RELATIONSHIP BETWEEN MATERNAL DEPRESSION AND CHILD PSYCHOPATHOLOGY AMONG ATTENDEES AT A SPECIALIST MENTAL HEALTH FACILITY IN ABEOKUTA, NIGERIA

BY

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DECLARATION

I hereby declare that this thesis is my original work and that it has not been submitted anywhere else for a diploma, fellowship or degree.

Where other sources of information have been used, they have been duly acknowledged.

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CERTIFICATION

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ABBREVIATIONS

ADHD	Attention deficit/hyperactivity disorder
ASD	Autism spectrum disorder
ID	Intellectual disability
LMICs	Low and Middle Income Countries
MCH	Maternal and Child Health
MCS	Mental Component Summary
PCS	Physical Component Summary
PHQ	Patient Health Questionnaire
SDQ	Strengths and Difficulties Questionnaire
SF12	Medical Outcomes Survey Short Form
WHO	World Health Organisation

ABSTRACT

Background: Children with recognized, diagnosable mental disorders are in addition prone to emotional and behavioral disorders. Among these children, a 'dysregulation phenotype' may be an indicator of overall psychopathology, symptom severity and functional impairment. These children are almost invariably accompanied by caregivers (usually mothers) who may also have mental health problems, notably depression. The relationship between child and maternal psychopathology and functioning has however not been extensively researched in low and middle income countries.

Objectives: The study aimed to investigate the relationship (if any) between maternal depression and child psychopathology among attendees at a specialist child and adolescent mental health facility.

Methods: Mothers [n=100] of children receiving care at the Child and Adolescent clinic of the Neuropsychiatric Hospital, Aro Abeokuta Nigeria took part in the study. To each consenting mother was administered a sociodemographic questionnaire, the Medical Outcomes Survey Short Form (SF12), the Patient Health Questionnaire (PHQ) and the Strengths and Difficulties Questionnaire (SDQ). The sociodemographic and clinical details of the child were obtained from the case records, and each child was also rated on the Children's Global Assessment Scale (CGAS). Data analysis was done with SPSS version 16.

Results: the mean ages of the mothers and children were 40.4 years (SD 4.7) and 11.6 years (SD 4.1), respectively. Majority of the mothers were married (85%), Yoruba (91%) and employed (95%). Among the children, 63% had a main diagnosis of seizure disorder, while 40% had a comorbid diagnosis. Among the mothers, 23% had major depressive disorder. On the SF12, 42% and 26% of the mothers scored below the cut-off point for the Physical and Mental component respectively. A significant positive correlation was found between scores on the PHQ and the SF12 Physical ($r=0.700$, $p<0.001$) and Mental ($r=0.752$, $p<0.001$) components respectively. A quarter (25%) of the children had abnormal total SDQ scores. Mothers whose children had comorbid neuropsychiatric illnesses had poorer mental functioning ($p=0.025$). Mothers' PHQ scores correlated with SDQ scores in all domains, while maternal SF12 scores correlated with the child's conduct problem scores. Finally, child CGAS scores positively correlated with SDQ scores in all domains.

Conclusion: The study showed notable rates of depressive illness and functional impairment among mothers of children with neuropsychiatric disorders. Marked rates of emotional and behavioural disorders were also found among the children. Associations were found between maternal psychopathology and impairment and child psychopathology and functioning. Recommendations following from the study are that mothers of children with neuropsychiatric disorders should be routinely screened for depressive illness and functional impairment, and an integrative approach to maternal and child mental health care should be adopted.

Key Words: depression, mothers, psychopathology, child

Word count: 429 words

CHAPTER ONE

INTRODUCTION

1.1. Background

Child and adolescent mental health services typically attend to children with developmental disorders (such as autism and attention deficit/hyperactivity disorder), intellectual disability, childhood onset psychosis, depression and anxiety disorders. Children with recognized, diagnosable mental disorders are in addition prone to emotional and behavioral disorders (Totsika *et al*, 2011; Alimovic, 2013; Maskey *et al*, 2013). Among these children, a 'dysregulation phenotype' may be an indicator of overall psychopathology, symptom severity and functional impairment (Carballo *et al*, 2014). These children are almost invariably accompanied by caregivers (usually mothers) who may also have mental health problems. A variety of studies have highlighted the psychological distress and morbidity associated with caring for children with mental disorders (Herring *et al*, 2006; Rimehaug *et al*, 2011; Huang *et al*, 2014) Caregiving is associated with more depressive symptoms, as reported among Latina mothers of children with developmental disabilities by Magana and Smith (2006).

According to the World Health Organisation, maternal mental health is ''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 community'' (Herrman and Swartz, 2007). Illnesses such as mood disorders, which are a threat to women in general (Burt and Quezada, 2009), exert an even greater toll on mothers especially in low and middle income countries (Engle, 2009; Hanlon, 2013).

The impact of maternal depression on the physical health of the child has been well documented, especially in Low and Middle Income Countries (Patel *et al*, 2004; Engle, 2009; Black *et al*, 2009; Adewuya *et al*, 2008; Surkan *et al*, 2014). Studies conducted mainly among mothers with depression have also sought to demonstrate an association between maternal mental health and the mental health of the child (Wan and Green, 2009; Boyd *et al*, 2011; Gray *et al*, 2011; Gupta and Ford-Jones, 2014; Breaux *et al*, 2014). A series of reports from the Sequenced Treatment Alternatives to Relieve Depression (STAR*D) study provide a narrative of the impact of maternal depression on the psychological welfare of the child

(Pilowsky *et al*, 2006; Weissman *et al*, 2006; Pilowsky *et al*, 2008; Wickramaratne *et al*, 2011). The study findings are however not equivocal, and the contribution from Africa remains low.

1.2. Justification and Relevance of the Study

A search of the research and policy literature reveals that while attention is often focused on perinatal depression, the period between births of successive children represents a time when women remain at risk for a depressive disorder (Feinberg *et al*, 2006). The pediatric visit therefore provides a special opportunity for the identification and management of maternal depression, as even mothers who pay less attention to their health and may not attend their own medical appointments are likely to accompany their child to pediatric visits (Feinberg *et al*, 2006).

Within the context of the Grand Challenges in Global Mental Health, Rahman *et al* (2013) have proposed that integrating maternal mental health care into existing maternal and child health (MCH) platforms will help advance both maternal and child health status. For mothers of children with mental health disorders, the child visit offers a model and platform for identification of and intervention in maternal depression. The potential benefit of this study is that it offers an opportunity to test this model of identification of depression among caregiving mothers at the same time that they present with their children for treatment. The study also explores the question of association between maternal and child mental health. Besides adding to existing data, the present study will provide evidence-based information for planning policy and intervention for caregiving mothers. Specifically, the study will provide preliminary insight into the possibility of leveraging care for caregiving mothers on the same platform where their children are receiving care.

1.3. Study Aim and Objectives

The study aimed to investigate the relationship (if any) between maternal depression and child psychopathology among attendees at a specialist child and adolescent mental health facility. The specific objectives are as follows:

1. To determine the prevalence of depressive disorders among mothers of children receiving treatment at a specialist mental health facility in Abeokuta, Nigeria.

2. To identify factors associated with depressive disorders among mothers of the children.

3. To compare the functional health status of depressed and non-depressed mothers.

4. To compare emotional/behavioral problems among children of depressed and non-depressed mothers at a specialist child mental health facility in Abeokuta, Nigeria.

5. To compare level of functioning of children of depressed and non-depressed mothers at a specialist child mental health facility in Abeokuta, Nigeria.

1.4. Null Hypothesis

1. There is no significant difference in functional health status of depressed and non-depressed mothers.

2. There is no significant difference in emotional/behavioral problems among children of depressed and non-depressed mothers.

3. There is no significant difference in level of functioning of children of depressed and non-depressed mothers.

1.5. Outcome Measures

1. Depressive disorders among mothers of children presenting at a mental health facility.
2. Emotional and behavioural problems among children receiving mental health care.
3. Functional health status of mothers and their children.
4. Relationship between maternal depression and child psychopathology.

CHAPTER TWO

LITERATURE REVIEW

2.1. Emotional and Behavioral Disorders among Children with Mental Disorders

Children with recognized, diagnosable mental disorders are in addition prone to emotional and behavioral disorders. Presentation of children and adolescents to mental health services is frequently complicated by comorbid and severe affective and behavioral dysregulation (Carballo *et al*, 2014). Totsika *et al* (2011) reported a cross-sectional comparison of child behavioral and emotional problems and maternal mental health measures among 18,415 children (aged 5-16 years), of which 47 had autism spectrum disorder (ASD), 51 had autism spectrum disorder with intellectual disability (ID), 590 had only intellectual disability, and the rest had neither. The highest prevalence of behavioral and emotional problems was found among children with autism spectrum disorder (with or without intellectual disability). After controlling for age, gender, adversity, maternal mental health, the presence of ASD and ID significantly and independently increased the odds for hyperactivity, symptoms, conduct and emotional problems.

A comparison of children aged 4-11 years with intellectual disability and/or visual impairment with children with typical development was reported by Alimovic (2013). Children with ID and visual impairment had more emotional and behavioral problems than children with single impairment or typical development. Children with special needs also had more emotional and behavioral problems.

In a study of 863 children with ASD, Maskey *et al* (2013) utilized the population-based database of children with ASD living in the North East of England. High rates of emotional/behavioral problems were reported (more than half had 4 or more problems) including sleep, toileting and eating problems, hyperactivity, self-injury and sensory difficulties. These were greater in children with lower language level and in special schooling, whereas anxiety, tantrums and aggression towards others were frequent regardless of age, ability or schooling.

Gau *et al* (2010) studied a clinic sample of 268 Taiwanese children and 137 community-based children with ADHD, along with 268 school controls, aged 6-15 years. Children with ADHD scored higher on wide-ranging emotional and behavioral problems, and had more impairments in the school, peer, family, and leisure time domains than school controls.

Among patients with high-functioning autism spectrum disorder (HFASD) and attention deficit/hyperactivity disorder (ADHD), Lizuka *et al* (2010) reported that HFASD children were scored significantly higher by parents on emotional symptoms and peer problems than a community sample, while teachers scored ADHD children significantly higher on hyperactivity/inattention and conduct problems, but HFASD children higher on peer problems.

Child mental health services often have to manage children with epilepsy, either occurring alone or comorbidly with other mental health disorders. In a study by Dafoulis and Kalyva (2012), parents of 106 children with idiopathic epilepsy and 305 healthy controls aged 6-9 years completed the Vanderbilt ADHD Diagnostic Parent Rating Scale and the Strengths and Difficulties Questionnaire. The 106 children with idiopathic epilepsy were further assessed with the KSADS-PL. Parents of children with idiopathic epilepsy reported more hyperactivity, emotional and conduct problems than the parents of healthy controls, as well as less prosocial behavior. Seizure frequency was associated with behavior problems. Similar findings have been reported by Lagunju *et al* (2012), who screened 84 Nigerian children with epilepsy (aged over 5 years) with the Rutter A2 scale. Behavioral problems were found in 46.6% of subjects. Presence of associated learning difficulties and being diagnosed with epilepsy within 6 months of the onset of the first epileptic seizure independently predicted psychopathology.

Tanabe *et al* (2013) screened 83 4-16 year old Japanese children with epilepsy using the Japanese version of the Strengths and Difficulties Questionnaire. The authors reported a significant proportion with hyperactivity, peer problems and conduct problems. Early onset was a risk factor for poor SDQ scores. Similarly, Tsai *et al* (2013) studied 61 Taiwanese children with epilepsy, aged 6-16 years, and 122 age-, sex- and parental education-matched controls. They found that children with epilepsy had more severe ADHD-related symptoms and a wider range of emotional/behavioral problems than controls. A history of developmental delay predicted ADHD-related symptoms and internalizing and externalizing problems. Among children with epilepsy, longer duration of treatment with antiepileptic drugs predicted externalizing problems, and an earlier onset of epilepsy predicted inattention and hyperactivity/impulsivity.

Following from these studies, the ‘dysregulation phenotype’ may be an indicator of overall psychopathology, symptom severity and functional impairment, as postulated by Carballo *et*

al (2014), who studied a clinic sample of 623 consecutively referred children and adolescents (4-17 year olds). Of these, 28.1% met the Strengths and Difficulties Questionnaire dysregulation profile criteria. These had significantly higher scores on internalizing and externalizing psychopathology, problems with peers and overall problems as well as significantly lower scores on prosocial behavior. They also had greater psychological comorbidity, worse family functioning, increased symptom severity and lower scores on psychosocial functioning.

2.2. Parenting Children with Mental Disorders

Child and adolescent mental health services typically attend to children with developmental disorders (such as autism and attention deficit/hyperactivity disorder), intellectual disability, and childhood onset psychosis, depression and anxiety disorders. These children are almost invariably accompanied by caregivers (usually mothers) who may also have mental health problems. The first challenge is often that of coming to terms with the child's diagnosis. According to Kearney *et al* (2011), maternal resolution of the child's diagnosis leads to sensitive caregiving and healthy attachment, with failure to resolve being associated with maternal distress, high caregiver burden, and the quality of marital and social support.

Herring *et al* (2006) studied 123 children with ASD and ID, aged 20 – 51 months, referred to a developmental assessment clinic. They found that initial and follow up measures of child behavior and emotional problems, parent mental health problems, parent stress and family functioning were significantly correlated, providing some evidence of stability over time. Child emotional and behavioral problems contributed significantly more to mother stress, parent mental health problems, and perceived family dysfunction than child diagnosis. Compared with mothers, all fathers reported significantly less stress in relation to parenting their child (Herring *et al*, 2006).

Rimehaug *et al* (2011) examined changes in distress symptoms and parenting dimensions among 102 parents with children in psychiatric services. These were parents whose children had learning/developmental problems and attention disorders. One in ten parents experienced the parenting role as burdensome because of the child's mental health problems. Some suffered from self-blaming and emotional distress, which increased with the severity and

duration of problems and with the presence of externalizing problems. The authors noted that child and maternal mental health problems were bidirectional.

In a similar vein, Huang *et al* (2014) interviewed caregivers of children with autism with the Childhood Autism Rating Scale, the Strengths and Difficulties Questionnaire, and the Parenting Stress Index Short Form. Caregivers of children with mild/moderate autistic behavior problems perceived lower parenting stress than those with no or severe problems. Prosocial behaviors and conduct problems predicted stress in the parent-child relationship and child-related stress respectively.

Caregiving is associated with more depressive symptoms, as reported by Magana and Smith (2006) among Latina mothers of children with developmental disabilities. Woodman *et al* (2013) noted that parents of children with developmental disabilities face greater caregiving demands than other parents. The authors, in a study of 92 mothers and their adolescents with developmental disabilities, noted that certain strategies help to moderate the impact of adolescent behavior problems on maternal depressive symptoms; these include active coping/planning, positive reinterpretation/growth, and behavioural/mental disengagement.

Lee (2013) observed that developmental disorders involve high levels of caregiving responsibilities. Mothers of children with developmental disorders experience high levels of maternal stress, and poor sleep and well-being. The mothers often had depressive symptoms, with child behavioral problems significantly associated with both maternal stress and developmental symptoms. The authors observed a bidirectional relationship between maternal stress and depressive symptoms.

Among mothers of children receiving care for attention deficit/hyperactivity disorder (ADHD), lifetime prevalence of major depressive disorder is over 50% (Chronis-Tuscano *et al*, 2013). Major depressive symptoms in them are associated with impaired parenting and predict adverse developmental and treatment outcomes for the children. According to Laxman *et al* (2014), father literacy and responsive caregiving involvement were associated with lower levels of depressive symptoms for mothers of children with ASD.

