PSYCHOSOCIAL FACTORS PREDICTING PSYCHOLOGICAL HEALTH AND EFFICACY OF ACCEPTANCE AND COMMITMENT THERAPY AMONG MOTHERS OF CHILDREN WITH CEREBRAL PALSY IN LAGOS, NIGERIA

BY

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CERTIFICATION

I hereby certify that this thesis on **Psychosocial factors Predicting Psychological health and efficacy of Acceptance and Commitment Therapy among mothers of children with Cerebral Palsy** was carried out by **Damilola Adepeju OLUGBOJA (Matric No: 140691)** in the department of Psychology, Faculty of the Social Sciences, University of Ibadan under my supervision.

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DEDICATION

This study is dedicated to God Almighty, the giver of knowledge and to the following people who played prominent role in my education. To my dear husband, Com. Olayinka Aliu, who stood by me and cheered me on through the course of this programme. To my parents, HRM Anthony Olugboja and Olori Olugboja who laid solid foundation in my academic pursuit. To my children for their patience, sacrifices and prayers.

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ABSTRACT

Cerebral Palsy (CP) is a chronic condition defined as a set of functional limitations due to alterations in the development of central nervous system. Previous studies have shown evidence that caregiving may be a burden to the Psychological Health (PH) of mothers of children with CP. However, little attention is given to psychotherapeutic intervention in managing mothers caring for such children in Nigeria. This study, therefore, investigated the influence of psychosocial factors on psychological health and the efficacy of Acceptance and Commitment Therapy (ACT) among mothers of children with CP in Federal Psychiatric Hospital (FPH), Yaba, Lagos, Nigeria.

Biopsychosocial models and Cognitive Theory guided this study. The study utilized mixed sequential design which combined both qualitative and quantitative methods. Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs) provided qualitative data on psychosocial factors and PH among 20 mothers of CP children. A cross-sectional survey of 80 mothers of CP children purposively selected at Child clinic, FPH, Yaba was conducted. Questionnaires used included Child Behavioural Checklist (α=0.92); Socio-demographic characteristics; Caregivers' Burden (α=0.86); Social Support (α=0.89); Sleep-quality (α= 0.78); Illness Severity (α=0.88); Parental Knowledge (α=0.67); Psychological Health (α=0.92) and Acceptance (α=0.81) Scales. Pretest-posttest quasi- experimental design was used to assign forty participants with low scores on PH into experimental (20) and control group (20). Treatment focused on establishing defusion, acceptance and increasing value direction goal. Qualitative data were content analysed, while multiple and logistic regressions, ANOVA, and t-test were computed at $p \leq 0.05$.

Respondents' mean age was 33.09±7.33 years, while 48.0% participants reported poor psychological health. Mothers of male CP children ($\bar{X}$ =40.7) expressed better PH than mothers of female CP children ($\bar{X}$= 35.7) ($F_{(1,75)}$=543.35). Mothers of children in young childhood stage ($\bar{X}$= 41.9) expressed better PH compared to mothers of infants ($\bar{X}$=38.2) and late childhood ($\bar{X}$=26.6) ($F_{(1,75)}$=561.72). Mothers of female children in late childhood stage expressed better PH than mothers of male children in late childhood ($F_{(1,75)}$=709.91). Social support (t= 6.15) and caregivers' burden (t= -5.57) significantly predicted PH. Social support, caregivers' burden and sleep-quality significantly jointly predicted PH (R^2=0.68, $F_{(3,76)}$=54.79). Mothers' age (OR= 1.02, CI: 0.69-1.52) and occupation (OR=4.02, CI:1.16-13.91) predicted PH. Child behavioural problems had a significant influence on PH (t(78)= -2.47). The ACT had significant effect on PH ($F_{(1,36)}$=7.94) after controlling for severity of illness. Participants in experimental group improved in their PH when compared with those in control group (t (38) = 3.20). Acceptance level of the mothers improved after intervention with a decrease in pretest mean score ($\bar{X}$= 31.60) to posttest mean score ($\bar{X}$= 24.10). Mothers expressed high caregiving burden, sleeplessness, distress, denial and depression; while their preferred support is financial.

High social support and low caregivers' burden contributed to the maintenance of psychological health among mothers of children with cerebral palsy in Lagos, Nigeria. Acceptance and Commitment Therapy proved efficacious and therefore should be integrated into the management of psychological health.

Keywords: Cerebral palsy, Psychological health, Acceptance and commitment therapy, Social support

Word count: 486

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Psychological health is a form of well-being in which a person recognizes his or her abilities to manage normal stresses of life, work productively and fruitfully to make a positive impact to his or her environment (World Health Organization, 2003). The psychological health of persons is determined by several factors which include biological, social, economic, environment, individual and family. Psychological health should not be confused with the question of if one suffers from a mental or emotional disorder. It is how individuals cope, how they are doing in response to their environmental, emotional and social situations and whether they find life to be interesting and enjoyable (World Health Organization, 2003). The way individuals handle a stressful situation in their life is very pivotal in maintaining their psychological health. Also, how we function and adapt to situations and whether our existence is satisfying and productive is also important to our psychological health.

Informal caregivers play an important part in helping people with the illness. This is of special relevance when it has to do with developmental disorders. The impact of caregiving could be serious on informal caregivers' psychological, physical and social health. It has often been suggested that the extra stress of taking care of a child with intellectual disabilities exposes parents to the risk of suffering from depression (Azeem, Dogar, Shah, Cheema & Asmat, 2013). Olsson and Hwang (2008) in their study opined that mothers having children with intellectual disabilities experience a greater level of depression and anxiety than mothers with typically developed children. An estimate of 89% of mothers having children with intellectual disability visits their doctors as a result of own psychological status that was induced by their child's disabilities (Eisenhower, Baker & Blacher, 2009).

According to Rethlefsen, Ryan, and Kay (2010), Cerebral Palsy (CP) is defined as a chronic condition with a set of functional limitations due to alterations in the development of the central nervous system. This is often accompanied by disturbances of sensation and perception, poor cognitive ability, impaired communication, problem behavior and seizure disorder. It is reported to be the common cause of motor deficiency in childhood both in developing and developed countries (Aisen, Kerkovich, Mast, Mulroy, Wren, Kay & Rethlefsen, 2011). Reduced motor function is the primary indication of cerebral palsy. Children with cerebral palsy experience intellectual, communicative and sensory disorders alongside complex limitations in activity of daily living (Raina, O'Donnell, Rosenbaum, Brehaut, Walter, Russell, Swinton, Zhu & Wood, 2005). The incidence and prevalence studies recently revealed that 3 out of every 1000 child develop cerebral palsy globally. Similarly, about 764,000 people currently live with cerebral palsy. However, about 500,000 of the people living with the disorder are children and teens (National Institute of Neurological Disorders and Stroke, 2017). Very little has been reported on cerebral palsy in the African context which is peculiar with many other pediatric neurological conditions (Raina, O'Donnell, Rosenbaum, Brehaut, Walter, Russell, Swinton, Zhu & Wood, 2005).

Nevertheless, a prevalence of 6 of 1000 children was reported in a systematic review (Donald, Samia, Kakooza-Mwesige & Bearden, 2014). In Nigeria, cerebral palsy has been said to have 50.3 percent incidence among referrals to a child neurology clinic between 2000 and 2006 in Sagamu, Western Nigeria (Ogunlesi, Ogundeyi, Ogunfowora & Olowu, 2008). Also, Lagunju and Okafor (2009) reported an incidence rate of 36 percent cases of cerebral palsy among children that presented at the child neurological clinic, University College Hospital, Ibadan, Nigeria. The prevalence of cerebral palsy is higher in Africa due to perinatal complications which include asphyxia, neonatal infections, and kernicterus which are potentially preventable.

Caregiving role takes on an entirely different significance when a child experiences functional limitations and possible long-term dependence. The presence of a child with cerebral palsy in a family could generate profound emotional stress and feeling of gloom, shock and a sense of guilt (Begum & Desai, 2010). One of the main challenges of parents is managing their child's chronic health complications effectively alongside their responsibilities in providing necessities of everyday living. Consequently, the responsibility of taking care of a child with a complex disability at home might be somewhat burdensome for caregivers. The delivery of such care may prove injurious to both the physical and psychological health of the parents.

Myezwa and M'kumbuzi (2003) opined that in the African context, emotional problems can start due to perceived stigma and discrimination related to disability. The cultural and religious beliefs as to the reason of the disability may also add towards this stigmatization and consequently could lead to social isolation and emotional problems in caregivers (Hamzat & Mordi, 2007; Myezwa & M'kumbuzi, 2003). Some even see CP as a curse from ancestral spirits for misconducts such as promiscuity during pregnancy (Hamzat & Mordi, 2007) or from spiritual attack by unknown enemies who had seen the 'glorious destiny' of the child. As a result, taking care of a CP child can be overpowering as it can negatively affect caregivers physically, emotionally and psychosocially (Murphy, Christian, Caplin & Young, 2007; Oh & Lee, 2009; Palamaro, Kilmer, Cook & Reeve, 2012; Reid, Moss & Hyman, 2005).

The increase in the proportion of caregivers who felt overwhelmed could be accounted for by the fact that, caregiving demands increase with time, thereby; making the burden become cumulative. The stress associated with care could lead to further deterioration of caregivers' psychological health. The nature of the predominant movement disorder of CP affects children's activity of daily-living performance differently even when compared with other developmental disabilities like Down syndrome (Esbensen, Bishop, Seltzer, Greenberg & Taylor, 2010). Cusick, McIntyre, Novak, Lannin and Lowe (2006) postulated that children living with cerebral palsy are likely to experience difficulty with the activity of daily living and the performance of these responsibilities is a high priority for parents.

Several past studies had revealed that mothers having children with an intellectual disability reported significantly more physical health complaints in addition to an increased level of depression, and overall emotional distress than the mothers of typically developed children (Cramm & Nieboer, 2011; Khamis, 2007; Yirmiya & Shaked, 2005).

Factors predicting psychological health in informal caregivers could be psychological, cognitive-emotional, behavioral, cultural, social and family-related, disease-related, and economic. However, this study will focus on psychological, cognitive-emotional and social factors which have remained implicated in literature as contributing to the psychological health of informal caregivers of children with intellectual disability (Almasri, 2010; Azar & Badr, 2006).

Several psychological and contextual factors such as social support, caregivers' burden, and sleep quality have been identified to predict anxiety and depression in parents of children living with intellectual disability (Azeem, Dogar, Shah, Cheema & Asmat, 2013; Brummett, Babyak, Segler, Vitaliano, Ballard & Gwyther, 2006; Dhwanit, Sumit, Deepak & Parmar, 2014; Huang, Sousa, Peng, Hwang, Tsai, Huang & Yao, 2009; Meltzer & Moore, 2008; Ozbay, Johnson, Dimoulas, & Morgan, 2007).

Taylor (2011) defined social support as the perception or actualization of care or assistance from a social network which can be emotional, tangible, informational, or companionship that is either subjectively perceived or objectively received (as cited in Aliu, Osinowo & Ishola, 2016). Yasin and Dzulkifl (2011) refers social support as the experience of being valued, respected, cared about, and loved by others who are present in one's life. It may come from different sources such as family, friends, religious societies, community or any social and formal groups to which one is affiliated. Aliu, Osinowo and Ishola (2016) mentioned that social support can come in the form of tangible assistance provided by others when needed which includes, appraisal of different situations, effective coping strategies and emotional support. Social support has been emphasized as an element that helps individuals reduce the amount of stress experienced as well as help people cope better in dealing with stressful situations (Kugbey, Osei-Boadi & Atefoe, 2015). Similarly, they buttressed how it has long been regarded to mitigate distress. A number of researchers have acknowledged its role in minimizing the impact of caring for a child with intellectual disabilities among parents. Parents with greater social support have been reported to show better psychological adjustment (Ozbay, Johnson, Dimoulas, & Morgan, 2007). Social support has been explained to affect health by protecting people against the negative effects of high stress (Aliu, Osinowo & Ishola, 2016). It could also help buffer the impact of stress on individuals' psychological health during stressful life events. People with higher levels of social support are able to appraise situations as less stressful by modifying their responses to a stressor after initial appraisal.

According to Yorges (2017), social support can be categorized in several different ways. Yorges explained emotional support as the offering of empathy, concern, affection, love, trust, acceptance, intimacy, encouragement, or caring. It is the warmth and nurturance provided by sources of social support. Providing emotional support can let the individual know that he or she is valued. It is also called esteemed support or appraisal support (Wills, 1991). Tangible support is the provision of financial assistance, material goods or services. It is also called instrumental support (Wikipedia, 2018). This form of social support encompasses the concrete direct ways people assist others. Another form of social support is Informational support which according to Scott (2017) is the provision of advice, guidance, suggestion, or useful information to someone. This type of information has the potential to help others solve problems. Companionship support is the type of support that gives someone a sense of social belonging. This can be seen as the presence of a companion to engage in shared social activities (Wikipedia, 2018). The source where support is derived plays a significant role in its effectiveness as a coping strategy as support from significant orders has been associated with health benefit (Li, 2014).

Caregiver burden refers to the individual emotional response to changes and demands that occur as he or she offers assistance to his or her loved ones. Similarly, it implies the objective and subjective difficulties experienced by families of people with long-term illness (Davis, Shell, Waters, Boyd, Cook, Davern & Reddihough, 2010). Despite its frequent use in scientific literature, the concept of burden still has some vagueness. Ostman and Hansson (2014) referred to objective burden as a practical challenge that caregivers undergo which include the disruption of family relationships, constraints in social, leisure and work activities, financial difficulties, and negative impact on caregivers' physical health. Furthermore, Ostman and Hansson (2014) described subjective burden as the psychological reactions which relatives experience. For instance, a feeling of loss, sadness, anxiety, or embarrassment in social situations, the stress of coping with disturbing behaviors, and the frustration caused by changing relationships. Emphasis is laid on the need for universal understanding of the effects of caregiving among the caregiver and that taking into account both the physical and mental limitations of the person being cared for, the context in which the care occurs, the consequences arising from the caring role and factors that may moderate all of the above is highly necessary (Marrón, Redolar-Ripoll, Boixadós, Nieto, Guillamón, Hernández & Gomez, 2013).

Although caring is part of the parental responsibility, it can often cause a significant burden when the requirements are extreme and long-lasting. When a parent is overburdened with extreme responsibility of caring for a child with life-long disability, the role may adversely affect the physical and psychological health of such parent (Brehaut, Kohen, Garner, Miller, Lach, Klassen & Rosenbaum, 2009; Tucker, Butler, Loyuk, Desmond, & Surrency, 2009). Similalrly, the social, cultural and professional lives are not exempted in this regard and possibly, reducing the quality of life (Davis, Shell, Waters, Boyd, Cook, Davern & Reddihough, 2010; Grootenhuis & Bronner, 2009). Grief may also occur when burden is excessive. Grief may be associated with the loss of the person's former personality, achievements, and contributions, as well as the loss of family lifestyle, unconscious hostility, and anger (Ostman & Hansson, 2004). In addition, studies have found that approximately one-third of caring relatives have elevated levels of anxiety or depression connected with the caregiving responsibility (Azeem, Dogar, Shah, Cheema & Asmat, 2013). Similarly, studies reported that parents of children with intellectual disabilities reported shortened employment opportunities which are as a result of burden and this was related to feelings of isolation, lack of fulfillment, and low self-esteem (Davis, Shelly, Waters, Boyd, Cook, Davern & Reddihough, 2010; Shearn & Todd, 2000).

Sleep quality refers to the quantitative aspect of sleep, such as sleep duration, sleep latency, or a number of arousals, as well as more purely subjective aspects, such as "depth" or 'restfulness" of sleep. Intertwined in caregivers' burden are sleep disturbances, which McCurry, Logsdon, Teri, and Vitiello (2007) reported to worsen the physical and psychological health of informal caregivers and also to the increasing prevalence of depression and anxiety in various caregivers. However, the effects of sleep quality and their impact on psychological health outcomes have not been the focus of most studies in the scant literature using informal caregivers of children with intellectual disability, particularly in Nigeria. For caregivers who must provide care and support to care recipients, poor sleep might adversely affect the psychological health due to the tasks of caring for a loved one with cognitive, physical, and neuropsychiatric impairments. Brooks, Girgenti and Mills (2009) found that poor sleep complaints put an individual at risk for development of depression, particularly in women, yet, the directionality of the impairment has remained unclarified. A depressed person typically experiences sleep complaints such as prolonged sleep latency, increased wakefulness in the night, and decreased sleep efficiency (Swanson, Hoffmann, & Armitage, 2010). Whether sleep disturbances create or add to caregivers' depressive symptoms, anxiety, or fatigue is not well researched among caregiving population. It is, however, important to understand the influence of sleep quality among caregivers of children with cerebral palsy.

Empirical evidence has also implicated demographic factors as influencing psychological health. Women have been found to have higher rates of depression than men in the caregiving role (Litwin, Stoeckel & Roll, 2014; Pinquart & Sorensen, 2003). Studies have revealed that female caregivers experience increased risk of depressive symptomology as compared to male caregivers. These gender differences in levels of depressive symptoms and actual depression could be linked to differences in stress exposure, coping responses and the role of social support and biological factors (Mc Grath, Keita, Stickland & Russo, 1992). Also, younger women were found to be more probable to express poor psychological health than older women (Jacobson & Gould, 2007). In addition, William and Hassanyeh (1983) found that marital status, occupation and educational level influence caregivers' psychological health and a disadvantage in any of them can lead to adverse reactions. However, the age and gender of the child with a disability have not been well researched on its' influences on caregivers' psychological health. These past studies simply point to the fact that psychosocial factors and even demographic variables have ways of influencing the psychological health of caregivers of children with intellectual disability.

Irrespective of the degree of intellectual disability, caregivers have to cope with the special needs of their children thereby making it not simply a problem for affected children, but in factual reality a 'family disease' (Witt, Riley, & Coiro, 2003). This seems more germane in Nigeria where families bear the burden of care for such children unlike in developed countries where external assistance and institutions are readily available to help lessen the burden on family members, thereby improving their psychological health. Some of the literature has shown direct causal relationship of the discussed psychosocial variables while others tend to show correlational evidence between these variables and psychological health. Reports from Nigeria tend to be very scanty on the predictive influence of these psychosocial variables (social support, caregivers' burden, and sleep quality) on psychological health, hence, the necessity for this scientific investigation. In addition, there is inadequate research-based evidence which has posed challenges to the mental health service providers on the management of informal caregivers' psychological health. This inadequate research evidence and limited service provision necessitated this study which provided empirical research evidence and tested the efficacy of Acceptance and Commitment therapy among mothers of cerebral palsy children which has been found effective and efficacious in management of pain, stress, and depression (McCracken & Vowles, 2014; Landy, Schneider & Arch, 2015).

1.2 Statement of the Problem

The disability associated with cerebral palsy is life-long. According to National Institute of Neurological Disorders and Stroke (2017), the prevalence of CP was said to be 3 out of every 1000 babies born globally. In Nigeria, studies reported an incidence rate of cerebral palsy to be 68.3% among new referrals to child neurology clinics in Western Nigeria (Lagunju & Okafor, 2009; Ogunlesi, Ogundeyi, Ogunfowora & Olowu, 2008). Studies have also established cases of poor psychological health among non-formal caregivers of children with cerebral palsy (Dhwanit, Sumit, Deepak & Parmar, 2014; Ijezie, Ojinnaka & Iloeje, 2009). Despite these cases, there are very few opportunities to place young children in appropriate respite-care facilities; special education centers particularly those with severe disabilities and from families with limited financial resources in Nigeria. The little rehabilitation provided is on an intermittent basis by tertiary health hospitals such as Child and Adolescent Unit of Federal Psychiatric Hospitals all over the country while caregivers, mostly mothers and sometimes other members of the family do the day-to-day care.

These mothers were observed in clinics having worries, fear, and frustration about the condition of their child which mostly come in form of non-activity participation, cognitive deficit, aggression exhibited by the child, poor communication skill and dependency on the mother for the basic activity of daily living due to the child's disorder. They were also noticed to experience physical strains in chest and arm as a result of stress emanating from backing/carrying a toddler due to the motor limitation of the child. They occasionally express emotional pains, activity constriction, truncated social and career life they go through due to lack of social support in terms of financial, tangible and companionship. These mothers expressed concern on how they cannot go out freely with the child due to the burden alongside a feeling of shame they experienced due to lack of support from their social circle. The cultural and religious beliefs as to the cause of the disability contribute to this shame and consequently lead to social isolation and emotional problems in caregivers (Hamzat & Mordi, 2007; Myezwa & M'kumbuzi, 2003).

The challenges of poor sleep pattern were also a major problem expressed by the mothers. The associated sleep problem in the majority of the children with cerebral palsy was reported by mothers to affect their sleep quality. Many of the mothers reported that they sleep late or wake up early so long as the child does not sleep well at night. Despite the psychological, emotional pains and trauma experienced by the informal caregivers, particularly mothers, many cases remained unaddressed and untreated.

To add to it, factors precipitating and exacerbating this poor level of psychological health has not been well investigated in Nigeria in recent times as the prevalence of Cerebral Palsy is on the increase. Also, the Acceptance and Commitment Therapy, a psychotherapeutic intervention which had been established as efficacious in management of depression and pain had not been well employed in the past at improving the psychological health of informal caregivers of children with cerebral palsy which necessitated the researcher interest as a way of improving the overall psychological health functioning of the caregivers.

Research Questions

The study aimed at providing answers to the following questions.

1. To what extent do psychosocial factors (social support, caregivers’ burden and sleep quality) predict psychological health among mothers of children with cerebral palsy?
2. How do some socio-demographic factors (age of mother, educational level, marital status, occupation) predict psychological health among mothers of children with cerebral palsy?
3. In what way would clinical variables (severity of illness, child behaviour problem and parental knowledge) influence the psychological health of mothers of children with cerebral palsy?
4. How would Acceptance and Commitment Therapy improve the psychological health of mothers of children with cerebral palsy?

1.3 Purpose of the Study

The study examined the predictive influence of psychosocial factors (social support, caregivers’ burden and sleep quality) on psychological health and efficacy of acceptance and commitment therapy among mothers of children with cerebral palsy. The specific objectives of the study included:

1. To examine the predictive influence of psychosocial factors (social support, caregivers’ burden and sleep quality) on psychological health among mothers of children with cerebral palsy.
2. To investigate the prediction of some socio-demographic factors (age of mother, educational level, occupation, marital status) on psychological health of mothers of children with cerebral palsy.
3. To determine the influences of clinical variables (severity of illness, child behavioural problem and parental knowledge of child’s illness) on psychological health of mothers of children with cerebral palsy.
4. To assess the efficacy of Acceptance and Commitment therapy on psychological health among mothers of children with cerebral palsy

1.4 Relevance of Study

The findings of this study contributed to the body of knowledge on the influence of psychosocial factors (social support, caregivers' burden, and sleep quality) as predictors of psychological health among mothers of children with cerebral palsy in Nigeria. This is grossly lacking at the moment. The information available is majorly literatures from foreign studies while the few available local studies are not psychologically oriented studies. Hence, findings from this study serve as reference material for future studies. The outcome of the study will, therefore, assist mental health professionals, such as the psychiatrists, psychologists, physiotherapist, occupational therapist and so on to be involved in the rehabilitation process, decisions making, treatment formulation and planning in managing mothers of children with cerebral palsy.

Clinical psychologists would benefit, as the study outcome serves as a guide in understanding and dealing with mothers who are saddled with the responsibility of provision of care to their children. Hence, regular assessment of caregivers, particularly in terms of caregivers' burden, sleep quality and social support experienced by them and the impact on their psychological health, is a vital step in ensuring that mothers who are prone to poor psychological health functioning are detected early, treated as a vulnerable group and presented for intervention. Clinical Psychologists managing Childhood/ Developmental psychopathology now have detecting and intervention tools valid and reliable in Nigeria culture. The Cerebral Palsy Psychological Health Scale (CPPHS), Cerebral Palsy Social Support Scale (CPSSS), Cerebral Palsy Caregivers Burden Scale (CPCB) and Modified Acceptance and Commitment Therapy module are great and positive contributions to the scientific community both for research and clinical practice.

It will be useful to relevant governmental agencies at all levels in enacting policies that would further protect the right of the vulnerable children and their mothers. It will also awake the government to its responsibilities in the provision of financial support, special education and more rehabilitation centres in all local government areas for easy accessibility to mothers having children with cerebral palsy.

CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Framework

In this section, the relevant theories examining social support, caregivers' burden, and sleep quality as predictors of psychological health were reviewed.

2.1.1 Social Support Theory

Aliu, Osinowo and Ishola (2016) defined social support as perception or actualization of care or assistance from a social network which can be emotional, tangible, informational, or companionship that is either subjectively perceived or objectively received. Uchino (2004) conceptualized social support as "the functions that are provided by social relationships". He emphasized that social support theorist linked the level social support provided from social relationships to health outcomes of people. Cho (2007) stated that there are two main models of social support theories: direct effect model and stress-buffering model. Though, each model within social support theory emphasized different processes, however, they have the same objective.

Direct effect model

Cho (2007) explained the direct-effect model of social support. The model proposed that having social relationship has an overall beneficial effect on individuals' health and well-being regardless of the occurrence of stressful events. This model emphasized the advantages of direct effect of received social support based on social identity, social control and loneliness of the individual (Uchino, 2004).

According to the model, social support has positive effects on health when individuals are rooted in a social network because it offers individuals significant roles that provided self-esteem and increased meaning to life, which in turn affected the health of recipients (Haslam, O'Brien, Jetten, Vormedal & Penna, 2005). Also, social support also have positive effects on health when an individual is rooted in a social network which placed responsibility on people to follow healthier behaviors by giving individuals meaningful roles that enhanced obligation to life (Lewis & Rook, 1999).

In addition, loneliness was linked to poor health outcomes because loneliness affected self-esteem, meaning of life, and responsibility to life (Stroebe & Stroebe, 1996; Uchino, 2004). This resulted in negative health behaviors such as smoking and the intake of alcohol (Stroebe & Stroebe, 1996).

Stress-Buffering Model

Cohen and Herbert (1994) conceptualised the stress-buffering model of social support. The model proposed that social support is healthy because it buffered the negative effects of stress on health (Cohen & Herbert, 1996). Uchino (2004) suggested that stressors such as bereavement and daily hassles affected health through appraisal process which is psychological process that can be adjusted by social support

Cho (2007) explained that based on buffering model, when an individual is faced with extremely stressful events such as death of a spouse, social support helped reduce the intensity of the stress response and facilitated coping strategies over the long term.

Schopler and Mesibov (1984) mentioned that there are several types of social support which are formal and informal. The authors defined formal social support as the help that is social, psychological, physical, or financial given either for free or in exchange for a fee through an organized group or agency, while they defined informal support as a network that may include the immediate and extended family, friends, neighbours and other caregivers (Schopler &Mesibov, 1984). Wills (1991) stated that social support can be classified in numerous ways:

(1) The author defined emotional support as the offer of empathy, concern, affection, love, trust, acceptance, intimacy, encouragement, or care. It is the friendliness and nurturance delivered by sources of social support. Providing emotional support can let the individual know that he or she is valued. It is also called esteemed support or appraisal support.

(2) Wills (1991) explained that tangible support is provision of financial assistance, material goods or services. It could also be called instrumental support. This form of social support involves the concrete direct ways people help others.

(3) The author defined informational support as provision of advice, guidance, suggestion, or useful information to someone. This type of information has the potential to help others problem-solve.

(4) He explained companionship support as the type of support that gives someone a sense of social belonging. This was viewed as the presence of companion to engage in shared social activities.

Walen and Lachman (2000) reported that the source of social support is an important determinant of its effectiveness as a coping strategy. He explained that support from significant others is related with health benefit for women than for men. Social support theories focused exclusively on psychological effects. Although these theories reported that physical health could be affected by social support because physical health is affected through the psychological process, or both psychological and behavioral processes.

Critique of Social Support Theory

The limitation of social support theories was related to the conceptualization of social support which emphasized psychosocial aspects more than physical aspects. Cohen, Underwood and Gottlieb (2000) explained that it was no surprise that social support theories and research on social support showed that social support protected individuals from a multitude of mental health problems which ranged from mild depression to suicidal tendencies. However, it is less obvious whether and how social support affected physical health. He further buttressed that as opposed to psychosocial effect of social support, caregiving may have strong influence on the physical health of care recipients. For instance, some caregiving such as administering medications, feeding and carrying/backing a grown-up child could cause strain to the body, that is, it directly affected physiological processes and physical health, while social support tends to have an indirect influence on physical health via its' psychological process.

Application of Theory

Social support theories are valuable to comprehend the mechanism of how caregiving influenced the health of caregivers. These theories also explained mechanisms of how social support affected health which included psychological and behavioral processes. Support can come in the form of instrumental support which could be helping with daily living needs and housework, emotional support, and informational support which are information and knowledge from both health experts and from those who have experienced similar situations. Cohen (2004) reported that positive relationship between social support and psychological well-being has generally been found. Sarafino (2002) also acknowledged that social support affected health by protecting people against the negative effects of high stress.

Cohen (2004) further buttressed how it provided a buffer against burden and stress for caregivers by increasing the perception that resources are available to handle stress which has effect upon an individual's psychological health during stressful life events. According to stress buffering hypothesis, social support worked by making people with higher levels of social support appraise situations as less stressful by modifying people's responses to a stressor after initial appraisal. Stress may be seen as a case of 'it is being in the eye of the beholder kind of thing'. This means events are stressful, in so far, as people have negative thought about the event (appraisal) and coped ineffectively. The current study explored the level of perceived social support received by mothers caring for children with cerebral palsy to know if the available social support predicted their psychological health.

2.1.2 Spielman’s Three-Factor Insomnia Model

Spielman, Caruso and Glovinsky (1987) propounded Spielman's Three-Factor Insomnia Model. The model proposed that people with insomnia have predisposing factors or traits that, when combined with life stress (precipitating factors) could lead to chronic insomnia if there are maladaptive coping strategies (perpetuating factors) (Spielman et. al, 1987). The model further explained that there is an interaction among predisposing, precipitating, and perpetuating factors of insomnia (Spielman, Caruso & Glovinsky, 1987).

The authors stated that the predisposing factors included genetic, physiological or psychological diatheses that conferred differential susceptibility in individuals. They explained the precipitating factors to include physiological, environmental, or psychological stressors which pushed an individual over a hypothetical insomnia threshold to produce acute symptoms. While the perpetuating factors included behavioural, psychological, environmental, and physiological factors that prevented individual from re-establishing normal sleep. Spielman et. al. (1987) explained perpetuating factors as behaviors used to compensate for the loss of sleep. They said that when a person with predisposing factors of insomnia experienced one or more precipitating factors, the result could be acute episodes of insomnia.

Critique of the model

The model does not explicitly consider the influences of the circadian system and sleep-wake homeostasis. Furthermore, the model did not provide a detailed account of how one transitions from good sleep to acute insomnia, that is, how does the precipitating factor precipitate disruption of sleep. Also, the model implied that the susceptibility to insomnia differs across patients and that it is a trait factor within the individual patient. Apparently the postulated between-subject variability means that some patients are not prone to insomnia, some are marginally at risk, and still others are at high risk.

