/or/uninterested) in the past 12 months?) _____ NUMBER

DON'T KNOW 998

REFUSED 999

***D64c. Here's the next series, which deals with waking up too early in the morning:**

One: Most of the time, you woke up no more than 30 minutes before you needed to get up.

Two: More than half the time, you woke up more than 30 minutes before you needed to get up.

Three: You almost always woke up at least one hour or so before you needed to, but you went back to sleep eventually.

Four: You woke up at least one hour before you needed to and couldn't get back to sleep.

(IF NEC: Which of these four statements was most true of you during your worst (several days/two weeks) of being (sad/or/discouraged/or/uninterested) in the past 12 months?) _____ NUMBER

DON'T KNOW 998

REFUSED 999

***D64d. Here's the next series, which deals with the amount of sleep you got each night:**

One: You slept no longer than 7-8 hours/night, without napping during the day.

Two: You slept no longer than 10 hours in a 24-hour period including naps.

Three: You slept no longer than 12 hours in a 24-hour period including naps.

Four: You slept longer than 12 hours in a 24-hour period including naps.

(IF NEC: Which of these four statements was most true of you during your worst (several days/two weeks) of being (sad/or/discouraged/or/uninterested) in the past 12 months?) _____ NUMBER

DON'T KNOW 998

REFUSED 999

***D64e. Here's the next series, which deals with feeling sad:**

One: You did not feel sad.

Two: You felt sad less than half the time.

Three: You felt sad more than half the time.

Four: You felt sad nearly all the time.

(IF NEC: Which of these four statements was most true of you during your worst (several days/two weeks) of being (sad/or/discouraged/or/uninterested) in the past 12 months?) _____ NUMBER

DON'T KNOW 998

REFUSED 999

***D64f. Here's the next series, which deals with your ability to concentrate and make decisions:**

One: There was no change in your usual capacity to concentrate or make decisions.

Two: You occasionally felt indecisive or found that your attention wandered.

Three: Most of the time, you struggled to focus your attention or to make decisions.

Four: You couldn't concentrate well enough to read or you couldn't make even minor decisions.

(IF NEC: Which of these four statements was most true of you during your worst (several days/two weeks) of being (sad/or/discouraged/or/uninterested) in the past 12 months?) _____ NUMBER

DON'T KNOW 998

REFUSED 999

***D64g. Here's the next series, which deals with feeling down on yourself:**

One: You saw yourself as equally worthwhile and deserving as other people.

Two: You were more self-blaming than usual.

Three: You largely believed that you caused problems for others.

Four: You thought almost constantly about major and minor defects in yourself.

(IF NEC: Which of these four statements was most true of you during your worst (several days/two weeks) of being (sad/or/discouraged/or/uninterested) in the past 12 months?) _____ NUMBER

DON'T KNOW 998

REFUSED 999

***D64h. Here's the next series, which deals with your interest in daily activities:**

One: There was no change from usual in how interested you were in other people or activities.

Two: You noticed that you were less interested in people or activities.

Three: You found you had interest in only one or two of your formerly pursued activities.

Four: You had virtually no interest in formerly pursued activities.

(IF NEC: Which of these four statements was most true of you during your worst (several days/two weeks) of being (sad/or/discouraged/or/uninterested) in the past 12 months?) _____ NUMBER

DON'T KNOW 998

REFUSED 999

***D64i. Here's the next series, which deals with your energy:**

One: There was no change in your usual level of activity.

Two: You got tired more easily than usual.

Three: You had to make a big effort to start or finish your usual daily activities (for example, shopping,

homework, cooking, or going to work).

Four: You really couldn't carry out most of your usual daily activities because you just didn't have the energy.

(IF NEC: Which of these four statements was most true of you during your worst (several days/two weeks) of being (sad/or/discouraged/or/uninterested) in the past 12 months?) _____ NUMBER

DON'T KNOW 998

REFUSED 999

***D64j. Here's the next series, which deals with a change in your appetite:**

One: There was no change in your usual appetite.

Two: You ate somewhat less often or lesser amounts of food than usual.

Three: You ate much less than usual and only with personal effort.

Four: You rarely ate within a 24-hr period, and only with extreme personal effort or when others persuaded you to eat.

Five: You felt a need to eat more frequently than usual.

Six: You regularly ate more often and/or greater amounts of food than usual

Seven: You felt driven to overeat both at mealtime and between meals.

(IF NEC: Which of these seven statements was most true of you during your worst (several days/two weeks) of being (sad/or/discouraged/or/uninterested) in the past 12 months?) _____ NUMBER

DON'T KNOW 998

REFUSED 999

***D64k. Here's the next series, which deals with changes in your weight:**

One: You did not have a change in your weight.

Two: You felt as if you had a slight weight loss.

Three: You lost 2 pounds or more.

Four: You lost 5 pounds or more.

Five: You felt as if you had a slight weight gain.

Six: You gained 2 pounds or more.

Seven: You gained 5 pounds or more.

(IF NEC: Which of these seven statements was most true of you during your worst (several days/two weeks) of being (sad/or/discouraged/or/uninterested) in the past 12 months?) _____ NUMBER

DON'T KNOW 998

REFUSED 999

***D64l. Here's the next series, which deals with thoughts of death or suicide:**

One: You did not think of suicide or death.

Two: You felt that life was empty or wondered if it was worth living.

Three: You thought of suicide or death several times a week for several minutes.

Four: You thought of suicide or death several times a day in some detail, or you made specific plans for suicide or actually tried to take your own life.

(IF NEC: Which of these four statements was most true of you during your worst (several days/two weeks) of being (sad/or/discouraged/or/uninterested) in the past 12 months?) _____ NUMBER

DON'T KNOW 998

REFUSED 999

***D64m. Here's the next series, which deals with feeling slowed down:**

One: You thought, spoke, and moved at your usual rate of speed.

Two: You found that your thinking was slowed down or your voice sounded dull or flat.

Three: It took you several seconds to respond to most questions, and you're sure your thinking was slowed.

Four: You were often unable to respond to questions without extreme effort.