Mediation of the relationship between child illness and maternal wellbeing was studied by Jones *et al* (2014). Mothers of children with autism [n=71] reported on their own positive and negative psychological wellbeing and their children's behavior problems. Psychological

acceptance was found to act as a mediator variable for maternal anxiety, depression, and stress. General mindfulness and mindful parenting had significant mediating effects for maternal anxiety, depression and stress.

Postulates on biological mechanisms by which the strss of parenting a child with developmental disabilities can take its toll on parents' physical and mental health were proferred by Seltzer *et al* (2009). These include variations in the FMR1 gene, FMRP, and FMR1 messenger RNA in mothers of children with Fragile X syndrome and the association of these measures with maternal depression and anxiety. Also implicated are profiles of cortisol expression in mothers of children with disabilities and the association of cortisol with daily measures of caregiving stress.

However, Totsika *et al* (2011) studied a British-representative sample of 5 year old children with autism spectrum disorder and found that negative maternal outcomes (serious mental illness, psychological distress, and physical health limitations) were not consistently elevated in ASD.

2.3. Maternal Depressive Disorders

According to the World Health Organisation (WHO), maternal mental health is ''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 community'' (Herrman and Swartz, 2007). Among the threats to maternal mental health, particularly noteworthy are mood disorders, to which women are vulnerable at times of life cycle related hormonal challenge (e.g. the premenstruum, pregnancy, post-miscarriage, postpartum, and perimenopause). Neurobiological, genetic and psychosocial substrates underlie the increased vulnerability for depression in women (Burt and Quezada, 2009).

Depression occurs twice as commonly in women as in men, has great economic impact, and often occurs comorbidly with other psychiatric and medical disorders (Taney, 2007). Even in developed countries such as the US, maternal depression is of great public health concern, affecting mothers, children, and families (Freed *et al*, 2012). Many mothers experience depression, with the exposure to maternal depression putting their children at increased risk for psychopathology and poor psychosocial development. Early recognition of maternal

depression is thus a critical step in promoting healthy development and preventing adverse outcomes in children and families (Freed *et al*, 2012).

In Low and middle Income Countries (LMICs), the problems associated with maternal depression are even more enormous (Hanlon, 2013). Studies suggest that rates of maternal depression are as high as 15-28% in Africa and Asia (including 18.6% in Nigeria), 50% in Bangladesh, 28-57% in Pakistan, and 35-47% in Latin America (Engle, 2009; Abiodun *et al*, 2006). Maternal depression in LMICs is linked to a variety of risk factors such as marital disharmony, young maternal age, birth of a child of the nonpreferred sex, and presence of stressors in the environment such as conflict, disasters, violence, migration, and high prevalence of HIV/AIDS (Engle, 2009).

While perinatal depression is often the focus of attention, the period between births of successive children represents a time when women remain at risk for a depressive disorder (Feinberg *et al*, 2006). The pediatric visit provides a special opportunity for the identification and management of maternal depression, as mothers who do not attend their own medical appointments are likely to accompany their child to pediatric visits (Feinberg *et al*, 2006). This dovetails with the proposal by Rahman *et al* (2013) that integrating maternal mental health care into existing maternal and child health (MCH) platforms will help advance both maternal and child health status. Obstacles to such integration, according to Rahman *et al* (2013), include common misconceptions about maternal depression. These are in the form of myths about maternal mental health, such as beliefs that maternal depression is rare, not relevant to MCH programmes, can only be treated by specialists, or that its incorporation into MCH programmes is difficult.

2.4. Impact of Maternal Depressive Disorders on Child Physical Health

The impact of maternal depression on the physical health of the child has been well documented, especially in Low and Middle Income Countries (LMICs). In a review of evidence from South Asia, Patel *et al* (2004) observed that infants of mothers who were depressed showed poorer growth outcomes than infants whose mothers were not depressed. In countries such as India, Pakistan and Bangladesh, associations have been found between

maternal depression and lighter infant birth weight, poor infant growth, higher rates of diarrhea, shorter breast feeding duration, and slower development (Engle, 2009).

In a study conducted in rural Bangladesh, Black *et al* (2009) measured growth among 221 infants at 6 and 12 months. Infants of depressed mothers experienced poor linear growth; they were found to have 2.17 higher odds of being stunted than infants of mothers with few symptoms. Similar findings have been reported in Nigeria by Adewuya *et al* (2008).

By way of testing whether the relationship between maternal depression and child growth is limited to developing countries, Surkan *et al* (2014) studied data from 6,550 singleton births in a US cohort. The authors found that children whose mothers reported postpartum depressive symptoms remained significantly shorter throughout the child's first 6 years.

Mechanisms which have been suggested for this association include the direct impact of depressive symptoms on parenting, negative life events and chronic psychosocial difficulties (Patel *et al*, 2004). Beyond these, Dang *et al* (2011) outlined the effects of maternal care on both defensive responses to stress and reproductive behavior in rat models, and explored the possible underlying epigenetic mechanisms for these effects.

The reports have however not been equivocal. Surkan *et al* (2007) found social support to be a strong predictor of infant growth in Northeastern Brazil, but maternal depression was not.

2.5. Impact of Maternal Depressive Disorders on Child Mental Health

Studies conducted mainly among mothers with depression demonstrate an association between insecure/disorganized attachments and severe maternal psychopathology, whether current or chronic (Wan and Green, 2009). According to Gupta and Ford-Jones (2014), frequent and positive early daily interactions are crucial for optimal child development. The negative effects of maternal depression may include her perception of the child, the child's cognitive development and future antisocial behavior (Gupta and Ford-Jones, 2014).

The longitudinal relationship between behavior and emotional disturbance in young people with intellectual disability and maternal mental health was studied by Gray *et al* (2011). The authors followed an epidemiological cohort of children and adolescents over 11 years with four waves of data collection, complete data being available on 238 mothers and their

children. High levels of mental health problems were reported, which were stable over time. Higher scores on behavior and emotional problems were associated with high rates of maternal mental health problems.

Boyd *et al* (2011) investigated 63 African American mothers with a past year diagnosis of a depressive disorder, and one of their children (ages 7-14). Of the offspring, 25.4% and 20.6% exhibited externalizing and internalizing symptoms in the clinical range, respectively. Breaux *et al* (2014) equally studied the role of parent psychopathology in the development of preschool children with behavior problems. They found that every dimension of parental psychopathology when children were 3 years old was associated with their reports of children's externalizing and internalizing problems 3 years later. Their findings suggested that most types of parental self-reported psychopathology symptoms may play a role in the prognosis of behavioral, social and emotional outcomes of preschoolers.

A series of reports from the STAR*D study provide a sequential and elegant narrative of the impact of maternal depression on the psychological welfare of the child. First, Pilowsky *et al* (2006) assessed the current and lifetime prevalence of psychiatric disorders among children of currently depressed mothers. They also assessed the association of clinical features of maternal depression (severity, chronicity and clinical features) with child psychopathology. The mothers were selected from the STAR*D (Sequenced Treatment Alternatives to Relieve Depression) multisite trial, which was designed to compare the effectiveness and acceptability of different treatment options for outpatients with non-psychotic major depressive disorder. The authors reported that about a third (34%) of children of currently depressed mothers had a current psychiatric disorder, including disruptive behavior (22%), anxiety (20%), and depressive disorders (19%). Atypical depressive features in the mother were associated with a three-fold increase in the odds of having a child with depressive or anxiety disorder. A history of maternal suicide attempts and the presence comorbid panic disorder with agoraphobia were associated with a three-fold increase and an eight-fold increase in the odds of depressive disorders in the offspring, respectively.

That left the question of how much of this had to do with nature (genetics) or nurture. In exploring this problem, in a second paper by Weissman *et al* (2006), the authors sought to determine whether effective treatment with medication of women with major depression is associated with reduction of symptoms and diagnoses in their children. 151 mother-child

pairs in 8 primary care and 11 psychiatric outpatient centres in the United States were assessed. The mothers were part of the STAR*D study. The children were aged 7-17 years, with diagnoses based on the Kiddie Schedule for Affective Disorders and Schizophrenia; child symptoms based on the Child Behaviour Checklist; and child functioning based on the Children's Global Assessment Scale. The mothers were grouped as remitted or not remitted based on a cut off score of 7 on the Hamilton Rating Scale for Depression. The authors reported that remission of maternal depression after three months of medication was significantly associated with reductions in the children's diagnoses and symptoms, whereas mothers who remained depressed may increase the rates of their children's disorders.

A third paper in the series (Pilowsky *et al*, 2008) examined the changes in psychiatric symptoms and global functioning in children of depressed women one year following the initiation of treatment for maternal major depressive disorder. The study showed that during the year following the initiation of treatment for maternal depression, maternal depression severity and children's psychiatric symptoms continued to decrease over time. Decreases in the number of children's psychiatric symptoms were significantly associated with decreases in maternal depression severity. When children's outcomes were examined separately, a statistically significant decrease in symptoms was evident in the offspring of women who remitted early (i.e., within the first 3 months after the initiation of treatment for maternal depression) or late (i.e., over the 1-year follow-up interval) but not in the offspring of nonremitting women.

Finally, Wickramaratne *et al* (2011) examined changes in psychiatric symptoms, behavioral problems, and functioning among children of depressed mothers during the first year after the mothers' remission from depression. The children were assessed at baseline and at three-month intervals for 1 year after their mothers' remission or for 2 years if the mothers did not remit. The authors compared children of early remitters (0-3months, n=36), late remitters (3-12 months, n=28) and non-remitters (n=16). They reported that following remission of maternal depression, children of early remitting mothers showed significant improvement on all outcomes. Externalising behavioural problems decreased in children of early and late remitting mothers but increased in children of non-remitting mothers. Psychiatric symptoms decreased significantly only in children of mothers who remitted, and functioning improved only in children of early remitting mothers. These studies support the importance of vigorous treatment for depressed mothers in specialized clinics, primary care or the community.

However, Ordway (2011) has observed that mothers with depressive symptoms more frequently report behavioral problems among their children than non-depressed mothers, calling into question the suitability of depressed mothers as informants. The author therefore suggested incorporating multiple informants, identifying the characteristics of maternal depression, and adopting advanced statistical methodology.

Studies addressing maternal and child mental health are rare in Africa due to shortage of shortage of researchers, heavy patient load, lack of funding, poor data collection and difficulty following up patients and their mothers.

CHAPTER THREE

METHODOLOGY

3.1. Study location

The study was conducted at the Child and Adolescent Clinic of the Neuropsychiatric Hospital, Aro, Abeokuta. Established in 1944, the Neuropsychiatric Hospital, Aro, Abeokuta caters to the mental health needs of residents of Ogun State and its environs. The institution is world famous and is a World Health Organisation collaborating centre for training and research in mental health. The Hospital has 500 beds and runs specialty services spanning child and adolescent psychiatry, geriatric psychiatry, forensic psychiatry, drug and addiction psychiatry, and community psychiatry.

The Child and Adolescent clinic became functional in 2007 and is run by the Child and Adolescent Unit of the Hospital which is headed by three Consultant Psychiatrists. Resident doctors rotate through the unit, with a locum consultant neurologist seeing patients at the clinic once a week. There is a full complement of twenty multidisciplinary staff comprising doctors, nurses, occupational therapists, speech and language therapists, and pharmacists, with access to social workers, psychologists and physiotherapists. Clinics are run twice a week, with an average of 25 children seen at each clinic. A brief review of the records showed that 90% of carers are mothers, and as much as 60% of children seen have epilepsy, either occurring alone or comorbidly with another disorder. Other commonly seen disorders include intellectual disability, autism spectrum disorders, attention deficit hyperactivity disorder, mood disorders, and early onset psychosis.

3.2. Study design

The study design was cross-sectional. The study involved mothers whose children were receiving specialist mental health care. The mothers provided information on their own health as well as emotional/behavioral problems in their children.

3.3. Study population

The study population comprised mothers of children receiving treatment at the Child and Adolescent Unit, Neuropsychiatric Hospital, Aro Abeokuta, Ogun State, Nigeria.

Inclusion Citeria: 1. Mothers whose children have illness of longer than 6 months' duration

2. Mothers must be primary caregivers (meaning those who are living with the child receiving treatment, are financially responsible for the care of the child, and are called upon in emergencies involving the child).

Exclusion criteria: 1. Mothers with prior lifetime history of mental illness.

2. Mothers who reported having a family history of mental illness.

3.4.Sample size calculation

This was derived from the sample size calculation for proportions:

$$n = \frac{Z^2 p(100-p)}{d^2}$$

Where Z = 1.96; p = prevalence of depression among mothers of children with psychiatric illness = 50% (Chronis-Tuscano et al, 2013). d = absolute sampling error = 10

This therefore gives

$$n = \frac{1.96^2 \times 50 \times 50}{100} = 96$$

This was rounded up to a minimum sample size of 100 participants.

3.5.Sampling technique

Mothers for recruitment into the study were selected by a systematic random technique. To achieve a total sample size of a minimum of 100 subjects, an average clinic attendance of 20 subjects per clinic day was utilized.

The sampling fraction per clinic, to obtain 10 mothers per clinic, was

$$10/20 = \frac{1}{2} = 1/k$$

Where k = 2 = sampling interval.

For every clinic day, a random start was picked by a simple ballot from the first two children presenting at the clinic. Thereafter, alternate children accompanied by the mother was picked. Those who were not accompanied by their mothers, or for whom consent was not obtained, were replaced by the next suitable mother. This process gave ten mothers to be interviewed per clinic, or twenty per week, over a period of five weeks.

3.6. Study Instruments

Five instruments were used to collect data (see Appendix 3). These were:

1. A questionnaire containing socio-demographic details of the mother and child, as well as relevant clinical details of the child such as diagnoses and duration of illness. (Appendix 3a)
2. **Patient Health Questionnaire, PHQ-9** (all mothers): this was used to make diagnosis of depression among the mothers. It is a nine-item self-administered questionnaire by Kroenke et al (2001) which has been validated for use in Nigerian populations for screening and diagnosis of depressive disorders (Adewuya et al, 2006). (Appendix 3b)
3. **Strengths and Difficulties Questionnaire, SDQ** (all children): The SDQ is a brief screening tool by Goodman et al (1997) for behavioral problems in children and adolescents. SDQ contains twenty-five item questions and five clinical sub-scales of; Emotional Symptoms, Conduct Problems, Hyperactivity, Peer Problems and Pro-social Behavior. The SDQ has been used in Nigeria by Bakare et al (2010). (Appendix 3c)
4. **Medical Outcomes Survey (Short Form), SF-12** (all mothers): this is a self-administered questionnaire (Ware et al, 1997) which assesses functional status in physical and mental domains. The 12-item version is a derivative of the longer 36 item version. The Medical Outcomes Survey has been used in Africa by Arogundade et al (2004) who reported good psychometric properties. (Appendix 3d)
5. **Children's Global Assessment Scale, CGAS** (all children) This tool by Schaffer et al (1983) provides a clinician rating of functioning in the child and adolescent population. It has been found to have good reliability and validity (Rey et al, 1995). (Appendix 3e)

3.7. Translation of Instruments: The PHQ and the SDQ are available in Yoruba version. The SF12 was back-translated into Yoruba. The Yoruba versions were required given that the population in the study location is predominantly Yoruba, and not all were fluent in English.

3.8. Ethical considerations

Ethical approval for the study from which this data was extracted was obtained from the Health Research Ethics Committee of the Neuropsychiatric Hospital, Aro Abeokuta (see Appendix 1). All mothers for recruitment into the study were required to sign a consent form after the nature, purpose and scope of the study had been explained to them. Assent was also obtained from the children as appropriate.

Confidentiality of Data: strict confidentiality was maintained with respect to handling of data. Information provided was available only to investigators. All participants were assigned serial numbers which was the only identifying feature on the questionnaire. Direct information was kept separate from the questionnaires themselves.