The three factor insomnia model focused on instrumental conditioning. It did not explicitly consider the role of classical conditioning in chronic insomnia, that is, the likelihood that the steady co-occurrence of wakefulness with sleep-related stimuli might lead to a second-order, and perhaps more active, perpetuating factor such as conditioned wakefulness or conditioned arousal.

Application of Model

In caregivers who provide care and support to care recipients with intellectual disability, poor sleep pattern may badly impact their capability to meet the challenges of care for a loved one with cognitive, physical, and neuropsychiatric impairments. The sleep disruptions in care recipient may awaken caregivers at night, cause delay in going to bed, or cause early morning arousals in reaction to care recipient need. Sleep obtained daytime or at irregular times that due to caregiving is of poorer quality than sleep obtained during usual nighttime sleep (Achermann & Borbely, 2011; Lee, Landis, Chasens, Dowling, Merritt, Parker, Redeker & Weaver, 2004).

Caregivers who have genetic, physiological or psychological diatheses that conferred their susceptibility to developing insomnia, when exposed to demanding life events like caring for a loved one with physical and mental challenges are more prone to having problems with their sleep quality especially when care recipient has sleep challenges. In caregiving, the sleep disruption may be the additional responsibilities caregivers assume when a family member is ill.

2.1.3 The Caregiving Stress Process Model

Pearlin, Mullan, Semple and Skaff (1990) propounded caregiving stress process model. The model posed that caregivers' characteristics influence the kind and intensity in which stress is expressed, and the capability to use individual and social resources. The authors described the influence of attributes such as educational level, ethnicity and age on caregiving experience as these attributes influenced the distribution of caregivers' resources and opportunities available to caregivers. Thus, caregivers with fewer personal and social resources might experience greater stress.

Pearlin et al.(1990) defined stressors as problematic conditions and difficult circumstances experienced by caregivers that strained or superseded the individual's capacity to adapt. These were conceptualized by authors as primary and secondary in nature. They stated that the primary stressors are linked directly to the individual and the disability, while the secondary stressors arose from the strains of the caregiving role itself. The model further suggested that caregivers' psychological health is affected not only by primary stressors originating directly from the illness and care of patient, but also from secondary stressors, for instance, family conflict, and constriction of social activities. This model assessed the informal caregiving processes that affect caregivers' health (Pearlin, Lieberman, Menaghan, & Mullan, 1981; Pearlin, Mullan, Semple & Skaff, 1990). This conceptualization allowed for numerous instances for moderators to impact the situation. Eicher and Batshaw (1993) stated that moderators included social supports and concepts of mastery or self-efficacy, which could determine how people are impacted differently by the same stressors, could help sustain the caregivers and lessened the effect of the stressors. Consequently, caregivers who have active coping strategies and adequate resources will most likely respond differently to stress as related to caregivers with few resources and limited or ineffective coping plans at their disposal.

Application of Model

Parental care of a child with a developmental disability is an enormous responsibility, one that can far exceed that of typical parental care. While most parents adapted well to the situation of caring for a child with a disability, some do not. People would naturally occupy numerous roles in life, such as family and occupational roles. Becoming caregivers of a child with long-term disability introduces an additional role, and therefore required some rearrangement of priorities, and redirection of energy (Raina, McIntyre, Zhu, McDowell, Santaguida, Kristjansson, Hendricks, Massfeller & Chambers, 2004). This most likely could cause strain at personal level, but also likely to spur reactions (potentially negative) from several people who are interconnected to the caregiver outside the realm of caregiving. Thus, stress can be understood to arise at the level of provision of care, as well as in other areas of life.

Much of the literature focused on stress related to direct provision of care, it is important to recognize stress occurring in the larger social context so as to gain a complete understanding of its scope and effects. Agreeing to the model which expatiated the stress that caregivers' experienced into primary (stressors originating directly from the illness and care of the patient) and secondary such as family conflict, job demands and constriction of social activities. The current study explored how caregivers' burden predicted psychological health of mothers. Also, through exposure to ACT intervention, caregivers were taught how to accept and manage the source of primary stressor (which is the care of the child living with cerebral palsy) and secondary stressor (which could come in form of marital conflict, shame, stigma, social constriction, and so on).

2.1.4 Transactional Model

Lazarus and Folkman (1984) propounded Transactional Model which suggested that stress resulted from a disparity between demands and resources or occur when pressure surpasses one's perceived ability to cope”. Lazarus and Folkman (1984) explained that management of stress was based on the impression that stress is not a direct reaction to a stressor but rather that one's resources and capability to cope mediated the stress response and it’s responsive to change, thus allowing stress to be controllable. The authors buttressed that in order to develop an effective stress management, it is necessary to identify the factors that are central to person controlling his/her stress, and identify the intervention methods which effectively targeted these factors.

The authors stated that stress may not be a stressor if the individual did not perceive the stressor as a threat but rather as positive. Also, when the person possessed or could use adequate coping skills, then stress might not really develop because of the stressor. The authors further explained that individuals could be educated to handle their stress and manage with stressors. They may learn to change their viewpoint of the stressor and offer them with the capacity and confidence to improve their lives and handle all kinds of stressors.

Critique of the model

The model had been critique by researcher because it is tough to test through experimental research as a result of its subjective nature. It does not account for the social, biological and environmental factors. Also, it overlooked the physiological perspective in response to stressor.

Application of the model

The transactional model was built on the assumption that stress is a person-situation interaction that is reliant on subjective cognitive judgement that arose from interplay between an individual and his environment. No one event is inherently stressful but rather the stressor is defined by the subjective judgement of the situation that is appraised as threatening, harmful or tasking on individuals coping. How informal caregivers process or judge the condition of the care recipient serve as strong coping strategy that would assist them go through the stress associated with care. When the child's developmental challenge is processed as a condition that can be managed through therapies by informal caregivers, it serves as strong coping strategy that will make them see caregiving demands as less stressful thereby encouraging caregivers to do away with experiential avoidance and defuse from negative thought which consequently lead to a goal oriented action.

2.1.5 Behavioural Theories

Ferster (1973), one of the first researchers that suggested association between depression and behavior, hypothesized that depression develops due to absence of positive reinforcement for the depressive's actions He suggested that the depressives lack motivation and control and as a result received negative feedback from others. Other behaviorists agreed with this view and saw the presence of negative reinforcements as compounding the depression by causing more self-esteem to be lost. Wetzel (1984) stated that behaviorists used learned helplessness model to explain depression. The emphasized on behaviorists believed that people developed depression because they were overprotected when they were younger. As a result, they find it difficult to handle the pressures and stressors as they have been taught by their parents to be passive because they have someone helping out. So when stressors mount, they feel lesser because they believed they are incompetent of taking care of themselves. The limitations of earlier behavioral methods and conditioning models were principally modified by the addition of cognitive change methods and models.

2.1.6 Cognitive Theories

According to 'Abela and DAlessandro (2002) cognitive theory assumes that most psychological problems derive from faulty thinking processes. He stated that there are three bi-directional components of this theory: cognitions or thoughts, affect or feelings, and behavior. He emphasized that while cognitive theory is obligated to the behavioral model, the differences are obvious. In contrast to behavioral models that focus primarily on visible behaviors, cognitive theory looks at the antecedent events, cognitions, and behavior as interactive and dynamic. Each of these aspects is capable of influencing the other, but the main importance is placed on cognition. Abela and DAlessandro (2002) buttressed that the way we act and feel is most often affected by our beliefs, attitudes, perceptions, cognitive schema, and attributions He explained that these cognitive factors serve as an outline through which happenings are filtered and judged.

Albert Ellis' Cognitive Theory

Ellis (1984) in his Cognitive Theory stated that depressed people's irrational beliefs take the form of absolute statements. He described three main irrational beliefs typical of depressive thinking: "I must be completely fit in everything I do, or I am useless." "Others must give me respectfully, or they are absolutely bad." "The world should always give me joy, or I will die." Because of these kinds of beliefs, depressed people make absolute demands on others and assure themselves that they have overwhelming needs that must be satisfied. Ellis (1984) referred to inclination towards absolutism in depressive thinking as "Musterbation."

He also explained the presence of information processing biases in depressed people's beliefs process. He said that depressed individuals have tendency to overlook optimistic information, pay overstated attention to negative information, and engage in overgeneralization, which occurs when people assume that because some happening has turned out badly, then this means that all happenings will turn out badly. For example, depressed people may refuse to see that they have at least a few friends, or that they have had some achievements across their lifetime by overlooking the positive. They might dwell on and exaggerate the hurts they have suffered. They might as well overgeneralize; depressed people may convince themselves that nobody loves them or that they always mess up

Bandura's Social Cognitive Theory

Bandura (1986) developed Social Cognitive Theory which suggested that people are shaped by the interactions between their behaviors, thoughts, and environmental happenings. He said that human behavior is mainly a product of learning, which occurs by way of observation, as well as through direct experience. Bandura expressed that depressed person's self-concepts are different from non-depressed person’s self-concepts. He stated that people who are depressed hold themselves solely accountable for bad things in their lives and are full of self-recrimination and self-blame.

In contrast, the same depressed individual view successes as being caused by external factors outside their control. In addition, they tend to have low levels of belief that they have the capacity to influence their situation. Because depressed people also have a faulty judgmental process, they tend to fix their personal goals too high, and then fall short of reaching them. These repeated failures further reduce feelings of self-efficacy and eventually lead to depression.

According to Moore (2000), majority of renowned cognitive and behavioral therapies in the first and second wave are fairly mechanistic. He explained that a mechanistic interpretation of human complexity is an accumulation of simple parts, relations, and forces and that the objective of science is to combine those elements in a comprehensive way. He explained that the second-wave interventions focused on the content of thought. The aim is to establish the truth of thought and teach client an alternative reconstruction. All these processes are done because behaviour theorists have naturally mechanistic assumption that the form, frequency, or situational sensitivity of thought leads directly to emotional and behavioral effects.

Jenkins (1974) posed that changes in philosophy of science have progressively weakened the assumptions of both the first and second wave of behavioral and cognitive therapies for a more contextual approach (as cited in Moore, 2000). The change birth a positive outcome for Dialectic Behavioural Therapy. Hayes, Masuda, Bissett, Luoma and Guerrero (2004) also provided a concrete backing for the function of acceptance and change and the significance of mindfulness in behavior treatment (Hayes, Follette, & Linehan, 2004).

In the cognitive area, the shift started by weakening the idea that the form or frequency of specific problematic cognitions was fundamental. The attention was shifted to focusing on the cognitive context and coping strategies related to these specific thoughts. Borkovec and Roemer (1994) explained that greater attention is given to contacting the present moment and changing treatment from first-order change to psychological context. Finally, Teasdale et. al (2002) proposed Mindfulness-Based Cognitive Therapy which provided intense evidence of how possible it is to alter the function of thoughts without first changing their form.

2.1.7 Relational Frame Theory

Relational frame theory (RFT) was originally developed by Hayes in 1991 but extended notably in research by Barnes-Holmes. It is a psychological theory of human language which claimed that the building block of human language and higher cognition is related, that is, the human ability to build links between things. It is fundamentally similar to Skinner's behavioural theory and is different from most cognitive and linguistic approaches to language, in that "it approaches verbal events as activities not product (Dymond & Roche, 2013).

On the strength of this, the relational frame theory also argues that natural human language typically specifies not just the strength of link between stimuli but also the type of relation, as well as the dimension along which they are related. Consequently, participants in operant experiments cannot be said to be showing verbal responding unless they demonstrate patterns of behavior consistent with such a history (Hayes et al, 2001). By implication, individuals with a sufficiently advanced repertoire of this form of behavior, on the other hand, can speak with meaning, thus producing sequences of stimuli that may come to influence other verbal individuals, and listen with understanding and respect to the stimuli produced by the latter.

From the RFT perspective, any objects or events that are relationally framed become verbal part of the world as known through relational frames (Hayes et al, 2001). Hayes et al (2001) further stressed that as we frame objects, events, and people through our interactions with the socio-verbal community, we elaborate our network of related stimuli and, through transformation of functions, the world increasingly takes on new verbally derived functions, beginning when we first learn to frame words and objects as the same and likely continuing throughout most of our lives. Instructively, and as noted by the proponents of the theory (Hayes et al, 2001), the RFT principle of 'relational responding' refers to the process of discriminating relationships between stimuli, the idea of discriminating relationships between stimuli is important because it allows more information to be gleaned from sets of stimuli than discrimination of each individual member of the set would allow.

The following analogy as highlighted by Hayes et al (2001) is a good analogy of the situation. Accordingly, being able to discriminate a wooded area, and being able to discriminate a snake, which tells one nothing about the relationship between snakes and wooded areas. Furthermore, knowing that snakes are often in wooded areas because a friend told one, would make one cultivate the attitude of being very careful when walking in the woods, even one had never once encountered a snake in the woods (and thus never had the opportunity for wooded areas to become classically conditioned to snakes). If one were also told that "snakes are dangerous, unpredictable, and move quickly," and one already knew that dangerous unpredictability and sudden movement were things to be justifiably afraid of, one would then know the need to be afraid of snakes even if one had never encountered one before.

Moreover, knowing the relationships between wooded areas teeming with dangerous snakes that are a deadly threat to one by virtue of the fear they engender when one thinks about them could also engender other, even more complex behaviors. For example, if one knew that one was going on a camping trip to the woods, the relational frame depicted in the example above might also cause one to pack a snake bite kit and wear tall leather boots, and to make sure one's tent flap is tightly zipped at all times, all to avoid problems from a creature one has never even seen.

Nonetheless, the authors nudge that while there are some obvious benefits to the ability to relate information like this, it is also clearly obvious that this process can get out of control and lead to psychological problems like having snake phobia. The empirically demonstrated fact that specific types of relational responding occur even in specific situations where they have not been directly taught requires that such instances be referred to as derived relational responding Hayes et al (2001). Accordingly, derived relational responding involves the ability to relate stimuli in a variety of ways even though one has never been reinforced (i.e., directly trained) for relating those stimuli in those specific ways. Assume also that I learned from someone that snakes can be dangerous, unpredictable, and often move quickly, and that I had learned previously that danger, unpredictability, and quick movement were fearsome events. Even though nobody had ever told one that one should be afraid of snakes, one would then know that they are indeed something to be afraid of.

Application of the Theory

As humans, everything we encounter and think about, including ourselves, our thoughts and emotions, our prospects, other people, and our environment, becomes part of this elaborate verbal relational network. For us, the world is verbal, and we can never completely escape language except under very unusual situation. The fact that events and objects in our world take on verbal functions through relational framing has both positive and negative implications for us (Torneke, 2010). On one hand, the human ability to verbally analyze and transform the functions of our environment can allow more effective behavior (Hayes et al, 2001). But the very same capacity can cut individuals off from important experiences and produce maladaptive responding (Hayes, Strosahl & Wilson, 2011).

RFT suggests a third-wave alternative of changing the contexts that support a thought, action or emotion. Experiential acceptance and cognitive defusion are prime examples of Acceptance Commitment Therapy techniques that attempt to do just that.

2.1.8 Acceptance and Commitment Therapy (ACT)

Hayes, Wilson and Strosahl (1980) developed Clinical Behavioural Analysis known as Acceptance and Commitment Therapy. The ACT has its background in a contextual theory of language and cognition known as relational frame theory (Hayes, Barnes-Holmes & Roche, 2001). According to the authors, ACT makes use of a number of therapeutic strategies, many copied from other approaches and subsequently further developed within the ACT model. The authors explained that ACT aimed to increase acceptance of the full range of subjective experiences, including distressing thoughts, beliefs, sensations, and moods, with determination to stimulate desired behavior change that would lead to improved quality of life. They buttressed that the key principle is that attempts to control unwanted subjective experiences are often not only unproductive but even counterproductive distress reduction. Consequently, patients are encouraged to contact their experience completely and without resistance move toward valued goals.

According to the authors, the Acceptance and Commitment Therapy (ACT) seemed confusing because how do acceptance and commitment paired with mindfulness form an effective treatment? They further buttressed that instead of evading the problems, one should stay committed to actions that would help stop the struggle against the unavoidable but that would aid thriving. They emphasized the essential components of ACT which included letting go of the struggle to control unwanted thoughts and feelings, being mindfully aware of the present, and committing to a course of action that is stable with what one valued. Thus, the authors explained that ACT is about both acceptance and change.

Hayes and Smith's study (as cited in Hulbert-Williams, Storey & Wilson, 2015) explained ACT as less concerned with traditional models of psychopathological categorization and maintains that suffering is normal and should not be seen as a indication of ill-health. ACT incorporates a trans-diagnostic model of intervention emphasizing the broadening of an individual's psychological repertoires to improve coping responses to adverse stressor events. In contrast to symptom-reductive traditional models of CBT intervention, ACT does not target and alter the content, frequency or form of troubling cognitions. Rather, ACT aimed to diminish their behavioural impact. In doing so, ACT interventions resulted in an increase in psychological flexibility, which acted as a buffer to psychological distress. ACT encourages patients to “defuse” from distressing psychological experiences and assume an accepting stand toward one's experience as it unfolds in real time.

Hulbert-Williams, Storey & Wilson (2015) explained that ACT promotes the idea of committed action as a drive toward goals in the context of experiential acceptance. It encourages that rather than concentrating on altering psychological events directly through first-order change strategies, these interventions seek to change the significance of those events and the individual's connection to them through second-order change strategies such as acceptance or cognitive defusion. The authors emphasized that the ACT targets each of these main problems with the general aim of increasing psychological flexibility. Hulbert-Williams, Storey & Wilson (2015) further stated that the ACT is effective for different psychological disorders and other treatment towards life-affirming and motivational perspective of the world. The author stipulated that Acceptance and commitment therapy (ACT) has been presented by researches to be useful in handling anxiety, depression, substance abuse, and so on. Hulbert-Williams, Storey & Wilson (2015) said that there are numerous specific domains of ACT intervention, and each has its own specific methodology, exercises, homework, and metaphors. They are:

(a) **Confronting The System**: Hulbert-Williams, Storey & Wilson (2015) stated that ACT regularly starts by challenging the linguistic set that defines both problems and their potential solutions, because it is believed that the linguistic set itself is viewed to be a problem. Using mindfulness training, ACT encourages an open experience of the environment and psychological occurrences, whether perceived as good or bad. ACT seeks to recognize the strategies that the client has engaged till this present to "solve the problem" and see whether these methods are working. The "person in the hole" metaphor provided a model of this aspect of ACT. Hulbert-Williams, Storey and Wilson explained the metaphor with this example:

"The condition you are in seems a bit like this. Envisage that you're positioned in a field, wearing a blindfold, and you're given a tiny bag of tools. You're told that your job is to run around this field, blindfolded. Strange to you, in this field there are a number of widely-spaced, fairly deep holes. You started running around and sooner or later you fall into this large hole. You feel around and there are no escape routes you can find. So you reach into your bag and find a shovel. So you started digging, but pretty soon you noticed that you're not out of the hole as the hole was getting bigger. So you tried digging faster, or with big scoops. But it was not working. So you looked around and saw me, thinking, maybe he has a really huge shovel or a gold-plated steam shovel. Well, I don't. And if I did, I wouldn't engage it because excavating is not an answer out of the hole-digging, it is what makes holes" (Hulbert-Williams, Storey & Wilson, 2015).

(b) **Control Is The Problem:** In the realm of common sense, if we do not need something, we must figure out how to get rid of it. Controlling strategies are taught continually and in most facets they work fairly well. In the psychological domain, however, it worked otherwise because of the nature of relational frames. For example, intentionally not thinking of something usually fails because the rule (“don't think of x”) contains the avoided item. In this aspect of ACT, a simple idea is put on the table that conscious, deliberate, and purposeful control simply may not work very well with respect to the private experiences the client is targeting. The polygraph metaphor provided a model of this aspect of ACT: Teasdale explained the metaphor with this example; "assume I had you hooked up to the most sensitive polygraph machine and I told you that I had a very simple assignment for you to perform: stay relaxed. However, I want you to try hard, so I am going to hold a loaded gun to your head. If you get anxious, I'm sorry but I'm going to have to pull the trigger. What you reason might occur here?” In this metaphor (and similar metaphors or exercises), the client is requested to consider the possibility of not being anxious a nearly difficult task, which applied to efforts in regulating automatic beliefs, feelings, and memories.

(c) Cognitive defusion and mindfulness: The author stated ACT intimates that the development and maintenance of psychological disorders are linked to fused cognitions. This occurs where individuals become attached to content rather than function of cognitions. An important part of accepting our thoughts is to recognize that they are different from the events to which they refer. In ACT, this process is called "cognitive defusion." ACT therapists use a number of trainings to help their clients experience thoughts in a "defused" way. Cognitive defusion procedures are intended to modify how an individual responds to or interacts with their thoughts and feelings rather than the nature of these thoughts and feelings. The thought “I am bad” can seem to mean that the person is dealing with being bad, not with thinking “I am bad.” Instead, ACT alters their context. The argument is that thoughts do not represent what they say they mean, and while it may not be likely or healthy to experience their referents, it is always possible to experience them as an ongoing process if the situation in which they are occurring is changed.

Mindfulness exercises are alternative means to attain cognitive defusion and thus increase behavioral flexibility. Kabat-Zinn (1994) expressed that contacting events in the here and now without getting into evaluative and judgmental language is the very essence of mindfulness. Metaphorically, mindfulness teaches clients to see thoughts as happenings in the world, not at the world as structured by thoughts.

(d) A transcendent sense of self: A transcendent sense of self: Distressed individuals often fail to distinguish between their cognitive and emotional experiences as being distinct from the self. Hayes et. al. (2006) explained that the ACT gives individuals the capability to be consistently mindful of thoughts, feelings and other internal states (process) and notice that these are distinct from the experiencing self (context). The observer exercise (a modified of the self-identification exercise developed by Assagioli (1971) is a main eyes-closed ACT exercise designed to promote experiential contact with sense of self. The client is asked to become aware of present sensations, and then is asked to remember something that happened a few months earlier and to become intensely conscious of what that experience sensed like. Then the client is asked to notice (not as a belief, but as a direct experience that a person is here now experiencing those events some months ago. From this “observer perspective”, a variety of domains are examined (e.g., bodily sensations, roles, emotions, thoughts). In each case, the rapidly changing content of experiences is contrasted with the continuity of consciousness itself. For example: “Now let's examine the area: emotion Notice how your emotions are constantly changing. Occasionally you feel calm and sometimes tense, at times joyful and sometimes sorrowful. Sometime happy and sometime sad, even now you may be experiencing emotions . . . interest, boredom, relaxation, fear. The solitary thing you can reckon on with emotions is that they will change. And yet while these emotions come and go, observe that in some deep sense the 'you' that looked out from behind those eyes do not change. You have been you; your whole life. I'm not asking you to believe this; I'm asking you to look at your experience. If your emotions are constantly changing and yet the you that you call you is not, it must mean that while you have emotions you do not experience yourself to simply be your emotions. So just notice your emotions for a moment and as you do so, notice also who is noticing them.” After a number of areas are covered such as thoughts, bodily sensations, memories;, the hit statement said by the therapist is simple: “The things you've been stressed with and trying to change are not you anyway.” Being aware that there is a fixed transcendent sense of self, helps offer a safe place from which to experience fearsome psychological content with less concern that psychological damage could result.

(e) Acceptance and willingness: In ACT, acceptance is not simply tolerance. It is the active open-minded act of embracing of experience at the present time.. Acceptance is an substitute to the nature of circumventing negative, or potentially negative, experiences. It is the active choice to be aware of and permit these types of experiences without trying to escape or change them. Acceptance is not a aim of ACT, but a technique of encouraging action that will lead to positive results. Acceptance is not possible without defusion. Acceptance means actively facing events, as they are and not as what they say they are. This means feeling feelings as feelings; thinking thoughts as thoughts, sensing sensations as sensations, and so on, here and now.

(f) Values: The stress on values differentiates ACT from many alternative treatments. Actually, ACT therapists often do values interpretation work before other ACT components. Values in this framework are defined as the potentials that we select to work towards in any given moment. We all hold values, knowingly or automatically, that direct our steps. In ACT, we apply procedures and techniques that aid us live our lives according to the values that we hold dear. Values are qualities of action that can be began in behavior but not possessed like an object. ACT therapists ask their clients, “What do you want your life to stand for?” In this phase of treatment, a client is requested to list values in different life domains such as family, intimate relationships, health, spirituality, and so on. Various suggestive exercises are used to improve clarity about fundamental values. When values are illuminated, achievable goals that represent those values, tangible actions that would create those goals and specific obstacles to accomplish these actions are identified.

(g) Commitment: ACT aims to assist clients commit to actions that will promote their goals and facilitate their effort to live values consistent life. While a value can point an individual in a specific direction, and values may even recommend specific goals, values and goals are not the same thing. People who chase similar goal can do so because of different values. Let us consider several politicians contesting for the same office. They all share the common goal of getting elected, but does this mean they have the same values? One might have chosen this goal based on the values of public service. Does it follow that anyone pursuing the goal of election to public office has these values? This difference between values and goals is key because occasionally people do things to achieve goal that actually move them away from a valued direction. If the goal is the only thing energizing our progress, once we have achieved the goal, progress stops. Unlike goals, values are directions, not destinations. Being aware of the values that stimulated one to set a goal can give one a sense of ongoing progress and clarity about what comes next. All of the exercises, techniques, and practices of ACT are anticipated to assist individuals in realizing their goals through positive behavior changes. ACT pursues to form larger patterns of malleable and active responding, both by eliminating the repertoire-narrowing effects of cognitive fusion and experiential avoidance and by encouraging thoughtful patterns of action that agree with chosen values.

These core processes show that ACT is not entirely different from other behavioral-based therapies, but the stress on acceptance and allowing instead of avoidance. This is what distinguishes ACT from numerous other methods of therapy. Acceptance and Commitment Therapy module modified to meet with the need of participants as gathered from the focus group discussion was used by the researcher at the intervention stage of the study on the experimental group and subsequently on the control group after the study (see appendix V).

2.2 Review of Related Empirical Studies

Several studies have suggested that many caregivers are at risk of experiencing distress and depression (Hartley, Sikora, & McCoy, 2008; Ijezie, Ojinnaka & Iloeje, 2009; Okewole, Dada, Ogun & Bello-Mojeed, 2011; Totsika, Hastings, Emerson, Lancaster, & Berridge, 2011). They administered structured clinical interviews of which nearly half of the caregivers were reported to meet diagnostic criteria for depression. Dhwanit, Sumit, Deepak and Parmar (2014) found that nearly one-quarter of caregivers met the criteria for depression while engaging in caregiving activities even though they did not have prior diagnoses of before taking up the responsibilities. In this section, review of relevant literature on of social support, caregivers' burden and sleep quality's influence on psychological health was addressed.

2.2.1 Social Support and Psychological Health

The powerful and appropriate mechanism to decrease stress and improve the psychological health of families caring for children with intellectual disability is the social support they enjoy from family, friends, neighbors, and professionals. (Zablotsky, Bradshaw & Stuart, 2013). Lahey (2002) in his study explained how people with good social support respond to negative life events with depression, anxiety, and health problems.

Quittner, Glueckauf and Jackson (1990) study similarly opined that the lingering parenting stress is associated with lowered perceptions of emotional support, greater depression and anxiety. Parenting stress accounted for considerable change in psychological distress of caregivers in contrast to life events stress. They examined the "buffer" model of social support with an alternative mediator model for ongoing parenting stress versus life event stress using 96 mothers of deaf children and 118 matched controls. He discovered that social support mediated the association between stressors and outcomes.

Kim and Knight (2008) carried out a study among Korean American on direct and indirect impact of caregiving status on their physical health from the aspect of caregivers coping styles and quality and quantity of informal social support using objective and subjective health indicators among sample size of 87 caregivers and 87 matched non-caregivers. They found that there was a relationship between caregivers' status with poor health outcomes and the adverse effects of caregivers' status on their physical health.

Similarly, Smerglia, Miller, Sotnak and Geiss (2007) investigated social support and adjustment to caregiving of elder family members in order to know if informal support assisted family caregivers. They carried out a study based on computer-generated literature which produced 35 articles on caregiving from data bases of social science and medical science. Findings showed that there is no positive significant relationship between social support and caregivers' adjustment and neither received nor perceived support are more important and instrumental or socio-emotional support may not likely predict adjustment.

Brehaut, Kohen, Raina, Walter, Russell, Swinton, O'Donnell and Rosenbaum (2004) investigated the health of primary caregivers of children with cerebral palsy. They collected data from four hundred and sixty-eight primary caregivers of children with cerebral palsy drawn from eighteen to nineteen rehabilitation centers in Canada, taking into consideration the following variables; age, education, gender, work-related factors and income, they also consider social support, family functioning, distress, cognitive and emotional problems. They went further to consider physical health variables like chronic conditions, vision, hearing and mobility problems and experience of pain. Their findings revealed that though compared with general population the caregivers of children with cerebral palsy had lower incomes despite the circumstance that differences was not observed in their level of education. Also, they were less likely to report working for pay, may not engage in full-time work and more likely to list caring for their family as their main activity. There was no difference in the measures of social support and family functioning though the caregivers sample reported a statistically greater number of support contacts. Psychological health measured revealed greater chronicity of distress, emotional and cognitive problems. They also reported variety of physical problems like low back pain, migraine headache, stomach/intestinal ulcers, asthma, arthritis/rheumatism and chronic pain, as well as greater overall number of chronic physical conditions.

Raina, McIntyre, Zhu, McDowell, Santaguida, Kristjansson, Hendricks, Massfeller and Chambers (2004) examined the influence of indirect and direct relationships between caring for a person with dementia and caregivers' health. They used structural equation modeling to test their hypotheses among the sample size of three hundred and twenty-seven caregivers of people with dementia who lived in the community as part of Canadian Study of Health and Aging. The results showed that there was negative impact of increasing disability of care recipient on the psychological well-being of the caregivers which was mediated by the use of informal support systems. The use of this system by caregivers had relationship with decreased use of formal supports.

The association between caregivers' characteristics and psychological health was mediated be the use of formal support and not vice versa. Winslow (1997) reported that neither coping nor formal support mediated primary stressors and caregivers' characteristics among Alzheimer patient family as hypothesized. Furthermore, path analysis suggested that the decreased physical health of the caregivers' observed was best explained by caregivers' overload. They explained caregivers' anxiety is determined by lower levels of care receiver dependency, higher levels of caregivers' overload, and higher levels of caregivers' anxiety. Social support has being stated to have weighty effects on caregivers' outcomes.

Reports invariably indicate that less depressive symptomatology corresponds to more social support (Cly burn, Stones, Hadjistavropoulos & Tuokko, 2000; Huang, Sousa, Perng, Hwang, Tsai, Huang & Yao, 2009). Gruetzner (2001) stated that social support is important, in that, caregivers were able to find out about services from people who have used them before and formed a link with others in similar situations.

Nordin, Westerholm, Alfredsson and Akerstedt (2012) reported that both dimension (structure and function) and source (at and outside work) of support mattered in sleep quality and related, whereas the functional dimension affected sleep quality when provided outside work. In addition, he found that the elderly individuals who reported sleep problems and took longer to fall asleep and slept poorly at night had lower scores on the Interpersonal Support Evaluation Scale than the elderly who denied such problems.