(IF NEC: Which of these four statements was most true of you during your worst (several days/two weeks) of being (sad/or/discouraged/or/uninterested) in the past 12 months?) _____ NUMBER

DON'T KNOW 998

REFUSED 999

***D64n. Here's the last series, which deals with feeling restless:**

One: You did not feel restless.

Two: You were often fidgety, wringing your hands, or needing to shift how you were sitting.

Three: You had impulses to move about and were quite restless.

Four: At times, you were unable to stay seated and needed to pace around.

(IF NEC: Which of these four statements was most true of you during your worst (several days/two weeks) of being (sad/or/discouraged/or/uninterested) in the past 12 months?) _____ NUMBER

DON'T KNOW 998

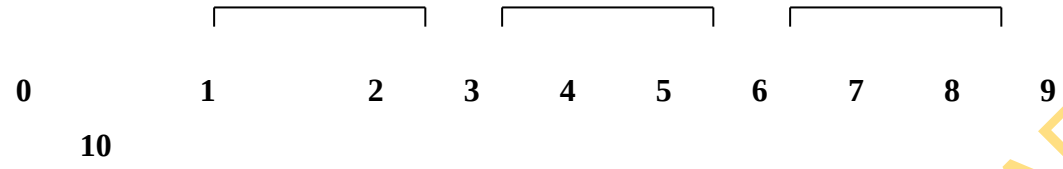
REFUSED 999

No

Very Severe

Interference Mild Moderate Severe

Interference



***D66. (RB, PG 9) Think about the period lasting one month or longer in the past 12 months when your (sadness/or/discouragement/or/lack of interest) was most severe. Using the 0 to 10 scale on page 9 of your booklet, where 0 means no interference and 10 means very severe interference, what number describes how much your (sadness/or/discouragement/or/lack of interest) interfered with each of the following activities during that period?**

(IF NEC: How much did your (sadness/or/discouragement/or/lack of interest) interfere with (ACTIVITY)

during that period?)

(IF NEC: You can use any number between 0 and 10 to answer.)

NUMBER (0-10)

***D66a. Your home management, like cleaning, shopping, and working around the (house/ apartment) (or yard)? _____**

DOES NOT APPLY 97

DON'T KNOW 98

REFUSED 99

***D66b. Your ability to work? _____**

DOES NOT APPLY 97

DON'T KNOW 98

REFUSED 99

***D66c. Your ability to form and maintain close relationships with other people? _____**

DOES NOT APPLY 97

DON'T KNOW 98

REFUSED 99

***D66d. Your social life? _____**

DOES NOT APPLY 97

DON'T KNOW 98

REFUSED 99

***D67. INTERVIEWER CHECKPOINT: (SEE *D66a - *D66d)**

ALL RESPONSES CODED '0' OR '97' 1 GO TO *D72

ALL OTHERS 2

***D68. About how many days out of 365 in the past 12 months were you totally unable to work or carry out your normal activities because of your (sadness/or/discouragement/or/lack of interest)?**

(IF NEC: You can use any number between 0 and 365 to answer.)

_____ NUMBER OF DAYS

DON'T KNOW 998

REFUSED 999

***D72. Did you <u>ever</u> in your life talk to a medical doctor or other professional about your (sadness/or/discouragement/or/ lack of interest)? (By professional we mean psychologists, counselors, spiritual advisors, herbalists, acupuncturists, and other healing professionals.)**

YES 1

NO 5 GO TO *D87.1

DON'T KNOW 8 GO TO *D87.1

REFUSED 9 GO TO *D87.1

***D72a.How old were you the <u>first time</u> [you talked to a professional about your (sadness/or/ discouragement/or/lack of interest)]? _____ YEARS OLD**

DON'T KNOW 998

REFUSED 999

***D84. Did you ever get treatment for your (sadness/or/discouragement/or/lack of interest) that you considered <u>helpful</u> or <u>effective</u>?**

YES 1

NO 5 GO TO *D84c

DON'T KNOW 8 GO TO *D84c

REFUSED 9 GO TO *D84c

***D84a.How old were you the first time [you got helpful treatment for your (sadness/or/ discouragement/or/lack of interest)]? _____ YEARS OLD**

DON'T KNOW 998

REFUSED 999

***D84b. How many professionals did you ever talk to about your (sadness/or/discouragement/or/lack of interest), up to and including the first time you got helpful treatment? _____ NUMBER OF PROFESSIONALS**

GO TO *D86

DON'T KNOW 98 GO TO *D86

REFUSED 99 GO TO *D86

***D84c.How many professionals did you ever talk to about your (sadness/or/discouragement/or/lack of interest)? _____ NUMBER OF PROFESSIONALS**

DON'T KNOW 98

REFUSE

***D86. Did you receive professional treatment for your (sadness/or/discouragement/or/lack of interest) at any time in the past 12 months?**

YES 1

NO 5

DON'T KNOW 8

REFUSED 9

***D87. Were you ever hospitalized overnight for your (sadness/or/discouragement/or/lack of interest)?**

YES 1

NO 5 GO TO *D87.1

DON'T KNOW 8 GO TO *D87.1

REFUSED 9 GO TO *D87.1

***D87a. How old were you the first time [you were hospitalized overnight because of your (sadness/or/ discouragement/or/lack of interest)]? _____ YEARS OLD**

DON'T KNOW 998

REFUSED 999

***D87.1. How many of your close relatives – including your biological parents, brothers, sisters, and children – ever had episodes of being (sad/or/discouraged/or/uninterested) that either caused them a lot of distress or that interfered with their lives?**