Beneficence to Participants: counseling was offered to mothers as required, and those found to require structured therapy were referred to the psychology unit. Medication was offered to mothers with severe symptoms.

Non-maleficence to Participants: No risks were envisaged in the conduct of the study, which is non-invasive. The questionnaires used in the study did not contain any parts that may be deemed psychologically harmful to participants. The study was incorporated into the routine clinic visit and as such did not involve additional cost or time spent.

Voluntariness: Participants were informed explicitly about the voluntary nature of the study, and that refusal to participate would not in any way compromise the quality of care received by their children. This and other ethical information was contained in the informed consent form (see Appendix 2).

3.9. Study Procedure

Participants were recruited between March and April 2015 from among mothers of children presenting at the child and adolescent clinic. On the designated clinic days, mothers to be recruited into the study were picked from the pool presenting each clinic day. They were approached on the morning of the clinic while waiting for their children to be seen. Those who provided consent were recruited. All mothers were given the pro forma, PHQ-9, SF-12 and SDQ to fill while awaiting consultation. Mothers who were unable to read or write had the questionnaire read to them by the investigator. Thereafter the child was seen for normal consultation with the mother. During consultation, the child was scored on the CGAS by the investigator. To avoid bias, the child was rated before the questionnaires filled by the mother were reviewed.

3.10. Data Management

A spreadsheet was used for initial data recording from the various instruments. The prevalence of depression and socio-demographic variables was presented using descriptive

statistical measures such as means (with standard deviations) and frequency tables. On the PHQ, a score of 5 and above (out of a total of 27) was considered as screen positive for depression, while a score of 10 and above was considered diagnostic for Major Depressive Disorder (MDD). For the SF12, Physical Component Summary (PCS) and Mental Component Summary (MCS) scores, ranging from 0 to 100, were also computed as described in the instrument manual, with prescribed cut-off points (50 and 42 for the PCS and MCS respectively). Scorers were classified as 'High' or 'Low' depending on whether they scored above or below the cut-off point. The relationship between maternal depression and functional status, and child emotional/behavioral problems, was tested using chi squares, t tests, ANOVA and correlations as appropriate. Scores for emotional/behavioral problems among the children, assessed by the SDQ, were computed as total scores and subscale scores for emotional, conduct problems, hyperactivity, peer problems and prosocial subscales. The 25 items in the SDQ are divided into these 5 subscales with 5 items each. Items in each subscale are scored (0-10) after which the scores are categorized as normal, borderline or abnormal. A total score (0-40) is also generated from four out of the five subscales (excluding the prosocial subscale). However, inferential analysis for SDQ scores was done using raw scores (quantitative variables). Tests were two-tailed, with level of significance set at $p < 0.05$. Statistical analysis was done using version 16 of SPSS.

CHAPTER FOUR

RESULTS

4.1.1 Sociodemographic Profile of the Mothers

In all, 100 mothers of 100 children were approached for the study, and all agreed to participate in the study. The mean age of the mothers was 40.4 years (SD 6.14), ranging from 27 to 55 years. Other socio-demographic characteristics of the mothers are presented in table 1. Majority of the mothers were married (85%), Yoruba (91%) and employed (95%). Among the mothers, 5 were Ibo while 4 were from other tribes (one Hausa, one Urhobo, one Edo and one Igbira).

4.1.2 Sociodemographic and Clinical Profile of the Children

The mean age of the children was 11.6 years (SD 4.1), and ranged from 4 to 17 years. The median duration of illness for the children was 5 years (interquartile range 7 years), while median duration of treatment was 1 year (interquartile range 1.5years). The age and gender distribution, educational status and diagnoses of the children are presented in Table 2. Among the children, there was a male predominance. More than 60% had a main diagnosis of seizure disorder, while 40% had a comorbid disorder in addition to the main diagnosis. With respect to the clinician rating of functioning, the median score on the CGAS was 65, with 46% scoring below the median.

Table 1. Socio-demographic profile of the mothers.

Variable	Frequency, n	%
Age		
26-35 years	28	28%
36-45 years	55	55%
46-55 years	17	17%
Marital Status		
Single	3	3%
Married	85	85%
Divorced/separated	7	7%
Widowed	5	5%
Ethnicity		
Yoruba	91	91%
Ibo	5	5%
Others	4	4%
Religion		
Christianity	65	65%
Islam	35	35%
Highest Education		
No formal	6	6%
Primary	35	35%
Secondary	43	43%
Tertiary	16	16%
Employment status		
Employed	95	95%
Unemployed	5	5%

Table 2. Sociodemographic and clinical profile of the children

Variable	Frequency, n	%
Age		
0-9 years	77	77%
10-17 years	23	23%
Gender		
Male	53	53%
Female	47	47%
Level of Education		
No formal	11	11%
Nursery/primary	53	53%
Secondary	34	34%
Vocational/Special	2	2%
Main Diagnosis		
Seizure disorder	63	63%
Intellectual disability	26	26%
Autism	3	3%
ADHD	2	2%
Psychosis	6	6%
Comorbid diagnosis		
Seizure disorder	17	42.5%
Intellectual disability	13	32.5%
ADHD	2	5%
Psychosis	6	15%
Conduct disorder	1	2.5%
Specific developmental disorder	1	2.5%

4.2. Depressive Symptoms and Major Depressive Disorder among the Mothers

Among the mothers, 41% screened positive for depressive symptoms, while 23% met the cut-off for a major depressive disorder.

4.3. Functional Status (Physical and Mental) of the Mothers

Scores on the SF 12 were computed to give a Physical Component Summary (PCS) and a Mental Component Summary (MCS). Of the mothers, 42% scored below the cut-off for the PCS while 26% scored below the cut-off for the MCS.

A significant positive correlation was found between severity of depressive symptoms (as assessed by scores on the PHQ) and the functional status of the mothers (as assessed by the SF12) in both the physical ($r = 0.700$, $p<0.001$) and mental ($r = 0.752$, $p<0.001$) components.

4.4. Emotional and Behavioural Problems Among the Children

The performance of the children on the SDQ is presented in Table 3. Overall, a quarter (25%) of the children had scores in the abnormal range. Over half were rated abnormal in the prosocial subscale, while abnormal scores in the hyperactivity and conduct problems subscales were found in 38% and 21% respectively. However, only 5% and 1% of the children respectively were rated abnormal on the peer problems and emotional subscales.

Table 3. Performance of the children on different subscales of the SDQ.

Variable	Frequency, n	%
Emotional subscale		
Normal	96	96%
Borderline	3	3%
Abnormal	1	1%
Hyperactivity subscale		
Normal	56	56%
Borderline	6	6%
Abnormal	38	38%
Peer Problems Subscale		
Normal	85	85%
Borderline	10	10%
Abnormal	5	5%
Conduct Problems Subscale		
Normal	67	67%
Borderline	12	12%
Abnormal	21	21%
Prosocial Subscale		
Normal	18	18%
Borderline	28	28%
Abnormal	54	54%
Total Score		
Normal	65	65%
Borderline	10	10%
Abnormal	25	25%

4.5. Relationship between Maternal Depressive Illness and Other Mother and Child Variables

Associations between diagnosis of Major Depressive Disorder and various maternal and child variables are shown in Tables 4and 5. Children of mothers with major depressive disorder had significantly longer duration of illness. A significantly larger proportion of non-married mothers were found to have major depressive disorder. Mothers of children with seizure disorder were significantly less likely to be depressed compared to mothers of children with intellectual disability or other disorders. Finally, children of mothers with depression had significantly lower clinician rating of functioning on the CGAS.

4.6. Relationship Between Maternal Functional Status and Other Mother and Child Variables

Tables 6 to 9 present associations between various maternal and child variables and scores on the Physical Component Summary and the Mental Component Summary respectively. Significantly more mothers with low PCS and MCS scores had children with comorbidity, while children of mothers with low PCS scores had below median scores on the CGAS.

Table 4. Relationship between mothers' diagnosis of Major Depressive Disorder (MDD) and maternal variables.

Variable	MDD	No MDD	Difference
Age of Mother			
26-35 years	4(14.3%)	24(85.7%)	$\chi^2 = 4.415$, df=2
36-45 years	12(21.8%)	43(78.2%)	p=0.110
45-55 years	7(41.2%)	10(58.8%)	
Marital Status of Mother			
Married	16(18.8%)	69(81.2%)	$\chi^2 = 5.581$, df=1
Not Married	7(46.7%)	8(53.3%)	p=0.040*
Maternal Education			
Primary/less	9(22%)	32(78%)	$\chi^2 = 0.744$, df=2
Secondary	9(20.9%)	34(79.1%)	p=0.730
Tertiary	5(31.2%)	11(68.8%)	

*P<0.05

Table 5. Relationship between mothers' diagnosis of Major Depressive Disorder (MDD) and child variables.

Variable	MDD n=23(%)	No MDD n=77(%)	Difference
Age of Child			
0-9 years	18(23.4%)	59(76.6%)	$\chi^2 = 0.027$, df=1
10-17 years	5(21.7%)	18(78.3%)	p=0.558
Duration of Illness, Mean(SD)	7.9(4.9)	5.5(4.6)	t=-2.09, p=0.039*
Child Education			
No/Special	4(30.8%)	9(69.2%)	$\chi^2 = 3.708$, df=2
Nursery/Primary	15(28.3%)	38(71.7%)	p=0.160
Secondary/more	4(11.8%)	7(63.6%)	
Main Diagnosis			
Seizure Disorder	9(14.3%)	54(85.7%)	$\chi^2 = 7.32$, df=2
Intellectual disability	10(38.5%)	16(61.5%)	p=0.020*
Other	4(36.4%)	7(63.6%)	
Comorbidity			
Present	11(27.5%)	29(72.5%)	$\chi^2 = 0.762$, df=1
Absent	12(20%)	48(80%)	p=0.469
CGAS Score			
Below Median	30(65.2%)	16(34.8%)	$\chi^2 = 6.678$, df=1
Median and Above	47(87.0%)	7(13.0%)	p=0.016*

*P<0.05

Table 6. Relationship between mothers' scores on the Physical Component Summary (PCS) of SF12 and maternal variables.

Variable	Low PCS n=42(%)	High PCS n=58(%)	Difference
Age of Mother			
26-35 years	11(39.3%)	17(60.7%)	$\chi^2 = 0.264$, df=2
36-45 years	23(41.8%)	32(58.2%)	p=0.924
45-55 years	8(47.1%)	9(52.9%)	
Marital Status of Mother			
Married	36(42.4%)	49(57.6%)	$\chi^2 = 0.029$, df=1
Not Married	6(40%)	9(60%)	p=0.865
Maternal Education			
Primary/less	15(36.6%)	26(63.4%)	$\chi^2 = 1.452$, df=2
Secondary	21(48.8%)	22(51.2%)	p=0.521
Tertiary	6(37.5%)	10(62.5%)	

Table 7. Relationship between scores on the Physical Component Summary (PCS) of SF12 and child variables.

Variable	Low PCS n=42(%)	High PCS n=58(%)	Difference
Age of Child			
4-9 years	32(41.6%)	45(58.4%)	χ^2 = 0.027, df=1
10-17 years	10(43.5%)	13(56.5%)	p=0.528
Duration of Illness, Mean(SD)	6.7(4.7)	5.6(4.7)	t=1.133, p=0.260
Child Education			
No/Special	5(38.5%)	8(61.5%)	χ^2 = 5.985, df=2
Nursery/Primary	28(52.8%)	25(47.2%)	p=0.050
Secondary/more	9(26.5%)	25(73.5%)	
Main Diagnosis			
Seizure Disorder	22(34.9%)	41(65.1%)	χ^2 = 0.762, df=1
Intellectual disability	13(50%)	13(50%)	p=0.118
Other	7(63.6%)	4(36.4%)	
Comorbidity			
Present	23(57.5%)	17(42.5%)	χ^2 = 0.762, df=1
Absent	19(31.7%)	41(68.3%)	p=0.013*
CGAS Score			
Below Median	27(58.7%)	19(41.3%)	χ^2 = 9.748, df=1
Median and Above	15(27.8%)	39(72.2%)	p=0.002*

*P<0.05

Table 8. Relationship between scores on the Mental Component Summary (MCS) of SF12 and maternal variables.

Variable	Low MCS n=26(%)	High MCS n=74(%)	Difference
Age of Mother(SD)			
26-35 years	8(28.6%)	20(71.4%)	$\chi^2 = 0.359$, df=2
36-45 years	13(23.6%)	42(76.4%)	p=0.860
45-55 years	5(29.4%)	12(70.6%)	
Marital Status of Mother			
Married	24(28.2%)	61(71.8%)	$\chi^2 = 1.472$, df=1
Not Married	2(13.3%)	13(86.7%)	p=0.342
Maternal Education			
Primary/less	6(14.6%)	35(85.4%)	$\chi^2 = 4.746$, df=2
Secondary	15(34.9%)	28(65.1%)	p=0.086
Tertiary	5(31.2%)	11(68.8%)	

Table 9. Relationship between scores on the Mental Component Summary (MCS) of SF12 and child variables.

Variable	Low MCS n=26(%)	High MCS n=74(%)	Difference
Age of Child			
4-9 years	18(23.4%)	59(76.6%)	χ^2 = 1.198, df=1
10-17 years	8(34.8%)	15(65.2%)	p=0.289
Duration of Illness, Mean(SD)	6.2(4.4)	6.1(4.9)	t=0.092, p=0.927
Child Education			
No/Special	3(23.1%)	10(76.9%)	χ^2 = 0.312, df=2
Nursery/Primary	15(28.3%)	38(71.7%)	p=0.948
Secondary/more	8(23.5%)	25(76.5%)	
Main Diagnosis			
Seizure Disorder	14(22.2%)	49(77.8%)	χ^2 = 5.242, df=2
Intellectual disability	6(23.1%)	5(45.5%)	p=0.099
Other	6(54.5%)	5(45.5%)	
Comorbidity			
Present	16(40%)	24(60%)	χ^2 = 6.791, df=1
Absent	10(16.7%)	50(83.3%)	p=0.011*
CGAS Score			
Below Median	16(34.8%)	30(65.2%)	χ^2 = 3.415, df=1
Median and Above	10(18.5%)	44(81.5%)	p=0.072

*P<0.05

4.7. Relationship Between Emotional/Behavioural Problems in the Children and Other Mother and Child Variables

Maternal age showed no correlation with the child's emotional (r=0.145, p=0.150), conduct (r=0.069, p=0.496), hyperactivity (r=0.189, p=0.060), peer problem (r=0.099, p=0.326), prosocial (r=0.116, p=0.252) and total (r=0.018, p=0.286) scores. While no correlation was found between child's age and emotional (r=0.001, p=0.990), conduct (r=0.032, p=0.749), peer problem (r=0.142, p=0.159) and prosocial (r=0.142, p= 0.158) scores, a significant correlation was found between child's age and hyperactivity (r=-0.407, p<0.001) as well as total (r=-0.240, p=0.016) scores. Similarly, a significant correlation was found between duration of child's illness and hyperactivity (r=0.279, p=0.005) and total (r=0.238, p=0.017) scores.

Tables 10 to 15 show associations between the SDQ subscale and total scores with other mother and child variables. Children of mothers with tertiary education had higher mean hyperactivity scores. Children with no formal or special education had significantly higher scores in all domains except emotional problems. Children with seizure disorder also showed significantly different mean scores in all except the emotional domain, while presence of a comorbidity was associated with significantly different total and domain scores in all except the emotional problems domain.