Barakat and Linney (1992) reported that social support is associated to higher maternal psychological adjustment and higher child adjustment. He further said that maternal psychological adjustment related positively to child's adjustment in both groups. They carried out the study with 29 families of children with spinal fibida and without mental retardation and 28 families of children without handicaps and investigated inter-correlation of maternal adjustment, mother-child interaction, and child adjustment.

Raina, O'Donnell, Schwellnus, Rosenbaum, King, Brehaut, Russel, Swinton, King, Wong, Walter and Wood (2004) showed that caregivers in difficult circumstances but with relatively high social support managed well than those with less social support. Similarly, it was reported that the level of available informal social support has consistently been shown to be associated with both fewer reports of depression and better physical health in caregivers of the elderly (Resick, 2001; Travis, Lyness, Shields, King & Cox, 2004) and that being satisfied with social support networks associated with more positive caregivers' attitudes and personal well-being. Also, it is believed that parents who had more satisfaction with social supports reported fewer emotional and physical problems (Wrosch, Rueggeberg & Hoppmann, 2013).

Resch, Mireles, Benz, Grenwelge, Peterson and Zhang (2010) conducted a qualitative study with the drive to know sources of various challenges identified caregivers of children with developmental disorders. He collected data through audio recorded for two hours. He included 40 parents (four males and 36 females) who were primary care providers to children with physical, developmental, or intellectual disabilities. Purposive sampling procedures gathered participants of multiple ethnicities, education levels, income levels, and community sizes, with children of various primary disabilities such as Autism, Down Syndrome, and Muscular Dystrophy who took part in a varied range of classroom settings such as homeschool, regular classroom, or a school for special needs students. Focus groups were conducted by three staff members who served as a note taker each. He stated that the first two authors remained present at individual focus group to confirm consistency of data collection. He reported that parental wellbeing was influenced by four major themes of lack of access to important information and support services, financial barriers to acquiring support services (generally health care services), lack of inclusion in school and community activities due to adverse reactions from the community and absence of support for the whole family.

Ribeiro, Vandenberghe, Prudente, Vila and Porto (2016) investigated on how age group and severity of the motor impairment of children with cerebral palsy modify the experiences of stress and coping strategies by 19 mothers. They used a qualitative approach which method was framed on Grounded Theory Analysis. They found that the absence of support and increased time and effort invested in parenting at the cost of other areas of life threatened participants' physical and emotional health.

Frey, Greenberg and Fewell (1989) reported that positive belief systems or a non-critical family network associated with low psychological distress in mothers and that social network predicted family adjustment.

2.2.2 Sleep Quality and Psychological Health

Carter (2002) conducted a study that described caregivers' sleep and depression through caregivers' narratives which compared qualitative descriptions with quantitative scores. He reported that caregivers described severe fluctuations in sleep patterns over time and how these changes affected caregivers' depressive symptoms. His findings further showed that caregivers' narratives suggested progressive sleep deprivation suffered by caregivers and affected their emotions and ability.

Brummett, Babyak, Segler, Vitaliano, Ballard and Gwyther (2006) reported that caregiving was indirectly related to sleep quality among caregivers and non-caregivers control. They also found that the direct effect of caregiving on sleep quality was not statistically significant after they accounted for the indirect effects of negative affect and social support in caregivers. In addition, they found that the univariate and multivariate analyses showed that sleep quality was compromised in caregivers when compared to non-caregivers. Most importantly, their findings indicated that a large percentage of the variance in sleep quality was attributable to associations among caregiving, negative affect, and social support. Specifically, they suggested that negative affect mediated the association between caregiving and poor sleep quality. They further explained that the inverse association between negative affect and social support could explain part of the mediating role of negative affect with respect to caregiving and poor sleep.

McCurry, Gibbons, Logsdon, Vitiello and Teri (2009) conducted a study where caregivers rated their sleep quality and expressed whether they got enough, too much, or too little sleep in the night. Their CSQ scores of 12 points or higher (out of a possible 26), which was equal to the upper 25th percentile for the sample at baseline, were considered the “sleep disturbed” range.

In one other relevant study, Connell and Mary (2009) introduced participants to an exercise training program for first six weeks and engaged in a minimum of four 30 to 40 minutes home-based exercise sessions weekly (mostly brisk walking) for a year. He found that exercise produced improvements in systolic blood-pressure reactivity and PSQI subjective sleep quality scores in caregivers' participants at one year. Also, he found out among exercisers that improvements in sleep quality were related to reductions in perceived stress and subjective caregivers' burden. His findings supported the hypothesized relationship between caregivers' sleep disturbances and negative affect or appraisals, mediated by stress-induced cardiovascular reactivity.

Anyango (2013) similarly found that caregivers of children with mental health condition were likely to experience clinical depression than general public. Castro, Lee, Bliwise, Urizar, Woodward and King (2009) reported that caregivers and non-caregivers' sleep patterns were alike across most PSG-measured parameters. Caregivers were said to perceive more sleep disturbances but PSG showed minimal differences when compared to non-caregivers. They observed that depressive symptoms more among caregivers. In addition, the researchers stated that depression was found to be strongly correlated with longer sleep latency. They further reported that the quantity of sleep was highly associated with the quantity of sleep in care recipient. Lastly, he buttressed that caregivers' sleep was not significantly different from that of non-caregiving women notwithstanding differences in their perceptions.

Maltby, Sanderson, Lobb and Phillips (2017) study reported patterns of sleep among caregivers of patients with advanced cancer. It was a systematic review which reported empirical sleep. They reported that 72% of the caregivers experienced moderate to severe sleep disturbances when assessed by the Pittsburgh Sleep Quality Index. Secondly that the objective measurement of caregivers' sleep identified that some caregivers experienced up to a 44% reduction in their total sleep time compared to the recommended eight hours while reduction in total sleep time appeared to be the discovered biggest issue that affected caregivers' sleep.

Ghasemi, Negarandeh, Janani, Samiei and Delkhosh (2014) conducted a study that investigated the mental health status of the family caregivers of patients with heart failure. They collected data with General Health Questionnaire (GHQ-28) for measurement of mental health. The result showed that the majority of caregivers (74.4%) were suspected cases of mental health disorders.

Seun-Fadipe and Mosaku (2017) conducted a study that assessed sleep quality of 504 undergraduate students in a Nigerian University which determined its association with psychological distress and evaluated some of the factors associated with poor sleep quality among the students. They reported that about one-fourth of the student had psychological distress. In addition, poor sleep quality was significantly associated with the occurrence of psychological distress and symptoms of depression and anxiety. Lastly, they reported that poor sleep quality among the students was predicted by year of academic study level, psychological distress, and anxiety symptoms.

Lemma, Gelaye, Berhane, Worku and Williams (2012) reported that out 55.8% of 1,424 expressed poor sleep quality in a cross-sectional survey conducted using two universities at Ethiopia. Female students, second year (and third-year students were reported to express higher odds of poor sleep quality. Also, the perceived stress level and symptoms of depression and anxiety were said to be associated with sleep quality.

Sepehrmanesh (2016) investigated the relationship between mental health and sleep quality in the students. Two hundred students were selected by randomized sampling that included 100 cases (50%) with a sleep disorder and 100 cases without the sleep disorder. Three questionnaires were used, including demographic variables, Pittsburgh and GHQ questionnaires. There was a significant relationship between general mental health, physical symptoms, anxiety and depression scale with sleep quality. GHQ score was 31.52 in cases with a sleep disorder and 18.49 in cases without the sleep disorder. Thirty-five percent of students with a sleep disorder and 7% of students without sleep disorder had suicidal thoughts. Suicidal attempt ideas were 32% and 7% in people with a sleep disorder and without sleep disorder, respectively. He reported that a significant relationship existed between sleep disorder and suicidal thought /attempt.

Feeley, Turner-Henson, Christian, Avis, Heaton, Lozano and Su (2014) reported that an average sleeping time of 5.8 hours with significant correlations found between sleep quality, depressive symptoms and stress. This study was conducted among 61 maternal caregivers of young children with bronchopulmonary dysplasia.

Similarly, Honda, Iwasaki and Honda (2017) discovered that the well-being of 105 employed family caregivers in Japan is being affected by their sleep quality. He opined that having a good sleep quality among employed family caregivers is significant in reducing the burden of caregivers, psychological distress and for improving the stability between work and family life. He also found that the well-being of working family caregivers was impacted by the severity of behavioral and psychological symptoms in elderly relatives.

Furthermore, in Russell (2014) study, 62 family caregivers of children with ASD who expressed symptoms of insomnia, inadequate sleep and non-restorative sleep were found to be more likely to report poorer mental health issues than caregivers who did not report these sleep disorder symptoms. Caregivers with longer sleep duration reported better mental health and better FQol.

Argyriou, Karanasios, Assimakopoulos, Iconomou, Makridou, Giannakopoulou and Makris (2011) researched on Greek primary caregivers of patients with Multiple Sclerosis and discovered that 19 (54.3%) of the caregivers had poor quality of sleep as compared with controls, which scored at a significantly lower level. An increased level of anxiety and depression was also found to be significantly correlated with poor quality of sleep and that sleep latency were mostly influenced by the amount of emotional distress.

Koyama, Matsushita, Hashimoto, Fujise, Ishikawa, Tanaka, Hatada, Miyagawa, Hotta and Ikeda (2017) reported that sleep problems were significantly more common among 104 younger dementia caregivers than in 104 community residents. He also discovered that caregivers' deteriorated mental quality of life was associated with patients' behavioral and psychological symptoms.

Day, Haj-Bakri, Lubchansky and Mehta (2013) found that anxiety (43.6%), tension (28.7%) and fear (24.5%) were the most common factors contributing to poor sleep in adult family members of critically ill patients. Similarly, Song, Washington, Yano, McCurry, Fung, Dzierzewski, Rodriguez, Jouldjian, Mitchell, Alessi and Martin (2016) discovered that female Veterans with self-identified sleep problems experienced significantly more symptoms of depression and anxiety and impairment in daytime function due to caring for a sick adult than those with self-identified sleep problems due to caring for an infant after controlling for the respondent characteristics.

In addition, Lavela, Etingen and Louise-Bender (2013) study reported that female Veteran expressed higher rates of self-reported sleep problems and poorer mental health in caregivers as compared to female non-Veteran caregivers. They further found new evidence on the association between mental health and caregiving-related sleep problems alongside daytime impairments.

Mihaila and Hartley (2016) reported that mothers of children with autistic spectrum disorder persistently experience poor sleep quality associated with between-person differences in first rating of the level of behavior problems by the child using a 14-day daily diary using a sample of 176 mother-father couples. A dyadic multilevel model was used which examined the between-person and within-person effects of previous-night sleep quality on parental rating of the level of behavior problems by the autistic child. They further discovered that previous-night sleep quality moderated the association between the rating of the level of behavior problems by the child with autism spectrum disorder and level of positive and negative affect in fathers at a within-person level. They however concluded that interventions targeted at enhancing sleep quality in parents of children with autism spectrum disorder may have significant effects on parental psychological well-being.

Gallagher, Phillips and Carroll (2010) found that 67 parents of children with developmental disabilities reported poorer sleep quality when compared to 42 parents of typically developing children. He buttressed that the parental stress is the strongest predictor of poor sleep quality.

Unruh, Redline, An, Buysse, Nieto, Yeh and Newman (2008) in addition reported that older age was associated with shorter sleep time, diminished sleep efficiency, and more awakenings in men and women. They discovered that age was independently associated with more Stage 1 and Stage 2 sleep and less slow-wave (Stage 3 to 4) and rapid eye movement sleep in men while older age was less strongly associated according to linear trend with sleep stage in women. They further found that older age was not associated with poor subjective sleep quality with in men; however, older women had more trouble falling asleep, wake up during the night and wake up too early.

Hlubocky, Sher, Cella, Yap, Ratain, Peppercorn and Daugherty (2017) investigated the prevalence of sleep disorder and its impact on the quality of life and psychological disease among Advanced Cancer Patients (ACP) and Caregivers (CG). A prospective cohort of advanced cancer patient participating in phase I trials were assessed at baseline (T1) and one month (T2) using psychosocial instruments: cognition (MMSE);

depression(CES-D), state anxiety (STAI-S), QOL(FACIT-Pal), global health (SF-36). Semi-structured interviews evaluated sleep disorder patterns including quality/latency, habitual efficiency, and daytime dysfunction. 152 subjects (76 ACP and 76 CG) have been separately interviewed at T1 and T2. At T1, 57% of ACP reported experiencing sleep disorder within the past week including 55.6% insomnia, 44% nonrestorative sleep, 49% low energy, 48% daytime somnolence. For CG, 72% reported experiencing sleep disorder: 68% insomnia, 64% nonrestorative sleep, 69% fatigue, 66% daytime somnolence. At T2, rates remained consistent over time for both ACP and CG across time with the exception of increased insomnia at 61% and 76% respectively. After controlling for pain, mood, and fatigue, ACP with self-reported sleep disorder had higher State-Trait Anxiety and poor global health at T2. CG with sleep disorder had higher State-Trait Anxiety and poor global health at T2. Regression analyses revealed ACP with self-reported insomnia had poorer QOL over time. Prior chemotherapy was associated with ACP sleep disorder.

Lee, Yinn and Lu (2014) found that 72.2% of family caregivers experienced sleep disturbance due to frequent "wake after sleep onset" they experience due to patient care. A strong correlations were found between caregiver burden and sleep quality. They further discovered subjective and objective burden predicted 56.6% of the change in sleep disturbance.

Carney, Koetters and Cho (2011) study found no significant differences in clinically significant levels of sleep disturbances between patients and their family caregivers using subjective and objective measures of General Sleep Disturbance Scale (GSDS) and wrist actigraphs.

Similarly, Känel, Ancoli-Israel and Dimsdale (2010) found independent associations between decreased subjective sleep quality and increased levels of fibrin D-dimer and von Willebrand factor antigen among 97 Alzheimer caregivers and 48 non-caregiving controls. The percent sleep ($p = 0.025$) and subjective sleep quality ($p = 0.017$) were lower in caregivers than in controls. Also, he reported that there was a significant strong correlation between decreased percent sleep, elevated levels of interleukin-6 and C-reactive protein than in controls.

Pawl, Lee, Clark and Sherwood (2014) study discovered that sleep latency was, on average, 35 minutes more than twice as long as the norm of 15 minutes among 133 family caregivers of individuals with a primary malignant brain tumor (PMBT). Caregivers averaged a total sleep time of 5 hours and 57 minutes which is significantly less than the recommended 7 hours. He discovered that the night wake-up were 15% of the time, significantly more than the norm of 10%. He further found that caregivers aroused an average of 8.3 times during nocturnal sleep, with about 32% of them reporting poor or very poor sleep quality.

Similarly, Meltzer (2008) found that ASD parents reported poorer sleep quality when compared to the parents of typically developing (TD) children. In addition, parents of children with ASD had objectively different sleep patterns, with an earlier wake time and shorter total sleep time than parents of TD children. Finally, irrespective of group, fathers had significantly shorter sleep time compared to mothers.

Rittman, Hinojosa and Findley (2009) discovered a greater risk of depression among caregivers who sleep less, have difficulty achieving daytime enthusiasm, take routine sleep medicines or experience poor sleep quality. He reported a difficulty achieving daytime enthusiasm among caregivers who sleep less which expose them to greater risk of poor health. Also, he reported that caregiver burden was associated with less sleep and use of sleep medications. A total of participated in the study.

Aslan, Sanisoglu and Akyol (2009) examined the quality of sleep, reasons for sleep disturbances, and non-pharmacological strategies versus sleep disturbances among family caregivers of patient with cancer. He reported that the caregivers' high score on PSQI indicated poor sleep quality and that the most frequently determined explanations for sleep disturbances were "emotional distress because of the patient's illness" (83.33%), "financial problems" (36.66%), and "inadequate support system" (34.44%); 76.92% of caregivers used at least 1 non-pharmacological strategy, which included mostly "lifestyle practices" (54.28%) and "behavioral practices" (25.71%). Finally, he found a significantly higher poor sleep quality among caregivers having an illness than those caregivers having no illness.

2.2.3 Caregivers’ Burden and Psychological Health

Raina, O'Donnell, Rosenbaum, Brehaut, Walter, Russell, Swinton, Zhu and Wood (2005) found in their study that the most significant predictors of caregivers' well-being were child behavior, caregiving demands, and family function. They reported that fewer caregiving demands were related to better physical and psychological well-being of 468 caregivers of children with Cerebral Palsy recruited from 19 regional children's rehabilitation centers that provide outpatient disability management and supports in Ontario, Canada. In adddtion, past studies reported that the physical, psychological, emotional and functional health of caregivers is threatened by caregivers' burden (Carretero, Garces, Rodenas & Sanjose, 2009; Etters, Goodall & Harrison, 2008; Parks & Novielli, 2000).

Also, related studies stipulated that caregivers often suffer from depression, display maladaptive coping strategies and express concern about their poor quality of life (Molyneux, McCarthy, McEniff, Cryan & Conroy, 2008; Papastavrou, Kalokerinou, Papacostas, Tsangari & Sourtzi, 2007). It had been opined that more physical and psychological symptoms and the use more frequent prescription medications and healthcare services among caregivers than comparable non-caregivers (Schulz & Martire 2004; Serrano-Aguilar, Lopez-Bastida & Yanez-Lopez, 2006).

Some studies suggested that moderate to severe disability affecting basic daily activities in care-recipients is related to high caregivers' burden (Conde-Sala, Garre-Olmo, Turro-Gariga, Vilaita-French & Lopez-Pousa, 2010; Molyneux, McCarthy, McEniff, Cryan & Conroy, 2008; Rinaldix, Spazzafumo, Mastriforti, Mattioli, Marvardi & Polidori, 2005; Sussman & Regehr, 2009). Similarly, a researcher found that numerous caregiving-related factors were associated with burden which include the types of responsibilities that must be performed, level of support and capacity to cope with managing the concerns of the care-recipient (Snyder, 2000). The caregivers that are vulnerable and deprived of access to supportive resources are reported to be at greater risk for burden than those who can call upon services to support them (Clyburn, Stones, Hadjistavropoulos & Tuokko, 2000; Sussman & Regehr, 2009). However, few other studies reported weak or no association between care-recipients' functional decline and caregivers' burden (Clyburn, Stones, Hadjistavropoulos & Tuokko, 2000; Thommessen, Aarsland, Brackhus, Ossengaard & Engedal, 2002).

Ajibade, Ajao, Fabiyi, Olabisi and Akinpelu (2016) investigated burden experienced by 138 family caregivers of patients with mental disorders. The result revealed 37% of the respondent experienced mild burden while 31.1% experienced moderate burden. The amount of time spent caring for the relation, money expended and trying to meet other responsibilities associated with high burden. Etters, Goodall and Harrison (2008) conducted a comprehensive literature review using cumulative index of nursing and allied health literature between 1996-2006 among dementia patient caregivers with the purposes to find modern evidence of factors influencing dementia-related caregivers' burden, describe caregivers' characteristics associated with caregivers' burden, and describe evidence-based interventions designed to lessen the burden of caregiving. They found out that dementia caregiving has been associated with negative effects on caregivers' health and that factors such as gender, relationship to the patient, culture, and personal characteristics impact the caregiving experience. They also reiterated that individually developed multicomponent interventions including a diversity of services will lessen burden, increase quality of life, and allow caregivers to offer home care for longer periods prior to the institutionalization of their loved one.

Stanley, Bhuvaneswari and Bhakyalakshmi (2015) study findings revealed that the majority of spouses of a psychotic patient responsible for caregiving were classified as 'severe' and 'extremely severe' with depression, anxiety and stress levels. They were reported as having expressed high perceived burden. Chien, Chan and Morrissey (2007) reported that caregiving burden is higher among caregivers who lived in a family with poorer functioning, worse health status and less satisfaction of social support. They buttressed that caregivers' burden was positively correlated with their age.

Also, caregivers' burden was found to be negatively correlated with caregivers' monthly household salary and number of family members living with the patient. In addition, they reported that social support is the most important predictor of caregivers' burden. Suro and Weisman de Mamani (2012) reported that individual appraisals of caregiving experiences appeared to moderately trigger the relationship between the concrete costs of caregiving and emotional outcomes among schizophrenia caregivers.

Werntz, Dodson, Schiller, Middlebrooks and Phipps (2015) study found that caregiving-related self-efficacy and caregivers' burden predicted the caregivers' mental health. De Oliveira, Neto, de Camargo, Lucchetti, Espinha and Lucchetti (2014) investigated comparison in caregiving process from childhood to old age. They evaluated variances in caregiver burden, mental health, and their quality of life. It was discovered that caregivers of children reported higher depressive symptoms, but healthier physical health and lesser bodily pain than other caregivers. Also, they reported that adults' caregiver experience better mental health than other caregivers.

Honda, Abe, Aoyagi, and Honda (2014) reported that the ratio of caregivers with poor mental health had increased burdens by 2.5-fold as compared to those with a good mental health. In addition they buttressed an association between mental health conditions in caregivers' burdens and behavioral problems among care recipients.

Olagunju, Oshodi, Umeh, Aina, Oyibo, Lamikanra, Lesi and Adeyemi (2017) conducted a study which set out to explore burden and psychological distress among caregivers of children with neurodevelopmental delays. They found that caregivers' burden was significantly associated to psychological distress in caregivers with greater percentage the caregivers of children with seizures.

Marrón, Redolar-Ripoll, Boixadós, Nieto, Guillamón, Hernández and Gómez (2013) conducted a study to explore factors that best predict the occurrence of a burden among primary caregivers of cerebral palsy children. Furthermore, hey reported that self-efficacy was negatively linearly associated with the burden, while the degree of disability and depression showed a positive linear association. The degree of disability, depression and self-efficacy was further reported as the most important predictors of caregivers' burden.

Hung, Wu, Chiang, Wu and Yeh (2010) study discovered that the parent-related factors that adversely affected parental mental health were low income, lack of religious beliefs, high level of parental distress, parent-child dysfunctional interaction, and having a difficult child. Also, parental distress was found to be the most significant predictor of overall parental mental health.

Kobayashi, Inagaki and Kaga (2012) reported on survey carried out in 460 anonymous institutions and consultation centers in Japan that attend to children with developmental disorders in order to determine the mental health state of parents providing care. Each of the facility was categorized by the client's core disabilities as follows: intellectual disability (ID), pervasive developmental disorder (PDD), profound intellectual and multiple disabilities (PIMD), physical disability group, and others. The findings revealed that ninety percent of the facilities experienced problems communicating with the client's parents, particularly with the mothers, which was found to be influenced by poor mental health, low socioeconomic status, and heavy caregiving burden. They also reported seventy percent of parents showed signs of depression with highest in the PDD group. Also, fifty percent of children who had parents with mental illness experienced maltreatment. It was buttressed that the factors associated with parent's poor mental health included: absence of support from other family members, the presence of a medical illness in the parent, lack of social support networks, the severity of child's disability, and parent participation or non-participation in face-to-face family support groups.

Gupta, Solanki, Koolwal and Gehlot (2014) reported moderate levels of burden by eighty percent of the caregivers and that a strong negative correlation existed between burden and psychological well-being among schizophrenics' caregivers.

Ohara, Komaki, Yamagata, Hotta, Kamo and Ando (2016) reported group who had contact with patients more than 6 hours a day significantly expressed higher caregiving burden and poor mental health conditions as compared to the group who had contact for 3 hours or less. Similarly, Ennis and Bunting (2013) reported that perception of family burden was associated with an increased susceptibility to personal mental health problems. Furthermore, he buttressed the predictive vulnerability to mental health problems by sociodemographic factors such as sex, age, marital status, education and household income.

Han, Diwan, Chang, Comfort and Forward (2017) expressed a significant adverse impacts of caregiving burden on family caregivers' mental health and further explained the mediating role played by self-care and social support in this relationship.

Similar findings were reported by Ukpong (2012) who reported that about one-third out of 101 caregivers experienced moderate/severe levels of burden. Medrano, Rosario, Payano and Capellán (2014) stated that a significant association was found in the between caregiver burden, anxiety, and depression in Alzheimer's patients. He reported that a total of 36% exhibited caregiver burden; 19% anxiety symptoms; and 43% depressive symptoms.

Lasebikan and Ayinde (2013) also reported that huge burden is experienced by caregivers of schizophrenia patients and that they are potential high-risk group for mental disorders. Research indicated that caregivers could put their own health and well-being at risk while they assisted loved ones (Tang & Chen, 2002). The strain of caregiving demands was linked to poor health outcomes which included depression, physical illness, anxiety, and poor sleep habits (Schulz, O'Brien, Bookwala & Fleissner, 1995). On the other hand, there is a report that when caregiving that is not overly strenuous could be associated with mental health benefits to the caregivers' (Beach, Schulz, Yee, & Jackson, 2000)

2.2.4 Acceptance and Commitment Therapy and Psychological Health

Acceptance and Commitment therapy (ACT) had not been used in managing informal caregivers' psychological health in a research study. However, it has been used on many medical and psychiatric diagnoses. Bach, Hayes and Steven (2002) found that a three-hour ACT intervention reduces re-hospitalization with about fifty percent over a four-month and one-year follow-up by way of comparing to treatment as usual among seriously mentally ill inpatients.

Also, Dahl, Wilson and Nilsson (2004) reported the efficacy of Acceptance and Commitment Therapy to manage persons at risk for lasting disability which resulted from stress and pain symptoms. The ACT was compared in an additive treatment design with medical treatment as usual (MTAU) using nineteen participants randomly distributed into two groups. The two treatment conditions received four MTAU. The ACT condition received four one-hour weekly sessions of the ACT additionally to MTAU. Fewer sick days and medical treatment resources were reported at ACT posttest and six-month follow-up review than those in MTAU condition. In addition, the researcher highlighted that the observed improvements in sick leave and medical utilization could not be accounted for by reduction of stress and pain in the ACT group as there was no between-group differences found for stress or pain symptoms.

Gifford, Kohlenberg, Hayes, Antonuccio, Piasecki, Rasmussen and Palm (2004) reported that abstinence rates were alike at the post but not after one year follow-up when the Acceptance and Commitment Therapy was used to stop smoking among 76 substance users as compared with Nicotine Replacement Therapy. The ACT group maintained their gains at 35% quit rates while the Nicotine Replacement Therapy quit rates fell to less than 10%.They reported that ACT worked through acceptance and response flexibility.

Hayes, Bissett, Roget, Padilla, Kohlenberg, Fisher, Masuda, Pistorello, Rye, Berry and Niccolls (2004) found that there was a greater reduction in the stigmatization of clients by therapists and a greater drop in therapist burnout after one-day of ACT workshop than the use of multicultural training.

Forman, Herbert, Moitra, Yeomans and Geller (2007) reported that participants who received CT and ACT improved on depression and anxiety symptoms, functioning difficulties, quality of life and life satisfaction. It was further discovered that when people observe and describe their experience, it mediated outcomes for those in the CT group as compared to those in the ACT group. The researchers, however, expressed that experiential avoidance, acting with awareness and acceptance mediated outcomes for participants in the ACT group.

Flaxman and Bond (2010) reported that ACT and SIT were found to be similarly effective in a randomized worksite comparison of acceptance and commitment therapy, stress inoculation training and waitlist on worksite stress. They also found that ACT mediated by psychological flexibility while SIT not mediated by the cognitive change.

Bohlmeijer, Fledderus, Rokx and Pieterse (2011) reported that depressive symptomatology which had significantly decreased was maintained at the three-month follow-up when ACT was investigated in 93 adults with mild to moderate depressive symptoms. Brinkborg, Michanek, Hesser and Berglund (2011) stated that they found that ACT significantly reduced stress and burnout and increased overall mental health when they were compared to a waiting list control among the two-thirds who were stressed at baseline.

Bethay, Wilson, Schnetze and Nassar (2013) reported that between-group differences were observed in participants who reported that they consistently applied the ACT skills learnt. In addition, participants with greater levels of psychological distress in ACT group showed decreased psychological distress from pretest to follow-up when related to control group. Also, they observed that simultaneous decreases in the authenticity of burnout-related thoughts were observed in the ACT group from pretest to follow-up when compared to control group.

Arch, Eifert, Davies, Vilardaga, Rose and Craske (2012) stated that there was positive outcome for both ACT and CBT at 12-month follow-up. They further reported that clinical severity improved better in participants at ACT group from post to follow up than those in CBT group and that there was better progress in terms of psychological flexibility for the ACT group.

Levin, Haeger, Pierce and Twohig (2017) showed that less stress was experienced by college students that received ACT treatment, both generally and specifically with regards to academic worries, reduced anxiety and depression symptoms, greater general mental health, and improved mindful acceptance.

Ivanova, Lindner, Ly, Dahlin, Vernmark, Andersson and Carlbring (2016) similarly reiterated the positive impact that ACT delivered via the internet had on anxiety and showed that was as effective as ACT delivered physically by therapist to treat social anxiety disorder and panic disorder.

Montesinos and Luciano study (as cited in Hulbert-Williams, Storey & Wilson, 2015) reported that seven out of eight patients in the ACT group expressed reduced relapse fear and clinically noteworthy improvement in emotional distress, anxious worry, and level of positivity of patients' perceptions of the cancer experience when likened to patients exposed to treatment as usual.

Also, Páez, Luciano and Gutiérrez study (as cited in Hulbert-Williams, Storey & Wilson, 2015) concluded that ACT effectively out-performed cognitive therapy with effects that lasted up to twelve-month follow-up, and even when female breast cancer patients continued to experience distress and suffering among.

Datta, Aditya, Chakraborty, Das and Mukhopadhyay (2016) also found that reported significant improvements in cancer patients that received ACT treatment in acceptance of their situations and better meaning in life, though, still experiencing pain.
Another study also found that even when chronic pain remained ACT improved psychological flexibility and reduced depressive symptoms (Scott, Hann & McCracken, 2016).

Walser, Garvert, Karlin, Trockel, Ryu and Taylor (2015) reported that 981 veterans with suicidal ideation at baseline of their study demonstrated significantly better improvement in depression severity during ACT treatment, comparative to patients with no suicidal ideation at baseline after they adjusted for experiential acceptance and mindfulness. Furthermore, they stated that increased experiential acceptance and mindfulness overtime were associated with reduction in depression severity and the attenuating effect.

Roberts and Sedley (2016) suggested that brief ACT course applied by a relative beginner ACT therapist was effective in reduced psychological inflexibility as well as reduced distress to non-clinical levels at 6 weeks post-therapy. The ACT was reported as being successfully applied to patients with eating disorders. The researchers reported that women with Binge Eating Disorder improved with the application of ACT to the extent that symptoms no longer met the clinical definition of Binge Eating Disorder (Hill, Masuda, Melcher, Morgan, & Twohig, 2015). The ACT was found to help patients that suffered from Obsessive Compulsive Disorder (OCD). The researchers reported that ACT treatment for OCD was as effective as the "treatment as usual" approach which included cognitive behavioral therapy (Bluett, Homan, Morrison, Levin, & Twohig, 2014).