_____ NUMBER

DON'T KNOW 998

REFUSED 999

***D88. INTERVIEWER CHECKPOINT (SEE REFERENCE CARD, SCREENER SECTION): FOLLOW SKIP FOR FIRST ENDORSED ITEM.**

***SC24 IS CHECKED**	**1**	**GO TO *M1 / NEXT SECTION**
***SC25a IS CHECKED**	**2**	**GO TO *M5**
***SC20 IS CHECKED**	**4**	**GO TO *PD1 INTRO 1**
***SC20a IS CHECKED**	**5**	**GO TO *PD1 INTRO 2**
***SC27 SERIES IS CHECKED**	**6**	**GO TO *SP1**
***SC29 OR *SC29a IS CHECKED**	**7**	**GO TO *SN1**
***SC30 IS CHECKED**	**8**	**GO TO *AG1**
***SC26 IS CHECKED**	**9**	**GO TO *G1 INTRO 1**
***SC26a IS CHECKED**	**10**	**GO TO *G1 INTRO 2**
***SC26b IS CHECKED**	**11**	**GO TO *G1 INTRO 3**
***SC20.1 IS CHECKED**	**12**	**GO TO *D89**
***SC20.2 IS CHECKED**	**13**	**GO TO *IED3 INTRO 4**
***SC20.3 IS CHECKED**	**14**	**GO TO *IED3 INTRO 5**
ALL OTHERS	**15**	**GO TO *SD1**

***D89. INTERVIEWER CHECKPOINT: (SEE REFERENCE CARD, SCREENING SECTION)**

***SC20.2 IS CHECKED**	**1**	**GO TO *IED3 INTRO 1**
***SC20.3 IS CHECKED**	**2**	**GO TO *IED3 INTRO 2**
ALL OTHERS	**3**	**GO TO *IED3 INTRO 3**

APPENDIX 3: INSTRUMENTS IN FRENCH

3A: Questionnaire Socio-demographique

S'il vous plaît écrivez les réponses aux questions ou encercler où cela s'applique à vous. Ce n'est pas un examen, c'est uniquement pour vous renseigner sur vous et votre santé

SECTION I

INFORMATION SUR LE CONTEXTE

Questions sur la famille

1. Où habites-tu? (Adresse du domicile actuel):

2. Quel âge avez-vous?

3. Quel est votre plus haut niveau d'éducation?

a. Aucune éducation formelle

b. Primaire

c. Secondaire

d. Supérieur

4. Quel est votre état civil?

(a) Marié (b) Séparé / Divorcé (e) Père est décédé (d) Mère est décédée (e) Mère et père sont morts

5. Combien d'enfants avez-vous? .....

6. Quelle est votre profession? .....

7. Combien avez-vous dépensé en moyenne au cours de la dernière année?
'…… ..

8. Type de famille:

(a) monogame (b) polygame

9. Combien d'enfants avez-vous? :

10. Combien d'enfants votre partenaire et / ou votre mari ont-ils?

11. Quelle est la position de votre enfant parmi les enfants de son père?

12. Quelle est la position de cet enfant parmi vos enfants?

13. Pratiquez-vous une religion? Non Oui

14. S'il vous plaît écrivez l'endroit exact où vous vous rendez pour le culte

_____

(a) Islam (b) Chrétien orthodoxe (c) Chrétien pentecôtiste (d) Religion traditionnelle (e) Autre

15. Dans quelle mesure l'enseignement de votre religion influence-t-il votre comportement?

(a) beaucoup (b) beaucoup (c) juste un peu (d) pas du tout

16. Dans quelle mesure l'enseignement de votre religion guide-t-il votre vie de famille?

(a) beaucoup (b) beaucoup (c) juste un peu (d) pas du tout

3B: Questionnaire sur l'intension de l'allaitement et les pratiques des mères
INSTRUCTIONS

• Si vous avez eu des jumeaux ou des naissances multiples, veuillez répondre à ces questions pour le bébé qui est né le premier.

• Parfois, il vous est demandé d'écrire un nombre, veuillez saisir un nombre comme chiffre plutôt que des mots.

• On vous demandera parfois d'écrire la réponse avec vos propres mots.

• Pour les questions avec options, cochez (□) ou entourez l'option qui vous convient le mieux (veuillez n'en choisir qu'une parmi les options).
• Soyez honnête avec toutes vos réponses.

Section A: Information sur le contexte

1. Quelle est la date de naissance de votre enfant? Date de naissance: _____ _____ _____

2. «L'âge de votre enfant …… .....

3. Au cours de votre grossesse précédente, aviez-vous un seul enfant, des jumeaux (ou plus)?

a. Naissance unique

b. jumeaux

c. Plus que deux

4. Votre enfant est-il un garçon ou une fille? Garçon fille

Section B: pratique de l'allaitement maternel et facteurs connexes.

5. En ce qui concerne la naissance elle-même, quel type d'accouchement avez-vous eu?

a. Normal

b. Forceps

c. Extraction sous ventouse

d. césarienne

6. Quand vous étiez en travail d'accouchement, quel genre de soulagement de la douleur aviez-vous, le cas échéant?

a. Anesthésie péridurale ou spinale

b. Péthidine

c. Gaz ou air à respirer (anesthésie au masque)

d. Une anesthésie générale

e. Eau

f. Rien du tout

g. Autres (s'il vous plaît spécifiez)..... .....

7. Combien votre bébé a-t-il pesé quand il est né? Veuillez donner votre réponse en kilogrammes
……

8. Avant la naissance de votre dernier bébé, comment aviez-vous prévu de le nourrir au cours des six premiers mois?

a) le lait maternel

b) formule d'alimentation artificiel (lait artificiel)

c) Combinaison du sein et du lait maternisé (artificiel)

d) Je n'avais aucun plan.

9. Pourquoi avez-vous pensé nourrir votre bébé de cette façon? S'il vous plaît écrivez toutes les raisons
……

……

……

……

10. Combien de temps après l'accouchement avez-vous mis votre bébé au sein?

_____

11. Allaitez-vous toujours votre enfant? a) Oui [] b) Non [] (si oui, passez à Q5)

12. Si non, pourquoi?

_____

13. Pendant combien de temps avez-vous allaité votre bébé?

_____

14. Si oui, quand comptez-vous arrêter l'allaitement? _____

15. Parmi les cas suivants, lequel avez-vous donné à votre bébé dans les trois (3) premiers jours suivant l'accouchement? a) préparations pour nourrissons [] b) eau / salade eau [] c) herbes / boissons aux herbes [] d) lait maternel [] e) autres (précisez) _____

16. Avez-vous introduit de l'eau à votre enfant? a) Oui [] b) Non []

17. a) Si oui à Q7, quel âge avait votre enfant lorsque vous lui avez introduit de l'eau?