PHQ scores of the mothers correlated with SDQ scores in the emotional (r=0.327, p=0.001), conduct (r=0.364, p<0.001), hyperactivity (r=0.446, p<0.001), peer problems (r=0.373, p<0.001) and prosocial (r=-0.330, p=0.001) domains, as well as total scores (r=0.512, p<0.001). Maternal PCS (r=0.370, p=0.012) and MCS (r=0.321, p=0.032) scores correlated with the children's conduct problem scores. Finally, child CGAS scores correlated with SDQ scores in the emotional (r=0.334, p=0.001), conduct (r=-0.0.346, p<0.001), hyperactivity (r=-0.726, p<0.001), peer problems (r=-0.680, p<0.001) and prosocial (r=0.499, p<0.001) domains, as well as total scores (r=-0.736, p<0.001).

Table 10. Relationship between child Emotional subscale scores and mother/child variables.

Variable	Frequency, n	Mean(SD)	Difference
Mother's Marital Status			
Married	85	2.5(1.6)	t=-0.213, p=0.831
Not Married	15	2.6(1.5)	
Maternal Education			
Primary/less	41	2.3(1.4)	F=5.14, p=0.008*
Secondary	43	2.3(1.5)	
Tertiary	16	3.6(1.8)	
Child Education			
No/Special	13	3.2(1.4)	F=2.414, p=0.095
Nursery/Primary	53	2.6(1.3)	
Secondary/More	34	2.1(1.9)	
Diagnosis			
Seizure Disorder	63	2.3(1.6)	F=2.534, p=0.085
Intellectual Disability	26	3.0(1.6)	
Other	11	3.0(1.4)	
Comorbidity			
Present	40	3.1(1.5)	t=2.861, p=0.005*
Absent	60	2.2(1.5)	

*P<0.05

Table 11. Relationship between child Conduct subscale scores and mother/child variables.

Variable	Frequency, n	Mean(SD)	Difference
Mother's Marital Status			
Married	85	2.6(2.1)	t=-1.738, p=0.085
Not Married	15	3.7(2.8)	
Maternal Education			
Primary/less	41	2.9(2.3)	F=0.179, p=0.837
Secondary	43	2.9(2.2)	
Tertiary	16	2.5(2.5)	
Child Education			
No/Special	13	3.2(1.3)	F=2.078, p=0.131
Nursery/Primary	53	3.1(2.4)	
Secondary/More	34	2.2(2.2)	
Diagnosis			
Seizure Disorder	63	2.5(2.3)	F=1.778, p=0.174
Intellectual Disability	26	3.3(2.0)	
Other	11	3.5(2.5)	
Comorbidity			
Present	40	3.7(2.2)	t=3.283, p=0.001*
Absent	60	2.2(2.1)	

*P<0.05

Table 12. Relationship between child Hyperactivity subscale scores and mother/child variables.

Variable	Frequency, n	Mean(SD)	Difference
Mother's Marital Status			
Married	85	5.2(3.1)	t=-0.942, p=0.349
Not Married	15	6.1(3.6)	
Maternal Education			
Primary/less	41	5.1(3.1)	F=0.222, p=0.802
Secondary	43	5.6(3.1)	
Tertiary	16	5.4(3.8)	
Child Education			
No/Special	13	8.3(2.0)	F=39.604, p<0.001*
Nursery/Primary	53	6.5(2.7)	
Secondary/More	34	2.5(1.9)	
Diagnosis			
Seizure Disorder	63	4.1(2.7)	F=19.284, p<0.001*
Intellectual Disability	26	8.1(2.4)	
Other	11	5.8(3.6)	
Comorbidity			
Present	40	7.7(2.6)	t=7.247, p<0.001*
Absent	60	3.8(2.6)	

*P<0.05

Table 13. Relationship between child Peer Problem subscale scores and mother/child variables.

Variable	Frequency, n	Mean(SD)	Difference
Mother's Marital Status			
Married	85	2.4(2.4)	t=0.154, p=0.878
Not Married	15	2.3(2.3)	
Maternal Education			
Primary/less	41	2.1(2.1)	F=0.752, p=0.474
Secondary	43	2.7(2.5)	
Tertiary	16	2.3(2.5)	
Child Education			
No/Special	13	4.8(2.0)	F=10.898, p<0.001*
Nursery/Primary	53	2.4(2.4)	
Secondary/More	34	1.6(1.7)	
Diagnosis			
Seizure Disorder	63	1.2(1.4)	F=40.569, p<0.001*
Intellectual Disability	26	4.2(2.1)	
Other	11	5.0(2.5)	
Comorbidity			
Present	40	4.1(2.3)	t=6.857, p<0.001*
Absent	60	1.3(1.7)	

*P<0.05

Table 14. Relationship between child Prosocial subscale scores and mother/child variables.

Variable	Frequency, n	Mean(SD)	Difference
Mother's Marital Status			
Married	85	5.5(2.6)	t=0.169, p=0.866
Not Married	15	5.4(2.0)	
Maternal Education			
Primary/less	41	5.5(2.1)	F=0.307, p=0.736
Secondary	43	5.4(2.7)	
Tertiary	16	5.9(2.9)	
Child Education			
No/Special	13	3.8(1.5)	F=4.785, p=0.010*
Nursery/Primary	53	5.5(2.7)	
Secondary/More	34	6.2(2.2)	
Diagnosis			
Seizure Disorder	63	6.3(2.1)	F=12.738, p<0.001*
Intellectual Disability	26	4.7(2.3)	
Other	11	3.0(2.9)	
Comorbidity			
Present	40	4.0(2.4)	t=-5.927, p<0.001*
Absent	60	6.5(1.9)	

*P<0.05

Table 15. Relationship between child Total SDQ scores and mother/child variables.

Variable	Frequency, n	Mean(SD)	Difference
Mother's Marital Status			
Married	85	12.8(7.1)	t=-0.966, p=0.336
Not Married	15	14.7(7.2)	
Maternal Education			
Primary/less	41	12.4(7.0)	F=0.382, p=0.683
Secondary	43	13.5(7.0)	
Tertiary	16	13.9(7.8)	
Child Education			
No/Special	13	19.5(4.4)	F=18.823, p<0.001*
Nursery/Primary	53	14.5(6.8)	
Secondary/More	34	8.4(2.3)	
Diagnosis			
Seizure Disorder	63	10.1(6.0)	F=21.501, p<0.001*
Intellectual Disability	26	18.5(5.0)	
Other	11	17.4(7.9)	
Comorbidity			
Present	40	18.4(6.0)	F=7.735, p<0.001*
Absent	60	9.6(5.4)	

*P<0.05

4.8. Regression Models for Maternal Depression and Functioning

A significant association was found between maternal depression and the mothers' marital status, the main diagnosis of the child, the duration of illness of the child, and the child's level of functioning as assessed by the CGAS. To check the effect of confounding, these were entered into logistic regression with mother's age, employment status, ethnicity, as well as the child's age, gender, and presence of comorbidity as covariates. As shown in Table 16, a significant difference remained with marital status and duration of illness in the child (maternal age and age of the child contributed significantly to the two models respectively), but not with main diagnosis of the child or the child's level of functioning.

Similarly, presence of comorbidity in the child and level of functioning of the child, which showed a significant association with the mother's physical functioning, were entered into logistic regression. As shown in Table 17, these variables remained significantly associated with mother's physical health.

Finally, presence of comorbidity in the child and level of functioning of the child were found to be associated with the mental functioning, which were entered into logistic regression with other variables as covariates. Neither of these variables remained significantly associated with mother's mental functioning (Table 18).

Table 16. Logistic regression* for depressive disorder variables

Variable	p value	OR(95% CI)
Marital Status		
Not Married	0.004**	0.142(0.037-0.546)
Married		Ref
Maternal Age	0.025**	1.136(1.016-1.271)
Main Diagnosis		
Epilepsy	0.171	0.162(0.012-2.202)
Others		Ref
Duration of Illness	0.039**	1.165(1.007-1.346)
Age of Child	0.017**	0.795(0.659-0.960)
Child Level of Functioning		
Median and Above	0.054	0.334(0.109-1.019)
Below Median		Ref

* Covariates: maternal age, employment status, ethnicity, age of child, sex of child.

**p<0.05

Table 17. Logistic regression* for mothers' physical functioning

Variable	p value	OR(95% CI)
Comorbidity in Child		
Present	0.038**	0.375(0.148-0.949)
Absent		Ref
Child Level of Functioning		
Median and Above	0.016**	3.061(1.235-7.586)
Below Median		Ref

* Covariates: maternal age, employment status, ethnicity, age of child, sex of child.

**p<0.05

Table 18. Logistic regression* for mother's mental functioning

Variable	Wald	p value	OR(95% CI)
Comorbidity in Child			
Present	3.263	0.071	0.38(0.133-1.086)
Absent			Ref
Child Level of Functioning			
Median and Above	0.604	0.437	1.504(0.537-4.212)
Below Median			Ref

* Covariates: maternal age, employment status, ethnicity, age of child, sex of child.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

The study examined the relationship between depressive illness among mothers of children with neuropsychiatric disorders, and the presence of emotional and behavioural disorders among the children. In addition, the study also assessed mothers and their children for functional status. Scores for depression among mothers was found to be associated with several domains of emotional and behavioural disorders among the children. Depression was also found to be associated with the functional status of mothers and their children.

5.1. Sociodemographic and Clinical Profile of the Mothers and Children

The mothers in the study were predominantly married Yoruba women engaged in some occupation or the other – this appears to be the typical profile of caregiving mothers in Southwestern Nigeria (Babalola *et al*, 2014). A larger proportion of the children in the study were male, which is in keeping with several reports of neuropsychiatric disorders in Nigeria. Adewuya and Oseni (2005) and Babalola *et al* (2014) reported a male proportion of 58.8% and 51.1% respectively among Nigerian children with epilepsy, while Baki *et al* (2004) and Hirfanoglu *et al* (2008) reported male proportions of 57.1% and 56.8% respectively among Turkish children with epilepsy. Added to this is the general male predominance among children with neurodevelopmental disorders (Suren et al, 2012). In a culture which in spite of the influence of Western values still prioritises the male child, a neuropsychiatric disorder could be a potential source of parental stress.

With respect to the main diagnoses of the children, over 60% of the children had seizure disorder. This is a finding which was reported by Ogun *et al* (2009) at a similar facility in Lagos, Nigeria. While it could be argued that childhood epilepsy should be treated by paediatric neurologists, this subspecialty is thin on the ground, with only one paediatric neurology facility in Abeokuta and two in Lagos. The pathway to care of most of the children presenting at the child and adolescent unit of a specialist psychiatric facility often takes them through traditional and spiritual healers rather than orthodox care centres (Ogun *et al*, 2009). The preference for a dedicated facility, rather than the pediatric neurology units which are embedded in paediatric services within a busy general medical facility, is also given as a recurrent reason by mothers for this preference. In addition, many children present with neuropsychiatric disorders with epilepsy as a comorbidity. In this study, nearly a fifth of

children presented with epilepsy as a comorbid disorder. The general cultural belief that epilepsy is a disease of the brain may also be responsible for the choice of treatment facility. In recognition of the foregoing, community-based treatment approaches such as the mental health Gap Action Programme (mhGAP) have incorporated epilepsy as a priority condition.

Besides epilepsy, a quarter of the children seen had intellectual disability as their main diagnosis, while about 5% had neurodevelopmental disorders such as autism and ADHD. In addition, one in 20 of the children seen had psychosis as the main diagnosis. This is worth bearing in mind given the prevailing belief that psychosis is a rare finding among children.

About 40% of the children had a comorbid neuropsychiatric disorder in addition to their main diagnosis. Given that these were diagnoses which were arrived at following clinical assessment, without formal assessment for other diagnosis, it is possible that the proportion would be even larger. This reiterates the belief that among children with neuropsychiatric disorders, comorbidity is the rule rather than the exception.

5.2. Prevalence of Depression among Mothers

Using the PHQ, 41% of mothers screened positive for depression, while 23% met the criteria for a major depressive disorder. These figures are higher than the 18.6% prevalence among a community sample of Nigerian mothers (Abiodun *et al*, 2006), though lower than the finding of about 50% depression among caregiving mothers of children with mental health problems by Chronis-Tuscano *et al* (2006) and Babalola *et al* (2014) in the United States and Nigeria, respectively. The difference in prevalence may be explained by the fact that these other studies examined lifetime prevalence rather than current prevalence as assessed in this study. The implication of this finding is that a considerable proportion of mothers of children with neuropsychiatric disorders have to cope with depression in addition to caring for their children.

5.3. Functional Health of Mothers

Nearly half and more than a quarter respectively of the mothers in the study scored below the cut-off point on the physical component summary and the mental health component summary of the SF12. This is similar to the finding by Allik *et al* (2006) that mothers of children with autism spectrum disorder had significantly lower SF12 scores than healthy control. In addition, Kuhlthau *et al* (2010) reported that parents of children with activity limitations

exhibited poorer quality of life as indicated by lower physical health scores, while Yamada *et al* (2012) found significantly lower mental component summary scores among caregiving mothers than normative population scores. These findings provide empirical evidence for the toll that caring for a child with neuropsychiatric disorder imposes on the mother's physical and mental well-being.

Scores on the physical and mental health domains were both found to correlate with scores on the measure of depression. As similarly reported by Rosenthal *et al* (2013), poor maternal health as assessed by the SF12 was associated with increased maternal depressive symptoms. The implication of these findings for prevention and treatment include a need to develop public health interventions (including universal and selective interventions) targeted at caregiving mothers.

5.4. Emotional and Behavioural Problems among the Children

A quarter of the children who took part in the study were found to have total scores for emotional and behavioural problems in the abnormal range. This is similar to the finding by Carballo *et al* (2014), who found that using the SDQ, 28.1% of children with neuropsychiatric disorders met criteria for a dysregulation profile. In Nigeria, Bakare *et al* (2010) also reported that among children with intellectual disability, 29.5% of them had scores on the SDQ in the abnormal range. Lagunju *et al* (2010) in a study among Nigerian children with epilepsy found a prevalence of behavioural and emotional disorders among 46.6%. This study was however done with a different screening tool (the Rutter scale). Including the children with borderline scores in the present study would approximate the finding by Lagunju *et al* (2010).

While Bakare *et al* (2010) found abnormal prosocial scores in 40.9% of children studied, in this study over half had prosocial problems. More similar findings were in the subscales of hyperactivity and conduct problems: 38% and 21%, respectively of the children in this study were found to have abnormal hyperactivity and conduct problems, while Bakare *et al* (2010) reported 36.4% and 27.3%, respectively.

A convergence of these findings leads to the observation that among children with neuropsychiatric disorders, emotional and behavioural problems are quite marked, a finding also reported by Totsika *et al* (2011). However, peer problems and emotional problems were

reported by only 5% and 1%, respectively among the children. The unusually low proportion with emotional problems may reflect the fact that these are internalising symptoms which are better volunteered by the children themselves; the study however used a parent report version.

5.5. Associations with Maternal Depression

Maternal depression was found in this study to be associated with a longer mean duration of child's illness. This finding agrees with the report by Rimehaug *et al* (2011) that emotional distress in mothers was associated with increased duration of the child's illness. It is conceivable that having to cope with a challenging neuropsychiatric illness in a child wears down the mother's defences and exerts an emotional toll.

Mothers who were not currently married (single, separated, divorced or widowed) were also more likely to be depressed. According to Laxman *et al* (2013), the presence of a literate father and responsive caregiving were associated with lower levels of depressive symptoms for mothers of children with an autism spectrum disorder. These resources are however not available to non-married mothers. The finding may also be linked, as previously postulated, to the lack of a confiding relationship which could be a risk factor for depression (Brown and Harris, 1978).

A higher proportion of major depressive disorder (more than a third) was also found among mothers of children with intellectual disability, while less than 15% of mothers of children with seizure disorder had a major depressive disorder. Regression modeling revealed the likelihood of confounding in this association. Nevertheless, the finding may reflect the more severe and persistent symptomatology and the heavier demands that are associated with intellectual disability. However, several other studies have shown that the prevalence of depressive illness among mothers of children with epilepsy can be higher that the generality of mothers (Lee *et al*, 2002; Ferro and Speechley, 2009; Babalola *et al*, 2014).