Vowles, Witkiewitz, Levell, Sowden and Ashworth (2017) found that physical and emotional functioning was enhanced with the ACT, eventhough, no simultaneous reduction in pain. Leoni, Corti, Cavagnola, Healy and Noone (2016) reported that interventions based on the core processes and related techniques of ACT appeared to be more favorable in promoting the wellbeing of paid caregivers of intellectual disabled through reduction in burnout and increased psychological flexibility as compared to CBT-based interventions that had limitations of problem-solving when applied to challenging environments.

Ferraioli and Harris study (as cited in Hulbert-Williams, Storey & Wilson, 2015) reported that mindfulness group alone had a statistically significant improvement in both outcome measures following the 8 week ACT among autism parents. They stated that positive changes were noted for the behavioral skills group, but not at a statistically significant level.

A more substantially powered randomized controlled trial (RCT) of ACT (compared with CBT) is reported by Rost, Wilson, Buchanan, Hildebrandt and Mutch (2012) in a study with 47 ovarian cancer patients. They found that participants who were randomized to the ACT condition showed significantly greater improvement over the 12-week individualized intervention, despite deterioration on health, though improved mood as compared to CBT. A substantial methodological benefit of this study was the inclusion of mediation analysis enabled by the collection of data at four time-points through the study (baseline and end of 4th, 8th and 12th intervention session); findings demonstrated that treatment effects were mediated by cognitive avoidance. The authors explain this further by suggesting that the ACT intervention increased participants' situational acceptance, “thus allowing them to engage in the value-concordant behavior.

Feros, Lane, Ciarrochi and Blackledge (2013) recruited 45 patients with mixed cancer type (including breast, genitourinary, head and neck, lymphoma, lung and stomach), cancer severity (five had advanced disease) and at various treatment stages (23 still undoing treatment at the time of ACT intervention) who had been recognized as distressed using a standardized screening tool. Over nine weekly individual ACT therapy sessions progresses were observed for distress, mood disturbance and quality of life with the maintenance of effect to three-month follow-up. The authors also note that the large effect size for distress and mood compare favorably with effect sizes reported in comparable traditional CBT intervention studies. Analysis of process within this data set suggested that improvements in psychological flexibility in the second-half of the intervention predicted improvement in anxiety, depression, and stress, even when previous symptom levels were fully controlled for.

2.2.5 Socio-Demographics Factors and Psychological Health

Caregivers' Characteristics and Psychological health

Women have greater levels of depression than men in the caregiving role (Litwin, Stoeckel & Roll, 2014; Pinquart & Sorensen, 2003). The literature on gender differences in the psychological health of caregivers pointed to the increased risk for females in terms of depressive symptomatology. It has been found that differences observed in gender expression of depressive symptoms and depression were due to variations in stress exposure, coping responses used, the role of social support and biological factors (Mc Grath, Keita, Stickland & Russo, 1992).

Yee and Schulz (2000) reported that men and women differ in relations to tasks and burden associated with caregiving and that the effect of the burden of care on both the genders may also be different. He further expressed that gender appeared to be a significant predictor of caregiver burden and also that female caregivers are more likely than male caregivers to report anxiety or depression or experiencing lower levels of life satisfaction.

Larsen and Lubkin (2009) similarly reported that while women expressed comparatively higher burden of care, conflicting roles, and strain, women are more probable than men to carry on with the caregiving tasks over a lengthier period of time when compared to the male caregivers. In addition, they stated that women are less likely than men to get assistance from others while providing care and there is less possibility for female caregivers to indulge in preventive health behaviors, such as relaxation, exercise and taking proper medications while they did caregiving task as compared to male caregivers.

Similarly, Schulz and Williamson (1991) found that thirty-nine percent of female caregivers, compared to sixteen percent of male caregivers are at risk for clinical depression. Yee and Schulz (2000) reported that women caregivers reported more psychiatric symptoms than men caregivers which included greater depression, burden, and anxiety and also that women were more likely to be thrust into the caregiving role than men. Female caregivers were also said to fix everything themselves rather than delegate to others while the male caregivers were more of a 'managerial' style that allowed them to distance themselves from the stressful situation to some degree through task delegation (Andren & Elmstahl, 2007). It has been shown that these mothers are more stressed than mothers of children without disabilities due to the extra daily tasks which engaged mothers to take care of themselves (Azeem, Dogar, Cheema & Asmat, 2013).

Ennis and Bunting (2013) found that high burden were associated to bigger risk to having depression in women and that low income and not being married were risk reasons for increased stress and poor mood for both men and women.

Trivedi, Beaver, Boudlin, Eugenio, Zeliadt, Nelson and Piette (2014) reported that male caregivers expressed poorer mental and general health, lower emotional and social support than female caregivers. The female caregivers were reported to have better general health, but poorer mental health, lower emotional and social support than female non-caregivers.

Oliveira, Neto, Camargo, Lucchetti, Espinha and Lucchetti (2014) similarly reported that male caregivers had lower caregivers' burden and better mental health across all levels of caregiving.

Ukpong (2012) reported in their study on burden with male and female caregivers of schizophrenic patients. They found that high caregivers' burden was more when the patient is female.

Caregivers’ Age and Psychological Health

Age-associated weakening in physical competence made the provision of care more tough for older caregivers (Chen & Lukens, 2011; Navaie-Waliser, Feldman, Gould, Levine, Kuerbis & Denelan, 2002). Chen and Lukens (2011) found a positive association between age and caregivers' burden in Whites, but a negative association for African Americans. They submitted that African Americans who were older would likely not experience caregiving as physically difficult. Similarly, Cox (1995) found that a negative association existed between age and burden in African American caregivers', but no significant association in Whites.

Cain and Wicks (2000) reported that younger caregivers of chronic obstructive pulmonary disease patients have more burden than older caregivers because they managed more commitments such as career, family, and work when compared older caregivers who were 55 years and above. Ennis and Bunting (2013) similarly found that younger caregivers were more susceptible to negative psychological outcomes.

Gupta, Solanki, Koolwal and Gehlot (2014) in addition, found that the psychological well-being was lower in older caregivers and those with lesser educational status, and higher in the siblings order.

Marital Status and Psychological Health

Marital Status and Psychological Health Penning and Zheng (2015) showed that marital status was the greatest predictor of coping for mothers of children with disabilities, indicating spousal support as a coping factor. He expressed that separated/divorced or never married experienced greater stress. More stress in care, emotional, social, and financial areas is significantly experienced by single parents of children with intellectual than married parents (Upadhyay & Havalappanavar, 2007). Studies that have concentrated on marital-status differences and well-being among men and women have showed that regardless of gender, married people enjoyed better mental health than unmarried whether never or formerly married persons (Waite & Gallagher, 2000).

Educational Status and Psychological Health

The educational level of caregiver also contributes as a factor to the level of burden among caregiver of children with intellectual disability. Salama (2012) conducted a research and found out those caregivers of children with disability having a lower level of education experience less burden and better self-esteem. It has similarly being reported that caregivers with more educational levels expressed less burden, less behavioral problems in their children and better psychological well-being consequences than less educated parents (Raina et. al, 2004).

More study has revealed that the higher educational level of parent results in less stress the family experienced (Azar & Badr, 2006; 2010). It was reiterated that parents with a higher educational background experienced less stress because they have knowledge about effective coping strategies that helped them handle with their child's behavioral problems effectively. Gupta, Solanki, Koolwal and Gehlot (2014) in addition, found that the psychological well-being was lower in those with lesser educational status.

Ukpong (2012) reported in their study on burden with male and female caregivers of schizophrenic patients. They found that high caregivers' burden was more when the patient is unemployed and the caregiver having lower education.

Occupation and Psychological health

The relationship between occupation status and caregiving is difficult to clearly discern; however, occupation does appear to impact individuals giving care. Research reveals that frequently working for heaps additional demands onto already burdened caregivers. Despite this, working outside of the home may also serve as a social outlet, a source of self-confidence for individual caregivers, or a “break” from caregiving tasks. Employed caregivers are especially likely to experience additional strain when a job is very demanding and there is little flexibility or support (Scharlach, Sobel, & Roberts, 1991). However, employed caregivers may be able to take steps to ease the stress that non-employed caregivers cannot afford to take. For example, employed female caregivers, when compared to non-employed female caregivers, tend to use more hours of paid and unpaid assistance to help manage work-related time constraints (Doty, Jackson & Crown, 1998). For those caregivers who remain in the workforce, employment can have a positive impact, providing them with financial, social and psychological resources (Fredriksen-Goldsen & Scharlach, 2001).

Paid employment can offer caregivers a much-needed break from their care duties, access to social support through co-worker relationships, and improved relations with the person for whom they provided care (Fredriksen-Goldsen & Scharlach, 2001).

Eberl, Lang and Seebaß (2017) showed that hours of caregiving have adverse effect on mental health taking into account the relationship between the caregiver and patient alongside extra burdens such as that of holding down a job. They reported that being employed for few hours has positive effect on health status even in combination with informal care duties.

Kumagai (2017) reported that hours of caregiving influenced the continuation of high-intensity caregiving among unemployed informal caregivers and irregular employees. Specifically, he stated that caregivers who experienced high-intensity caregiving (20-40 h) tended to continue with it to a greater degree than did caregivers who experienced ultra-high-intensity caregiving (40 h or more). He further said that high-intensity caregiving was associated with worse mental health among non-working caregivers but did not have any effect on the mental health of irregular employees.

Cannuscio, Colditz , Rimm , Berkman , Jones and Kawachi (2004) reported that greater weekly time obligation to informal care for a spouse or parent was associated with bigger risk of depressive symptoms in midlife and older women whether women were socially integrated or not, employed outside the home, employed full-time, or was employed part-time. They however acknowledged that both informal care provision and social ties were strong independent correlates of depressive symptoms.

In addition, they stated that women who reported high spousal care time obligation and few social ties experienced a dramatic elevation in depressive symptoms when compared with women who had no spousal care duties and many communal ties. Furthermore, they observed that depressive symptoms increased among socially isolated women who cared for their parent many hours per week but relationship was not as significant as those with spousal care.

Finally, Isaac and Tanga (2014) reported that the well-being of informal caregivers of children with disability in Southwest Nigeria was predicted by their income and occupational status.

Child Characteristics

Severity of Disability/Behavioural Problem and Psychological Health

Findings in family research had revealed that parental well-being is lower when children exhibit more maladaptive behavior (Glidden, 2012). Results from diverse investigators and samples have confirmed that child behavior problems, rather than intellectual disabilities, were associated with lower levels of parental well-being (Nalavany, Glidden, & Ryan, 2009; Totsika, Hastings, Emerson, Berridge, & Lancaster, 2011) and sibling well-being (Hastings, 2007; Neece, Baker, & Blacher, 2010).

Eisenhower, Baker and Blacher (2009) reported that behavioral problems related to developmental delay in a child predicted adverse change in mothers' health. The study also concluded that mothers with both clinical signs of depression and with a child that exhibited behavior problems had the poorest physical health. The study further suggested that the relationship between child behavior problems and maternal physical health was moderated by maternal stress and mediated by maternal depressive symptoms.

Cramm and Nieboer (2011) similarly found that parental stress and child's depressive feelings strongly affected the psychological well-being of parents. King, King, Rosenbaum and Goffin (1999) discovered that child behavior problems were the most single important predictor of caregivers' psychological well-being. The feeling of depression, self-rated well-being and competence in mothers of children with disabilities was reported as related to children's temperament (Beckman, 1983). In addition, the severity of the disability has been repeatedly shown to be related to parental stress (Taylor-Richardson & Heflinger, 2006).

Other relevant variables reported to affect caregivers' psychological health included the child's communication ability, and the presence of specific cognitive or sensory deficiencies (Trute & Hiebert-Murphy, 2002).

Raina, O'Donnell, Rosenbaum, Brehaut, Walter, Russell, Swinton, Zhu and Wood (2005) found that higher level of behavior problems were related to poor psychological and physical health in caregivers. The researchers further reported that better self-perception and ability to cope in caregivers were linked to fewer child behavior problems.

Corrice and Glidden (2009) reported that the link between child disability and parental well-being is less obvious among parents of children with Down syndrome than other child diagnoses. Blacher and McIntyre (2006) found that child's functional level in terms of behavioral problems and communicative skills, level of dependence (mobility, ability to wash and dress) and the level of physical pain contributed significantly to caregivers' psychological health. Studies have found that greater incidence of behavioral problems exhibited by patient is linked with higher level of caregivers' depression and burden (Bedard, Molloy, Pedlar, Lever & Stones, 1997).

Cohen, Davine, Horodezky, Lipsett and Isaacson (1993) reported that the frequency with which behavioral disturbances are manifested by patient was identified as strongest predictor of caregivers' distress. It played significant role in caregivers' decision to institutionalize patient. They further reported frequency of behavioral problems as consistent predictor of caregivers' burden and depression than functional and cognitive deficiencies of patient. Hung, Wu, Chiang, Wu and Yeh (2010) similarly reported that child-related factors that would adversely affect parental mental health were poor walking ability, younger age and reliance on others to achieve activities of daily life (ADL).

Ribeiro, Vandenberghe, Prudente, Vila and Porto (2016) found that mothers who have children with mild impairment suffered extra from task of managing their children's emotional and learning difficulties and aggression.

Huang (1997) found that mothers whose child had mild intellectual disability felt a reduced amount of stress than mothers whose child had a severe intellectual disability. Similarly, Pereira and Fernandes (2005) reported that mothers whose children have severe impairment experienced main complications related to coping with health complications and functional limitations. They acknowledged severity of child's intellectual impairment as strong predictor of parental stress.

Honig and Winger (1997) reported that the more a child is severely intellectually impaired, the higher the level of parental stress. Together, these findings were in line with Majumdar, Pereira and Fernandes (2005) study which concluded that the more severe the intellectual disability of the child, the more negative effects it has on the parental stress levels.

Childs' Age

Rimmerman and Divdevani (1996) stated that family experienced more stress when their child with intellectual disability enters school. He explained that parents become more conscious of the achievement differences between their child and same-age classmates and that as a result, when the child entered school, more time and effort is needed on the part of the parent to help the child to be successful. Additionally, as children get older, parents may not have access to information on how to cope with grown-up children with intellectual disability (Wikler, Wasow, & Hatfield, 1981).

Datta (2002) reported that on burden risk factors among the caregivers of children with intellectual disability. He found that when there was an increase in the age of the child with an intellectual disability, there would also be an increase in burden. They classified that increase in age of children leads to increase in child's physical size, thereby causing an upsurge in burden especially with those that have physical disability alongside their intellectual impairment.

Ribeiro, Vandenberghe, Prudente, Vila and Porto (2016) reported that mothers of younger children recounted diverse sources of stress and shortage of resources while mothers of adolescents have better experience and were able to take up their life projects again. They elaborated that the experience, knowledge and support received by the mothers were critical for adaptation.

Childs’ gender

Although, there are less evidences in the role the gender of the child with an intellectual disability may also play a role in the level of stress a parent experiences. Frey, Greenberg and Fewell (1989) reported that mothers' and fathers' parenting stress was predicted by the child's gender and also that parents of boys experienced higher stress levels. They also found that caregiver fathers were more affected by the gender of the intellectual disabled child than the mothers, as the fathers found it more problematic to modify their expectations of their sons due to the importance of shared recreational activities between father and son rather than as a caregiver

2.3 Conceptual Framework

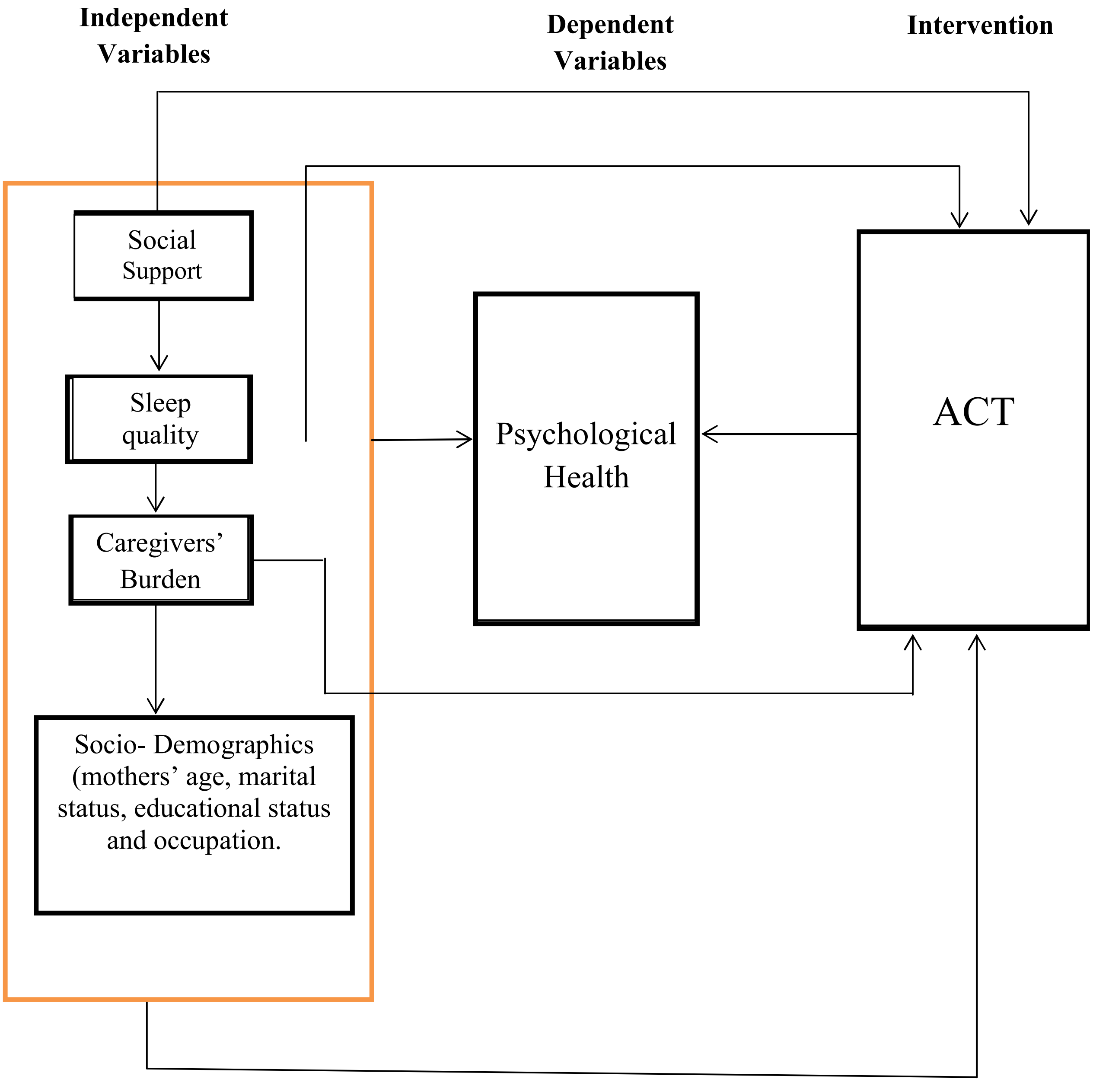


Figure 2.1: **Conceptual Framework Showing the Predictive Influence of Psychosocial Factors and Demographic Factors on Psychological Health and Efficacy of ACT.**

Figure 2.1 showed that the psychosocial factors (social support, caregivers' burden and sleep quality) would independently and jointly predict psychological health among mothers of children with cerebral palsy. It further indicated that demographic factors (mothers' age, occupation, educational level and marital status) would predict psychological health among mothers of children with cerebral palsy. The model also showed that ACT (Acceptance and Commitment Therapy) ideally would act as an intervention to improve poor psychological health.

2.4 Hypotheses

1. Mothers of female children in their late childhood will significantly have better psychological health than mothers of male children with cerebral palsy in their late childhood.
2. Social support, caregivers' burden and sleep quality will significantly jointly predict psychological health among mothers of children with cerebral palsy.
3. Some Sociodemographic factors will significantly predict psychological health among mothers of children with cerebral palsy.
4. Mothers of children with low behavioural problem will significantly have better psychological health than mothers of children with high behavioural problem.
5. Acceptance and Commitment therapy will significantly have effect on psychological health of mothers of children with cerebral palsy, controlling for the influence of severity of illness and parental knowledge.
6. Participants in experimental group will significantly score higher on psychological health than participants in control groups.
7. There will be a significant increase in the total score of participants in experimental group on psychological health after intervention than before intervention.
8. Acceptance level of mothers of children with cerebral palsy will significantly improve after exposure to therapy (ACT**).**

2.5 Operational Definition of Terms

Psychosocial Factors: These are the psychological and social variables that the researcher set out to examine. They are social support, caregivers' burden, sleep quality and sociodemographic variables.

Psychological Health: Psychological health implies the presence of wellness. It was measured using Cerebral Palsy Psychological Health Scale (CPPHS). It is a 16 items scale developed by the researchers. High score above the mean ($\bar{X}$ =37.87, SD=8.32) suggests that the respondents have good psychological health while scores equal or below the mean suggests poor psychological health.

Social Support: This is care or assistance received from a social network which can be emotional, tangible, informational, or companionship that is either perceived subjectively or objectively received. Social support was measured using Cerebral Palsy Social Support scale (CPSSS). It is a 9 item scale developed by the researchers. Scores above the mean score ($\bar{X}$=36.14, SD=11.03) denote good socio-emotional support, financial/moral support and low stigmatisation behaviour, while scores below the mean score denote low socio-emotional support, financial-moral support and high stigmatisation behaviour.

Sleep Quality: This is the quantitative aspect of sleep, such as sleep duration, sleep latency, or number of arousals, as well as more purely subjective aspects, such as ''depth'' or 'restfulness'' of sleep. It was measured using Pittsburgh Sleep Quality Index. It is a 19 item self-rating scale. By summing component scores, a total sleep quality score is obtained that ranges from 0 (good sleep quality) to 21 (poor sleep quality) with a mean score ($\bar{X}$=7.81, SD=4.66). Scores above the mean ($\bar{X}$=7.81, SD=4.66) denote poor sleep quality and scores below suggest good sleep quality.

Caregivers' Burden: This refers to people's emotional response to changes and demands that occur as they give help and support to their loved ones. This was measured using Cerebral Palsy Caregivers' Burden (CPCB). It is a 12 item scale developed by the researcher. Scores above the mean score ($\bar{X}$=10.63, SD=8.32) denote high personal strain, role strain and social strain, while scores below the mean score denote low personal strain, role strain and social strain.

C**erebral Palsy:** Cerebral palsy is a group of permanent disorders in the development of movement and posture, causing activity limitations that are attributed to non-progressive disturbances that occurred in the developing fetal or infant brain.

Mother: This is someone who give birth, nurtures and takes care of daily need of the child.

Children living with cerebral palsy: This is a child between the age 2-11 who have been clinically diagnosed of cerebral palsy based on Diagnostic and Statistical Manual of Mental disorder.

Acceptance and Commitment Therapy: This is a group tailored psychotherapy that aims to increase acceptance of the full range of subjective experiences, including distressing thoughts, beliefs, sensations, and feelings, in an effort to promote desired behavior change that will lead to improved quality of life. It was carried out using ACT module modified by the researcher.

Psychological flexibility: This is one's ability of being aware, open, and committed to behaviors that are congruent with deeply held values despite distressing or unwanted private events.

Cognitive Defusion: This is the separation of an emotion-provoking stimulus from the unwanted emotional response.

Experiential avoidance: Experiential avoidance involves the unwillingness to remain in contact with private experiences such as painful thoughts and emotions and is often proposed to be critical to the development and maintenance of psychopathology

Socio-Demographic variables: This includes age, occupation, educational level, and marital status.

Marital status: In this study refers to whether the mother is in a married relationship or not, such as married, divorced, separated or widowed.

Educational Status: In this study, it refers to the highest level of education acquired by the mother.

Mothers' Age: In the study, it is the chronological number of years of the mothers.

Childs' Age: It is the chronological age of the child. This was categorized as infant (0-2 years), young childhood (3-8years) and late childhood (9-11years) based on World Health Organisation children age range.

Childs' Gender: It is a state of being male or female.

Occupation: This is defined as to whether the mother is involved in skilled, semi-skilled or unskilled job.

Behaviour problem: This is the behavioural and emotional problems such as tantrum, aggression exhibited by the CP child. It was measured using Child Behavioural Checklist ($\bar{X}$=136.16, SD=26.32). Scores above the mean score denote high behavioural problem while scores below the mean score denote low behavioural problem.

CHAPTER THREE

METHODOLOGY

This study utilized a mixed sequential design which combined both qualitative and quantitative methods. The research study was in four phases. Phase one was a qualitative study which utilized Focus Group Discussions (FGD) and Key Informant Interviews (KII). This enabled the researchers to have comprehensive information and broader understanding of the content and context of the concepts under investigation.

The phase two was a pilot study used for establishing psychometric properties of the newly developed indigenous scales. The third phase was a cross sectional survey which examined the predictive influence of psychosocial factors of social support, caregivers' burden and sleep quality on psychological health among mothers of children with cerebral palsy.

The fourth phase was the intervention study in which the researcher examined the efficacy of Acceptance and Commitment Therapy (ACT) on poor psychological health of the mothers caring for children with cerebral palsy. The therapy focused at improving the psychological health of mothers caring for children with cerebral palsy. Each of these phases had their design, participants, inclusion and exclusion criteria, setting, instruments and procedure; hence the report of each phase was explained differently.

3.1. Phase One: Qualitative Study

Focus Group Discussion

Design: Focus group discussions and Key Informant interview were used in the collection of qualitative data from multiple participants, as these allowed for production of data that reflect socially acceptable experiences, beliefs, and language. The researcher observed interactions between participants. The qualitative study was designed to collect self-report data from participants using a qualitative research procedure for data collection and analysis. The current research aimed to describe a phenomenon from the participants' experience and point of view through discussions and interviews. The findings of this phase were reported in chapter four.

Participants: These were made up of 20 purposively sampled mothers of children with cerebral palsy at Cerebral Palsy Centre, Lagos.

Setting: The setting was Cerebral Palsy Centre, Lagos. The choice of the setting was based on the popularity, proximity and accessibility to caregivers of children with cerebral palsy.

Inclusion criteria:
(1) Mothers having and caring for children diagnosed with cerebral palsy
(2) Patients who can comprehend instructions in English.

Instruments: - FGD Guide

Interview guide was developed by the researcher to gain as much information as possible on experiences of mothers caring for a child with cerebral palsy. Ten open-ended questions were formulated, validated by experts in psychology, arranged, and used in a logical sequence (see Appendix II). They were open to possible probes and prompts, which might follow the answers to each of the questions**.** The questions addressed the specific objectives of the study. Prior to recording the researcher obtained the consent of the respondents to audiotape the group discussion and the interviews; beside tape recording the discussions, notes were also taken. The essence of audio tape recording the discussion was to ensure that information supplied by the respondents is accurately reported.

Procedure: The permission to conduct the study was sought and obtained from the Service Director, Cerebral Palsy Centre, Lagos. The participants were informed about the study and were invited to participate. Twenty respondents participated in 3 sessions of FGD. They were selected through accidental sampling technique. Each focus group included 6-7 participants and lasted 40-45 minutes. The discussions were held in main lobby, and were audio-recorded (with prior informed consent). Focus group discussions ended when participants with diverse experiences and characteristics had been sampled, when no new themes were apparent, and when existing themes were well-elaborated. The audiotape was transcribed and subjected to analysis.

Data Analysis

The data were analyzed following the Interpretative Phenomenological Analysis (IPA) method so as to create a comprehensive account of themes and sub-themes that have significance in the original text (Smith, Jarman & Osborn, 1999). The tape recordings were transcribed verbatim. The first step in the analysis involved repeated reading of the transcripts and annotated descriptions on each transcript regarding key phrases and processes. These descriptions included summaries of contents, connections between different aspects of the transcript and initial interpretations. Within each transcript, the notes were condensed to produce initial themes, with care being taken to ensure that these themes were consistent with the data. When this process had been repeated with each transcript, the resulting sets of initial themes were examined to identify recurrent patterns across the transcripts producing a final set of themes at the end of the process. Finally, the themes were reorganized in such a way as to produce a logical and coherent research narrative that revealed association between this qualitative study and the third phase of the study.

Key Informant Interviews

Key Informant Interview was conducted among mental health professionals.

Participants: The participants included clinical psychologist, psychiatrist and a psychiatric nurse. They were mixture of male and female.

Setting: Consulting room of the professionals at Federal Neuro Psychiatric Hospital, Yaba, Lagos.

Instruments: Interview guide developed by the researcher to gain as much information as possible on life experience of mothers of children with cerebral palsy from experts' perspective.

Procedure: Prior to recording, the researchers obtained the informed consent from the respondents to audiotape the interviews; beside tape recording the discussions, notes were also taken. The interview took between thirty and forty minutes.

3.2: Phase Two: Pilot Study

The study was conducted to have a pre-knowledge of the logistics involved in carrying out such study among the population. It also assisted in validation of developed indigenous scales and re-validation of all other existing scales that were used for data collection in the main study for cultural relativity.

Setting: The study was conducted at Cerebral Palsy Centre, Lagos and Adeyanju Special Needs Educational Centre, Ibadan.

Participants: The scales were administered to 50 mothers of children with cerebral palsy.

Instrument: These are set of questions put together through extensive generation of items from literature and from themes generated from focused group discussions and Key informant Interview.

Procedure: The items were presented to 10 experts, made up of two each of clinical psychologists, psychiatrist, physiotherapist, nurses and social workers to rate the appropriateness of each items to establish the content validity (Okurame, 2002). The items were put in questionnaire, using ‘Yes’ and ‘No’ format and given to experts to rate the appropriateness of each item and make suggestions where necessary. At the content validity stage, items given out to the experts were reduced, using 80% cut off point of the experts for each item. The items were judged as appropriate by 8 out of the 10 experts. The remaining items were edited and reformatted using Likert scoring format ranging from ‘Strongly Disagree’ =1 to 7 = ‘Strongly Agree’ and these were administered to participants. The participants were recruited and briefed on the purpose of the study and were assured that the data collected from them shall be used for research purpose only. Participants were also assured of their confidentiality. They were given the inform consent form to sign to indicate their interest. Willing participants were administered the questionnaires appropriately by the researcher alongside the help of a research assistant.

The researchers then retrieved the filled questionnaires from the participants. The scales were pilot tested using two settings; Cerebral Palsy Centre, Lagos, and Adeyanju Special Needs School, Ibadan with mothers of children with cerebral palsy. The returned questionnaires considered adequate for data analysis were coded, stored and entered for data analysis using the SPSS 20.0 version of computer software package.

Data Analysis: The statistical tests used include Principal Component Analysis, Cronbach alpha, Split-half reliability and Pearson product moment correlation (PPMC) at .05 level of significance. During analysis, accuracy of some items was identified while some were removed. Reliability for each variable was measured by Cronbach's alpha. Cronbach's alpha was greater than 0.6 for all variables, so reliability was acceptable. Exploratory factor analysis using the principal factor analysis and varimax rotation was used to address the dimensionality of the scale.

The indigenous developed scales were Cerebral Palsy Psychological Health Scale (CPPHS), Cerebral Palsy Social Support Scale (CPSSS) and Cerebral Palsy Caregivers' Burden (CPCB). The detailed results of the scales development were discussed in chapter four.