_____

b) Si non à Q7, à quel âge de l'enfant avez-vous l'intention de lui faire boire de l'eau?

_____

18. Avez-vous donné du colostrum à votre bébé? a) Oui [] b) Non []

19. Si non, pourquoi?

_____

20. Quel mode d'allaitement pratiquez-vous? a) à la demande [] b) à l'intervalle [] c) à la volonté de la mère []

21. Avez-vous déjà utilisé des biberons pour nourrir votre enfant? a) Oui [] b) Non []

22. Qui sont ceux qui vous soutiennent / vous soutiennent pendant l'allaitement? (Cochez autant que possible)

a) époux [] b) mère / belle-mère [] c) amis [] d) frères et soeurs [] e) infirmières / médecins [] f) femme de ménage []

23. Quand avez-vous commencé / avez-vous l'intention de donner à votre enfant des aliments semi-solides ou solides? _____

24. Combien de fois par jour nourrissez-vous / avez-vous l'intention de nourrir votre enfant avec des aliments solides ou semi-solides par jour? _____

25. Aviez-vous / avez-vous l'intention de continuer à allaiter votre enfant plus de 12 mois? a) Oui [] b) Non []

3C: Version de l'Interview sur le diagnostic international composite réalisée par la World Mental Health Survey Initiative

Section de dépistage

	OUI	NON	DK	RF
	(1)	(5)	(8)	(9)
1) Avez-vous déjà eu dans votre vie une période de plusieurs jours ou plus durant laquelle vous vous êtes senti malheureux, vide ou déprimé?	**1**	**5**	**8**	**9**
2) Avez-vous déjà eu une période de plusieurs jours ou plus? Quand la majeure partie de la journée vous a découragé de voir comment les choses se passaient dans votre vie	**1**	**5**	**8**	**9**
3) Avez-vous déjà eu une période de plusieurs jours ou plus? Lorsque vous avez perdu tout intérêt pour la plupart des choses que vous aimez habituellement comme le travail, les loisirs et les relations personnelles?	**1**	**5**	**8**	**9**

*D1. Plus tôt dans l'interview, vous avez mentionné avoir des périodes qui duraient plusieurs jours ou plus quand vous étiez mécontent, vide ou déprimé, la plupart de la journée. Lors des épisodes de la sorte, vous êtes-vous déjà Senti découragé à propos de comment les choses se déroulent dans votre vie?

Oui.....1

Non .....5 **Allez à *D1b**

Je ne sais pas .....8 **Allez à*D1b**

Refus.....9 **Allez à *D1b**

*D1a. Lors des périodes ou vous étiez mécontente, vide ou déprimée, avez-vous déjà perdu l'intérêt de plusieurs chose comme votre travail, hobby, et d' autres choses que vous aimiez d' habitude?

Oui.....1 **Allez à *D3**

Non .....5 **Aller à *D4**

Je ne sais pas .....8 **Aller à *D4**

Refus .....9 **Aller à *D4**

***D1b.** Lors des périodes ou vous étiez mécontente, vide ou déprimée, avez-vous déjà perdu l'intérêt de plusieurs chose comme votre travail, hobby, et d' autres choses que vous aimiez d' habitude?

Oui .....1 **Allez à *D5**

Non .....5 **Aller à *D6**

Je ne sais pas .....8 **Allez à *D6**

Refus .....9 **Allez à *D6**

***D2.** Plus tôt dans l'interview, vous avez mentionné avoir des périodes qui duraient plusieurs jours ou plus quand vous vous sentiez découragé à propos de comment les choses ce déroule dans votre vie? . Lors des épisodes de la sorte, avez-vous déjà perdu l'intérêt de plusieurs choses tel que votre travail, vos hobbies ou autres choses que vous aimiez d' habitude

Oui .....1 **Allez à *D7**

Non.....5 **Allez à *D8**

Je sais pas .....8 **Alllez à*D8**

Refus .....9 **Allez à *D8**

***D3.** INSTRUCTION DE L'INTERVIEWER

UTILISEZ LES MOTS CLES " TRISTE, DECOURAGE OU NON INTERESSE " TOUTE AU LONG DE LA SECTION **ALLLEZ A *D12**

***D4.** INSTRUCTION DE L'INTERVIEWER

UTILISEZ LES MOTS CLES " TRISTE OU DECOURAGE " TOUTE AU LONG DE LA SECTION **ALLLEZ A *D12**

***D5.** INSTRUCTION DE L'INTERVIEWER

UTILISEZ LES MOTS CLES " TRISTE OU NON INTERESSE " TOUTE AU LONG DE LA SECTION **ALLLEZ A *D12**

***D6.** INSTRUCTION DE L'INTERVIEWER

UTILISEZ LES MOTS CLES " TRISTE " TOUTE AU LONG DE LA SECTION **ALLLEZ A *D12**

***D7.** INSTRUCTION DE L'INTERVIEWER

UTILISEZ LES MOTS CLES " DECOURAGE OU NON INTERESSE " TOUTE AU LONG DE LA SECTION **ALLLEZ A *D12**

***D8.** INSTRUCTION DE L'INTERVIEWER

UTILISEZ LES MOTS CLES " DECOURAGE " TOUTE AU LONG DE LA SECTION **ALLLEZ A *D12**

*D9. Plus tôt dans l'interview, vous avez mentionné avoir des périodes qui duraient plusieurs jours ou plus quand vous vous aviez perdu l'intérêt de la plupart des choses comme votre travail, vos hobbies et autres choses que vous aimiez d'habitude ? Avez-vous eu des épisodes de la sorte qui durer la plupart des jours presque tous les jours pendant 2 semaines ou plus.

0ui .....1 **GO TO *D11**

Non.....5

Je ne sais pas 8

Refus ….....9

*D9a. Quelle est la période la plus longue en jours, pendant laquelle vous avez perdu intérêt en les choses que vous aimez ?