Lower scores on the CGAS, indicative of poorer functioning, was also found among children of depressed mothers. This association however did not persist following regression analysis. According to Rimehaug *et al* (2011), emotional distress among mothers increased with severity of child symptoms.

5.6. Associations with Functional Health Status of Mothers

Mothers of children with comorbid neuropsychiatric conditions were found to have low scores on both the Physical Component Summary and the Mental Component Summary of the SF12. Regression analysis suggested the possibility of confounding for mental but not physical functioning. According to Bompori *et al* (2014), parents of children with epilepsy with comorbid neurodevelopmental problems fared worse on measures of functional health such as the SF12. This may be because children with more than one condition have more needs which may involve more demands on the mother, with a consequent greater impairment of her functional status.

In the same vein, lower mean scores of the children on the CGAS correlated with lower scores of the mothers on both physical and mental health, an association which persisted following regression analysis with physical but not mental functioning. The CGAS is a clinician rating of impairment in the child. According to Dada *et al* (2011), higher caregiver burden was predicted by worse functioning in the child as assessed by both the clinician and the caregiver.

5.7. Associations with Emotional and Behavioural Disorders in the Children

Mothers with higher education were found in the study to score their children worse for emotional problems. It is possible that more educated mothers are more aware of their children's emotions and better able to report on abnormalities.

Children of younger age had higher total scores for emotional and behavioural problems. According to Tanabe (2013), age at onset correlated negatively with total scores, suggesting that early onset may be a risk factor for poor scores on the SDQ. This is in keeping with another finding of the study, which was that longer duration of illness was associated with higher scores on the SDQ. These findings suggest that younger children and those who are ill for longer may present with emotional and behavioural dysregulation over several domains.

Younger children were also found to score worse on hyperactivity. Bakare *et al* (2010) reported that among 40 Nigerian children with intellectual disability, mean chronological age showed a negative correlation with mean hyperactivity that almost reached statistical significance (r=-0.28, p=0.06). Longer duration of illness was also found in this study to correlate with worse scores on hyperactivity. According to Tanabe *et al* (2013), longer

duration of autism spectrum disorder treatment was associated with externalising symptoms, and earlier onset of epilepsy predicted inattention and hyperactivity/impulsivity.

Children without formal education, or who were in special schools, were found to have higher total SDQ scores than those in nursery/primary school, which was in turn higher than those in secondary school or higher. This also held true for the domains of hyperactivity, peer problems and prosocial behaviour. It is possible that children with fewer problems are able to advance further academically.

With respect to main diagnosis, higher total SDQ scores were found among children with intellectual disability, followed by those with other disorders (psychosis and neurodevelopmental disorders), both being considerably higher than children with epilepsy. This also held true for the domain of hyperactivity. According to Alimovic (2013), hyperactivity was greater among children with intellectual disability. However, the finding is likely relative rather than absolute: Dafoulis and Kalyva (2012) reported that children with epilepsy scored higher on hyperactivity than healthy control.

Children with other disorders had more peer problems than those with intellectual disability, followed by children with seizure disorders. According to Lizuka *et al* (2010), parents of children with neurodevelopmental disorders such as autism spectrum disorder scored them higher on peer problems.

The presence of a comorbid neuropsychiatric condition was associated with higher SDQ scores. This held not only for total scores but also for all except the prosocial domain. According to Lagunju *et al* (2012), presence of comorbid learning difficulties among children with epilepsy was associated with more behavioural problems. With specific reference to hyperactivity, Alimovic (2013) reported higher scores among children with comorbid conditions. These reports suggest that comorbidity, which is a common finding among children with neuropsychiatric disorders, is associated with more emotional and behavioural dysregulation.

Closely related to the foregoing is the finding in this study that lower CGAS scores (meaning poorer functioning as rated by the clinician) among the children correlated with higher total SDQ (implying worse behavioural problem) scores as well as with higher scores in the conduct, hyperactivity and peer problem domains. According to Carballo *et al* (2014),

increased symptom severity was associated with poorer child psychosocial functioning. Curiously however, the correlation between CGAS scores and Emotional and Prosocial Problems were both positive, implying greater problems among those with better functioning. A putative explanation may be that those who function better may be better able to communicate their feelings and to interact, in consequence of which problems in these areas may be more apparent.

5.8. Maternal depression and Emotional/Behavioural Disorders in Children

Maternal depression scores on the PHQ were found to correlate positively with total SDQ scores, as well as with scores in all domains. Herring *et al* (2006) observed that child emotional and behavioural problems contributed significantly to mother stress, while Gray *et al* (2011) reported that higher scores of children on emotional and behavioural problems was associated with high rates of maternal mental health problems.

With respect to emotional problems, Rimehaug *et al* (2011) observed that maternal and child mental health problems were bidirectional. According to Boyd *et al* (2011), 20.6% of African American women with depression had internalizing (including emotional) symptoms. This may be accounted for by both genetic and environmental factors.

Maternal emotional distress has also been reported to increase with child externalising symptoms (Rimehaug *et al*, 2011), while Boyd *et al* (2011) found that 25.4% of children of mothers with depressive illness had clinical-range externalising symptoms. These agree with the finding of child hyperactivity and conduct problem scores being correlated with scores for maternal depression in this study.

Finally, peer problems and prosocial behaviour were also correlated with scores for depression. According to Huang *et al* (2014), prosocial behaviours predict the parent-child relationship. These findings suggest that children with neuropsychiatric disorders, who in addition have problems with social interaction, may constitute a source of distress for mothers who may then be vulnerable to depressive symptoms. On the whole, externalizing symptoms and problems with social interaction may be key features which characterize children with neuropsychiatric disorders whose mothers go on to develop depressive illness.

5.9. Strengths and Limitations of the Study

This study provides information linking psychopathology and functional status of mothers and their children with neuropsychiatric disorders. The study was however limited by a cross-sectional design, which makes difficult an inference of direction of causality. The question of whether maternal depressive illness precedes child psychopathology and functional impairment, or vice versa, or indeed whether the relationship is bidirectional, will require a longitudinal study design. Secondly, while the study was adequately powered, a study with a larger sample size would enable exploration of more variables in further statistical detail. Thirdly, while it was inevitable that a parental assessment be used especially for children with severe disabilities who were unable to volunteer information, future studies for instance of children with epilepsy may utilise self-report questionnaires to obtain information especially about internalising symptoms.

5.10. Conclusions

The study reported notable rates of depressive illness and functional impairment among mothers of children with neuropsychiatric disorders. Factors associated with maternal depressive illness included mother's marital status and longer duration of child's illness, while maternal functional impairment was associated with presence of comorbidity in the child and lower level of child functioning. Marked rates of emotional and behavioural disorders were also found among the children, with younger children, those with lower education, with a diagnosis of intellectual disability and a comorbid diagnosis having more psychopathology. Associations were found between maternal psychopathology and impairment and child psychopathology and functioning.

5.11. Recommendations

1. Mothers of children with neuropsychiatric disorders should be routinely screened for depressive illness and functional impairment.

2. An integrative approach leveraging maternal mental health care on platforms for caring for children with neuropsychiatric disorders should be adopted.

3. Further studies involving maternal and child interventions and integrated systems of care are required.

REFERENCES

Abiodun OA (2006). Postnatal depression in primary care populations in Nigeria. Gen Hosp Psychiatry;28:133–6.

Adewuya A.O., Oseni S.B.A.(2005) Impact of psychiatric morbidity on parent-rated quality of life in Nigerian adolescents with epilepsy. *Epilepsy and Behaviour* 7; 497-501.

Adewuya A.O., Ola B.O., Afolabi O.O. (2006) Validity of the patient health questionnaire (PHQ-9) as a screening tool for depression amongst Nigerian university students. Journal of Affective Disorders, 96: 89-93. J Affect Disord; 108: 191-3.

Alimovic S (2013) Emotional and behavioral problems in children with visual impairment, intellectual and multiple disabilities. J Intellect Disabil Res; 57(2): 153-60.

Allik H., Larsson J.O., Smedje H. (2006) Health-related quality of life in parents of school age children with Asperger Syndrome or High Functioning Autism. *Health Qual Life Outcomes*, 4; 4:1.

Arogundade F.A., Zayed B., Daba M., Barsoum R.S. (2004) Correlation between Karnofsky Performance Status Scale and Short Form Health Survey in Patients on Maintenance hemodialysis. J Natl Med Assoc; 96(12): 1661-7.

Babalola E.O., Adebowale T.O., Onifade P.O., Adelufosi A.O. (2014) Prevalence and correlates of generalized anxiety disorder and depression among caregivers of children and adolescents with seizure disorders. *Journal of Behavioral Health*, 3(2): 122-127.

Bakare M.O., Ubochi V.N., Ebigbo P.O., Orovwigho A.O. (2010) problem and prosocial behavior among Nigerian children with intellectual disability: the implication for developing policy for school-based mental health programs. Italian Journal of Pediatrics, 36: 37.

Baki O., Erdogan A., Kantarci A., Akisik G., Kayaalp L., Yalcinkaya C. (2004) Anxiety and depression in children with epilepsy and their mothers. *Epilepsy and Behaviour*, 5(6): 958-964.

Black MM, Baqui AH, Zaman K, El Arifeen S, Black RE (2009) Maternal depressive symptoms and infant growth in rural Bangladesh. Am J Clin Nutr; 89(s): 951s-7s.

Bompoi E, Niakas D, Nakou I, Samopoulou-Mavridou A, Tzoufi MS (2014) Comparative study of the health-related quality of life of children with epilepsy and their parents. Epil Behav; 41: 11-7.

Boyd RC, Gillham JE (2009) Review of interventions for parental depression from toddlerhood to adolescence. Curr Psychiatry Rev. 5(4): 226-235.

Boyd RC, Diamond GS, Ten Have TR (2011) Emotional and behavioral functioning of offspring of African American mothers with depression. Child Psychiatry Hum Dev; 42(5): 594-608.

Breaux RP, Harvey EA, Lugo-Cardelas CI (2014) The role of parent psychopathology in the development of preschool children with behavior problems. J Clin Child Adolesc Psychol; 43(5): 777-90.

Brown GW, Harris TO (1978) Social Origins of Depression. Tavistock, London.

Burt VK, Quezada V (2009) Mood disorders in women: focus on reproductive psychiatry in the 21st century – Motherisk update 2008. Can J Clin Pharmacol; 16(1): e6-e14.

Carballo JJ, Serrano-Drozdowski E, Garcia Nieto R, Diaz de Neira-Hernando M, Perez-Fominaya M, Molina-Pizarro CA, De Leon Martinez V, Baca-Garcia E (2014) Prevalence and correlates of psychopathology in children and adolescents evaluated with the Strengths and Difficulties Questionnaire dysregulation profile in a clinical setting. Psychopathology; 47(5): 303-11.

Chronis-Tuscano A., Clarke TL, O'Brien KA et al (2013). Development and preliminary evaluation of an integrated treatment targeting parenting and depressive symptoms in mothers of children with attention deficit/hyperactivity disorder. J Consult Clin Psychol, 81(5): 918-25.

Dafoulis V, Kalyva E (2012) Factors associated with behavioral problems in children with idiopathic epilepsy. Epil Res; 100(1-2): 104-12.

Dang YH, Yan CX, Chen T (2011) Epigenetic mechanisms of the influence of maternal care on offspring development. Yi Chuan; 33(9): 919-24.

Engle PL (2009) Maternal mental health: program and policy implications. Am J Clin Nutr; 89(suppl): 963s-6s.

Feinberg E., Smith MV, Morales MJ, Claussen AH, Smith DC, Perou R (2006) Improving women's health during internatal periods: developing an evidence-based approach to addressing maternal depression in pediatric settings. J Women's Health (Larchmt); 15(6): 692-703.

Ferro M.A., Speechley K.N. (2009) Depressive symptoms among mothers of children with epilepsy: a review of prevalence, associated factors, and impact on children. *Epilepsia* 50(11), 2344-2354.

Freed RD, Chan PT, Boger KD, Tompson MC (2012) Enhancing maternal depression recognition in health care settings: a review of strategies to improve detection, reduce barriers, and reach mothers in need. Fam Syst Health; 30(1): 1-18.

Gau SS, Lin YJ, Shang CY, Liu SK, Chiu YN, Soong WT (2010) Emotional/behavioral problems and functional impairment in clinic and community based children with attention deficit/hyperactivity disorder in Taiwan. J Abnorm Child Psychol; 38(4): 521-32.

Goodman R. (1997) The Strengths and Difficulties Questionnaire: a research note. Journal of Child Psychology and Psychiatry; 38: 581-586.

Gray KM, Piccinin AM, Hofer SM, Mackinnon A, Bontempo DE, Einfeld SL, Parmenter T, Tonge BJ (2011) The longitudinal relationship between behavior and emotional disturbance in young people with intellectual disability and maternal mental health. Res Dev Disabil; 32(3): 1194-1204.

Gupta S, Ford-Jones E (2014) Recognizing and responding to parental mental health needs: what can we do now? Paediatr Child Health; 19(7): 357-61.

Hanlon C. (2013) Maternal depression in low and middle income countries. Int Health; 5(1): 4-5.

Herring S, Gray K, Taffe J, Tonge B, Sweeney D, Einfield S (2006) Behaviour and emotional problems in toddlers with pervasive developmental disorders and developmental delay: associations with parental mental health and family functioning. J Intellect Disab Res; 50: 874-82.

Herrman H, Swartz L (2007). Comment: promotion of mental health in poorly resourced countries. Lancet;370:1195–7.

Hearney JA, Britner PA, Farrell AF, Robinson JL (2011) Mothers' resolution of their young children's psychiatric diagnoses: associations with child, parent, and relationship characteristics. Child Psychiatric Hum Dev; 42(3): 334-48.

Hirfanoglu T., Serdaroglu A., Cansu A., Soysal AS., Derle E, Gucuyener K (2008) Do knowledge of, perception of, and attitudes toward epilepsy affect the quality of life of Turkish children with epilepsy and their parents? *Epilepsy and Behaviour*; 14: 71-77.

Huang CY, Yen HC, Tseng MH, Tung LC, Chen YD, Chen KL (2014) Impacts of autistic behaviors, emotional and behavioural problems on parenting stress in caregivers of children with autism. J Autism Dev Disord; 44(6): 1383-90.

Jones L, Hastings RP, Totsika V, Keane L, Rhule N (2014) Child behaviour problems and parental well-being in families of children with autism: the mediating role of mindfulness and acceptance. Am j Intellect Dev Disabil; 119(2): 171-85.

Kroenke K., Spitzer R.L., Williams J.B. (2001) The PHQ-9. Validity of a brief depression severity measure. J. Gen. Intern. Med. 16, 606-13.

Kuhlthau K, Kahn R, Hill KS, Gnanasekaran S, Ettner SL (2010) The well-being of parental caregivers of children with activity limitations. Mat Child Health J; 14(2): 155-63.

Lagunju IA, Bella-Awusah TT, Takon I, Omigbodun OO (2012) Mental health problems in Nigerian children with epilepsy: associations and risk factors. Epilepsy behav; 25(2): 214-8.

Laxman DJ, McBride BA, Jeans LM, Dyer WJ, Santos RM, Kern JL et al (2014) Father involvement and maternal depressive symptoms in families of children with disabilities or delays. Matern Child Health J. PMID: 2536111.

Lee M.M.K., Lee T.M.C., Ng T.K.K., Hung A.T.F., Au A.M.L., Wong V.C.N. (2002) Psychosocial well-being of carers of people with epilepsy in Hong Kong. *Epilepsy and Behaviour* 3; 147-157.