3.3: Phase Three: Survey

Design: This phase adopted a **c**ross-sectional design to examine the influence of psychosocial factors (social support, caregivers' burden and sleep quality) on the psychological health of mothers of children with cerebral palsy. The link between phase three and phase four of the study was that phase three provided broad based survey data on psychological health of mothers of children with cerebral palsy i.e. a screening procedure, from which the eligible participants requiring intensive psychotherapy intervention (ACT) were identified.

Population: This included mothers of children living with cerebral palsy at the outpatient clinic of Child and Adolescent Unit of Federal Psychiatric Hospital, Yaba, Lagos.

Setting: The study was conducted at the Federal Psychiatric Hospital Yaba, Lagos. The hospital was established in 1907. Over the years it has evolved into a comprehensive modern facility for training, research and treatment of all forms of psychiatric conditions and childhood/developmental disorders. It is located in the metropolitan city of Lagos State in Nigeria. As at 2016, the hospital has 544 bed capacity, 80,000 outpatients, 16 consultant psychiatrists, 40 registrars and sees cases ranging from substance abuse, forensic, affective, geriatric, and Child/adolescent psychiatric conditions. The hospital's Child and Adolescent unit is dedicated to attending to children and adolescent with neurological and psychiatric condition. It has one of the highest patronage and referral in Lagos State.

S**ample size calculation**: Sample size was determined using Slovin (2010) sample size calculation method.

$$n = \frac{N}{(1 + Ne^2)}$$

n = Sample number required
N = Total population
e = error tolerance = 0.05

Prevalence of Cerebral Palsy at Federal Psychiatric Hospital, Lagos registry is 100 at the time of this study.

Therefore

$$n = \frac{100}{(1 + 100(0.05)^2)}$$

$$= \frac{100}{1.25}$$

$$= 80$$

The sample size for the phase three of the study was eighty mothers of children with cerebral palsy.

Participants: The participants for the third stage of the study were eighty mothers of children living with cerebral palsy who are receiving treatment at the outpatient clinic of Child and Adolescent unit of Federal Psychiatric Hospital, Lagos.

Inclusion Criteria: The participants were:

1. Mothers having and caring for cerebral palsy child between the ages of one to twelve.
2. Mothers who indicated willingness to participate in the study and signed inform consent form.

Exclusion Criteria:

1. Mothers who did not give their consent to participate.

Sampling Technique: Purposive sampling technique was used for the selection of participants for the study. The researcher approached the patients that meet the criteria for the study through the medical record personnel.

Ethical Consideration: The first step taken in this research to ensure that ethical guidelines were followed was a formal request to the Department of Psychology by the researcher to be given a letter seeking permission to conduct the study which was taken to UI Research Ethics Committee alongside the research proposal and other relevant documents for ethical approval before data collection began. The UI Research Ethics Committee's mandate is to oversee and regulate the ethical conduct of research within the disciplines in the humanities at the University of Ibadan. The approval with reference number UI/SSHEC/2016/0048 was issued by the ethics committee (see appendix IV). The researcher also obtained ethical approval from the institution where the study was carried out (see Appendix III). Before participants took part in the study, their consent was sought and once their consent was given by filling a written consent form (see Appendix VI), they were assured of confidentiality of the information they provided. This was also indicated on the questionnaire. Respondents were informed that they could terminate or withdraw their participation before, during and after the study without any penalty or consequence. After the study, the researcher left her contact details for any questions or concerns that may have arisen during and after the study as a result of their participation.

Instruments

The study was carried out using a questionnaire containing 8 scales namely: Cerebral Palsy Psychological Health Scale, Cerebral Palsy Social Support Scale, Pittsburgh Sleep Quality Index, Cerebral Palsy Caregivers' Burden Scale, Gross Motor Function Classification System, Child Behavioural CheckList, Parental Knowledge of Cerebral Palsy Questionnaire, Acceptance and Action Questionnaire. The instrument had nine section of A-I for data collection as described below:

Section A: Socio-demographic Measures

This section gathered information on the demographic characteristics of the research respondents. This includes Mothers 'Age, Marital status, Educational status, Occupation, Child's gender and age.

Section B: Cerebral Palsy Psychological Health Scale (CPPHS)

Cerebral Palsy Psychological Health Scale (CPPHS) is a 16-item scale developed by the researcher to assess caregivers' presence of wellness. The response format ranges from Never=5, Seldom=4, Sometimes=3, Often=2, Almost Always=1. The scale achieved a Cronbach alpha of 0.92. In terms of construct validity, the Kaiser-Meyer measure of MSA was 0.59 showing meritorious sampling adequacy. In addition, the 16-item battery was factor analyzed using Principle Axis Factoring (PAF) with varimax rotation. A factor structure explaining 78.23% of the variance was obtained. The factors yielded are the dimensions of hopelessness, depression, social distress and stigma. The factor loading for the items ranged from 0.57 to 0.86 which indicated that all the items loaded well on the factors precipitated. For the convergence validity, the Pearson correlation analysis revealed that there was significant positive relationship between Cerebral Palsy Psychological Health Scale and Mental Health Index ($r = 0.68$, $p<.05$). Positive psychological health increases in the same direction for mental health index and CPPHS. The norm was set using the average score of the Cerebral Palsy Psychological Health Scale ($\bar{X}$ =37.87, SD=8.32). High score above the mean suggests that the respondents have good psychological health while scores equal or below the mean suggests poor psychological health.

Section C: Cerebral Palsy Social Support Scale (CPSSS)

Cerebral Palsy Social Support scale is a 9-item scale developed by Aliu, Osinowo and Ishola (2016) to assess caregivers' perception or actualization of care or assistance from a social network. The response questionnaire format is Likert scale ranging from 7=Very Strongly Agree, 6= Strongly agree, 5= Mildly agree, 4= Neutral; 3= Mildly disagree, 2= Strongly disagree to 1= Very strongly disagree. The scale achieved a reliability of .89 Cronbach alpha. Split-Half reliability of r = .74 and r = .83 were reported respectively. The principal axis factor extraction with varimax rotation produced a three factor solution that accounted for 88.27% of the variance in item responses. The factors yielded are socio-emotional support, financial-moral support and low stigmatisation behaviour. The factor loading for the items ranged from 0.68 to 0.98 which indicated that all the items loaded well on the factors precipitated. The overall index score on the Cerebral Palsy Social Support Scale was significantly positively correlated with Multidimensional Scale of Perceived Social Support (r = .45, p<.001). High scores above the mean ($\bar{X}$ =36.14, SD=11.03) denotes that respondents have good social support while lower scores below the mean suggests poor social support. The newly developed scale allowed the research to assess mothers' level of support beyond sources and quality of social support. The scale tapped into stigma experienced from social network in the process of receiving support. This kind of social support is often delivered as non-empathetic social support, which is, expressing concerns and showing prejudice at the same time.

Section D: Cerebral Palsy Caregivers' Burden Scale (CPCB)

Cerebral Palsy Caregivers' Burden Scale is a 12-item scale developed by the researchers. The scale is aimed at measuring how the respondents cope with the burden of taking care of a child with Cerebral Palsy. The scale achieved a reliability of 0.86 Cronbach alpha in this study. Split-half reliability of r= .87 and r=.88 were reported respectively. The principal axis factor extraction with varimax rotation produced a three factor solution that accounted for 77.13% of the variance in item responses. The factors yielded are personal strain, role strain and social strain. The factor loading for the items ranged from 0.64 to 0.91 which indicated that all the items loaded well on the factors precipitated. The overall score on the Cerebral Palsy Caregivers' Burden Scale was significantly and positively correlated with Zarit Caregivers' burden interview (r= .45, p < .001). Scores above the mean ($\bar{X}$=10.63, SD=8.32) denote high caregivers' burden while scores below the mean suggest low caregivers' burden.

Section E: Pittsburgh Sleep Quality Index (PSQI)

Pittsburgh Sleep Quality Index is a 19-item self-rating scale developed by Buysse, Reynolds, Monk, Berman and Kupfer (1989) to assess sleep quality, disturbances and to identify good and bad sleepers, not to provide accurate clinical diagnoses. This index encompasses several dimensions of sleep from subjective sleep quality, sleep latency, sleep disturbances, sleep duration, habitual sleep efficiency, use of sleeping medication and daytime dysfunction. The scores on items range from 0 (no difficulty) to 3 (severe difficulty). By summing component scores, a total sleep quality score is obtained that ranges from 0 (good sleep quality) to 21 (poor sleep quality). Brummett, Babyak, Segler, Vitaliano, Ballard, Gwyther and William (2006) had used the scale to assess sleep quality in a caregivers' research which achieved a Cronbach's alpha of .86. An alpha coefficient of .78 was obtained by the researcher in this present study conducted on mothers of children with cerebral palsy. Scores above the mean ($\bar{X}$=7.81, SD=4.66) denote poor sleep quality and scores below suggest good sleep quality.

Section F: Gross Motor Function Classification System (GMFCS)

Gross Motor Function Classification System was expanded and revised by Palisano, Rosenbaum, Bartlett and Livingston (2007). The Gross Motor Function Classification System (GMFCS) for cerebral palsy is based on self-initiated movement, with emphasis on sitting, transfers, and mobility. GMFCS was used in the study to determine the level of severity. The scale is ordinal, with no intent that the distances between levels be considered equal. Mild classification is for those on level I/II, Moderate classification level III and severe classification IV/V. The questionnaire was categorized and administered for different age groups (such as 2-4years, 4-6 years. 6-12 years) based on their developmental needs.

Section G: Child Behaviour Check List (CBCL)

The Child Behaviour Checklist is a parent-report 61 item questionnaire in which the child was rated on various behavioural and emotional problems. It was first developed by Achenbach (1992). It assesses internalizing and externalizing behaviour such as aggression, hyperactive, non-complaint, and under controlled. The response format ranges from (2) often true, (1) sometimes true, or (0) not true. It achieved a Cronbach alpha of 0.92. Scores above the mean score ($\bar{X}$=136.16, SD=26.32) indicates high behavioural problem while scores below indicates low behavioural problem.

Section H: Acceptance and Action Questionnaire (AAQ-II)

Acceptance and Action Questionnaire (AAQ-II) is a 7-item unidimensional measure that assesses the construct of acceptance, experiential avoidance and psychological inflexibility. The scale was developed by Hayes, Strosahl, Wilson, Bissett, Pistorello, Toarmino & McCurry (2004). The scale was revised for better psychometric properties by Bond, Hayes, Baer, Carpenter, Guenole, Orcutt, Waltz and Zettle (2011). It was scored using Likert response format rated from 1=never true to 7= always true. A total score ranges from 7 to 49. Higher scores on the AAQ-II indicate greater psychological inflexibility. Specifically, higher levels of psychological inflexibility, as measured by the AAQ-II, are related to greater levels of depression, anxiety, stress, and overall psychological distress. AAQ-II achieved a test-retest reliability is .81 and a validity score of .97.

Section I: Parental Knowledge of Cerebral Palsy Questionnaire (PKCP)

Parental Knowledge of Cerebral Palsy Questionnaire is a set of 8 items developed by Shilpa, Anjul and Hemar (2014) to assess the knowledge of parents on cerebral palsy disorder. The assessor rated the response as “correct’’ or ‘incorrect’’ to responses given by the parent. It achieved a Cronbach alpha of 0.67 in the study.

Section J: The Value Living Questionnaire (VLQ)

The value Living Questionnaire was developed as a tool for use during Acceptance and Commitment Therapy. It was developed by Wilson, Sandoz, Kitchens,

& Roberts, 2010). This 20 items questionnaire asks the individual to first rate the importance of values in 10 areas of life (e.g. family, work, education, relationships), and then the consistency of action towards those values taken during the last week. Each item is rated on a Likert scale from 1 to 10. The Value Living composite is calculated by multiplying the importance and consistency responses for each domain and then calculating the mean of those scores. The resulting Valued Living Composite scores ranges from 10 to 100.

Procedure

Ethical approval was obtained from the Federal Psychiatric Hospital, Lagos Research Ethics Committee and University of Ibadan Ethics and Research Committee. The participants were recruited and briefed on the purpose of the study and assured that the data collected from them shall be used for research purpose only. Thereafter, participants that met the inclusion criteria were approached. The purpose, risk and benefits of the study were explained to them. The participants were also assured of their confidentiality. Informed consent processes were duly followed. Willing participants were administered the questionnaires appropriately by the researchers alongside the help of a research assistant. The questionnaire required about 20-25 minutes completing. The researchers then retrieved the filled questionnaires from the participants. The data collection was for a period of one and half month. The returned questionnaires considered adequate for data analysis were coded, stored and entered for data analysis using the SPSS 20.0 version of computer software package. Participants who scored below the mean on Cerebral Palsy Psychological Scale which indicates poor psychological health were recruited for the third phase of the study.

3.4 Phase Four: Intervention

Design: Quasi experimental design (a pre-test-post-test within and between group) was used in the phase of the study. The design offers the opportunity for participants with poor psychological health (in the experimental group) to be tested twice (within group) and in comparison with those in the control group (between group).

This quasi-experimental study became necessary because of the need to assess the efficacy of acceptance and commitment therapy on the psychological health of mothers having children with cerebral palsy.

Setting: The study was conducted at the Child and Adolescent unit of Federal Psychiatric Hospital, Lagos.

Participants: Participants, who are screened and are judged to have poor psychological health, that is, participants who scored below the mean on Cerebral Palsy Psychological Health Scale at the third phase of the study.

Inclusion criteria – The participants had:

(a) Participated in the survey study
(b) Indicated their willingness to participate in ACT intervention
(c) Signed consent form after reading through.
(d) Could understand English language

Exclusion Criteria: - Participants who are:

(a) Judged not to have poor psychological health
(b) Have indicated willingness not to participate

Sampling: Random allocation into either the experimental or control group was done by simple balloting technique of yes or no. Twenty 'yes' and twenty 'no' were written and rolled together for each participant to pick one. Those who picked 'yes' were assigned into experimental group while those who picked 'no' were assigned into control group respectively. The researcher then scheduled appointments for the participants after their groups were determined.

Sample Size: A total of 40 participants were involved at this stage.

Experimental Group: This group participated in Acceptance and Commitment Therapy.

Control Group: This group participated in conventional treatment of general health talk for caregivers of cerebral palsy children at the clinic.

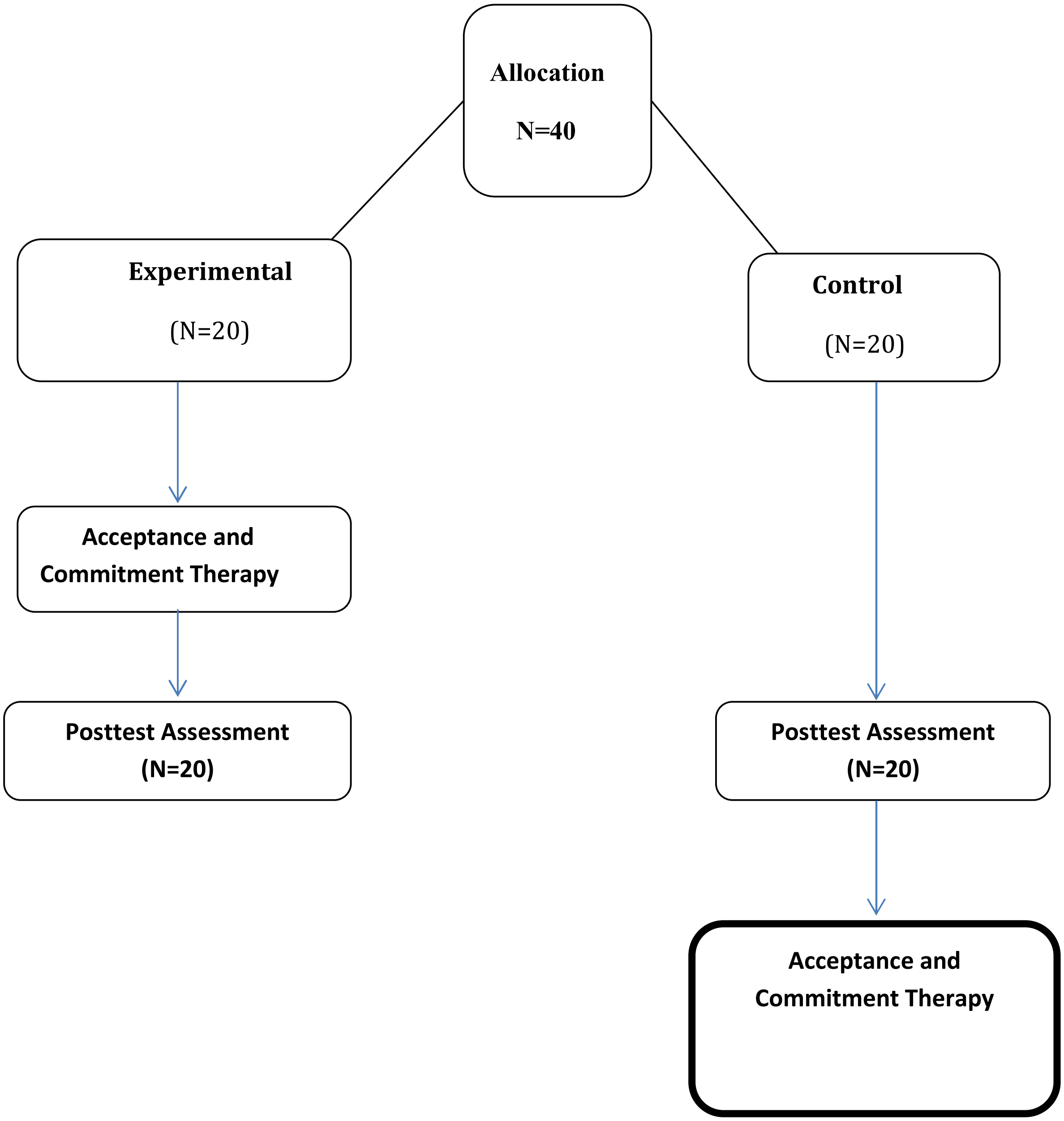
Instruments: Cerebral Palsy Psychological Health Scale, Acceptance and Action Questionnaire (this information served as pre-test score), Value Direction Worksheet and Modified Acceptance and Commitment Therapy Protocol were used for data collection and therapy (**see appendix V**).

Procedure: A pretest data assessment was obtained in order to reduce sampling error using the CPPHS and AAQ-II to determine the level of psychological health and psychological flexibility of the participants respectively. To avoid intrusion, the cooperation of medical personnel on duty was sought so as to avoid intrusion throughout the duration of the intervention. The experimental groups were exposed to 8 sessions of group Acceptance and Commitment Therapy with a session held per week while the control group was exposed to general health talk. Each session lasted 60 minutes. If participant has more than one missed session, result was not taken into account but they still had a right to participate in all the remaining sessions. Each session included exercises concerning the six processes of ACT. At the end of the eighth session, the researcher obtained the post-test assessment data alongside the help of research assistant (**see appendix V for detail therapy protocol**). The pre-test scores were then compared with the post-test scores to ascertain the effectiveness of the intervention. This was used to establish the efficacy of ACT therapeutic intervention. Target factor for change is a better psychological health and flexibility among mothers caring for children with cerebral palsy.

Control of Extraneous Variables

Randomization: Participants were randomly assigned to various treatment groups. This allowed for the reasonable proportion of basic characteristics in the sample being included in the study. Simple random sampling technique (yes-no) was used to assign the participants to the groups. Second, there was equal representation of mothers with and without knowledge of cerebral palsy. Third, the same instruction was given to the participants in the experimental and control group. The researcher conducted the experiment personally so as to control for experimenter effect. The cooperation of medical personnel on duty was sought so as to avoid intrusion throughout the duration of intervention. The control group received two brief sessions of Acceptance and Commitment Therapy after the completion of the experiment with the experimental group.

Figure 3.7: Flowchart Showing Assignment of Participants with Poor Psychological Health into Treatment Groups



3.5 Statistical Analysis

Hypothesis one was tested using 2×3 ANOVA, Hypothesis two was tested using Multiple regression analysis, Hypothesis three was tested with Logistic Regression, Hypotheses four and six were tested using t-test of independent measure, Hypothesis five was tested using ANCOVA and Hypotheses seven and eight were tested using t-test of dependent measure. Zero order correlation was applied to show how the variables are correlated.

CHAPTER FOUR

RESULTS

The result was reported in two phases; the first phase revealed the results of the qualitative study and scales development, while the second phase revealed the results of the tested research Hypotheses in the present study. The results are presented below.

4.1 Qualitative Study

Summary of the Result of Focus Group Discussion

A. Experience on Psychological Health

Based on the over-arching themes among participants of the FGD's, there was a significant expression of poor psychological health among mothers of children with cerebral palsy. These views as expressed by the participants in this study revealed the impact of having and caring for a child with cerebral palsy. The caregivers expressed how traumatic and stressful it is for them and how it affects their psychological health. Participants expressed these in their words:

> ''I mourn for a whole year, still in the shock of carrying this child here and there. I could not dress well, associate well with friend and colleague.'
> ''Initially, I was so ashamed of going out with the child to avoid questioning and pity from people or families.''
> ''I cry often, especially when my child becomes frustrated, trying to pass a message across but could not.''
> It has affected my career life. I couldn't pick up a stable job. I have to dedicate my time and energy nursing the child. but ,,,it is well.''
> (FGD 1/ Female/younger participant/ literate/skilled)

Respondents expressed how it affected them psychologically. A participant expressed how her child had become unacceptable in the society due to his impairment. She also reiterated her concern over uncertainty of what the future holds for her child in terms of academic, career and marital life achievement. The following comments were made of which other participants agreed.

> ‘’It is distressing and challenging as a mother to have a child with disability. Each day, I still wondered where I went wrong’’
> “It affects as it can be seen clearly that the child does not completely fit into the community. He can’t feed by himself or handle his basic need. All these and more often make me sad and unhappy. At times, I’m afraid of what the future holds for the child.’’
> (FGD 2/Female/older participant/ literate/unskilled)

Another participant expressed how hopeless and unhappy she feels whenever she sees her child as having cerebral palsy. She stated how challenging and embarrassing it is for her when her child put up behavioural problems. She reported that this made her unhappy especially when people are around her. She further emphasized that it is stressful and energy sapping. She made these comments below and other participants affirmed.

> ’I have disturbing thoughts about living with my child in this condition. At times my child put up behaviors that are not appropriate that not only affects me but also people around. So, I usually feel unhappy, as if I have failed.’’
> ‘’Sometimes I feel hopeless about the situation. As a matter of fact, I occasionally feel stressed up.’’ ‘Sometimes I feel hopeless about the situation I cry once in a while when I see the unavoidable situation that I find myself, it is a touching experience but we are there……’’
> (FGD 3/Female/younger participant/literate/unskilled)

A mother expressed that her child’s impairment shattered her self-pride as it was the least she bargained for in life. She stated that the incidence had slowed her down form her ambitions. She expressed the abandonment she had encountered from a loved one that she expected support. She made these comments below and majority of other participants supported her assertion.

> ‘’It has a great impact on me psychologically, it broke me totally. No other word to describe it than saddening. It is a lifelong situation. The older and younger siblings of the affected child are growing and moving on. When they ask me why their sister has not been walking or talking, I cry in my corner.’’
> ‘’It has taken almost everything from me. My husband abandoned me because of this child. I am still young, I wish to move on with my life but here I am saddled with

> the responsibility of looking after a child with cerebral palsy alone. Thank God for this center that accommodated me''
> (FGD 1/Female/younger participant/ literate/unskilled)

Themes emerged from the qualitative study which explained the psychological and emotional challenges that mothers experience in caring for a child with cerebral palsy. These were disturbing thoughts, emotional disturbances, hopelessness and dependency problems. Disturbing thought: They worry about the future life of the child due to inability of the child to meet physical, cognitive and social expectations. Emotional disturbances: There were varied degrees of emotional disturbances experienced which included feelings of sadness, crying and distress in daily care of the child. Dependency: The inability of the child to express needs was a source of psychological and emotional distress. This caused parent not to understand the child when the child is in need.

B. Experience of Social Support

Some of the participants expressed feeling abandoned to take the responsibility of looking after their child's disability, emotionally, financially, and so on. These feelings of inadequacy or lack of support had been a source of distress to these mothers with ripple effect on their psychological health. For instance, participants expressed.

> ''Getting physical support from people had been so tough. I picked up a flexible job where I can resume late and close early, although it slowed me down in my postgraduate program because I remember losing two sessions due to the fact that I had no one to help look after my child. It has been so demanding''.
> (FGD 1/Female/35 yrs. /younger participant/ literate/ skilled)

The support for this group of people is grossly inadequate, in the sense that there is no adequate social support system to care for these children. The ones that are available are either too far from the homes of people who need the services, expensive or poorly managed. Because of this, the responsibility of caring for these children is usually on the parents and family members. Participants expressed.

> ''Getting a place to keep my child was also a big challenge. I remember, for three years I live in Lekki. I will have to drop my child at Surulere before heading for work at Ojo

> another end of Lagos. By the time I'm getting home, I will be too tired to do anything'. We have to relocate to Surulere where we can get a centre to keep our son.
> (FGD 1/Female/older participant/ literate/ skilled)

The financial support was seen as the major source of support which the mothers expressed as grossly lacking

> 'We pay for every hospital and therapy visits on our own' It has been financially demanding, we spend money on medications and therapies of different type with no form of support from either private or government institutions. Whenever my husband doesn't have money, we sit at home.
> FGD 1/Female/older participant/ illiterate/ unskilled
> 'Highly expensive, we spend money on pampers even at the age of 5.' Very expensive, I change wheel chair as the child increases in size, putty chair and some other gadget to make life easy for my child'.'
> (FGD 3/Female/younger participant/ literate/ skilled)

As a background to the difficulty in getting a physical assistance to look after the child was the believe by mothers that their children are being socially stigmatized due to the physical and behavioural challenges that is associated with the disorder. Participants said and I quote:

> ''I consider the look of pity on people's faces when we go out with the child. Some look with disgust and some with sympathy. This weakens me emotionally. So, apart from very important places, the child stays at home''
> (FGD 1/Female/younger participant/ literate/ skilled)

> ''I avoid going out with the child due to questioning from friends and families, especially those that were not aware of my child's condition. e.g, what happened, what have you done? and so on. These experiences are not pleasant.''
> (FGD 2/Female/younger participant/ literate/ skilled)

From the study, mothers experienced social challenges as social life seems to be disrupted in families having children with cerebral palsy. Perceived stigma from mother due to societal response to the condition of the child was also expressed. Inadequate/inaccessibility of social services to cater for the therapeutic and educational needs of these children was emphasized by the mothers. Financial constraints were a major theme in which mothers emphasized little or no financial support from government and private institutions. It was expressed that it is expensive taking care of a child living with cerebral palsy. They have quite a lot of facilities needed for support which are expensive and may become useless as the child outgrows it.

C. Experience of Burden

Participants expressed burden of care in looking after their child's disability in terms of emotion and financial needs, constriction of social activities and so on. This feeling of burden was identified as a source of distress to these mothers with effect on their psychological health. For instance, some participants expressed.

> 'They are expensive children. 'It had been stressful caring for a child with cerebral palsy, I still cried last night,'
> (FGD 1/Female/younger participant/ literate/ skilled)
>
> ''It affects me by me not being able to coordinate my life the way I wish. Every decision we take in the family most times have to be reviewed because of the child. Travelling, going for social function, and many other activities are either disrupted, amended or someone has to sacrifice by staying back when you consider the stress of taking the child along with you. 'It's a big burden emotionally and psychological. Sometimes I wish it never happened… but it is well. I feel unfortunate''
> (FGD 1/Female/older participant/ literate/ skilled)

A participant expressed the physical stress involved in taking care of the child's activity of daily needs such as bathing, feeding and mobility. The participant expressed:

> ''I most of time avoid going out when I consider the stress involve, that is carrying the child. Take a look at this my right hand; I could barely feel it again due to the weight of the child. My chest and hand hurt''.

Other participants had similar responses to the question of how burdensome is it to care for a child with CP.

Based on the transcription of the recorded interview, the following significant points relating to the objectives of the study were identified about the psychological health of caregivers (mothers) of children with cerebral palsy from key informants. The psychiatrist had this to say.

> “Some of the mothers of the affected children tend to suffer from a lot of psychological consequences. For example, a lot of them tend to have adjustment disorders. They are not able to adjust to the situation because they are now having a child that is highly demanding on them unlike other children. Adjusting to that situation is a problem, so they tend to manifest with a lot of adjustment challenges. A lot of them tend to develop what we call depression and because of this depression most of them find it even difficult to move forward in life because once they develop depression without adequate treatment or intervention they will not be able to take care of the affected child or themselves. In addition, some of them may suffer from anxiety some tend to have sleep disturbance and if the stress is too much they may develop other psychotic conditions.

On adequacy of support, the psychiatrist had this to say…..

> In Nigeria the support for this group of caregivers are grossly inadequate in the sense that there is no social support system to care for these patients. No adequate social work, no enough facilities to take care of these patients and because of this, the responsibility of caring for these patients are usually on the parents and family members.
>
> There is no provision for many psychological conditions. The National Health Scheme does not have provision for any psychological conditions. Even when economic reasons are implicated it is usually the family members who meet all the caring needs, thereby, making the care of the child a burden on the family member.

KII / Male / Married / Psychiatrist

Based on the transcription of the recorded interview, the following significant points relating to the objectives of the study were identified concerning the impact of having a child with cerebral palsy on the psychological health of their mother. The clinical psychologist had this to say…

> … Most of the caregivers come in to the treatment center confused. The cerebral palsy condition is confusing to them and they don’t understand the etiology of the disorder so

> most of the time they feel guilty, rejected, hopeless, frustrated and dissatisfied about their child condition. They worry about treatment and management, most especially the future of their wards. Because the care demand is high, most parents abandoned these children due to the frustration and feeling of stigma associated with the child's condition. So these are the few challenges the caregivers face. They also complained of sleep problems but most often is the feeling of guilt and self-blame which could lead to depression.

In response to the question, what can you say about the adequacy or inadequacy of the support?

> 'The issue of social support is not adequate on both on the part of the government and on the part of the individual contribution, as most time it is only the mother who is saddled with the responsibility of taking care of the patient. Getting an external help to look after such child may be too expensive for most mothers. Financial support is a major aspect in which majority need assistance due to series of medications and therapeutic interventions the child is placed on which involved money. Poor governmental involvement in provision of free health policy, special educational facilities for these classes of children made it more difficult for the caregivers.
>
> ''Only few people who are of high economic status could afford and get consistent on the management of these classes of children. There is need for more psycho education programs, establishment social support groups, more respite homes and more governmental involvement''

The psychologist further reiterated on the issue of burden like other professional….