INTERVIEVEUR : « MOINS D'UNE JOURNEE » code '0'

PROBE DK : Etait-ce trois jours ou plus ? _____ NOMBRE

JE NE SAIS PAS 998

REFUS …….. 999

D9aTu. ENCERCLEZ UNE UNITE DE TEMPS :

JOURS …..1 SEMAINES…..2 MOIS….. ANNEES…..4

JE NE SAIS PAS ……998

REFUS……999

UTILISEZ LA PHRASE CLE « PAS INTERESSE » TOUT AU LONG DE LA SECTION **ALLEZ A *D10**

***D10**. POINT DE CONTROLE INTERVIEUVEUR : (VOIR ***D9a**)

DUREE DE 3 JOURS OU PLUS …….. 1 **ALLER A *D14**

TOUT AUTRE …… 2 **ALLER A *D87.1**

***D11.** INSTRUCTION DE L'INTERVIEUVEUR : UTILISEZ LA PHRASE CLE « PAS INTERESSE » TOUT AU LONG DE LA SECTION **ALLEZ A *D16**

***D12**. Avez-vous déjà eu une période où vous étiez (mécontent/ou/découragé/ou/désintéressé en toute chose) qui a duré une grande partie de la journée, pratiquement toute la journée pendant deux semaines ou plus ?

OUI …….. 1 **ALLER A *D16**

NON …… 5

JE NE SAIS PAS …….. 8

REFUS …….. 9

*D12a Combien était la plus longue période de jours que vous n'ayez jamais eu quand vous étiez (triste/où/découragé/où/désintéressé) la plus part de la journée

INTERVIEUVEUR : « MOINS D'UNE JOURNEE » CODE '0'_____ JOURS

JE NE SAIS PAS ……..998

REFUS ……..999

*D13. POINT DE CONTROLE DE L'INTERVIEUVEUR : (VOIR ***D12a**)

DUREE DE 3 JURS OU PLUS …… 1 **ALLER A *D14**

TOUT AUTRE …….. 2 **ALLER A *D87.1**

***D14.** Avez-vous déjà eu une année ou plus dans votre vie où vous avez plusieurs différents épisodes ou vous étiez (mécontents/ou/découragé/ou/désintéressé) chacune durant plusieurs jours ou plus D87

OUI…….. 1

NON…….... 5 **ALLER A *D87.1**

JE NE SAIS PAS ……. 8 **ALLER A *D87.1**

REFUS ……. 9 **ALLER A *D87.1**

*D14a. Avez-vous déjà eu une année ou plus dans votre vie ou environ chaque mois vous avez eu n épisode de la sorte ?

OUI …….. 1

NON …… 5 **ALLER A *D87.1**

JE NE SAIS PAS ……. 8 **ALLER A *D87.1**

REFUS ……. 9 **ALLER A *D87.1**

*D15. Souvenez-vous de la période de deux semaines plus tôt ou plus (ce problème/ ces problèmes) et votre humeur (était/étaient) plus sévère et plus fréquent. Pendant cette période, est ce que vos sentiments (tristesse, /ou découragement/ou manque d'intérêt) se durent habituellement moins d'une heure, entre 1 et 3 heures, entre 3 et 5 heures, plus de 5 heures

MOINS D'UNE HEURE ……..1 ALLER A D87.1

ENTRE 1 ET 3 HEURES ……2

ENTRE 3 ET 5 HEURES ……3

PLUS DE 5 HEURES ……8

REFUS……..9

L'ENQUETEUR SE REND A D 17^{E} DEMANDE A PROPOS DE LA DUREE « PLUSIEURS JOURS OU PLUS » POUR LE RESTE DE LA RUBRIQUE

D 16 Souvenez-vous de la période de deux semaines plus tôt ou plus (ce problème/ ces problèmes) et votre humeur (était/étaient) plus sévère et plus fréquent. Pendant cette période, est ce que vos sentiments (tristesse, /ou découragement/ou manque d'intérêt) se durent habituellement moins d'une heure, entre 1 et 3 heures, entre 3 et 5 heures, plus de 5 heures

MOINS D'UNE HEURE ……..1 ALLER A D87.1

ENTRE 1 ET 3 HEURES ……2

ENTRE 3 ET 5 HEURES ……3

PLUS DE 5 HEURES ……8

REFUS……..9 L'ENQUETEUR DEMANDE A PROPOS DE LA DUREE « PLUSIEURS JOURS OU PLUS » POUR LE RESTE DE LA RUBRIQUE

D17. Quelle était la gravité de votre détresse émotionnelle pendant c temps—légère, modérée, sévère ou très sévère

LEGERE……..1

MODEREE…….2

SEVERE……3

TRES SEVERE……4

NE SAIS PAS…….8

REFUS……..9

D18 A quelle fréquence durant cette période votre détresse émotionnelle étai si sévère que rien ne pouvait vous remonter le moral ?

SOUVENT……..1

PARFOIS……..2

JAMAIS……3

NE SAIS PAS……8

REFUS…….…...9

D19 A quelle fréquence durant cette période votre détresse émotionnelle étai si sévère que vous ne pouviez vaquer à vos activités quotidienne ?

SOUVENT……..1

PARFOIS……...2

JAMAIS……3

NE SAIS PAS……8

REFUS…...9

POINT DE CONTROLE DE L'ENQUETEUR VOIR (D17 D18 D19)

D20 point de vérification(voir D17, D18, D19)

D17 CODE 1 ET D18 CODE 4 ET D19 CODE 4…… ALLER A D87.1

TOUT LE RESTE ……2

D21 Les personnes avec les épisodes d'être (mécontent/ou découragé/ou désintéressé) ont parfois d'autres problèmes au même moment. Ceci inclus des modifications du sommeil, de l'appétit, de la capacité à se concentrer et de se rappeler, la diminution de l'estime de soi et d'autres problèmes. Avez-vous déjà eu l'un de ces soucis pendant une des périodes ou vous vous êtes senti (triste /ou découragé /ou désintéresse)

Oui……..1

Non…….5 Aller à **D87.1**

Je ne sais pas…8 Aller à **D87.1**

Je refuse……..9 Aller à **D87.1**

*D22. (à lire doucement) Pensez à un épisode de votre vie durant lequel vous étiez (triste, désintéressé ou découragé) durant (plusieurs jours ou semaines) ou encore lorsque vous aviez eu une bonne partie de ces problèmes pendant la même période. Un de ces épisodes vous semble-t-il être le pire que vous n'ayez jamais eu ?