Lee J (2013) Maternal stress, well-being, and impaired sleep in mothers of children with developmental disabilities: a literature review. Rev Dev Disabil; 34(11): 4255-73.

Lizuka C, Yamashita Y, Nagamitsu S, Yamashita T, Araki Y, Ohya T et al (2010) Comparison of the Strengths and difficulties questionnaire (SDQ) scores between children with high-functioning autism spectrum disorder (HFASD) and attention deficit/hyperactivity disorder (ADHD). Brain Dev; 32(8): 609-12.

Magana S, Smith MJ (2006) Health outcomes of midlife and older Latina and black American mothers of children with developmental disabilities. Ment Retard; 44(3): 224-34.

Maskey M, Warnell F, Parr JR, Le Couteur A, McConachie H (2013) Emotional and behavioral problems in children with autism spectrum disorder. J Autism Dev Disord; 43(4): 851-9.

Ogun OC, Owoeye AO, Dada MU, Okewole AO (2009) Factors influencing pathway to child and adolescent mental health care in Lagos, Nigeria. *Nigerian Journal of Psychiatry*, Feb; 7(1): 16-20.

Ordway MR (2011) Depressed mothers as informants on child behavior: methodological issues. Res Nurs Health; 34(6): 520-532.

Patel V, Rahman A, Jacob KS, Hughes M (2004) Effect of maternal mental health on infant growth in low income countries: new evidence from South Asia. BMJ; 328: 820-3.

Pilowsky DJ, Wickramaratne PJ, Rush AJ et al (2006) Children of currently depressed mothers: a STAR*D ancillary study. J Clin Psychiatry, 67(1): 126-36.

Pilowsky DJ, Wickramaratne P, Talati A et al (2008) Children of depressed mothers 1 year after the initiation of maternal treatment: findings from the STAR*D-Child study. Am J Psychiatry, 165(9): 1136-47.

Rahman A, Surkan PJ, Cayetano CE, Rwagatare P, Dickson KE (2013) Grand Challenges: Integrating Maternal Mental Health into Maternal and Child Health Programmes. PLoS Med 10(5): e1001442. doi:10.1371/journal.pmed.1001442.

Rey JM, Starling J, Wever C, Dossetor DR., Plapp JM.(1995) Inter-rater reliability of global assessment of functioning in a clinical setting. *Journal of Child Psychology and Psychiatry*, 36:787–795.

Rimehaug T, Berg-Nielsen TS, Wallander J (2011) Change in self-reported emotional distress and parenting among parents referred to inpatient child psychiatric family treatment. Nord J Psychiatry; 64: 1-8.

Rosenthal DG, Learned N, Liu YH, Weitzman M (2013) Characteristics of mothers with depressive symptoms outside the postpartum period. Mat Child Health Journal; 17(6): 1030-7.

Schaffer D., Gould M.S., Brasic J., Ambrosini P., Fisher P., Bird H., Aluwahlia H.(1983) A children's global assessment scale (CGAS). *Archives of General Psychiatry*, 40, 1228-1231.

Seltzer MM, Abbeduto L, Greenberg JS, Almeida J, Hong J, Witt W (2009) Biomarkers in the study of families of individuals with developmental disabilities. Int Rev Res Ment Retard; 37: 213-249.

Surkan PJ, Ryan LM, Carvalho Vieira LM, Berkman LF, Peterson KE.(2007) Maternal social and psychological conditions and physical growth in low-income children in Piauı´, Northeast Brazil. Soc Sci Med;64:375–88.

Surkan PJ, Ettinger AK, Hock RS, Ahmed S, Strobino DM, Minkowitz CS (2014) Early maternal depressive symptoms and child trajectories: a longitudinal analysis of a nationally representative US birth cohort. BMC Paediatrics; 14: 185.

Suren P, Bakken IJ, Aase H, Chin R, Gunnes N, Lie KK et al (2012) Autism spectrum disorder, ADHD, epilepsy and cerebral palsy in Norwegian children. Paediatrics; 130: e152-e158.

Tanabe T, Kashiwagi M, Shimakawa S, Fukui M, Kadobayashi K, Azumakawa K, Tamai H, Wakamiya E (2013) Behavioural assessment of Japanese children with epilepsy using SDQ (Strengths and Difficulties Questionnaire). Brain Dev; 35(1): 81-6.

Toney SD (2007) Identifying and managing depression in women. J Manag Care Pharm; 13(9)(suppls-a): s16-s22.

Totsika V, Hastings RP, Emerson E, Berridge DM, Lancaster GA (2011a) Behavior problems at 5 years of age and maternal mental health in autism and intellectual disability. J Abnorm Child Psychol; 39(8): 1137-47.

Totsika V, Hastings RP, Emerson E, Lancaster GA, Berridge DM (2011) A population-based investigation of behavioural and emotional problems and maternal mental health: associations with autism spectrum disorders and intellectual disability. J Child Psychol Psychiatry; 52(1): 91-9.

Tsai FJ, Liu ST, Lee CM, Lee WT, Fan PC, Lin WS, Chiu YN, Gau SS (2013) ADHD-related symptoms, emotional/behavioural problems, and physical conditions in Taiwanese children with epilepsy. J Formos Med Assoc; 112(7): 396-405.

Wan MW, Green J (2009) The impact of maternal psychopathology on child-mother attachment. Arch Women Ment Health; 12(3): 123-34.

Ware JE, Jr. , Snow KK, Kosinski M, Gandek B (1997) SF-36 Health Survey Manual and Interpretation Guide. Boston, MA, The Health Institute, New England Medical Center.

Weissman MM, Pilowsky DJ, Wickramaratne PJ et al (2006) Remissions in maternal depression and child psychopathology: a STAR*D-child report. JAMA, 295(12): 1389-98.

Wickramaratne P, Gameroff MJ, Pilowsky DJ et al (2011) Children of depressed mothers after remission of maternal depression: findings from the STAR*D-Child study. Am J Psychiatry, 168(6): 593-602.

Woodman AC, Hauser-Cram P (2013) The role of coping strategies in predicting change in parenting efficacy and depressive symptoms among mothers of adolescents with developmental disabilities. J Intell Disabil Res; 57(6): 513-30.

World Health Organisation (2008) Maternal mental health and child health and development in low and middle income countries : report of the meeting held in Geneva, Switzerland, 30 January - 1 February, 2008.

Yamada A, Kato M, Suzuki M, Watanabe N, Akechi T, Furukawa TA (2012) Quality of life of parents raising children with pervasive developmental disorders. BMC Psychiatry; 12: 119.

APPENDIX 1. ETHICAL APPROVAL

APPENDIX 2. CONSENT FORM

INFORMED CONSENT FORM

IRB Research Approval Number: PR004/15

This approval will elapse on: 19th April 2016

Title of the research: OPEN-LABEL TRIAL OF INTERPERSONAL COUNSELLING AMONG DEPRESSED MOTHERS OF CHILDREN ATTENDING A SPECIALIST MENTAL HEALTH FACILITY IN ABEOKUTA, NIGERIA (SUBTITLE: MATERNAL DEPRESSION AND CHILD PSYCHOPATHOLOGY AMONG ATTENDEES AT A SPECIALIST MENTAL HEALTH FACILITY IN ABEOKUTA, NIGERIA)

Name and affiliation of researcher: This study is being conducted by Dr A.O. Okewole of the Neuropsychiatric Hospital, Aro Abeokuta.

Sponsor: Self

Purpose of research: to investigate the welfare of mothers and their children.

Procedure of the research: Mothers who consent to participate will be given questionnaires to fill covering socio-demographic information, depressive disorders, and functional status for them and their children.

Expected duration of research and participants' involvement: 6 months (January – June 2015)

Risks: No risks are envisaged in the conduct of the study, which is non-invasive and limited to collection of verbal and written information.

Costs to the participants, if any, of joining the research: The only cost to participants will be the time spent responding to the study questionnaire.

Benefits: Mothers who take part in the study will be receiving an evidence-based psychological assessment at no additional cost.

Due inducements: No inducements will be offered to participants.

Confidentiality: strict confidentiality will be maintained with respect to handling of data. Information provided will be available only to investigators.

Voluntariness/alternatives to participation: The study is voluntary and a refusal to participate will not affect the care of the child in any way.

Consequences of participants' decision to withdraw from research and procedure for orderly termination of participation: Withdrawal from participation is the recognized right of the participant. Each withdrawing participant will be kindly requested to state this on the earlier signed consent form, briefly stating reason for withdrawal.

What happens to research participants and communities when the research is over: mothers requiring further attention will be duly informed and this will be facilitated.

Any apparent or potential conflict of interest: No conflict of interest is envisaged.

Statement of person obtaining informed consent:

I have fully explained this research to

……

And have given sufficient information, including risks and benefits, to make an informed decision.

DATE:

SIGNATURE:

NAME:

Statement of person giving consent:

I have read the description of the research or have had it translated into language I understand. I have also talked it over with the doctor to my satisfaction. I understand that my participation is voluntary. I know enough about the purpose, methods, risks and benefits of the research study to judge that I want to take part in it. I understand that I may freely stop being part of this study at any time. I have received a copy of this consent form and additional information sheet to keep for myself.

DATE:

SIGNATURE:

NAME:

WITNESS' SIGNATURE:

WITNESS'NAME:

This research has been approved by the Ethics Committee of the Neuropsychiatric Hospital, Aro and the Chairman of this Committee can be contacted at DRT's Office, Postgraduate Building, Neuropsychiatric Hospital, Aro.

Email: hrec@neuroaro.com

In addition, if you have any question about your participation in this research, you can contact the Principal Investigator:

Name: Dr A.O. Okewole

Department: Clinical Services, Neuropsychiatric Hospital Aro

Phone: 08065199190

Email: niranokewole@yahoo.com

PLEASE KEEP A COPY OF THE SIGNED INFORMED CONSENT.

APPENDIX 3. STUDY INSTRUMENTS

APPENDIX 3A. SOCIO-DEMOGRAPHIC QUESTIONNAIRE

Hello, my name is Dr Okewole, I am a Consultant Psychiatrist at the Child and Adolescent Unit of Neuropsychiatric Hospital Aro. I am doing a study on the welfare of mothers of children with mental health problems. The information provided will be kept confidential.

Thank you for your co-operation.

Please tick (√) where appropriate in the boxes provided.

SOCIODEMOGRAPHIC DATA

1. Serial Number ……..

SECTION A: CAREGIVER INFORMATION

2. Age (in yrs) .....

3. Sex i) male ( ) ii) female ( )

4. Marital status i) Single (never married)( ) ii) Married ( )

iii) Divorced/separated ( ) iv) Widowed ( )

5. Tribe i) Yoruba ( ) ii) Ibo ( ) iii) Hausa ( )

iv) Others ( ) specify……

6. Religion i) Christianity: Orthodox ( ) Pentecostal ( )

ii) Islam ( ) iii) Traditional religion ( ) iv) Others ( ) specify ……

7.Educational Status

i) No formal/ Primary uncompleted ( ) ii) Primary completed ( )

iii) Secondary uncompleted ( ) iv) Secondary completed ( )

v) Tertiary uncompleted ( ) vi) Tertiary completed ( )

vii) Other (specify) .....

8. Employment status

i)Employed( ) ii) Unemployed ( )

9. Occupation/previous occupation (if retired)

Occupations of mothers based on the international standard classification of occupations. ISCO-88. Last updated December 2007.

1. Managers
2. Professionals
3. Technicians and associate professionals
4. Clerical support workers
5. Service and sales workers
6. Skilled agricultural, forestry and fishery workers
7. Craft and related trade workers
8. Plant and machine operators, and assemblers
9. Elementary occupations
0. Armed forces occupations

10. Past history of mental illness

Yes ( ) No ( )

11. If yes, specify .....

SECTION B: PATIENT INFORMATION

12.Age of patient (in yrs) .....

13. Sex of patient Male ( ) Female ( )

14. Highest educational level i) No formal ( ) ii)Nursery/primary ( ) iii) Secondary ( )

iv) Post-Secondary v) Vocational ( ) vi) Special ( )

15. Duration of illness (Yrs/mths/wks) ...../...../ .....

16. Length of time in treatment (Yrs/mths/wks) ...../...../ .....

17. Main diagnosis……

18. Comorbid diagnosis……

SOCIO-DEMOGRAPHIC QUESTIONNAIRE (Yoruba)

E ku dede iwo yi. Oruko mi ni Dokita Okewole, lati eka itoju awon omode ti ile iwosan Aro. Mo n se iwadi nipa ona titun ti a fi le gba awon iya ti omo won ni arun opolo ni iyanju. Gbogbo idahun yi yoo je afi pamo. E se pupo fun ifowo sowopo yin.

Jowo fi amin (√) si ibi ti o ye ni awon apo ti a pese.

SOCIODEMOGRAPHIC DATA

1. Serial Number ……..

SECTION A: CAREGIVER INFORMATION

2. Ọmọ ọdun melo ni yin? .....

3. Ṣe ọkunrin tabi obinrin? (i) Ọkunrin ( ) (ii) Obinrin ( )

4. Bawo ni e se je pelu baba omo yin? i) E ko fe ara yin ri ( )
ii) T'oko t'aya ni yin ( ) iii) E ti ko ara yin sile/e ko jo gbe mo ( )
iv) Opo ni yin ( )

5. Eya won i yin? i) Yoruba ( ) ii) Ibo ( ) iii) Hausa ( )

iv) Omiran ( ) se apejuwe……

6. Esin won i yin? i) Igbagbo ( ) ii) Imale ( ) iii) Ibile ( )

7.Ibo ni e ka iwe de?

i) E o ka rara/ e ko ka Ile-Iwe Alakọbẹrẹ pari ( ) ii) Ile-Iwe Alakọbẹrẹ ( )

iii) E ko ka Ile iwe girama pari ( ) iv) Ile iwe girama ( )

v) Ile-iwe agba/Yunifasiti ( )

8. Nje e n se ise bi?

i) Bẹẹni ( ) ii) Bẹẹkọ ( )

9. Iru ise won ni e n se?.....

9. Occupation/previous occupation (if retired)

Occupations of mothers based on the international standard classification of occupations. ISCO-88. Last updated December 2007.

10. Managers
11. Professionals
12. Technicians and associate professionals
13. Clerical support workers
14. Service and sales workers
15. Skilled agricultural, forestry and fishery workers

16. Craft and related trade workers
17. Plant and machine operators, and assemblers
18. Elementary occupations
1. Armed forces occupations

10. Nje e tin i abi a ti toju yin fun arun opolo ri?

Bẹẹni ( ) Beeko ( )

11. Ti o ba ri bee, iru ewo? .....

SECTION B: PATIENT INFORMATION

12.Omo yin to odun melo? .....

13. Ṣe ọkunrin ni tabi obinrin? (i) Ọkunrin ( ) (b) Obinrin ( )

14. Ibo ni omo yin ka iwe de? i) Ko kawe rara ( ) ii) Ile-Iwe Alakọbẹrẹ ( )
iii) Ile iwe girama ( ) iv) Ile-iwe agba/ Yunifasiti ( ) v) Ile iwe ekose ( )
vi) Ile iwe awon omo akanda ( )

15. Ati igba wo ni aisan omo yin ti bere? (Yrs/mths/wks) ...../...../ .....

16. Ati igba won i omo yin ti n gba itoju? (Yrs/mths/wks) ...../...../ .....

17. Main diagnosis……

18. Comorbid diagnosis……

PATIENT HEALTH QUESTIONNAIRE (PHQ-9)

NAME:_____ **DATE:**_____

Over the last 2 *weeks,* how often have you been bothered by any of the following problems?
(use "✓" to indicate your answer)

	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or the opposite—being so figety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead, or of hurting yourself	0	1	2	3
		add columns	+	+
		TOTAL:		

(Healthcare professional: For interpretation of TOTAL, please refer to accompanying scoring card).