> These parents are more irritable due to pressure of burden and they complain of inadequacies of funds sometimes due to the needs of the child. They complained of time spent in caring for these children making them abandon their personal ambitions. Some of the care givers also complain of headaches, pains due to the burden.
>
> KII /Male /Married/ Clinical Psychologist

4.2 Results on Scales Development

Cerebral Palsy Psychological Health Scale (CPPHS)

Reliability

The initial reliability derived from the analysis revealed a Cronbach's alpha to be .69. However, four items were found to have low total item correlation following .3 standard set by scholars (Nunally, 1979). The four items were deleted and the alpha rose to .92. The split half reliability, another measure reliability revealed the Spearman brown co-efficient to be 0.94 when split into two groups. The group A has an alpha of .87 and group B consisting of 8 items has an alpha of .82. The correlation between forms of .86 revealed a sound level of internal homogeneity and strong reliability. The guttman split-half coefficient was .90. The results were illustrated in tables below.

Table 4.1: Summary of Cronbach Alpha Showing the Reliability of Cerebral Palsy Psychological Health Scale

Cronbach's Alpha	N of Items
.92	16

Table 4.2: Reliability Statistics

	Part 1	Value	.87
Cronbach’s Alpha		N of Items	.8[a]
	Part 2	Value	.82
		N of Items	8[b]
	Total N of items		16
Correlation Between Forms			.86
Spearman-Brown coefficient	Equal Length		.94
	Unequal Length		
Guttman Split-Half Coefficient			.90

Validity

In terms of construct validity, the generally accepted process of instrument development was followed, in that , the pattern of inter-item correlations was examined for the influence of underlying latent variables using factor analysis. Exploratory, rather than confirmatory factor analysis was used as this method of factor extraction is considered by many as more appropriate in the early stages of scale development. The criterion used to determine how many factors to retain was that of Kaiser Meyer (i.e. eigenvalues greater than 1 are retained), which is one of the most widely used.

An exploratory factor analysis was applied to explore the underlying dimensions of factors affecting Cerebral Palsy Psychological Health Scale. First, the covariance contained in the correlation matrix was tested by using the Bartlett test and Measure of Sampling Adequacy (MSA). In this test, the Bartlett test of sphericity (p. 0.00) indicates the statistical probability that the correlation matrix has significant correlations, and the Kaiser-Meyer measure of sampling adequate was .59 showing meritorious sampling adequacy.

In addition, the 16-item battery was factor analyzed using Principle Axis Factoring (PAF) with varimax rotation. A factor structure explaining 78.23% of the variance was obtained. As verified by KMO = .59, df = 120, $p<.000$, this suggest that the data matrix could be factorized. The factors yielded are the dimensions of hopelessness, depression, social distress and stigma**.** The factor loading for the items ranged from .57 to .86 which indicated that all the items loaded well on the factors precipitated (see appendix VII).

Convergent validity was also determined on the self-developed scale.

Table 4.3: Showing the Relationship between Cerebral Palsy Psychological Health Scale when Correlated with Mental Health Index

Variables	$\bar{X}$	SD	R	Sig.
Cerebral Palsy Psychological Health Scale	48.32	17.98	0.68**	P<.05
Mental Health Index	43.96	10.63		

***p* <.05 (Significant at 0.5 level)**

The Pearson correlation analysis revealed that there was significant positive relationship between Cerebral Palsy Psychological Health Scale and Mental Health Index ($r = 0.68$, $p<.05$). Positive psychological health increases in the same direction for mental health index and the self-developed scale. The norm was set using the average score on Cerebral Palsy Psychological Health Scale. High score above the mean suggest that the respondents have good psychological health while lower scores equal or below the mean suggests poor psychological health.

Cerebral Palsy Social Support Scale (CPSSS)

Reliability

The initial reliability was .54 Cronbach alpha. From the fourteen (14) items, nine (9) items were adjudge reliable and five (5) items were deleted due to poor reliability using < 0.3 criterion loading on the total item correlation (TIC). After deleting the weak items, the scale achieved a reliability of .88 Cronbach alpha meaning that eighty-eight percent of the respondents were consistent in their responses to the 9 items. Split-Half reliability of $r = .74$) and $r = .83$ were reported respectively. Correlation between forms was 0.83. Spearman-Brown equal length Coefficient was 0.91 and Guttman Split-Half Coefficient of .90 was reported. The table below shows further illustration.

Table 4.4: **Summary of Cronbach alpha Showing Reliability of Cerebral Palsy Social Support Scale**

Cronbach's Alpha	N of Items
.88	9

Table 4.5: **Reliability Statistics**

Cronbach's Alpha	Part 1	Value	.74
		N of Items	4^a
	Part 2	Value	.83
		N of Items	5^b
	Total N of items		9
Correlation Between Forms			.83
Spearman-Brown coefficient	Equal Length		.91
	Unequal Length		.91
Guttman Split-Half Coefficient			.90

Validity

Exploratory factor analysis was used as this method of factor extraction is considered by many as more appropriate in the early stages of scale development. The criterion used to determine how many factors to retain was that of Kaiser (i.e. eigenvalues greater than 1 are retained), which is one of the most widely used (Adejuwon & Ibeagha, 2005). In terms of construct validity, the generally accepted process of instrument development was followed, in that the pattern of inter-item correlations was examined for the influence of underlying latent variables using factor analysis.

Construct Validity

Cerebral Palsy Social Support scale responses were submitted to an analysis of principal components in line with Kaiser's method–eigenvalue > 1. As verified by KMO = .61, X^2 = 428.42, df = 36, p<.001, this suggests that the data matrix could be factorized. The principal axis factor extraction with varimax rotation produced a three factor solution that accounted for 88.27% of the variance in item responses. The factors yielded are socio-emotional support, financial-moral support and low stigmatisation behaviour. The factor loading for the items ranged from .80 to .96 which indicated that all the items loaded well on the factors precipitated (see appendix VII).

Convergent validity

Table 4.6: Showing the Relationship between Cerebral Palsy Social Support Scale Multidimensional Scale of Perceived Social Support and Subscales of Cerebral Palsy Social Support Scale

	MEAN	S.D	1	2	3	4	5
CPSS	29.33	7.97	1	.93**	42**	.48**	.45**
SOCIO-EMTNAL SPRT	15.27	6.26		1	.30*	-.20	.62**
FINANCIAL-MORAL SPRT	8.78	1.92			1	-.16	.16
STIGMATIZATION	5.29	2.82				1	-.22
MSPS	41.55	19.71					1

The overall index score on the Cerebral Palsy Social Support scale was significantly and positively correlated with Multidimensional Scale of Perceived Social Support (r = .45, p<.001). In addition, the subscale of socio-emotional support was positively correlated with financial support (r= .30, p<.001). Stigmatisation did not correlate with socio-emotional and financial moral support. The Cerebral Palsy Social Support scale range of possible scores is within 9 - 63. High score above the mean score ($\bar{X}$ =36.14, SD=11.03) denotes good socio-emotional support, financial - moral support and low stigmatisation behaviour, while scores below the mean score denotes poor socio-emotional support, financial - moral support and high stigmatisation behaviour.

Cerebral Palsy Caregivers' Burden Scale

Reliability

Initial reliability was .72 alpha. Eleven Items with weak performance were deleted using the .3 criterion and the scale achieved a reliability of .86 Cronbach alpha. Split-Half reliability of r = .87 and r = .88 were reported respectively. Correlation between forms was .32. Spearman-Brown Split-Half Coefficient was .48 and Guttman Split-half Coefficient was .43 were reported. The results were further illustrated in the tables below.

Table 4.7: Summary of Cronbach alpha Showing Reliability of Cerebral Palsy Caregivers' Burden Scale

Cronbach's Alpha	N of Items
.86	12

Table 4.8: Reliability Statistics

Cronbach's Alpha	Part 1	Value	.87
		N of Items	6[a]
	Part 2	Value	.88
		N of Items	6[b]
	Total N of items		12
Correlation Between Forms			.32
Spearman-Brown coefficient	Equal Length		.48
	Unequal Length		.48
Guttman Split-Half Coefficient			.43

Validity

Construct Validity

Cerebral Palsy Caregivers' Burden scale responses were submitted to an analysis of principal components in line with Kaiser's method-eigenvalue > 1. As verified by KMO = .50, X^2 = 710.49, df = 66, p<.001, this suggest that the data matrix could be factorized. The principal axis factor extraction with varimax rotation produced a three factor solution that accounted for 77.13% of the variance in item responses. The factors yielded are personal strain, role strain and social strain. The factor loading for the items ranged from 0.64 to 0.91 which indicated that all the items loaded well on the factors precipitated (see appendix VII).

Convergent Validity

Table 4.9: Pearson Correlation Showing the relationship between Cerebral Palsy Caregivers' Burden, Zarit burden interview and CPCB subscales

	Mean	S.D	1	2	3	4	5
CPBURDEN	32.76	13.87	-	.87**	.61**	.69**	.45**
Personal strain	18.45	10.15		-	.18*	.35*	.34*
Role strain	9.47	4.67			-	.61**	.29*
Social strain	4.84	3.16				-	.45**
Zarit caregivers' burden	42.80	17.90					-

****. Correlation is significant at the 0.01 level (2-tailed).**
***. Correlation is significant at the 0.05 level (2-tailed).**

The overall score on the Cerebral Palsy Caregivers' Burden Scale was significantly and positively correlated with Zarit Caregivers' burden interview ($r= .45$, $p < .001$). In addition, the subscale of personal strain was positively correlated with social strain ($r= .18$, $p<.05$). Social strain and role strain were positively correlated ($r= .61$, $p<.001$). The Cerebral Palsy Caregivers' Burden Scale range of possible scores is within 0 - 48. High scores above the mean score ($\bar{X} =10.63$, $SD=8.32$) denotes high personal strain, role strain and social strain, while scores below the mean score denotes low personal strain, role strain and social strain.

4.3 Intercorrelation among Variables of Study

Table 4.10: Zero-order Correlations Showing the Relationship among Social Support, Caregivers' Burden, Sleep Quality, Mothers' Age, Child's Age, Marital Status, Occupation, Educational level and Psychological Health

	$\bar{X}$	SD	1	2	3	4	5	6	7	8	9
1. Psychological health	16.13	8.32	-								
2. Social support	36.14	11.03	.74**	-							
3.Caregivers burden	10.63	8.32	-.73**	-.57**	-						
4. Sleep quality	7.81	4.66	.34**	.34**	.49**	-					
5. Mothers age	33.09	7.33	.32**	.06	-.17	.39**	-				
6. Childs age	4.48	2.17	.39**	-.50**	.30**	-.09	.59**	-			
7. Marital Status	1.33	0.67	.20	-.41**	-.27*	.03	.36**	.17	-		
8. Occupation	4.21	1.74	-.39**	-.32**	.46**	-.24*	-.35**	-.37**	.07	-	
9. Education level	2.29	0.80	-.23*	-.19	.49**	-.12	-.16	-.19	.06	.79**	-

***. Correlation is significant at the 0.01 level (2-tailed).**
***. Correlation is significant at the 0.05 level (2-tailed).**

Table 4.7 revealed that there was significant positive relationship between social support (r = .74, p<.01) and psychological health. This implies that mothers with high social support significantly reported better psychological health. Caregivers' burden has significant inverse relationship with psychological health (r = -.73, p<.01). This demonstrates that mothers who experience high caregivers' burden significantly reported poor psychological health. Furthermore, sleep quality has significant positive relationship with psychological health (r = .34, p<.01). The result indicated that increase in sleep quality significantly relates to better psychological health. It was further revealed that there was significant positive relationship between mothers' age (r =.32, p<.01) and psychological health. This indicates that the older the mother, the better the psychological health. Apparently, Childs' age has significant positive relationship with psychological health (r =.39, p<.05), meaning that the older the child the better the psychological health of the mother. Also, there was significant inverse relationship between mothers' occupation and psychological health (r = -.39, p<.01), indicating that mothers who are skilled significantly reported poor psychological health. Educational level has significant inverse significant relationship with psychological health (r = -.23, p<.01). The result indicates that mothers with higher educational level significantly reported poor psychological health. Moreso, there was no significant positive relationship between marital status (r = .20, p>.05) and psychological health. This implies that being married, single, divorced, or widowed did not significantly relate to better or poor psychological health.

Descriptive Statistics

The descriptive statistics showing the demographic characteristics of the participants for the main study are presented in figures below:

Figure 4.1: Showing the Age of Participants in Percentage

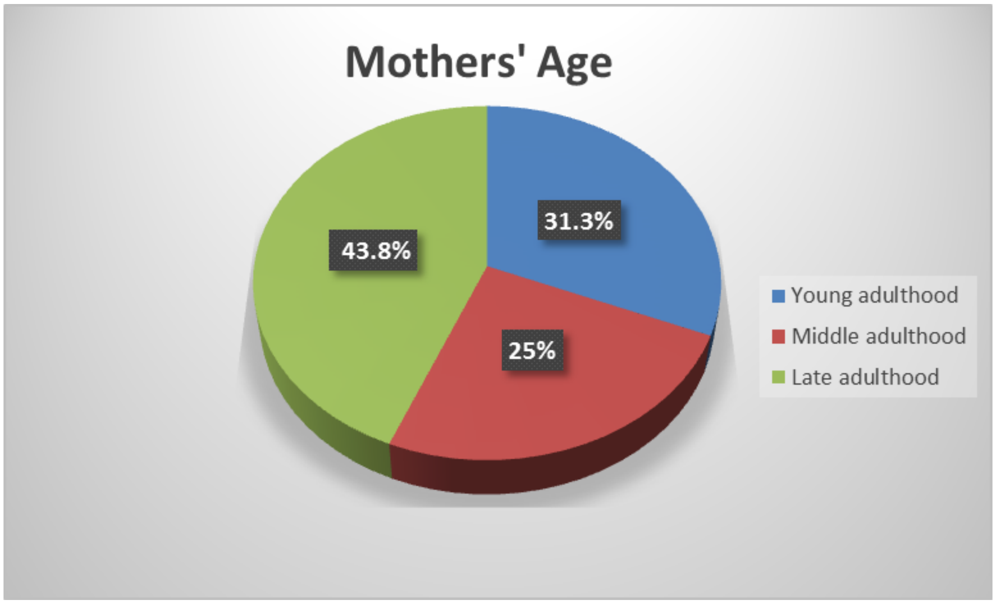


Figure 4.1 shows that 43.8% of the participants were in their late adulthood, 31.3% were in young adulthood while 25% were in their middle adulthood.

Figure 4.2: Showing the Age of Children in Percentage

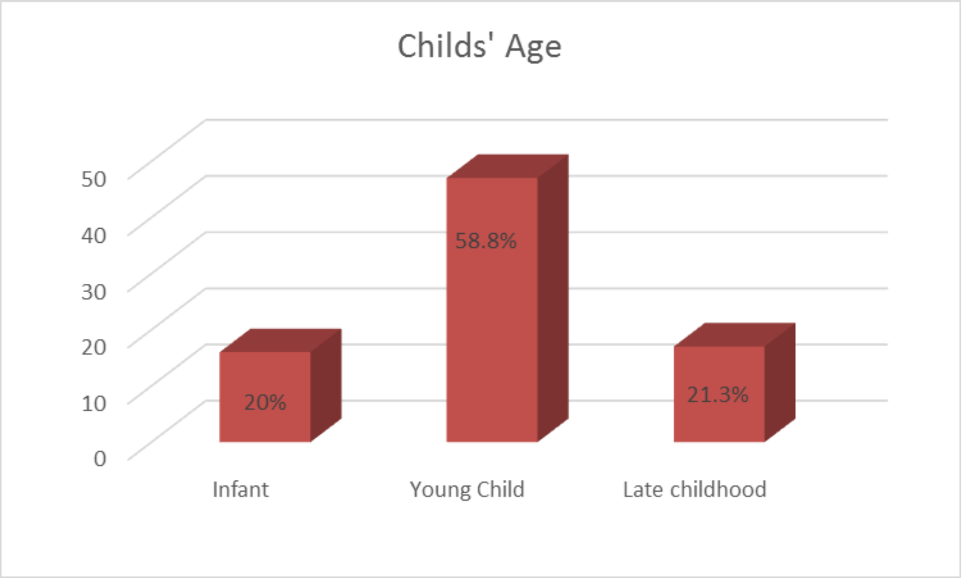


Figure 4.2 shows that 58.8% of the respondents were in their young childhood, 21.3% were in their late childhood while 20.0% were in infant stage.

Figure 4.3: Showing the Gender of Children in Percentage

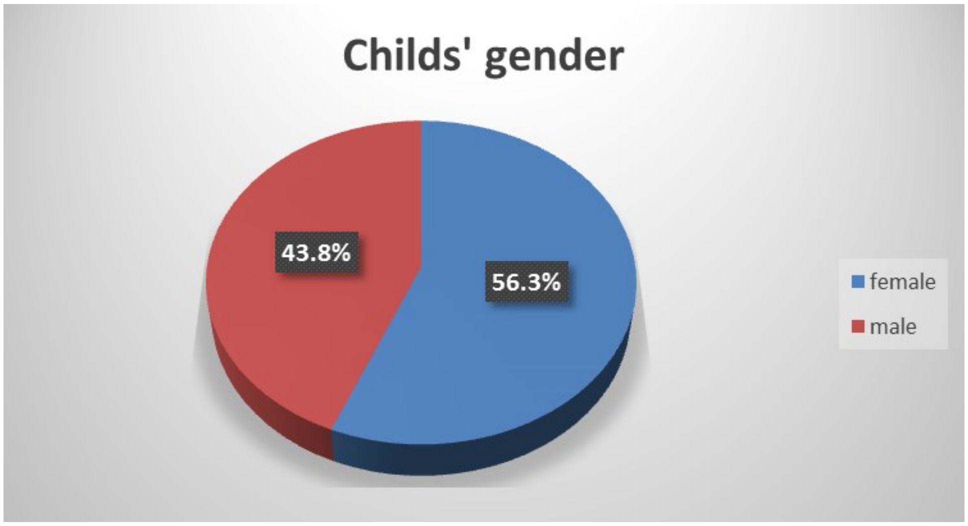


Figure 4.3 shows that larger proportions 56.3% of children with cerebral palsy were female while 43.8% were male.

Figure 4.4: Showing the Marital status of Participants in Percentage.

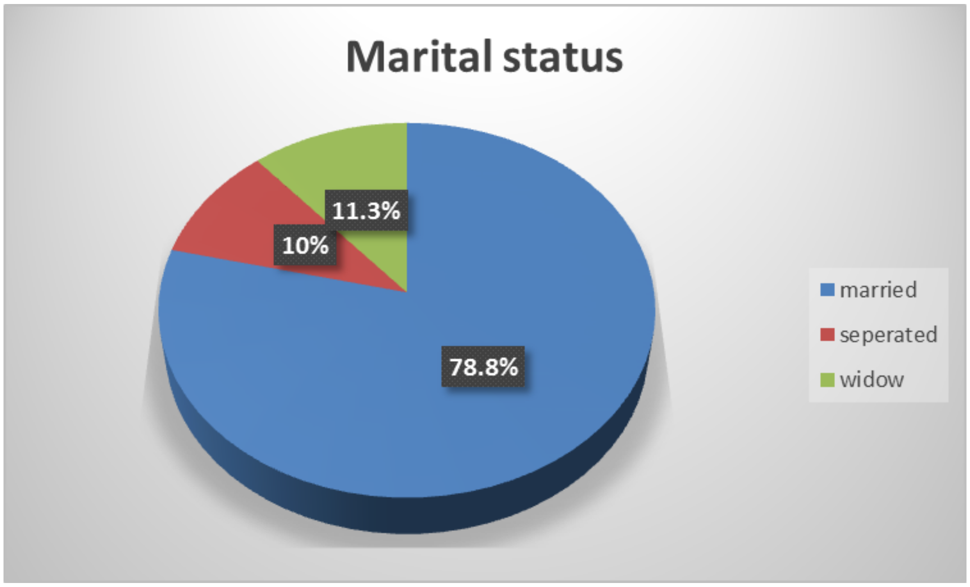


Figure 4.4 shows that a larger percentage of the mothers 78.8% were married, 11.3% were widow while 10% were separated.

Figure 4.5: Showing the Occupation of Participants in Percentage.

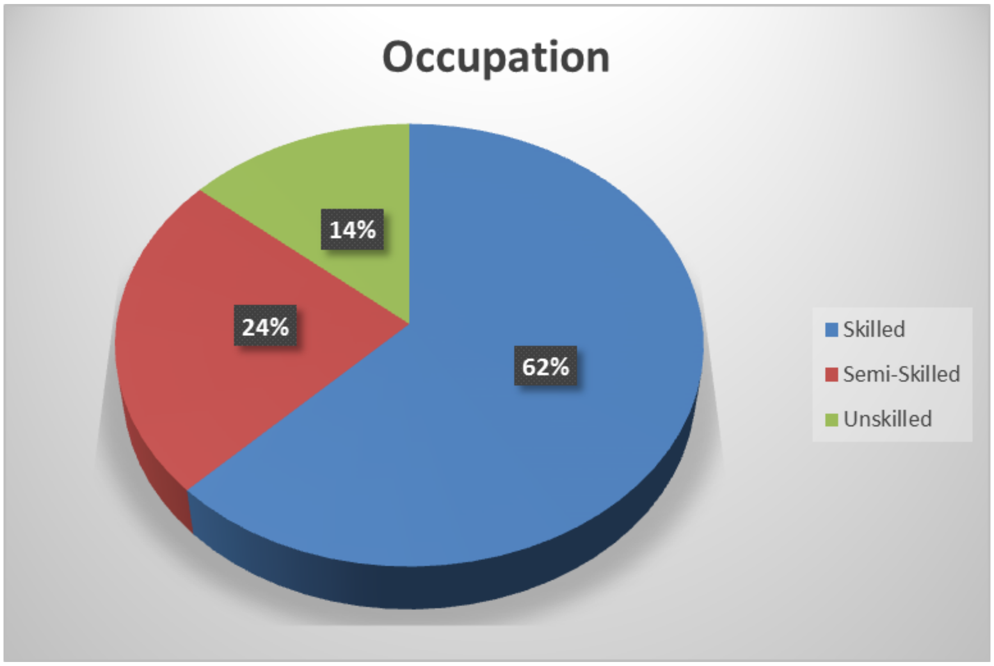


Figure 4.5 shows that larger proportion, 62% of the respondents were skilled workers, 24% were semi-skilled and 14% were unskilled.

Figure 4.6: Showing the Educational level of Participants in Percentage.

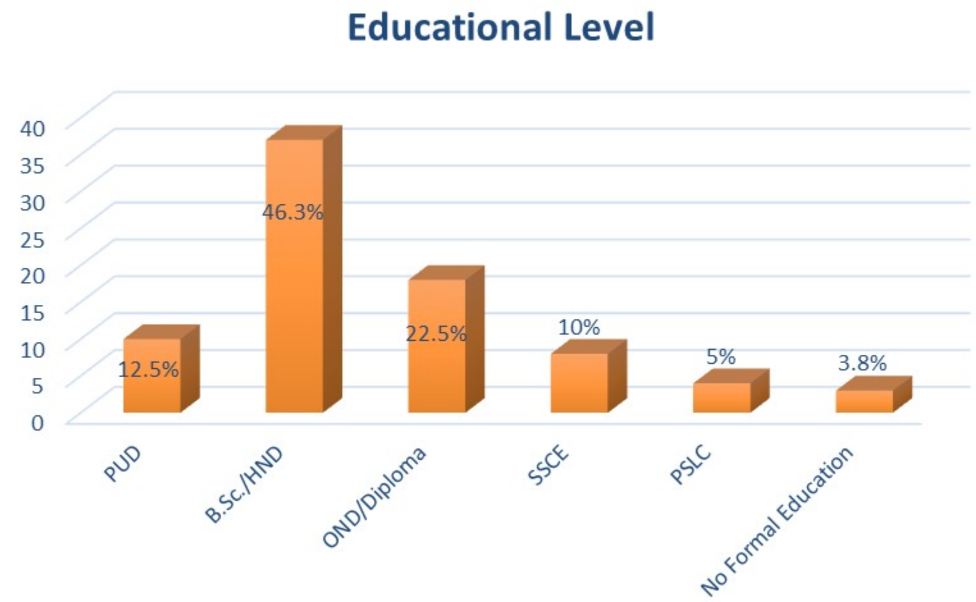


Figure 4.6 revealed that the educational qualification of mothers of children with cerebral palsy, it shows that larger proportion of the mothers 46.3% acquired B.Sc./HND degree, 22.5% possessed an OND/diploma degree, 12.5% were Ph.D holders, 10% were SSCE holder, 5% were Primary School Leaving Certificate holder while 3.8% had no formal education.

4.4 Test of Hypotheses

Specifically, the study provided answers to eight research hypotheses. The statistical tests used include multiple and logistic regression analysis for testing the predictive influence of the independent variables on dependent variable, t-test for dependent and independent samples for testing significant difference between independent and within groups, analysis of variance (ANOVA) and analysis of covariance ANCOVA.

4.4.1 Hypothesis One

The first hypothesis states that mothers of female children in their late childhood with cerebral palsy will significantly have better psychological health than mothers of male children in their late childhood. This was tested using 2x3 ANOVA and the result presented in Table 4.11 below.

Table 4.11: Summary of 2x3 ANOVA Showing the Influence of Child's gender and Child's Age on Psychological Health of Mothers

Source	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Child gender	1481.42	1	1481.42	543.35	<.01
Child age	3063.01	2	1531.50	561.72	<.01
Child gender * Child age	1935.53	1	1935.53	709.91	<.01
Error	204.48	75	2.73		
Corrected Total	5470.75	79			

The result of the hypothesis shows that there was a significant main influence of Childs' gender (F (1, 75) = 543.35, p<.01) on psychological health of mothers. Mothers of male children expressed better psychological health than mothers of female children. There was also significant main influence of child's age on psychological health (F (1, 75) =561.72, p<.01). Mothers of children in young childhood stage expressed better psychological health of mothers compared to mothers of children in infant and late childhood. Furthermore, the result revealed that there was significant interaction influence of child's gender and child's age on psychological health (F= (1, 75) = 709.91, p<.01). Further analysis on the interaction effect of child's gender and child's age on psychological health was presented in table 4.12

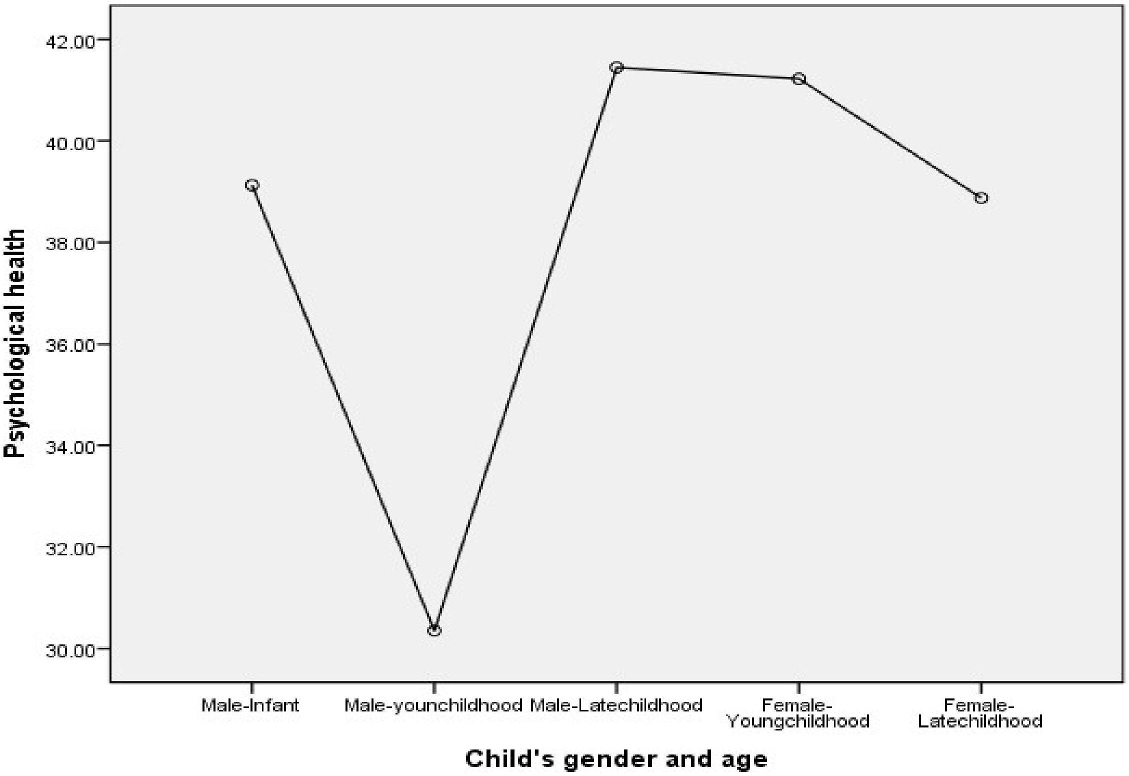
Table 4.12: Descriptive and Posthoc Analysis Showing Interaction Influence of Child's Age and Gender on Psychological Health

Groups	N	$\bar{X}$	SD	1	2	3	4	5
Male-infant	16	39.13	1.67	-				
Male-young child	20	30.35	12.64	8.78*	-			
Male-Late childhood	9	41.44	9.55	-2.32	-11.09*	-		
Female-Young child	27	41.22	1.76	-2.10	-10.72*	0.22	-	
Female-late child	8	38.88	0.35	0.25	- 8.53*	2.35	-2.35	-

***. Significant at the 0.05 level.**

Descriptive analysis and post hoc analysis revealed that mothers of male infant child, male in late childhood and young female child significantly reported better psychological health compared to mothers of male who are young and mothers of female in the late childhood. More so, mothers of male children in their late childhood significantly reported better psychological health compared to mothers of female in late childhood. Furthermore, mothers of female who are young significantly reported better psychological health compare to mothers of young male children. The hypothesis is hereby rejected.

Figure 4.7: Showing the Interaction between Child's Gender and Age on Psychological Health of Mothers.



4.4.2 Hypothesis Two

The second hypothesis stated that social support, caregivers' burden and perceived sleep quality will significantly jointly predict psychological health among mothers of children with cerebral palsy. This was tested using multiple regression analysis and the result was presented in table 4.13.

Table 4.13: Summary of Multiple Regression Analysis Showing the Influence of Social Support, Caregivers' Burden and Sleep quality on Psychological Health of Mothers

Predictors	B	**T**	**P**	***R***	R^2	***F***	***P***
Social support	.49	6.15	<.05	. 83	.68	54.79	<.01
Caregivers' burden	-.48	-5.57	<.05				
Sleep quality	-.06	.78	>.05				

The result revealed that respondents social support, caregivers' burden and sleep quality significantly jointly predicted psychological health ($R^2 = 0.68$, $F(3, 76) = 54.79$, $p < .01$). This revealed that when combined, social support, caregivers' burden and sleep quality accounted for 68% of the change observed in psychological health of mothers of children with cerebral palsy. The result revealed that social support ($\beta = .49$, $t = 6.15$; $p < .05$) and caregivers' burden ($\beta = -.48$, $t = -5.57$; $p < .05$) were significant independent predictors of psychological health. While sleep quality ($\beta = -.06$, $t = 0.78$; $p > .05$) have no significant independent predictive influence on psychological health. The result demonstrated that mothers with high social support significantly reported better psychological health and mothers with low caregivers' burden significantly reported better psychological health. The hypothesis is thus accepted.