Oui……...1
Non ……..5 **Aller à D22c**
Je ne sais pas……..8 **Aller à D22c**
Je refuse…….9 **Aller à D22c**

*D22a. Quel âge aviez-vous au moment de la mauvaise expérience ?

_____**ans**

Je ne sais pas……**998**

Je refuse……..**999**

*D22b. Combien de temps a duré cet épisode ?

_____Nombre **Aller à D23**

*D22b. Entourez la période

Jours……..1 Semaines……2 Mois……3 Années……4

Je ne sais pas……..98

Je refuse…….99

*D22c. Maintenant pensez à la dernière fois que vous ayez eu un tel épisode. Quel âge aviez vous lorsque c'est arrivé ?

_____**ans**

Je ne sais pas……**998**

Je refuse……..**999**

*D22d. Combien de temps a duré cet épisode ?

_____Nombre

*D22d. Entourez la période

Jours……..1 Semaines……2 Mois……3 Années……4

Je ne sais pas……..98

Je refuse…….99

*D23. Quelque chose est-il arrivé dans votre vie, qui a causé cet épisode ?

Oui…….1
Non ……5 **Aller à *D24**
Je ne sais pas……...8 **Aller à *D24**

*D23a. Qu'est ce qui a causé cet épisode ?

(entourer la (les) bonnes réponses)

Le surmenage……1

La tension…….2
La mort d'un être aimé……..3
Un divorce……4
Perte d'emploi……..…5
Le stress……6

AUTRES EXPERIENCE STRESSANTE (A SPECIFIER SI DESSOUS)

MALADIES/BLESSURES/CONDITION PHYSIQUE

- EPUISEMENT……10
- CYCLE MENTRUEL……11
- GROSSESSE/ POSTPARTUM……12
- PATHOLOGIE CARDIAQUE……13
- PATHOLOGIE THIROIDIENNE……14
- CANCER……15
- SURPOIDS……16

AUTRES MALADIES PHYSIQUES OU BLESSURES
(SPECIFIER SI DESSOUS) ……17

AUTRES
AUTRES (SPECIFIER SI DESSOUS) ……82
AUCUNE IDEE……98
REFUS DE REPONDRE……99

*D23aOth----------

*D24. (RB, PG 4. POUR CHAQUE ARTICLE APROUVE. DEMANDER A R DE LE MARQUER DANS RB.) regardez la page 4 de votre carnet. En répondant aux questions suivantes, pensez à une période de (plusieurs jours/ deux semaines) ou plus durant laquelle votre (malheur, découragement et désintéressement) et d'autres problèmes étaient sévères et fréquents. Pendant cette période, quels problèmes aviez-vous le plus souvent et ce quasiment tous les jours

	OUI (1)	**NON (5)**	**AUCUNE IDEE (8)**	**REFUS DE REPONSE (9)**
*D24a. vous sentiez vous malheureux, vide, ou déprimé la plupart des jours de cette période de (plusieurs jours/ deux semaines) ou plus ?	1	5 **Allez à*D24e**	8 **Allez à*D24e**	9 **Allez à D24e**
*D24b.vous sentiez vous si malheureux que rien ne pouvait vous réconforter quasiment tous les jours ?	1	5	8	9
*D24c.Pendant cette période de (plusieurs jours/2semaines) ou plus, vous sentiez vous découragé à propos du déroulement de votre vie quasiment tous les jours ?	1	5 **Allez à D24e**	8 **Allez à D24e**	9 **Allez à D24e**
*D24d. vous sentiez vous désespéré en pensant au futur quasiment tous les jours ?	1	5	8	9

*D24e. pendant cette période de (plusieurs jours/2semaines) étiez-vous désintéressé de presque tout tel que le travail, les loisirs et les choses que vous faisiez pour vous amuser ?	1	5	8	9	
*D24f. Avez-vous perdu la capacité d'éprouver du plaisir quand de bonnes choses vous arrivaient comme gagner quelque chose ou être félicité ou complimenté ?	1	5	8	9	

*D25 POINT DE CONTROL DE L'ENQUETEUR (VOIR *D24a-D24f)

UNE OU PLUSIEURS REPONSE CODE '1'……1

TOUS LES AUTRES…….2 ALLEZ A *D87.1

***D26**(RB, PG 4-5. Pour CHAQUE TITRE MENTIONNE. DEMANDER R POUR LE MARQUER DANS LA RB)	**1**	**5**		8	9
*D26a. avez-vous eu une perte d'appétit durant quasiment tous les jours de cette période de (plusieurs jours/ 2semaines) ?	1 **ALLEZ A *D26e**	5		8	9
*D26b Avez-vous eu un gain d'appétit plus d'habitude quasiment chaque jour ?	1	5		8	9
*D26c .Avez-vous eu une prise de poids involontaire durant cette période de (plusieurs jours / deux semaines) ?	1	5 **ALLEZ A *D26e**	7 **ALLEZ A *D26g**	8 **ALLEZ A *D26e**	9 **ALLEZ A *D26e**
SI R SIGNALE UNE GROSESSE OU UNE CROISSANCE, CODE 7 ET **ALLEZ A *D26g**					
*D26d. combien avez-vous pris poids ? NUMERO_____ **ALLEZ A *D26g**				998	999
*D26dWu. ENTOUREZ L'UNITE DE POID :					
POUNDS…....1 **ALLEZ A *26g**					
KILOS……..2 **ALLEZ A *26g**					
***D26e**. avez-vous perdu du poids sans le vouloir ?	1	5		8	9
SI R SIGNALE SUIVRE UN REGIME OU D'ETRE MALADE, CODE 'NON' ET **ALLEZ A *D26g**		**ALLEZ A *D26g**		**ALLEZ A *D26g**	**ALLEZ A *D 26g**
*D26f. Combien avez-vous perdu ?				998	999
NUMERO_____					