10. If you checked off *any problems,* how *difficult* have these problems made it for you to do your work, take care of things at home, or get along with other people?

- Not difficult at all _____
- Somewhat difficult _____
- Very difficult _____
- Extremely difficult _____

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PHQ-9 Patient Depression Questionnaire

For initial diagnosis:

1. Patient completes PHQ-9 Quick Depression Assessment.
2. If there are at least 4 ✓s in the shaded section (including Questions #1 and #2), consider a depressive disorder. Add score to determine severity.

Consider Major Depressive Disorder

- if there are at least 5 ✓s in the shaded section (one of which corresponds to Question #1 or #2)

Consider Other Depressive Disorder

- if there are 2-4 ✓s in the shaded section (one of which corresponds to Question #1 or #2)

Note: Since the questionnaire relies on patient self-report, all responses should be verified by the clinician, and a definitive diagnosis is made on clinical grounds taking into account how well the patient understood the questionnaire, as well as other relevant information from the patient.
Diagnoses of Major Depressive Disorder or Other Depressive Disorder also require impairment of social, occupational, or other important areas of functioning (Question #10) and ruling out normal bereavement, a history of a Manic Episode (Bipolar Disorder), and a physical disorder, medication, or other drug as the biological cause of the depressive symptoms.

To monitor severity over time for newly diagnosed patients or patients in current treatment for depression:

1. Patients may complete questionnaires at baseline and at regular intervals (eg, every 2 weeks) at home and bring them in at their next appointment for scoring or they may complete the questionnaire during each scheduled appointment.
2. Add up ✓s by column. For every ✓: Several days = 1 More than half the days = 2 Nearly every day = 3
3. Add together column scores to get a TOTAL score.
4. Refer to the accompanying **PHQ-9 Scoring Box** to interpret the TOTAL score.
5. Results may be included in patient files to assist you in setting up a treatment goal, determining degree of response, as well as guiding treatment intervention.

Scoring: add up all checked boxes on PHQ-9

For every ✓ Not at all = 0; Several days = 1;
More than half the days = 2; Nearly every day = 3

Interpretation of Total Score

Total Score	Depression Severity
1-4	Minimal depression
5-9	Mild depression
10-14	Moderate depression
15-19	Moderately severe depression
20-27	Severe depression

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Ìwé-ìbéèrè Ẹni tì ó n gba ìtọ́jú ní'lé ìwòsàn (**PHQ-9**)

Orúkọ / Nọ́mbà Ìgbaniwọ́le _____ Ọjọ́ _____

Láàrin ọ̀sẹ̀ mẹ̀jì tí o kọja, báwo ni ose
ti n ko jú ọ̀kankan nínú àwọn ìsòrò wọ̀nyí si?
(Fi dáhùn ìbéèrè rẹ)

		Rárá	Aimọye ọjọ́	ọ̀pọ̀lọ̀pọ̀ ìgbà láarin ọjọ́	Ofe e jẹ ojojúmó
1.	Àìnífẹ̀ sí láti ṣe ohun kóhun	0	1	2	3
2.	Ìrẹ̀wẹ̀sì ọkàn tàbí àìní rétí	0	1	2	3
3.	Àìrí oorun sùn tàbí oorun àsùnjù	0	1	2	3
4.	Àìní okun tabi níní okun díẹ̀	0	1	2	3
5.	Kí óunje má wu ènìyàn jẹ tabi óunjẹ àjẹjù	0	1	2	3
6.	Ríro èrò tí kò dára nípa ara eni - tabi èrò wipe ènìyàn ti kùnà tabí o ti ja awọn mọ̀lébí re ku lè	0	1	2	3
7.	À ì lè pa ọkan pọ lori àwọn nkan bìì kíka ìwé ìròyìn tàbí wíwo èro amóhùn m'àwọ̀rán				
8.	Rínrìn tàbí sí sọ̀rọ̀ díẹ̀díẹ̀ dé bí wípe ó hàn sí àwọn ènìyàn. Tabì ni ìdàkeji - kí ara énìyan má ba lè débi wípé o ti n rin káà kiriri ju bí o ti ye lọ.	0	1	2	3
9.	Àwọn èrò wípé kì bá dára kí o kú tàbi se ara re ní ìjanbá ní àwọn ọ̀nà kan.	0	1	2	3

Se àropọ̀ [ ] + [ ] + [ ]

Àpapọ [ ]

10.	Tí o ba ni ìkankan nínú àwọn ìsoro wọnyi, báwo ni àwọn ìsọ̀rọ̀ wọ̀nyi se n mú kí o nira fún ọ sí láti se isé re, mú ójú tó ilé rẹ tàbí latí ni ìbásèpọ́ tí o dán mọ́rán pẹlu àwọn énìyán míràn?	Kò nira rárá _____ ó nira díẹ̀ _____ Ónira gan _____ Oniragidi gidi _____

Ìwé ìbéèrè ẹni tí n gba itọjù ni'le ìwòsàn

Orúkọ ẹnití n gba ìtójú ni ilé - ìwòsàn _____ Ọjọ́ ìbí _____/____/_____ Ọjọ́ _____

Orúkọ dọ́kítà tí o se isẹ́ abẹ _____ Ọjọ́ _____

Àsìko Àyẹ̀wò: _____ Kí a to se isẹ́ abẹ (1) _____ Ọlọ́dún mẹ́ta (4)
_____ Ní kété lẹ́hìn isẹ́ abẹ (2) _____ Ọlọ́dún Máàrún (5)
_____ Ọlọ́dún kan (3) _____ Òmíràn (kọ ọ́ síbẹ̀) (6)

Àlàyé yíi yí ó ran àwọn dọ́kítà re lọ́wọ́ láti sé àkọsílẹ̀ ohun tí on se ọ ati bí o se lè se àwọn ise re àtẹ̀yìnwá sí. Dáhùn gbogbo aìbéèrè nípa fífi àmì sí orí ìlà tí ó wà níwàjú ìdáhùn rẹ. Kíí se fun arthritis ní pàtó. Tí o kò ba mọ bi o o se dáhùn ìbeèrè kan, jọwọ́ dáhùn re, bi o se ye ọ sí kí o sí se àlàyé sí ẹgbẹ́ ìdáhùn rẹ.

1. Ìn àkótán ǹjẹ́ o le sọ pé ìlera re:
   _____ dángájiá (1)
   _____ dára púpò (2)
   _____ dára (3)
   _____ dara díẹ̀ (4)
   _____ kò dára (5)

   Àwọn ìbéèrè méjì tí ó kàn wọ̀nyí lè ní í se pẹ̀lú àwọn ohún tí o ma n se lojojúmọ́. ǸJẸ́ ILERA RẸ DÈNA RẸ̀ LATI SE WỌ́N NÍSINSÌYÍ tí ó bá jẹ́ bẹ̀ẹ̀, báwo ni ìdènà náà se pọ̀ tó?

2. ÀWỌN ISẸ́ NÍWỌ̀NBÁ, bíi sísún tábìlì, títi ẹ̀rọ tí a fi n nu ilé tabí síse eré ìdárayá:
   _____ Bẹ́ẹ̀ni, ó dènà re púpọ̀ (1)
   _____ Bẹ́ẹ̀ni, ó dènà rẹ̀ díẹ̀ (2)
   _____ Rárá, kò dènà rẹ̀ rárá (3)

3. Òkè gígùn
   _____ Bẹ́ẹ̀ni, ó dènà re púpọ̀ (1)
   _____ Bẹ́ẹ̀ni, ó dènà rẹ̀ díẹ̀ (2)
   _____ Rárá, kò dènà rẹ̀ rárá (3)

   Láàrin ọ̀sẹ̀ mẹ́rin tí ó kọjá, ǹjẹ́ o tí ní ìkankan nínú àwọn ìsòrò wònyi pẹlu isé re tàbí awọn nkan mìíràn látàrìí ìlera rẹ?

4. OKÒ LE SE TÓ BÍ Ó SÉ WÙ Ọ́:
   _____ Bẹ́ẹ̀ni (1)
   _____ Bẹ́ẹ̀kọ́ (2)

Orúkọ ẹnití n gba ìtọ́jú ni ilé - ìwòsàn _____ Ọjọ́ ìbí _____/____/_____ Ọjọ́ _____

Orúkọ dọ́kítà tí o se isẹ́ abẹ _____ Ọjọ́ _____

Àsìkò Àyẹ̀wò:

_____ Kí a to se isẹ́ abẹ (1)
_____ Ní kété lẹ́hìn isẹ́ abẹ (2)
_____ Ọlọ́dún kan (3)
_____ Ọlọ́dún mẹta (4)
_____ Ọlọ́dún Máàrún (5)
_____ Òmíràn (kọ ọ́ síbẹ̀) (6)

---

5. O kò rí àwọn isé kan se tábí àwọn nkan mìíràn

_____ Bẹ́ẹ̀ni (1)
_____ Bẹ́ẹ̀kọ́ (2)

Láàrin ọ̀sẹ̀ mẹ́rin tí o kọjá, ǹjẹ́ àwọn isé kan wa tí o kò le e se látàrí ogbé ọkan kan tàbí òmíràn (bíi ìrẹ̀wẹ̀sì ọkan tabi ìpòruru ọkàn)

6. O KÒ LE SE TÓ bí ó se wù ọ́:

_____ Bẹ́ẹ̀ni (1)
_____ Bẹ́ẹ̀kọ́ (2)

7. O kò se isé re tàbí àwọn ǹkan míràn pẹ̀lú ÌFARABALẸ́ bíi ti àtẹ̀yìnwá:

_____ Bẹ́ẹ̀ni (1)
_____ Bẹ́ẹ̀kọ́ (2)

8. Láàrin ỌSẸ̀ MÉRIN TÍ O KỌJÁ, bawó ní ÌRORA se se àkóbá fun isé re àtẹ̀yìnwá si? (Isé tí ò nse ní ilé atì àwọn mìràn tí o n se nita)

_____ Rara (1)
_____ Díẹ̀ (2)
_____ Ìwònba ránpé (3)
_____ Ìwọ̀nba díẹ̀ (4)
_____ púpọ̀ gan

Àwọn ìbéèrè méta tí ó kàn yìí dá lé lórí èrò re ati bi nkan se rí LÁÀRIN ỌSÈ MẸ́RIN tí o kọjá. Fun ìbéèrè kòòkan jọ̀wọ́ dáhùn ní ọna tí o sún mó èrò re jùlọ. Ìwòn àsìkò ìgbà méló láàrin ỌSÈ MẸ́Ẹ̀IN?

9. Ǹjẹ́ o ti ní ìfọ̀kànbalẹ̀?

_____ Ní gbogbo ìgbà (1)
_____ Ní Ọ̀pọ̀lọpọ̀ ìgbà (2)
_____ Ní ìgbà tí ó pọ̀ díẹ̀ (3)
_____ Ní Àwọn ìgbà díẹ̀ (4)
_____ Ní àwọn ìgbà péréte (5)
_____ Kò sí rárá (6)

Orúkọ dọ́kítà tí o se isẹ́ abẹ _____ Ọjọ́ _____

Orúkọ ẹnití n gba ìtọ́jú ni ilé - ìwòsàn _____ Ọjọ́ ìbí _____/____/_____ Ọjọ́ _____

Orúkọ dọ́kítà tí o se isẹ́ abẹ _____ Ọjọ́ _____

Àsìko Àyèwò: _____ Kí a to se isẹ́ abẹ (1) _____ Ọlọ́dún mẹ́ta (4)
_____ Ní kété lẹ́hìn isẹ́ abẹ (2) _____ Ọlọ́dún Máàrún (5)
_____ Ọlọ́dún kan (3) _____ Òmíràn (kọ ọ́ síbẹ̀) (6)

---

10. Ǹjẹ́ o ní okun púpò?
_____ Ní gbogbo ìgbà (1)
_____ Ní Ọ̀pọ̀lọpọ̀ ìgbà (2)
_____ Ní ìgbà tí ó pọ̀ díẹ̀ (3)
_____ Ní Àwọn ìgbà díẹ̀ (4)
_____ Ní àwọn ìgbà péréte (5)
_____ Kò sí rárá (6)

11. Ǹjẹ́ o ní ti ní?
_____ Ní gbogbo ìgbà (1)
_____ Ní Ọ̀pọ̀lọpọ̀ ìgbà (2)
_____ Ní ìgbà tí ó pọ̀ díẹ̀ (3)
_____ Ní Àwọn ìgbà díẹ̀ (4)
_____ Ní àwọn ìgbà péréte (5)
_____ Kò sí rárá (6)

12. Láàrin ỌSẸ̀ MÉRIN TÍ Ó KỌJÁ, ìwọ̀n ìgbà méló ni àwọn ìsòrò ÌLERA TÀBÍ ỌGBẸ́ ỌKÀN rẹ ti se àkóbá fun àwọn ohun tí o jẹ mọ́ ìbá se pọ̀ re pẹ̀lú àwọn ènìyàn míran (bíi bíbe àwọn ọ̀rẹ́ àti mọ̀lébí wo, abbl)
_____ Ní gbogbo ìgbà (1)
_____ Ní Ọ̀pọ̀lọpọ̀ ìgbà (2)
_____ Ní àwọn ìgbà tí ó pọ̀ díẹ̀ (3)
_____ Ní Àwọn ìgbà díẹ̀ (4)
_____ Ní àwọn ìgbà péréte (5)
_____ Kò sí rárá (6)

Orúkọ dọ́kítà tí o se isẹ́ abẹ _____ Ọjọ́ _____

Strengths and Difficulties Questionnaire

P 4-16

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months.

Child's Name ..... Male/Female

Date of Birth.....

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	☐	☐	☐
Restless, overactive, cannot stay still for long	☐	☐	☐
Often complains of headaches, stomach-aches or sickness	☐	☐	☐
Shares readily with other children (treats, toys, pencils etc.)	☐	☐	☐
Often has temper tantrums or hot tempers	☐	☐	☐
Rather solitary, tends to play alone	☐	☐	☐
Generally obedient, usually does what adults request	☐	☐	☐
Many worries, often seems worried	☐	☐	☐
Helpful if someone is hurt, upset or feeling ill	☐	☐	☐
Constantly fidgeting or squirming	☐	☐	☐
Has at least one good friend	☐	☐	☐
Often fights with other children or bullies them	☐	☐	☐
Often unhappy, down-hearted or tearful	☐	☐	☐
Generally liked by other children	☐	☐	☐
Easily distracted, concentration wanders	☐	☐	☐
Nervous or clingy in new situations, easily loses confidence	☐	☐	☐
Kind to younger children	☐	☐	☐
Often lies or cheats	☐	☐	☐
Picked on or bullied by other children	☐	☐	☐
Often volunteers to help others (parents, teachers, other children)	☐	☐	☐
Thinks things out before acting	☐	☐	☐
Steals from home, school or elsewhere	☐	☐	☐
Gets on better with adults than with other children	☐	☐	☐
Many fears, easily scared	☐	☐	☐
Sees tasks through to the end, good attention span	☐	☐	☐

Do you have any other comments or concerns?

Please turn over - there are a few more questions on the other side

Overall, do you think that your child has difficulties in one or more of the following areas: emotions, concentration, behaviour or being able to get on with other people?

No	Yes-minor difficulties	Yes-definite difficulties	Yes-severe difficulties
☐	☐	☐	☐

If you have answered "Yes", please answer the following questions about these difficulties:

- How long have these difficulties been present?

Less than a month	1-5 months	6-12 months	Over a year
☐	☐	☐	☐

- Do the difficulties upset or distress your child?

Not at all	Only a little	Quite a lot	A great deal
☐	☐	☐	☐

- Do the difficulties interfere with your child's everyday life in the following areas?