4.4.3 Hypothesis Three

The third hypothesis stated that some socio-demographic factors will significantly predict psychological health among mothers of children with cerebral palsy. This was tested using logistic regression analysis and the result was presented in table 4.14 below.

Table 4.14: Summary of Logistic Regression Analysis Showing the Influence of Socio-Demographic Variables on Psychological Health

	Observed		Predicted		
			Psychological health		Percentage Correct
			Low	High	
Step 1	Psychological health	Low	19	2	90.0
		High	6	53	89.8
	Overall Percentage				90.0

	B	**S.E**	**Wald**	**Df**	**Sig.**	**Exp(β)**
Mothers age	.15	.06	6.30	1	.012	1.03
Marital status	1.24	.78	2.51	1	.113	242.32
Educational level	.88	.95	.85	1	.355	5.93
Occupation	-1.31	.47	7.75	1	.005	4.02
Constant	-1.01	2.25	.20	1	.656	1.90

Log likelihood= 52.75, Cox & Snell R Square= .39, Nagelkerke R Square= .57, Chi-square= 39.36

The result from table 4.14 revealed that inclusion of the independent variables; mothers' age, marital status, education and occupation to the model increased the level of accuracy from 89.8 to 90.0%. This demonstrated a strong fitted model. The overall significance revealed that the *Model Chi square*, derived from the likelihood fitted was accurate. The model chi square value of (39.36 df (4); p <.05) was significant. Thus, the indication is that the model has a good fit. It is observed from result that the mothers' age (B = .15, wald statistics = 6.30; p<.05) and occupation (B = -1.31, wald statistics = 7.75; p<.05) contributed significantly to the prediction of psychological health while marital status (B = 1.24, wald statistics = .78; P>.05) and educational level (B = .88, wald statistics = .85; P>.05) did not significantly predict psychological health. It was further revealed that the Exp (B) or the odds ratio for mothers' age is 1.03 which implies that mothers who are older are likely to report better psychological health. Occupation is 4.02 indicating that mothers who are skilled workers are four times more likely to report better psychological health than their counterparts. Mother's marital status and education level did not significantly increase any chance of better psychological health of mothers. The hypothesis is hereby accepted.

4.4.4 Hypothesis Four

The fourth hypothesis states that mothers of children with low behavioural problem will significantly express better psychological health than mothers of children with high behaviour problem. This hypothesis was tested using the t-test for independence and the result was presented in Table 4.15 below.

Table 4.15: T-test Summary Table Showing Differences between Mothers of Children with Low and High Level of Problem Behavior on Psychological Health

DV	Problem behavior	N	$\bar{X}$	SD	df	t	p
Psychological health	Low	36	40.33	1.97	78	-2.47	<.05
	High	44	35.86	10.72			

The result from table 4.15 shows that mothers whose children have low level of behavior problem ($\bar{X}$= 40.33, SD=1.97) significantly reported better score in their level of psychological health compared to mothers whose children are high on behavior problem ($\bar{X}$=35.86, S.D=10.72). This implies that child behavior problem significantly influences psychological health among respondents sampled (t (78) = -2.47, $p<.05$). The hypothesis is thus accepted.

Table 4.16: T-Test Summary Table Showing the Differences between the Control and Experimental Groups on Psychological Health Prior to ACT Intervention

Groups	**N**	$\bar{X}$	**Std**	**Df**	***T***	***P***
Control	20	33.45	5.69	38	-.48	>0.05
Experimental	20	34.35	6.20			

The result on Table 4.16 shows that prior to intervention, participants in the control group ($\bar{X}$=33.45, S.D= 5.69) were not significantly different in their level of psychological health compared to participants in the experimental group ($\bar{X}$=34.35, S.D =6.20). This shows that there was no significant difference in the level of psychological health reported by participants in the two groups (control and experimental) prior to intervention [t (38) = -.48, p>.05]. This result implies that participants in the two groups were statistically identical in their level of psychological health before the intervention

4.4.5 Hypothesis Five

The fifth hypothesis stated that Acceptance and Commitment Therapy will significantly have effect on psychological health of mothers of children with cerebral palsy, controlling for the influence of severity of illness and parental knowledge. This was tested using One way analysis of covariance and result was presented in table 4.17 below.

Table 4.17: Summary of One way ANCOVA Showing the effect of Acceptance and Commitment Therapy on Psychological Health of Mothers of Children with Cerebral Palsy

Source	SS	df	MS	F	P	η_p^2
Illness Severity	158.52	1	158.52	8.39	<.05	.13
Parental knowledge	59.32	1	59.32	3.14	>.05	.08
Treatment	150.89	1	150.89	7.97	<.05	.19
Error	681.20	36	18.92			
Corrected Total	1085.50	39				

Covariates appearing in the model are evaluated at the following values: GMFCS = 2.55, Parental knowledge = 20.8000

Table 4.17 presented a One-way analysis of covariance result, showing the significant effect of acceptance and commitment therapy on psychological health of mothers of children with cerebral palsy F (1, 36) = 7.97, $p < .05$, $\eta_p^2 = .19$), controlling for the influence of severity of illness F (1, 36) = 8.39, $p < .05$), parental knowledge F (1, 36) = 3.14, $p > .05$), This indicates that acceptance and commitment therapy has significant effect on psychological health of mothers of children with cerebral palsy. In other words, it implies that the psychological health of mothers of children with cerebral palsy exposed to different treatment groups is significantly different. Administered interventions (ACT) were responsible for 19% of the change observed in the psychological health of mothers of children with cerebral palsy. In order to ascertain the magnitude significant determinant of F value, a group comparison test was conducted. Consequently, LSD post hoc test was used to compare the two groups. The results are shown in Table below 4.18 below.

Table 4.18: Showing the Summary of LSD Post Hoc Analysis of Study Groups on Psychological Health of Mothers of Children with Cerebral Palsy

Study Groups	N	$\bar{X}$	SD	LSD Post hoc Test	p
Experimental Group	20	33.65	5.76	3.97*	<.05
Control Group	20	28.85	3.44		

** *p* < .01. * *p* < .05

The post-hoc result presented in Table 4.18 shows that mother of children exposed to Acceptance and Commitment Therapy had the most stable psychological health compared to the control group. The participants in the control group had low scores on psychological health scale, indicating poor psychological health. In view of the result, hypothesis five was therefore accepted.

4.4.6 Hypothesis Six

The sixth hypothesis states that participants in experimental groups will significantly score higher on psychological health than participants in control group. The hypothesis was tested using the t-test of independent measure and the result presented in Table 4.19.

Table 4.19: Showing the significant effect of ACT on Psychological health of Mothers of Children with Cerebral Palsy

DV	Group	N	$\bar{X}$	SD	df	t	P
Psychological health	Experimental	20	33.65	5.76	38	3.20	< .05
	Control	20	28.85	3.44			

The finding obtained in table 4.19 showed that Acceptance and Commitment therapy has significant effect on psychological health of mothers of children with cerebral palsy (t (38) = 3.20, $p < .05$). Further observation of the difference of means showed that participants in the experimental groups reported a significant better psychological health ($\bar{X}$ = 33.65, S.D. = 5.76) than those in the control group ($\bar{X}$ = 28.85, S.D. = 3.44). The sixth hypothesis was therefore accepted.

4.4.7 Hypothesis Seven

The seventh hypothesis stated that there will be a significant increase in the scores of participants in experimental group on psychological health scale after intervention than before intervention. This hypothesis was tested using the t-test of repeated measure and the result was presented in Table 4.20.

Table 4.20: Showing the Significant effect of ACT on Psychological health within Experimental group

DV	Group	N	$\bar{X}$	SD	df	t	*P*
Psychological Health	Pre-Intervention	20	21.35	9.13	19	-2.10	< .05
	Post-Intervention	20	25.70	9.71			

The finding obtained in table 4.20 showed that there was a significant difference in the scores of psychological health of mothers of children with cerebral palsy before and after intervention (t (19) = -2.10, p < .05). Furthermore, it was found that there was a significant increase in their mean scores on psychological health, indicating better psychological health from pretest score ($\bar{X}$ = 21.35, SD = 9.13) to posttest score ($\bar{X}$= 25.70, S.D. = 9.71). This confirmed the stated hypothesis.

4.4.8 Hypothesis Eight

Acceptance level of mothers will significantly improve with exposure to Acceptance and Commitment therapy. This hypothesis was tested using the t-test for repeated measure and the result is presented in Table 4.21.

Table 4.21: T-test Summary Table Showing Significant Difference in Mothers' Acceptance Level before and after intervention

	Experiment	N	$\bar{X}$	SD	df	t	p
Acceptance	Pre-test	20	31.60	4.27	19	-3.84	<0.05
	Posttest	20	24.10	9.11			

The result from table 4.21 shows that there was significant difference in the scores of the mothers at pretest and posttest (*t* (19) = -3.84, p<.05). This indicates a better psychological flexibility of mothers of children with cerebral palsy after exposure to therapy (ACT). The pretest score of acceptance level of the mother ($\bar{X}$=31.60, S.D=4.27) significantly reduced at posttest ($\bar{X}$= 24.10, S.D=9.11) indicating better acceptance and psychological flexibility. The hypothesis is thus accepted.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATION

The current chapter presented the summary of discussions, conclusion, recommendations and limitations of the study.

5.1 Discussion

The study examined psychosocial factors (social support, caregivers' burden and sleep quality) as predictors of psychological health and efficacy of acceptance and commitment therapy among mothers of children living with cerebral palsy. Some psychosocial variables were identified in literatures and confirmed at the pilot phase of this study as predictors of psychological health among mothers of children of cerebral palsy. The variables were investigated and their predicting influences were empirically verified. The variables were social support, caregivers' burden and sleep quality. Eight research hypotheses were tested in the study.

Study outcome revealed that gender and age of children with cerebral palsy have significant independent influence on psychological health of mothers of children with cerebral palsy. Mothers of male children expressed better psychological health than mothers of female children. Also, mothers of children in young childhood stage expressed better psychological health compared to mothers of children in infant and late childhood. The interaction influence further revealed that mothers of male children in their late childhood with cerebral palsy significantly have better psychological health than mothers of female children in their late childhood which made the researcher to reject the stated hypothesis. The result further showed that mothers of male children in their late childhood stage expressed better psychological health, followed by mothers of female children in their young childhood stage and mothers of male children in their infant stage. This outcome supports Frey, Greenberg, and Fewell (1989) study which found that the child's gender predicted both the mothers' and fathers' parenting stress. Ribeiro, Vandenberghe, Prudente, Vila and Porto (2016) study also found mothers of children in late childhood to have greater experience and are able to take up their life projects again.

In addition, Datta (2002) in a study on burden among the caregivers of children with intellectual disability found that when there is an increase in the age of the child, there will also be an increase in burden. They classified that the increase in age of children leads to increase in child's physical size and weight making it more stressful for caregivers to meet the needs of the child. This explained the complaints by mothers about the strains they experience in mobility of a cerebral palsy child especially those that have motor challenges. It was said that as the child increased in age, the size and weight also increases. However, the findings of this study negates an aspect of Ribeiro, Vandenberghe, Prudente, Vila and Porto (2016) study as they found mothers of younger children reporting diverse sources of stress and scarcity of resources.

With respect to hypothesis two which stated that psychosocial factors (social support, caregivers' burden and sleep quality) will significantly jointly and independently predict psychological health among mothers of children with cerebral palsy. The result showed that psychological health of mothers of children with cerebral palsy was jointly predicted by social support, caregivers' burden and sleep quality, thus hypothesis was accepted. Social support and caregivers' burden independently predicted psychological health of mothers of children with cerebral palsy while sleep quality did not. The study found that respondents with good social support expressed better psychological health.

The findings was in line with social support theories which believed that social support has an effect on an individual's psychological health during stressful life events. According to this buffering hypothesis, social support works by making people with greater levels of social support evaluate situations as less stressful and by adjusting people's reactions to a stressor after first appraisal such as somebody providing them with a solution to their problem. Stress is a case of 'it is being in the eye of the beholder kind of thing'. This means happenings are stressful as long as people have negative thought about the event (appraisal) and cope ineffectively. The outcome was in support of Lahey (2002) study which revealed that social support has significant impact on life event and that individuals with good social support are less expected to respond to negative life events with depression, anxiety, and health problems.

Zablotsky, Bradshaw and Stuart (2013) reported that social support from family, friends, neighbours, and professionals is a powerful and appropriate mechanism to lessen stress and improve well-being of families of children with intellectual disability. Past studies reports have consistently indicated that more social support experienced lead to less depressive symptomatology (Clyburn, Stones, Hadjistavropoulos & Tuokko, 2000; Huang, Sousa, Perng, Hwang, Tsai, Huang & Yao, 2009). Being satisfied with social support systems has been linked with more positive caregivers' attitudes and personal well-being. It has been found that parents who had more satisfaction with social supports reported fewer emotional and physical problems (Wrosch, Rueggeberg & Hoppmann, 2013).

To add to the body of knowledge, the current study established that caregivers' burden significantly predicted poor psychological health among mothers of children with cerebral palsy. Mothers with low burden were observed to express better psychological health. From the qualitative study, many of the mothers expressed physical and financial burden in management of their child. They complained of little or no special need service centres that can help alleviate the burden of care at little or no cost. Those that have the support of extended family members complained less as they have assistance from significant orders in caring for the disabled child. This outcome was consistent with the findings of Raina, et al. (2005) that discovered that the greatest significant predictors of caregivers' health were child behaviour, caregiving demands and family function. Fewer caregiving burdens were related with better physical and psychological health of caregivers.

Other reviewed studies which supported our findings of significant prediction psychological health by caregivers' burden were works of Carretero, Garces, Rodenas and Sanjose (2009) which found that caregivers' burden threatens the physical, psychological, emotional and functional health of caregivers. There are also some evidences to suggest that a diagnosis of depression can be causally related to the caregiving situation (Ijezie, Ojinnaka & Iloeje, 2009; Okewole, Dada, Ogun & Bello-Mojeed, 2011; Totsika, Hastings, Emerson, Lancaster, & Berridge, 2011). The study findings is also supported by the work of Hung, Wu, Chiang, Wu and Yeh (2010) which found caregivers' burden as the most significant predictor of overall parental mental health. Also, past studies have indicated that caregivers may put their own health and well-being at risk while assisting loved ones (King et al. 2002; Tang & Chen, 2002). The strain of caregiving demands has been linked to poor health outcomes including depression, physical illness, anxiety, and poor sleep habits (Schulz, O'Brien, Bookwala & Fleissner, 1997).

However, the present study did not find sleep quality as statistically significant predictor of psychological health. This confirmed Brummett, Babyak, Segler, Vitaliano, Ballard and Gwyther (2006) study which found that after accounting for the indirect influences of negative affect and social support, the direct influence of caregiving on sleep quality was not statistically significant. The present finding negates the work of Schulz, O'Brien, Bookwala and Fleissner (1995) which found that the strain of caregiving demands has been linked to poor health outcomes including depression, physical illness, anxiety, and poor sleep habits.

Study outcome with respect to hypothesis three revealed that mothers' age and occupational status significantly predicted psychological health of mothers of children with cerebral palsy, thus making us accept the stated hypothesis. The present study found that older mothers expressed better psychological health than younger mothers. The findings was in support of Ribeiro, Vandenberghe, Prudente, Vila and Porto (2016) study which revealed that mothers who are older have greater experience and are capable of picking up life projects again. The authors further reported that experience, knowledge and support received by the mothers are critical for adaptation. This negated Cain and Wicks (2000) finding that found younger caregivers experiencing higher stress as they gained higher burden scores because they manage more obligations such as career, family and work as compared to the caregivers who are age 65 years or more. Also, mothers who are skilled workers communicated better psychological health than their counterparts. The finding supported Eberl, Lang, and Seebaß (2017) study which found that hours of caregiving have a negative effect on mental health. Having being employed for a limited working hours has a positive effect on the health status even when combined with informal care duties. Also, employed female caregivers, when compared to non-employed female caregivers, tend to use more hours of paid and unpaid assistance to help manage work-related time constraints (Doty, Jackson & Crown, 1998). The outcome is also consistent with Fredriksen-Goldsen and Scharlach (2001) study which found that for caregivers who remain in the workforce, employment can have a positive impact by providing them with financial, social and psychological resources. Paid employment can offer caregivers a much-needed break from their care duties, access to social support through co-worker relationships, and improved relations with the individual for whom they offer care.

However, study outcome also revealed that marital and educational status did not significantly predict psychological health of mothers of children with cerebral palsy. The findings negated Margaret, Penning and Zheng (2015) study which showed that marital status was the best predictor of coping for mothers of children with disabilities. This indicated that spousal support is a coping factor for mothers. Upadhyay and Havalappanavar (2007) reported that greater stress in care, emotional, social, and financial was experienced by caregivers who were separated/divorced or never married, single parents than the married parents. In addition, the study outcome was not in support of Raina, et. al (2004) study which stated that parents with higher education heights reported fewer behavioral problems in their children, feel fewer burden by the caregiving duty and have better psychological well-being outcomes than less educated parents. More studies have shown that the higher the education level of the parent, the less stress the family experienced (Azar & Badr, 2006; 2010). Parents with a higher educational background may experience less stress because they have knowledge about effective coping strategies that help them deal with their child's problem behaviours; however, these findings negates the present study outcome.

Hypothesis four outcomes showed that psychological health of mothers of children with cerebral palsy was influenced by child behavioural problems. Furthermore, mothers of children with low level of behavioural problem significantly had better psychological health than mothers of children with high level of behavioural problem. This outcome was in consistent with the findings of Raina, et. al (2005) which found that the most significant predictors of caregivers' well-being were child behavioural problems. He reported further that less child behavioural problems were linked with better physical and psychological well-being of caregivers, while high child behavioural problems associated with poor physical and psychological well-being of caregivers. Eisenhower, Baker and Blacher (2009) similarly reported that maternal stress moderated the association between child problem behaviour and maternal physical health. The authors buttressed that maternal depressive symptoms mediated the relationship between child behavior problems and maternal physical health. King, King, Rosenbaum and Goffin (1999) also reported that child problems behaviour as the most significant predictor of caregivers' psychological well-being. Other studies by previous researchers supported the finding (Nalavany, Glidden, & Ryan, 2009; Raina et al, 2005; Totsika, Hastings, Emerson, Berridge, & Lancaster, 2011).

Hypothesis five study outcomes revealed that Acceptance and Commitment Therapy had significant effect on psychological health of mothers of children with cerebral palsy after controlling for the influence of severity of illness and parental knowledge. In other words, this implied that the psychological health of mothers of children with cerebral palsy exposed to different treatment conditions is significantly different when severity and parental knowledge are controlled for respectively. The mothers of children with high knowledge of cerebral palsy exposed to acceptance and commitment therapy expressed better psychological health; closely follow by the mother of children with low knowledge of cerebral palsy exposed to acceptance and commitment therapy, while participants in the control group had the lowest scores which indicated poor psychological health. It was also found that when severity of illness was controlled for the psychological health was significant when exposed to ACT treatment. The study outcome supported Bach, Hayes and Steven (2002) intervention study that found that a three-hour ACT intervention reduces re-hospitalization by about fifty percent over a four month and one year follow-up when equated to treatment as usual with extremely mentally ill inpatients. Bohlmeijer, Fledderus, Rokx and Pieterse (2011) study revealed that ACT was very efficacious in the management of depression, such that significant reduction was reported in depressive symptoms in participants after intervention and was sustained at three-month follow-up.

Hypothesis six outcomes further revealed that a significant difference in the psychological health of mothers of children of cerebral palsy in experimental groups and control group was observed. Further interpretations revealed that participants in the experimental groups reported a significant better psychological health that those in the control group. Moreso, there was significant difference in scores of psychological health of mothers of children with cerebral palsy before and after intervention. The findings were consistent with Forman, Herbert, Moitra, Yeomans and Geller (2007) study which found that participants who received Cognitive Therapy and Acceptance and Commitment Therapy showed great and equivalent improvements in depression, anxiety, functioning difficulties, quality of life and life satisfaction. The study outcome confirmed Flaxman and Bond (2010) which found ACT and SIT equally effective in stress management. It supported Bethay, Wilson, Schnetze and Nassar (2013) study which reported that ACT group participants showed reduced psychological distress from pretest to follow-up when compared to the control group. A simultaneous reduction in the acceptability of burnout-related thoughts was observed in the ACT group from pretest to follow-up in relation to the control group. Arch, Eifert, Davies, Vilardaga, Rose and Craske (2012) in addition reported that anxiety symptoms reduced after psychological intervention of acceptance and commitment therapy (ACT) than before the intervention.

Acceptance level and psychological flexibility of the mothers was found to improve with exposure to therapy considering decrease in mean score from pre-test to post-test indicating better psychological flexibility in the mothers. This confirmed Flaxman and Bond (2010) study which found that ACT mediated psychological flexibility among their population of study.

5.2 Conclusion

Findings from the study revealed that some very important variables predicted psychological health of mothers of children living with cerebral palsy. Exploring the child's characteristics influence on psychological health of mothers of children living with cerebral palsy revealed that gender and age grade of children with cerebral palsy significantly interactively and independently influenced psychological health of the mothers.

The outcome of this findings may not be far-fetched from the differences in the physiological or hormonal differences that is associated with gender (females were reported to have more responsibility with self-care as they attain puberty than males) and age grades (younger age is associated with less burden in terms of weight in the process of mobility, while older age have been consistently associated with bigger weight, more pronounced cognitive deficit in relation to the expected chronological age which lead to more dependency task performance).

Also, it was concluded that mothers' age and occupation significantly predicted psychological health of mothers of children with cerebral palsy. The mentioned psychological variables have been severally implicated by previous researchers as influencing psychological health of caregivers. The present study concluded that older mothers expressed better psychological health than younger mothers. Mothers who are older have greater experience and are able to take up their life projects again. Moreso, experience, knowledge and support received are critical for adaptation. In addition, the researchers concluded that occupation significantly influenced psychological health of mothers. Mothers who have skilled jobs expressed better psychological health when compared with their counterparts. The reasons for such outcome could be that participants who are engaged in intellectually demanding job have other distraction from day to day care of the child which thereby reduced the vast demands of care for the child.

In addition, it was concluded that there was significant joint prediction of psychological health among mothers of children with cerebral palsy by social support, caregivers' burden and sleep quality. The result further showed significant independent prediction of psychological health of mothers by social support and caregivers' burden. The mentioned psychological variables have been severally implicated by previous researchers in influencing psychological health of caregivers. Mothers with good social support were reported to express better psychological health. Also, mothers who experience low burden were found to express better psychological health.

In addition, it was concluded that problem behaviour in children influenced psychological health of mothers. Mothers having children with low behavioural problem expressed better psychological health.

The study also concluded that Acceptance and Commitment Therapy had significant effect on psychological health of mothers of children with cerebral palsy after controlling for the influence of severity of illness and parental knowledge. In other words, the psychological health of mothers of children with cerebral palsy exposed to different treatment conditions is significantly different. Also, it was discovered that severity of illness of the children was a significant factor that should be considered when managing psychological health of the mothers.

It was further concluded that participants in the experimental groups reported a significant better psychological health than those in the control group which established how efficacious Acceptance and Commitment Therapy is as treatment as psychological intervention for managing poor psychological health among mothers of children living with cerebral palsy.

5.3 Implication of findings

The study has brought to the fore the importance of some psychosocial variables that predicted psychological health of mothers of children with cerebral palsy and went further to experiment ACT intervention that was found to be efficacious at improving psychological health, which is a huge contribution to the body of knowledge.

Examining the findings of child characteristics of age and gender having significant independent and interactive influence on psychological health of mothers, it has implication for clinical practice. Physiological or hormonal differences in gender makeup revealed that females have more responsibility with self-care as they attain puberty than male. This worsens the stress of caregiving when a female child presents with cerebral palsy. The limitation associated with the disorder poses female children to require greater assistance when it comes to activity participation. Also, self-care need may become more intense particularly as a female child attains puberty due to poor physical and cognitive ability. These have implication on their mothers who may experience increased demand with care. In addition, the increase in age of children leads to increase in child's physical size. This explained the complaints by mothers on strains they experience moving a cerebral palsy child from one place to another especially those that have mobility challenges. Increase in child's age, lead to increase in size and weight, thereby making it more stressful and psychological demanding for caregivers to meet the needs of the child which has implication for the caregivers' psychological health. Therefore, mothers of female CP children, mothers who have children in infant and late childhood stage should need greater therapeutic management and provision of support to improve their psychological health.

This present study outcome has implication for treatment formulation and management of younger mother who may be experiencing greater distress in coming to term with the child's condition. Clinical psychologist may need to focus more on younger mothers who may be having challenges with acceptance of the traumatic event (having a child with disability) by encouraging resilience and good coping mechanism. Mothers who are not engaged in a skilled work expressed poor psychological health. This has implication in that more attention in treatment and provision of support in care should be a high point for clinical psychologist in the management of poor psychological health among mothers.

The problem of shame and social isolation of children with cerebral palsy go a long way in causing distress, activity constriction and hopelessness in caregivers. Good social support network is important in experiencing better psychological health. This can come in form of financial, informational and of much importance companionship. Also, caregiving burden was associated with better psychological health of caregivers. This has implication for government policy making and management of mothers of CP children especially in provision of facilities which should be affordable and accessible to reduce mothers' burden and improve their psychological health.

In the current study, it was noted that ACT has effects on psychological health of mothers of children with cerebral palsy after controlling for severity and parental knowledge of the child's illness. Assessing severity level assist in determining the magnitude of impairments and quantity of interventions needed for positive outcome, which invariably would determine the psychological health of mothers of children of cerebral palsy. This has implication for treatment planning in that mothers should be attended to base on the severity of the child's impairment.

The finding that behavioural problem significantly influenced mothers psychological health has important implications for clinical psychologists using behavioral therapy as intervention to intensify effort in reducing problem behaviour in children living with cerebral palsy and developmental challenges at large. This further suggests that improvements in child's behavior would lead to a decrease in parental distress and subsequently improved psychological health. Considering implication for clinical psychology practice, best practices may not be too productive focusing on the vulnerable population leaving out the caregivers who are mostly the quasi-therapists. Helping with better ways of coping with the problem behaviour of the children should be incorporated into treatment package.

It has implication of the need to make available and screen mothers with indigenous scales for assessing social support, caregivers' burden and psychological health.

5.4 Recommendation

It is hereby recommended that support should come in form of provision of special needs treatment and educational centres by the government in every local government which should be affordable.

This treatment centres should be made accessible to mothers to reduce caregivers' burden which threatened psychological, emotional and functional health of the caregivers.

Also, ACT should be incorporated into the treatment and management of mothers of CP children.

Individualized intervention modality is very essential in the study recommendation. Caregivers of children with cerebral palsy should be attended to base on the severity of impairment when exposed to treatment.

Finally, child characteristics of gender and age sensitivity should not be undermined when providing support. Ensuring this recommendation will increase the impact of the intervention clinical psychologist delivered to caregivers of children with cerebral palsy.

Having established the psychosocial predictors and efficacy of acceptance and commitment therapy on psychological health among mothers of children of cerebral palsy. It is imperative to note that future researches should explore the efficacy of Acceptance and Commitment Therapy on caregivers of other developmental and childhood disabilities such as Autism, Down syndrome, learning disabilities among others.

5.5 Limitations

The study mainly covered rehabilitation centre of a mental institution in Southwest Nigeria in its examination of predicting influence of psychosocial variables on psychological health and efficacy of psychological health among mothers of children of cerebral palsy in Lagos State, Nigeria. Perhaps an attempt could be made by other researchers to increase the research area to other geopolitical zones. The population of the study was limited that random selection became unrealistic.

A single study cannot examine all the important circumstances or issues that address the menace of psychological health among mothers of children of cerebral palsy, with some of the short comings already identified; further researchers will do well to look in the future directions of multi-site work to have a larger pool of respondents, also to consider other psychosocial variables predicting psychological health among mothers of children with cerebral palsy.

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APPENDIX I

DEPARTMENT OF PSYCHOLOGY

FACULY OF SOCIAL SCIENCES, UNIVERSITY OF IBADAN, OYO STATE, NIGERIA

Dear Respondent,

This questionnaire is strictly for research and academic purposes. I assure you of utmost confidentiality and not to be used for any other purpose apart from the one mentioned above. Please read the instructions carefully and respond to the statement on each questionnaire truthfully. The confidentiality of your responses is guaranteed. No wrong or right answer, all responses should be a truthfully supplied.

Thanks.

SECTION A: PERSONAL INFORMATION

Age: **Age of Child:**

Marital Status: Single ☐ **Married** ☐ **Separated/Divorced** ☐ **Widow** ☐

Occupation: ------------------------------------

Highest level of education

- Postgraduate degree ☐
- B.sc/HND ☐
- OND/Diploma ☐
- SSCE ☐
- Primary school leaving certificate ☐
- No formal education ☐

SECTION B

Read and carefully reflect on your life in the past several months, indicate to what extent each item has been met from 1 (never or almost never) to 2 (Seldom or occasionally) to 3 (sometimes) to 4 (often or frequently) to 5 (almost always). Tick the most accurate number for each item listed below:

CPPHS

S/N	Items	1	2	3	4	5
1.	I am almost going crazy trying to accept that I am the one that truly gave birth to this child.					
2.	I have lost my pride as a mother.					
3.	I have lost the hope of achieving much if I am still with this child.					
4.	This child threatens my career and success in life.					
5.	I see my situation as entirely hopeless with this child.					
6.	I don't see any future with this child.					
7.	I feel sick inside discussing this child with anybody.					
8.	There is virtually no enjoyment or happiness in my family because of this child					
9.	I feel like committing suicide because of this child.					
10.	I stopped looking forward to anything good in life with this child.					
11.	My physical health is often affected in the course of taking care of this child.					
12.	I sometimes secretly wish this child is dead so I can be free.					
13.	My life feels empty.					
14.	I am dying inside taking care of this child.					
15.	I have stopped being myself since the problem of this child started.					
16.	This child has isolated me from friends and neighbours.					

SECTION C

Instructions: We are interested in how you feel about the following statements. Read the statement carefully. Use the following Likert scale to indicate how you feel about each statement.

1=Very Strongly Disagree, 2=Strongly Disagree, 3=Mildly Disagree
4=Neutral, 5=Mildly Agree, 6=Strongly Agree 7=Very Strongly Agree.
Answer all questions

CPSSS

S/N	Items	Very Strongly Disagree 1	Strongly Disagree 2	Mildly Disagree 3	Neutral 4	Mildly Agree 5	Strongly Agree 6	Very Strongly Agree 7
1	I get the emotional help and support I need from people around me.							
2.	There is a special person who is around when I am in need.							
3	People around me are willing to suggest help or information about my child's condition							
4.	My family really tries for me							
5	I don't have enough money to take care of my child							
6	My spouse help me in taking care of my child							
7	There is a special person with whom I can share my joys and sorrows							
8	I get mocked due to my child's health condition							
9	People avoid me because of my child's condition							

SECTION D

For each of the following statements, indicate the extent to which you agree or disagree by tickling. There is no right or wrong answer. Answer all questions.