*D26fWu. ENTOUREZ L'UNITE DE POIDS

POUNDS……1

KILOS……2

***D26g**. Avez-vous eu plus de difficultés que d'habitude à vous en dormir, maintenir le sommeil, ou un réveil précoce durant quasiment tous les toutes les nuits de cette période de (plusieurs jours/ deux semaines) ?	1 **ALLEZ A *D26j**	5	8	9
*D26h. Avez-vous dormir beaucoup plus que d'habitude durant quasiment toutes des nuits de cette période de (plusieurs jours/deux semaines) ?	1 **ALLEZ A *D26j**	5	8	9
***D26i.** Dormez-vous beaucoup moins que d'habitude mais sans ressentir de fatigue ou avoir sommeil pour autant ?	1	5	8	9
	OUI (1)	**NON (2)**	**DK(3)**	**RF(4)**
***D26j.** vous êtes-vous senti fatigué ou en manque d'énergie durant quasiment tous les jours de cette période de (plusieurs jours/2 semaines) même lorsque vous travailliez beaucoup ?	1 **ALLEZ A *D26l**	5	8	9
*D26k. avez-vous beaucoup plus d'énergie que d'habitude durant quasiment tous les jours de cette période de (plusieurs jours /deux semaines)	1	5	8	9
***D26l**. parliez-vous ou vous déplaciez vous plus lentement que d'habitude quasiment tous ces jours ?	1	5 **ALLEZ A *D26n**	8 **ALLEZ A *D26n**	9 **ALLEZ A *D26n**
*D26m. quelqu'un d'autre a-t-il remarqué que vous parliez ou vous déplaciez lentement ?	1 **ALLEZ A *D26p**	5 **ALLEZ A *D26p**	8 **ALLEZ A *D26p**	9 **ALLEZ A *D26p**
***D26n**. Etiez-vous agité ou nerveux durant quasiment tous les jours ou vous faisiez les cents pas ou aviez du mal à rester assis ?	1	5 **ALLEZ A *D26p**	8 **ALLEZ A *D26p**	9 **ALLEZ A *D26p**
*D26o. Quelqu'un a-t-il remarqué que vous étiez agité ?	1	5	8	9
***D26p**. Aviez-vous eu une lenteur dans la réflexion ou alors le sentiment que vos pensées étaient confuses durant presque tous les jours de cette période de (plusieurs jours/ 2semaines)	1 **ALLEZ A *D26r**	5	8	9
*D26q. Avez-vous eu l'impression que vos pensées allaient d'un sujet à l'autre ou que vos pensées défilaient tellement vite que vous aviez du mal à suivre leur fil ?	1	5	8	9

***D26r**. Avez-vous eu beaucoup plus du mal à vous concentrer que d'habitude durant presque tous les jours ?	1	5	8	9
*D26s. N'arriviez-vous pas à vous décider sur les choses, qu'ordinairement vous n'aurez aucun problème à le faire ?	1	5	8	9
*D26t. avez-vous perdu la confiance en vous ?	1	5	8	9
*D26u. avez-vous eu l'impression d'être moins bon que les autres presque chaque jour ?	1	5	8	9
		ALLEZ A *D26w	**ALLEZ A *D26w**	**ALLEZ A * D26w**
*26v. Vous êtes-vous senti inutile quasiment chaque jour ?	1	5	8	9
***26w**. Avez-vous ressenti un sentiment de culpabilité avérée quasiment chaque jour ?	1	5	8	9
	ALLEZ A *D26x			
*D26w.1 vous êtes-vous senti plus coupable que vous auriez dû quasiment chaque jour ?	1	5	8	9
*D26x. Vous êtes-vous senti irritable, grognon, ou de mauvaise humeur presque chaque jour ?	1	5	8	9
*D26y. Vous êtes-vous senti nerveux ou anxieux la plupart des jours ?	1	5	8	9
*D26z. Durant cette période, avez-vous eu des crises soudaines de peur ou de paniques ?	1	5	8	9
*D26aa. Pensez-vous très souvent à la mort, soit la vôtre, soit celle de quelqu'un d'autre, ou la mort en général ?	1	5	8	9
*D26bb. Durant cette période, avez-vous pensé que ce serait mieux si vous étiez mort ?	1	5	8	9
*D26cc. Pensiez-vous à vous suicider ?	1	5	8	9
		ALLEZ A *D26ff	**ALLEZ A *D26ff**	**ALLEZ A *D26ff**
*D26dd. Avez-vous fait des plans suicidaires ?	1	5	8	9
*D26ee. Avez-vous fait une tentative de suicide ?	1	5	8	9
*D26ff. Avez-vous senti que vos responsabilités étaient trop lourdes pour vous ?	1	5	8	9
*D26gg. Avez-vous senti l'envi de rester seul plutôt qu'être en compagnie des amis ou des proches ?	1	5	8	9
*D26hh. Etiez-vous moins d'humeur à parler que d'habitude ?	1	5	8	9
*D26ii. Etiez-vous constamment en pleurs ?	1	5	8	9°

*D27. POINT DE CONTROL DE L'ENQUETEUR : (VOIR *D24- *D26ii)

ZERO OU UNE REPONSE CODEE '1'…….1 ALLEZ A *D87.1

DEUX A QUATRE REPONSES CODEE '1'……ALLEZ A *D28

CINQ REPONSES OU PLUS, CODEE '1'……3

*D27a. INSTRUCTION DE L'ENQUETEUR: ENTOURE LA LETTRE 'A' IN LONG/SHORT GROUP OF REFERENCE CARD

(SIDE TWO.) ALLEZ A *D28

*D28. Vous avez signalé avoir eu (deux des/ un certain nombre de) problèmes à propos desquels je vous ai interrogé. A quel point votre(malheur ou votre découragement ou votre manque d'intérêt)ou ces autres problème ont impacté soit votre travail, votre vie sociale, ou vos relations personnelles durant cet épisode- pas du tout, un tout petit peu, un peu, beaucoup ou extrêmement ?