	Not at all	Only a little	Quite a lot	A great deal
HOME LIFE	☐	☐	☐	☐
FRIENDSHIPS	☐	☐	☐	☐
CLASSROOM LEARNING	☐	☐	☐	☐
LEISURE ACTIVITIES	☐	☐	☐	☐

- Do the difficulties put a burden on you or the family as a whole?

Not at all	Only a little	Quite a lot	A great deal
☐	☐	☐	☐

Signature ..... Date .....

Mother/Father/Other (please specify:)

Thank you very much for your help

Ìwé ìfòrò-wàní-lénù-wò nípá Agbára àtì ísòro ẹnì (SDQ-YOR) OB 4-16

Fún ìbéèrè kòòkan jòwó fagi sí eyíkéyìí nínú àwọn àpótí fùn ìdáhùn "Kìíse òótó", "Òótó níwọnba", "Dájú-dájú òótó ni". Yoo ràn wá lówó tí ó bá lè dáhùn gbogbo àwọn ìbéèrè wònyí dáradára kòdà bí ó tì lè jé wí pé kò da ọ lójú tàbí ìbéèrè náà kò yé ọ. Jòwó fún wa ní ìdáhùn nípa gbìgbà ìhùwàsí ọmọ yín làárín osù méfà séhin tàbí nínú odun ìkeekò tí ó wà yìí.

Orúkó ọmọ .....

Ọjó ìbí .....

	Kìíse òótó	Òótó níwọnba	Dájú-dájú òótó ni
Ó máa n gba ìmòlárá èlòmíran rò	☐	☐	☐
Ó máa n ṣaìfára-balè, ara líle jù, ko lè duró lójú kan fún ìgbà pípé	☐	☐	☐
Ó máa n ṣàròyé nipá ori-fifó, inú rirùn tàbí éébi lópò ìgbà	☐	☐	☐
Ó gbárádi látí se àjopín ñnkan pèlú àwọn ọmọ mìíràn (ñnkan bii ñnkan ìseré, pénsùrù, ìpápánu)	☐	☐	☐
Ó máa n ní ìrunú tàbí inúfùfù lópò ìgbà	☐	☐	☐
Ó máa n dá wà ó sí n sáàbà dá seré	☐	☐	☐
Lápapò ó jé ọmọ ti ó ní igbòràn, ó si máa n sáábà se óhún tí àgbalàgba bá ran ọ	☐	☐	☐
Opo àníyàn: bi ẹnì tí ó ní àníyàn lópò ìgbà	☐	☐	☐
Ó máa n se ìrànlówó ti ẹnì kan báa sese, daamú tàbí ní àìléra	☐	☐	☐
Ó máa n mi ara nígbà gbogbo, bi ó tile jé wí pé ó wà ní ìjokòó (bii ki ó máa ju ese, ki ó máa mi owó àti kí ó máa yí ara síhìn-ín sóhùn-ùn)	☐	☐	☐
Ó ní o kéré tan òré tímótímó kan	☐	☐	☐
Ó máa n bá àwọn ọmọ yòókú jà tàbí móómò fìyà jé wón lópò ìgbà	☐	☐	☐
Ó máa n ni àidùnnú, ìrèwèsì-okàn tàbí kí omijé lé sójú rè lópò ìgbà	☐	☐	☐
Lákòópó gbogbo àwọn ọmọ yòóku ló féràn rè	☐	☐	☐
Okàn rè máa n tètè kúrò nínú nkàn tí ó bá n se ó sí sòro fun látì fi okàn sí ñnkan	☐	☐	☐
Ó máa n ní ibèrù-bòjò tàbí kí ó má so mó àwọn ti ó bá mò nìkàn nigbà tí ó bá wà ní agbègbè tuntun. Ó tètè máa n se àní-idárà-ẹnì-lojú nínú ara rè	☐	☐	☐
Ó máa n féràn àwọn omodé tí kò tó lójó orí	☐	☐	☐
Ó máa n páró tàbí yàn èlòmíràn jè lópò ìgbà	☐	☐	☐
Àwọn ọmọ yòóku máa n fojú sí lara látí fi ìyà je é	☐	☐	☐
Ó máa n fara rè sílè làtì ràn àwọn èlòmíràn lówó (òbí, olùkó atí àwọn ọmọ yòóku) lópò ìgbà.	☐	☐	☐
Ó máa n ronú sí ñnkan kí ó tó se é	☐	☐	☐
Ó máa n jalè ñnkan nínú ilé, ilé ìwé, tàbí ni ibomíràn	☐	☐	☐
Ó máa n sáàbà ní ìbásépò tí ó gún menrán pélú àgbalàgba jú àwọn omodé mìíràn	☐	☐	☐
Ó ní ifòyà púpó, ó sì máa n tètè bèrù	☐	☐	☐
Ó máa n pari ise ti ó bá dawó lé. Ó ni ìfòkànsí tí ó dárá	☐	☐	☐

Sé ó ní àkíyèsí tàbí ohun tí ó mú o lókàn?

Sí ojú ìwé. Àwọn ìbéèrè kù ní òdì kejì

Lápapò, njé o rò wipe omo rè ní ísòro kankan ní onà kan tàbí jù bè ló nínú àwon onà wònyí? ìmí-èdùn, ìfokànsí, ìhùwàsí tàbí níní ìbáséepò tí ó gún menrán pèlú àwon èniyàn.

Rárá	Bèé ni ísòro níwonba	Bèé ni ísòro púpò	Bèé ni ísòro púpò gan-an
☐	☐	☐	☐

Tí o bá dáhùn "bèé ni", jòwó dáhùn àwon ìbéèrè yìí nípá ísòro wònyì:

• Ó tó ìgbà wo tí àwon ísòro wònyí ti bèrè?

Kò tó osù kan	Osù kan sí márùn-ún	Osù méfà sí méjìlá	Ó jù odún kan
☐	☐	☐	☐

• Njé ísòro wònyí n da omo yín láàmú tàbí ó n bà a nínú jé?

Rárá kò rí bèé	Diè nìkan	Púpò gán-an	Púpò gidi gán-an
☐	☐	☐	☐

• Njé ísòro wònyí ní ipá lorí ìgbési ayé ojojúmó omo yín ní àwon onà wònyí?

	Rárá kò rí bèé	Diè nìkan	Púpò gán-an	Púpò gidi gán-an
Ìgbési ayé nínú ilé	☐	☐	☐	☐
Òré-níní	☐	☐	☐	☐
Èkó ni iyàrá ìkòwèé	☐	☐	☐	☐
Ojúse Igbàfé	☐	☐	☐	☐

• Njé ísòro wònyí n fún ìwó tàbí ebí re lápapò ní wàhálà kankan?

Rárá kò rí bèé	Diè nìkan	Púpò gán-an	Púpò gidi gán-an
☐	☐	☐	☐

Ifowósí ..... Ojó òní .....

Màmá/Bàbá/Elòmíràn (Dárúko)

Ę sé púpò fún ìrànlówó yín

SF-12® **Patient Questionnaire**

Patient Initials _____ _____ _____ **Date of Birth:** ___/___/___ **Patkey:** _____

Surgeon Name: _____ **Date:** _____

Examination Period:
_____ Preop (1)
_____ Immediate Postop (2)
_____ 1 Year (3)
_____ 3 Year (4)
_____ 5 Year (5)
_____ Other (specify) (6): _____

SF-12®:
This information will help your doctors keep track of how you feel and how well you are able to do your usual activities. Answer every question by placing a check mark on the line in front of the appropriate answer. It is not specific for arthritis. If you are unsure about how to answer a question, please give the best answer you can and make a written comment beside your answer.

1. In general, would you say your health is:
   _____ Excellent (1)
   _____ Very Good (2)
   _____ Good (3)
   _____ Fair (4)
   _____ Poor (5)

The following two questions are about activities you might do during a typical day. Does YOUR HEALTH NOW LIMIT YOU in these activities? If so, how much?

2. MODERATE ACTIVITIES, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf:
   _____ Yes, Limited A Lot (1)
   _____ Yes, Limited A Little (2)
   _____ No, Not Limited At All (3)

3. Climbing SEVERAL flights of stairs:
   _____ Yes, Limited A Lot (1)
   _____ Yes, Limited A Little (2)
   _____ No, Not Limited At All (3)

During the PAST 4 WEEKS have you had any of the following problems with your work or other regular activities AS A RESULT OF YOUR PHYSICAL HEALTH?

4. ACCOMPLISHED LESS than you would like:
   _____ Yes (1)
   _____ No (2)

5. Were limited in the KIND of work or other activities:
   _____ Yes (1)
   _____ No (2)

Surgeon Initials _____ **Date:** _____

Patient Initials _____ _____ _____ **Date of Birth:** ___/___/___ **Patkey:** _____

Surgeon Name: _____ **Date:** _____

Examination Period:
_____ Preop (1)
_____ Immediate Postop (2)
_____ 1 Year (3)
_____ 3 Year (4)
_____ 5 Year (5)
_____ Other (specify) (6): _____

SF-12® Cont'd:

During the PAST 4 WEEKS, were you limited in the kind of work you do or other regular activities AS A RESULT OF ANY EMOTIONAL PROBLEMS (such as feeling depressed or anxious)?

6. ACCOMPLISHED LESS than you would like:
   _____ Yes (1)
   _____ No (2)

7. Didn't do work or other activities as CAREFULLY as usual:
   _____ Yes (1)
   _____ No (2)

8. During the PAST 4 WEEKS, how much did PAIN interfere with your normal work (including both work outside the home and housework)?
   _____ Not At All (1)
   _____ A Little Bit (2)
   _____ Moderately (3)
   _____ Quite A Bit (4)
   _____ Extremely (5)

The next three questions are about how you feel and how things have been DURING THE PAST 4 WEEKS. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the PAST 4 WEEKS –

9. Have you felt calm and peaceful?
   _____ All of the Time (1)
   _____ Most of the Time (2)
   _____ A Good Bit of the Time (3)
   _____ Some of the Time (4)
   _____ A Little of the Time (5)
   _____ None of the Time (6)

Surgeon Initials _____ **Date:** _____

Patient Initials _____ _____ _____ **Date of Birth:** ___/___/___ **Patkey:** _____

Surgeon Name: _____ **Date:** _____

Examination Period:
_____ Preop (1)
_____ Immediate Postop (2)
_____ 1 Year (3)
_____ 3 Year (4)
_____ 5 Year (5)
_____ Other (specify) (6): _____

SF-12® Cont'd:

10. Did you have a lot of energy?
    _____ All of the Time (1)
    _____ Most of the Time (2)
    _____ A Good Bit of the Time (3)
    _____ Some of the Time (4)
    _____ A Little of the Time (5)
    _____ None of the Time (6)

11. Have you felt downhearted and blue?
    _____ All of the Time (1)
    _____ Most of the Time (2)
    _____ A Good Bit of the Time (3)
    _____ Some of the Time (4)
    _____ A Little of the Time (5)
    _____ None of the Time (6)

12. During the PAST 4 WEEKS, how much of the time has your PHYSICAL HEALTH OR EMOTIONAL PROBLEMS interfered with your social activities (like visiting with friends, relatives, etc.)?
    _____ All of the Time (1)
    _____ Most of the Time (2)
    _____ A Good Bit of the Time (3)
    _____ Some of the Time (4)
    _____ A Little of the Time (5)
    _____ None of the Time (6)

Surgeon Signature_____ **Date**_____

Childrens Global Assessment Scale (CGAS)

1. Enter a score from 1-100
2. Rate the child/adolescents most impaired level of general functioning during the period rated by selecting the lowest level which describes his/her functioning on a hypothetical continuum of health-illness
3. Use intermediary levels eg. 35, 94, 68
4. Rate actual functioning regardless of treatment or prognosis, using the descriptions below as a guide

100-91	Superior functioning
90-81	Good functioning
80-71	No more than a slight impairment in functioning
70-61	Some difficulty in a single area, but generally functioning pretty well
60-51	Variable functioning with sporadic difficulties
50-41	Moderate degree of interference in functioning
40-31	Major impairment to functioning in several areas
30-21	Unable to function in almost all areas
20-11	Needs considerable supervision
10-1	Needs constant supervision

Principle reference

Schaffer D, Gould MS, Brasic J, et al. (1983) A children's global assessment scale (CGAS). *Archives of General Psychiatry*, 40, 1228-1231.

Description

The Childrens Global Assessment Scale (CGAS) is a measure developed by Schaffer and colleagues at the Department of Psychiatry, Columbia University to provide a global measure of level of functioning in children and adolescents. The measure provides a single global rating only, on scale of 0-100. In making their rating, the clinician makes use of the glossary details to determine the meaning of the points on the scale.

CGAS Glossary

Rate the patient's most impaired level of general functioning for the specified time period by selecting the *lowest* level which describes his/her functioning on a hypothetical continuum of health-illness. Use intermediary levels (eg 35, 58, 62).

Rate actual functioning regardless of treatment or prognosis. The examples of behaviour provided are only illustrative and are not required for a particular rating.

100-91 *Superior functioning* in all areas (at home, at school and with peers); involved in a wide range of activities and has many interests (eg., has hobbies or participates in extracurricular activities or belongs to an organised group such as Scouts, etc); likeable, confident; 'everyday' worries never get out of hand; doing well in school; no symptoms.

90-81 *Good functioning in all areas*; secure in family, school, and with peers; there may be transient difficulties and 'everyday' worries that occasionally get out of hand (eg., mild anxiety associated with an important exam, occasional 'blowups' with siblings, parents or peers).

80-71 *No more than slight impairments in functioning* at home, at school, or with peers; some disturbance of behaviour or emotional distress may be present in response to life stresses (eg., parental separations, deaths, birth of a sib), but these are brief and interference with functioning is transient; such children are only minimally disturbing to others and are not considered deviant by those who know them.

70-61 *Some difficulty in a single area but generally functioning pretty well* (eg., sporadic or isolated antisocial acts, such as occasionally playing hooky or petty theft; consistent minor difficulties with school work; mood changes of brief duration; fears and anxieties which do not lead to gross avoidance behaviour; self-doubts); has some meaningful interpersonal relationships; most people who do not know the child well would not consider him/her deviant but those who do know him/her well might express concern.

60-51 *Variable functioning with sporadic difficulties or symptoms in several but not all social areas;* disturbance would be apparent to those who encounter the child in a dysfunctional setting or time but not to those who see the child in other settings.

50-41 *Moderate degree of interference in functioning in most social areas or severe impairment of functioning in one area,* such as might result from, for example, suicidal preoccupations and ruminations, school refusal and other forms of anxiety, obsessive rituals, major conversion symptoms, frequent anxiety attacks, poor to inappropriate social skills, frequent episodes of aggressive or other antisocial behaviour with some preservation of meaningful social relationships.

40-31 *Major impairment of functioning in several areas and unable to function in one of these areas* (ie., disturbed at home, at school, with peers, or in society at large, eg., persistent aggression without clear instigation; markedly withdrawn and isolated behaviour due to either mood or thought disturbance, suicidal attempts with clear lethal intent; such children are likely to require special schooling and/or hospitalisation or withdrawal from school (but this is not a sufficient criterion for inclusion in this category).

30-21 *Unable to function in almost all areas* eg., stays at home, in ward, or in bed all day without taking part in social activities *or* severe impairment in reality testing *or* serious impairment in communication (eg., sometimes incoherent or inappropriate).

20-11 *Needs considerable supervision* to prevent hurting others or self (eg., frequently violent, repeated suicide attempts) *or* to maintain personal hygiene *or* gross impairment in all forms of communication, eg., severe abnormalities in verbal and gestural communication, marked social aloofness, stupor, etc.

10-1 *Needs constant supervision* (24-hour care) due to severely aggressive or self-destructive behaviour or gross impairment in reality testing, communication, cognition, affect or personal hygiene.