PAS DU TOUT…….1 ALLEZ A *D29

UN TOUT PETIT PEU…….....2

UN PEU…….3

BEAUCOUP…….4

EXTREMEMENT……5

AUCUNE IDEE……6

A REFUSE……9

*D28a. A quel fréquence étiez-vous incapable de mener à bien vos activités quotidiennes durant cet épisode à cause de votre (tristesse, découragement ou manque d'intérêt) – souvent, quelquefois, rarement, ou jamais ?

SOUVENT……..1

QUELQUEFOIS……2

RAREMENT……3

JAMAIS……4

AUCUNE IDEE……8

A REFUSE……9

*D29.Quand j'emploie le terme ''épisode'' dans la question suivante, je fais référence à une période de (plusieurs jours/ deux semaines) ou plus durant laquelle vous étiez (malheureux/ découragé/désintéressé) quasiment chaque jours et que vous aviez également plusieurs des autres problèmes dont nous avons parlé. L'épisode c'est achevé lorsque vous n'avez plus eu ces problèmes pendant deux semaines consécutives. Avec cette définition en tête, environ combien d'épisode différents avez-vous eu de toute votre vie ?

----------NOMBRE

AUCUNE IDEE----------998

A REFUSE----------999

INSTRUCTION POUR L'INTERVIEWER : INSERER LE NUMERO D'EPISODES SUR LA CARTE DE REFERENCE (COTE 1)

*D29a. Les épisodes de la sorte se produisant sont les résultats de causes physiques tels que les maladies physiques, les blessures ou l'usage de traitement, de la drogue ou de l'alcool. Pensez-vous que votre/ vos épisode(s) de (malheur ou de découragement ou le désintéressement) ont été ne serais ce qu'une seule fois causé par ces facteurs physiques ?

OUI……1

NON…….5 ALLEZ A *D29d

AUCUNE IDEE……8 ALLEZ A *D29d

A REFUSE…….9 ALLEZ A *D29d

*D29b.Pensez-vous que votre/vos épisode(s) étai(en)t toujours le résultat de causes physiques ?

OUI……..1

NON……5 ALLEZ A *D29d

AUCUNE IDEE……..8 ALLEZ A *D29d

REFUS DE REPONDRE……9 ALLEZ A *D29d

*D29c. Brièvement que pensez-vous que la cause physique pouvait être ?

*D29d. POINT DE CONTROLE DE L'INTERVIEWEUR (VOIR *D29)

*D29 CODE '1' ……1 ALLEZ A *D37d

TOUS LES AUTRES……..2°

*D37. Pensez à la toute première fois dans votre vie, lorsque vous avez eu un épisode s'étendant sur (plusieurs jours ou plus/ deux semaines ou plus) dont durant la quasi-totalité des jours vous étiez triste ou découragé ou désintéressé) et aviez aussi certains des problèmes que nous venons à peine de revoir. Pouvez-vous vous rappeler de votre Age ?

OUI……..1

NON……5 ALLEZ A *D37b

AUCUNE IDEE……..8 ALLEZ A *D37b

REFUS DE REPONDRE……..9 ALLEZ A *D37b

*D37a. (IF NEC : quel âge avez-vous ?

……..ANS GO TO *D37c

AUCUNE IDEE……998

REFUS DE REPONDRE…….999

*D37b.environ quel âge aviez-vous (lors de votre premier épisode de ce genre ?)

---------- ANS

SI '' TOUTE MA VIE '' OU ''AUSSI LONGTEMPS QUE JE ME SOUVIENNE'' SONDEZ

*D37b1. Etait-ce avant que vous ne commenciez à aller à l'école ?

SI ‘’NON’’, SONDEZ : était-ce durant votre adolescence ?

AVANT DE COMMENCER D’ALLER A L’ECOLE……4

AVANT L’ADOLESCENCE……..12

PAS AVANT L’ADOLESCENCE……13

AUCUNE IDEE…….998

REFUS DE REPONDRE……999

*D37c. environ combien de temps a duré le premier épisode ?

……..NOMBRE

*D37cTu. ENTOUREZ L’UNITE DE TEMPS :

JOURS……..1 SEMAINE…….2 MOIS……..3 ANS……4

AUCUNE IDEE……..98

REFUS DE REPONDRE…….99

Appendix 4: Ethical Approval

UNIVERSITY OF BUEA
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REPUBLIC OF CAMEROON
PEACE- WORK- FATHERLAND

FACULTY OF HEALTH SCIENCES- INSTITUTIONAL REVIEW BOARD
IRB00008917-US Office for Human Research Protection (OHRP)IORG007426

Chair : **Professor Choukem Simeon Pierre**
Secretary : **Associate Professor. Halle-Ekane Edie Gregory**

Your Ref _____

Our Ref: **2019/873-12UB/SG/IRB/FHS** Date: 05 MARS 2019

Notice of Ethical Approval

Application number: **873-12**

Principal Investigator: **Tamambang Rita Frinue**

Study Title: **Maternal Mental Health, reported breastfeeding practices and infant health in two Health Districts in the South West Region of Cameroon.**

Application Type: **Initial**
Sponsor: **Student**
Review Type: **Normal**
Date of Approval: **5th March 2019**
Expiration Date: **One year**

Principal Investigator's responsibilities:

1. The study must be conducted in strict accordance with the protocol approved by the Board
2. Changes to the protocol or its related consent documents must be approved by the Board before implementation
3. Adverse events or unanticipated problems must be reported promptly to the Board
4. Participants must receive a copy of the consent document, if appropriate
5. The Principal Investigator is responsible for the on-going conduct of the study. The study must be implemented according to national and international guidelines for the ethical conduct of research on humans. She must collaborate with the IRB's monitoring of the study's implementation.
6. Any future correspondence must include the application number, and the PI's name in the subject line.
7. A renewal application or project closure report must be submitted at least one month prior to the expiration date indicated above. These must be done using the FHSIRB's secretariat AND an electronic copy sent to: irbfhs@gmail.com, making sure to reference the application number indicated above. This form is available at http://www.healthresearchweb.rg/en/cameroon/institution2130

Assoc. Prof. Halle Ekane Edie Gregory
Secretary, Institutional Review Board
Faculty of Health Sciences University of Buea