CPCB

S/N	**Items**	**Never** **0**	**Rarely** **1**	**Sometimes** **2**	**Quite frequently** **3**	**Always** **4**
1	I wish I could just leave the care of my child to someone else					
2	I feel uncertain about what to do with my child					
3	I get stigmatized because of my child.					
4	I get tired and sick from taking care of my child.					
5	I have lost control of my dreams/ambitions since your child illness					
6	I sometimes get tired of taking care of my child					
7	Taking care of my child has taken a lot from me.					
8	I sometimes lock up my child because of his/ her condition					
9	I feel strained when I'm with my child					
10	I secretly wish my child is dead					
11	My health has suffered because of my involvement with my child.					
12	I feel that my social life has suffered because I am caring for my child					

SECTION E

PSQI

Instructions: The following questions relate to your usual sleep habits during the past month only. Your answers should indicate the most accurate reply for the majority of days and nights in the past month. Please answer all questions.

During the past month,

1. When have you usually gone to bed? ______________

2. How long (in minutes) has it taken you to fall asleep each night? ______________

3. When have you usually gotten up in the morning? ______________

4. How many hours of actual sleep do you get at night? (This may be different than the number of hours you spend in bed) ______________

		Not during the past month (0)	**Less than Once a week (1)**	**Once or twice a week (2)**	**Three or more times a week (3)**
5	During the past month, how often have you had trouble sleeping because you……..				
a	Cannot get to sleep within 30 minutes				
b	Wake up in the middle of the night or early morning				
c	Have to get up to use the bathroom				
d	Cannot breathe comfortably				
e	Cough or snore loudly				
f	Feel too cold				
g	Feel too hot				
h	Have bad dreams				
I	Have pain				
J	Other reason(s), please describe, including how often you have had trouble sleeping because of this reason(s):				
6	During the past month, how often have you taken medicine (prescribed or “over the				

	counter") to help you sleep?				
7	During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?				
8	During the past month, how much of a problem has it been for you to keep up enthusiasm to get things done?				
		Very good (0)	**Fairly good (1)**	**Fairly bad (2)**	**Very Bad (3)**
9	During the past month, how would you rate your sleep quality overall?				

SECTION F

GMFCS

Family Report Questionnaire

Instruction: Please read the following and mark only one box beside the description that best represents your child's movement abilities. Choose questions under your child's age range only.

Children Aged 2 to 4 Years

My child…

☐ Has difficulty controlling head and trunk posture in most positions and uses specially adapted seating to sit comfortable and has to be lifted by another person to move about

☐ Can sit on own when placed on the floor and can move within a room and uses hands for support to maintain sitting balance and usually uses adaptive equipment for sitting and standing

☐ Can sit on own and walk short distances with a walking aid (such as a walker, relator, and moves by rolling, creeping on stomach or crawling crutches, canes, etc.) and may need help from an adult for steering and turning when walking with an aid and usually sits on floor in a "W-sitting" position and may need help from an adult to get into sitting and may pull to stand and cruise short distances and prefers to move by creeping and crawling

☐ Can sit on own and usually moves by walking with a walking aid and may have difficulty with sitting balance when using both hands to play and can get in and out of sitting positions on own

and can pull to stand and cruise holding onto furniture and can crawl, but prefers to move by walking

☐ Can sit on own and moves by walking without a walking aid and is able to balance in sitting when using both hands to play and can move in and out of sitting and standing positions without help from an adult and prefers to move by walking.

Children Aged 4 to 6 Years

Please read the following and mark only one box beside the description that best represents your child's movement abilities.

My child…

☐ Has difficulty sitting on their own and controlling their head and body posture in most positions and has difficulty achieving any voluntary control of movement and needs a specially-adapted supportive chair to sit comfortably and has to be lifted or hoisted by another person to move

☐ Can sit on their own but does not stand or walk without significant support and adult supervision and may need extra body / trunk support to improve arm and hand function and usually needs adult assistance to get in and out of a chair and may achieve self-mobility using a powered wheelchair or is transported in the community

☐ Can walk on their own using a walking aid (such as a walker, rollator, crutches, canes, etc.) and can usually get in and out of a chair without adult assistance and may use a wheelchair when travelling long distances or outside and finds it difficult to climb stairs or walk on an uneven surface without considerable help

☐ Can walk on their own without using a walking aid, but has difficulty walking long distances or on uneven surfaces and can sit in a normal adult chair and use both hands freely and can move from the floor to standing without adult assistance and needs to hold the handrail when going up or down stairs and is not yet able to run and jump

☐ Can walk on their own without using a walking aid, including fairly long distances, outdoors
and on uneven surfaces and can move from the floor or a chair to standing without using their hands for support and can go up and down stairs without needing to hold the handrail
and is beginning to run and jump

Children Aged 6 to 12 Years

Please read the following and mark only one box beside the description that best represents your child’s movement abilities.

My child…

☐ Has difficulty sitting on their own and controlling their head and body posture in most positions
and has difficulty achieving any voluntary control of movement and needs a specially supportive chair to sit comfortably and has to be lifted or hoisted by another person to move

☐ Can sit on their own but does not stand or walk without significant support and therefore relies mostly on wheelchair at home, school and in the community and often needs extra body / trunk support to improve arm and hand function and may achieve self-mobility using a powered wheelchair

☐ Can stand on their own and only walks using a walking aid (such as a walker, rollator, crutches, canes, etc.) and finds it difficult to climb stairs, or walk on uneven surfaces and may use a wheelchair when travelling for long distances or in crowds

☐ Can walk on their own without using walking aids, but needs to hold the handrail when going up or down stairs and often finds it difficult to walk on uneven surfaces, slopes or in crowds

☐ Can walk on their own without using walking aids, and can go up or down stairs without needing to hold the handrail and walks wherever they want to go (including uneven surfaces, slopes or in crowds) and can run and jump although their speed, balance, and coordination may be slightly limited

SECTION G

CBCL

Instruction: The following is a list of items that describe behaviour problems that children have. Please tell me whether each statement has (2) OFTEN true, (1) SOMETIMES true, or (0) NOT true that is being experienced in your child.

S/N	**Items**	**Often true 2**	**Sometimes true 1**	**Not true 0**
1	Argues a lot			
2	Can't concentrate or pay attention for long			
3	Can't get his or her off certain thoughts; has obsession			
4	Can't sit still, is restless, or hyperactive			
5	Clings to adult or is too dependent			
6	Complains of loneliness			
7	Confused or seems to be in a fog			
8	Cries a lot			
9	Cruelty, bullying, or meanness to others			
10	Day dreams or gets lost in thought			
11	Demands a lot of attention			
12	Destroys things belonging to his/her family or others			
13	Disobedient at home			
14	Disobedient at school			
15	Doesn't eat well			
16	Doesn't get along well with other kids			
17.	Doesn't seem to feel guilty after misbehaving			
18	Fears he/she might think or do something bad			
19	feels he/she has to be perfect			
20	Feels or complaints that nobody loves him/her			
21	Feels others are out to get him/her			
22	Fells worthless or inferior			
23	Gets in many fights			
24	Hangs around with others who get in trouble			
25	Is impulsive or act without thinking			
26	Would rather be alone than with others			
27	Lies or cheat			

28	Is nervous or intense			
29	Has nightmares			
30	Is not liked by other kids			
31	Too fearful or anxious			
32	Feels dizzy			
33	Feels too guilty			
34	Overeats			
35	Is overtired			
36	Have physical health problems without any known cause, like…			
a.	Aches or pains, not including headaches			
b.	Headaches			
c.	Nausea, feels sick			
d	Problems with eyes			
e	Rashes or other skin problems			
f.	Stomach aches or cramps			
g.	Vomiting, throwing up			
37	Poor school work			
38	Prefers being with older kids			
39	Refuses to talk			
40	Runs away from home			
41	Screams a lot			
42	Is secretive, keeps thing to self			
43	Self-conscious or easily embarrassed			
44	Sets fires			
45	Shy or timid			
46	Sleeps less than most kids			
47	Sleeps more than most kids during the day and /or night			
48	Stares blankly			
49	Stubborn, sullen, or irritable			
50	Sudden changes in mood or feelings			
51	Sulks a lot			
52	Suspicious			
53	Swears or uses obscene language			
54	Teases a lot			
55	Has temper tantrums or a hot temper			
56	Threatens people			

57	Truant, skips school			
58	Underactive, slow moving, or lacks energy			
59	Unhappy, sad, or depressed			
60	Withdrawn, doesn't get involved with others			
61	Worries			

SECTION H

Instruction: For each of the following statements, indicate the extent to which you agree or disagree by tickling. There is no right or wrong answer. Answer all questions.

AAQ

S/N	Items	Never true 1	Not true 2	Rarely true 3	Neither true or false 4	Sometimes true 5	True 6	Always true 7
1	My painful experiences and memories make it difficult for me to live a life that I would value.							
2.	I'm afraid of my feelings							
3	I worry about not being able to control my worries and feelings							
4.	My painful memories prevent me from having a fulfilling life.							
5.	Emotions cause problems in my life.							
6.	It seems like most people are handling their lives better than I							

	am.							
7.	Worries get in the way of my success							

SECTION I

Instructions: The following questions relate to your knowledge of your child's disorders. The clinician will ask you one after the other; feel free to share your thought.

PKCP

S/N	Items	Correct 1	Incorrect 0
1	What is the name of the illness from which your child suffers?		
2	What do you think is the cause of this disorders 'cerebral palsy'?		
3	What aspect of child development is involved in cerebral palsy?		
4	Do you think that this disease will increase in severity?		
5	Will this disease be totally cured?		
6	Do you think that your child can get schooling or not?		
7	How can Cerebral Palsy be prevented?		
8	Are you aware of special school for your child?		

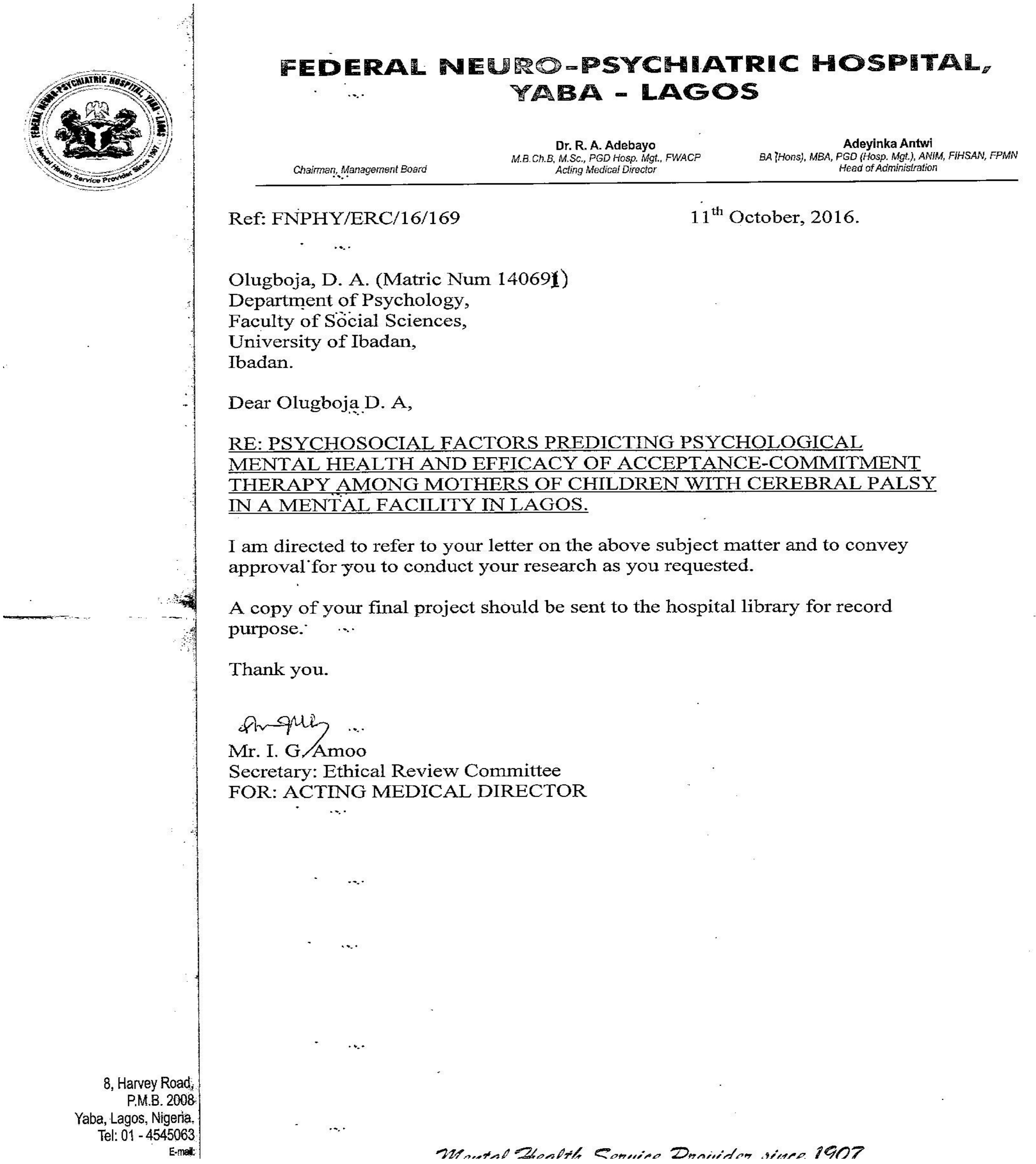
APPENDIX II

Qualitative Study:

A 10-item FGD guide questions used to seek participant's opinions regarding the focus of the study, the questions which included:

i. How does it feel to have a child with cerebral palsy?
ii. What impact does it have on you?
iii. What impact does it have on your family/ career?
iv. How have you been coping with the child from birth?
v. How has it affected your marital relationship?
vi. How does it affect you psychologically?
vii. How does it affect you socially and financially?
viii. How satisfied are you with your life?
ix. What extent do you get support because of your child's disability?
x. How satisfied are you with your life?

APPENDIX III



FEDERAL NEURO-PSYCHIATRIC HOSPITAL,
YABA - LAGOS

Chairman, Management Board

Dr. R. A. Adebayo
M.B.Ch.B, M.Sc., PGD Hosp. Mgt., FWACP
Acting Medical Director

Adeyinka Antwi
BA (Hons), MBA, PGD (Hosp. Mgt.), ANIM, FIHSAN, FPMN
Head of Administration

Ref: FNPHY/ERC/16/169 11th October, 2016.

Olugboja, D. A. (Matric Num 140691)
Department of Psychology,
Faculty of Social Sciences,
University of Ibadan,
Ibadan.

Dear Olugboja D. A,

<u>RE: PSYCHOSOCIAL FACTORS PREDICTING PSYCHOLOGICAL MENTAL HEALTH AND EFFICACY OF ACCEPTANCE-COMMITMENT THERAPY AMONG MOTHERS OF CHILDREN WITH CEREBRAL PALSY IN A MENTAL FACILITY IN LAGOS.</u>

I am directed to refer to your letter on the above subject matter and to convey approval for you to conduct your research as you requested.

A copy of your final project should be sent to the hospital library for record purpose.

Thank you.

Mr. I. G. Amoo
Secretary: Ethical Review Committee
FOR: ACTING MEDICAL DIRECTOR

8, Harvey Road,
P.M.B. 2008
Yaba, Lagos, Nigeria.
Tel: 01 - 4545063
E-mail:

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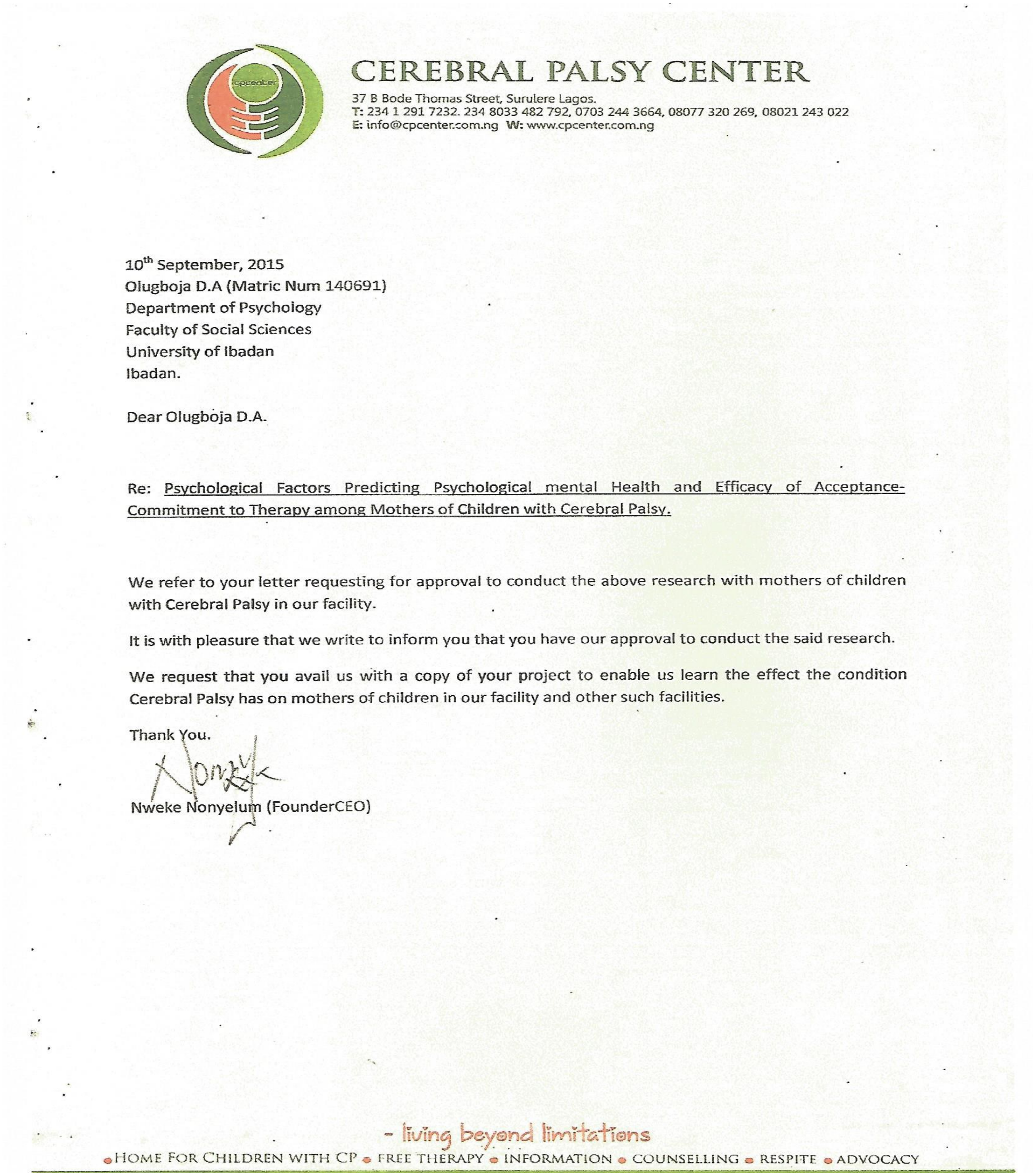
APPENDIX IV



CEREBRAL PALSY CENTER
37 B Bode Thomas Street, Surulere Lagos.
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E: info@cpcenter.com.ng W: www.cpcenter.com.ng

10th September, 2015
Olugboja D.A (Matric Num 140691)
Department of Psychology
Faculty of Social Sciences
University of Ibadan
Ibadan.

Dear Olugboja D.A.

Re: Psychological Factors Predicting Psychological mental Health and Efficacy of Acceptance-Commitment to Therapy among Mothers of Children with Cerebral Palsy.

We refer to your letter requesting for approval to conduct the above research with mothers of children with Cerebral Palsy in our facility.

It is with pleasure that we write to inform you that you have our approval to conduct the said research.

We request that you avail us with a copy of your project to enable us learn the effect the condition Cerebral Palsy has on mothers of children in our facility and other such facilities.

Thank You.

Nweke Nonyelum (FounderCEO)

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APPENDIX V

MODIFIED GROUP ACCEPTANCE AND COMMITMENT TREATMENT MODULE

A brief overview of each session was indicated below. The sessions followed the steps and guidelines of Acceptance and Commitment Therapy.

SESSION 1: ENGAGEMENT/CONFRONTING THE SYSTEM

- Baseline data were collected from the participants.
- Introduction and development of rapport with the participants.
- The purpose of the group, group rules and meaning of psychological health was explained.

Objective

The general overview of ACT often begins by challenging the linguistic set that defines both problems and their potential solutions, because that linguistic set is itself viewed to be a problem. The first session sets out to probe how mothers perceive their children condition, the solution and efforts they have put in place to control the situation and their view of the outcome. ACT seeks to identify the strategies that the client has employed till this present to "solve the problem" and see whether these methods are working.

Potential supporting exercises:

- The "person in the hole" metaphor.

SESSION 2: CONTROL IS THE PROBLEM

Objectives

In the world of common sense, if we do not want something, we must figure out how to get rid of it. Controlling strategies are taught repeatedly and in most aspects they work quite well. In the world of private events, however, it might work differently because of the nature of relational frames. The therapist taught the client that deliberately not thinking of something usually fails because the rule (“don’t think of x”) contains the avoided item. In this aspect of ACT, a simple idea is put on the table, that is, conscious, deliberate, and purposeful control simply may not work very well with regard to the private experiences the client has been targeting. The client’s depressive state, social distress, perceived stigma, denial and hopelessness showed limited responsiveness of control strategies. Therapist introduced the idea that “control is the problem, not the solution.” The therapist also taught client about the relationship between depressed mood, distress, sense of stigma and hopeless feelings and behavior using examples from the client’s own life (having a child with disability). The therapist used experiential exercises to further test the efficacy of **control strategies**.

Potential supporting exercises:

- Polygraph metaphor.
- Mind is not your friend

SESSION 3: COGNITIVE DEFUSION AND MINDFULNESS

Objectives

The session encouraged clients to contact events in the here and now without buying into evaluative and judgmental language. A cognitive defusion technique was used to change how an individual reacts to or interacts with their thoughts and feelings rather than the nature of these thoughts and feelings. The thought “I am bad” can seem to mean that the person is dealing with being bad, not with thinking “I am bad.” The point is that thoughts do not mean what they say they mean, and while it may not be possible or healthy to experience their referents, it is always possible to experience them as an ongoing process if the context in which they are occurring is changed. Mindfulness teaches clients to look at thoughts as events in the world, not at the world as structured by thoughts. The client’s ability to defuse from depressive, distressing/hopeless thoughts and feelings were emphasized.

- Homework – Write out your thought about your child and how you experience the private event.

SESSION 4: TRANSCENDENT SENSE OF SELF

Objective

The participants were taught to become aware of present sensations. They were then are asked to remember something that happened a few months earlier and to become intensely aware of what that experience felt like. They were encouraged to notice (not as a belief, but as a direct experience) that a person is here now experiencing those events some months ago. From this “observer perspective” a variety of domains are examined (e.g., bodily sensations, roles, emotions, thoughts, memories). In each case, the rapidly changing content of experiences is contrasted with the continuity of consciousness itself.

Potential supporting exercises

- Breathing regulation (mindful breathing)
- Observer exercise.

SESSION 5: ACCEPTANCE AND WILLINGNESS

Objective

The therapist encouraged participants to have an active nonjudgmental embracing of experience in the here and now. Acceptance is not possible without defusion. Acceptance means actively experiencing events, as they are and not as what they say they are. This means feeling feelings as feelings; thinking thoughts as thoughts, sensing sensations as sensations, and so on, here and now.

SESSION 6: VALUE

Objective

Values are qualities of action that can be initiated in behavior. ACT therapists ask their clients, “What do you want your life to stand for?” In this phase of treatment a client is asked to list values in different life domains such as family, intimate relationships, health, spirituality, and so on. For example, the ACT therapists asked the participants to write out what they would most like to see on their tombstone, or the eulogy he or she would want to hear at his or her own funeral. When values are clarified, achievable goals that embody those values, concrete actions that would produce those goals and specific barriers to performing these actions are identified.

Potential supporting exercises

- Identify a valued action (behavioral goal) to perform this week

SESSION 7: COMMITMENT

Objective

ACT seeks to build larger patterns of flexible and effective responding. For example, participants were asked to establish specific goals, to make public and concrete commitments, and to work toward these goals in small steps.

Potential supporting exercises

- Role of choice in committed actions: Why to choose your direction – because everyone else has their own interests in mind.
- Solve the solvable discussion
- ACT acronym (Accept, Choose, Take Action)
- Homework: Performance of identified valued action

SESSION 8

Summary and review of all skills taught so far

Conclusion, Posttest assessment and termination.

The Valued Directions Worksheet

1. Work/career

Importance: 0 = not at all important 1 = moderately important 2 = very important

Satisfaction: 0 = not at all satisfied 1 = moderately satisfied 2 = very satisfied

Intention: What do I want my work or career to be about or stand for? What is important to me about my work (for example, financial security, intellectual challenge, independence, prestige, interacting with or helping people, and so on)

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2. Intimate relationships (e.g., marriage, couples)

Importance: 0 = not at all important 1 = moderately important 2 = very important

Satisfaction: 0 = not at all satisfied 1 = moderately satisfied 2 = very satisfied

Intention: What kind of partner would I most like to be within an intimate relationship? What type of marital or couple relationship would I like to have? How do I want to treat my partner?

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3. Parenting

Importance: 0 = not at all important 1 = moderately important 2 = very important

Satisfaction: 0 = not at all satisfied 1 = moderately satisfied 2 = very satisfied

Intention: What type of parent do I want to be? What type of child do I want? How do I want to interact with my children?

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4. Education/learning (personal growth)

Importance: 0 = not at all important 1 = moderately important 2 = very important

Satisfaction: 0 = not at all satisfied 1 = moderately satisfied 2 = very satisfied

Intention: Why is learning important to me? What skills, training, or areas of competence would I like to acquire? What would I really like to learn more about?

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5. Friends/social life

Importance: 0 = not at all important 1 = moderately important 2 = very important

Satisfaction: 0 = not at all satisfied 1 = moderately satisfied 2 = very satisfied

Intention: What kind of friend do I want to be? What does it mean to be a good friend? How do I behave toward my best friend?

Why is friendship important to me?

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6. Health/physical self-care

Importance: 0 = not at all important 1 = moderately important 2 = very important

Satisfaction: 0 = not at all satisfied 1 = moderately satisfied 2 = very satisfied

Intention: How and why do I take care of myself? Why do I want to take care of my body and my health through what I eat, by exercising, or by being physically fit?

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7. Family of origin (family relationships other than marriage or parenting)

Importance: 0 = not at all important 1 = moderately important 2 = very important

Satisfaction: 0 = not at all satisfied 1 = moderately satisfied 2 = very satisfied

Intention: How do I want to interact with my family members? What type of sister or brother do I want to be? What type of son or daughter do I want to be?

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8. Spirituality

Importance: 0 = not at all important 1 = moderately important 2 = very important

Satisfaction: 0 = not at all satisfied 1 = moderately satisfied 2 = very satisfied

Intention: What are the mysteries of life before which I stand in awe? What are the things larger than my own life that inspire me?

In what (if anything) do I have faith?

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9. Community life/environment/nature

Importance: 0 = not at all important 1 = moderately important 2 = very important

Satisfaction: 0 = not at all satisfied 1 = moderately satisfied 2 = very satisfied

Intention: What can I do to make the world a better place? Why are community activities (such as volunteering, voting, recycling) important to me? What do I care about in the environment or nature (e.g., being outdoors, gardening, hiking, camping, communing with nature)?

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10. Recreation/leisure

Importance: 0 = not at all important 1 = moderately important 2 = very important

Satisfaction: 0 = not at all satisfied 1 = moderately satisfied 2 = very satisfied

Intention: How do I feed myself through hobbies, sports, or play? Why do I enjoy these things?

APPENDIX VI

INFORMED CONSENT FORM

Research approval assigned number: UI/SSHEC/2016/0048

This approval will elapse on: __________________.

PSYCHOSOCIAL FACTORS PREDICTING PSYCHOLOGICAL HEALTH AND EFFICACY OF ACCEPTANCE AND COMMITMENT THERAPY AMONG MOTHERS OF CHILDREN WITH CEREBRAL PALSY IN LAGOS

This study is being conducted by Miss Olugboja, Damilola Adepeju, a post graduate student of the Psychology department, University of Ibadan. I am conducting a study to investigate the psychosocial factors predicting psychological health and efficacy of Acceptance and Commitment Therapy among mothers of children with Cerebral Palsy in Lagos. This study is being carried out in partial fulfillment of the requirement for the award of Doctor of Philosophy (Psychology) degree of the University of Ibadan. You may be required to participate in a treatment program that will span eight weeks (one session per week) alongside your regular treatment for you and your child.

All the information you give will be confidential and used for the purpose of the research only. The information you and others give will help me to document the Psychosocial factors predicting Psychological health and efficacy of Acceptance and Commitment Therapy among mothers of children with Cerebral palsy. Please note that participation in this study is voluntary and you are free to decline from participating. You are also free to withdraw your participation at any instance. I will be grateful if you will help by completing the questionnaire and participate in the study. Your participation in this research will not cost you anything, and any information collected during the course of this study will be treated confidentially by using code numbers, there won’t be any record of your name or any form of identifier used in any publication or reports from this study. Your participation in this research will not affect your treatment in any way. You can also choose to withdraw at any time during the course of this study but the initial information that has been obtained about you before your withdrawal may have been modified or used in reports or publications. These cannot be removed any more. However I promised to make a good faith and effort to comply with your wishes as much as is practicable.

Statement of person obtaining informed consent:

I have fully explained this research to ________________________________ and have given sufficient information, including about risks and benefits, to make an informed decision.

DATE__________________ SIGNATURE______________

NAME________________________________

Statement of person giving consent

I have read the description of the research. I have also talked it over with the researcher to my satisfaction. I understand that my participation is voluntary. I know enough about the purpose, methods, risks and benefit 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 to keep for myself.

DATE____________ SIGNATURE____________

NAME_______________________

WITNESS' SIGNATURE____________________

WITNESS NAME_____________________

In addition, if you have any question about your participation in this research you can contact the principal investigator, Olugboja, Damilola A. Department of Psychology, Faculty of the Social Sciences, University of Ibadan, 08066501965, talktomedammy@yahoo.com.

*PLEASE KEEP A COPY OF THE SIGNED INFORMED CONSENT

APPENDIX VII

Cerebral Palsy Psychological Health Scale

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
I don't see any future with this child.	29.10	120.85	.76	.91
I am almost going crazy trying to accept that I am the one that truly gave birth to this child.	29.49	122.14	.76	.91
This child has isolated me from friends and neighbours.	29.41	120.69	.68	.91
I stopped looking forward to anything good in life with this child.	29.76	123.46	.67	.91
My life feels empty.	29.59	125.29	.59	.92
I have lost the hope of achieving much if I am still with this child.	29.69	119.34	.70	.91
I sometimes secretly wish this child is dead so I can be free.	29.59	127.65	.57	.92
I have lost my pride as a mother.	29.25	114.75	.64	.92
This child threatens my career and success in life.	29.12	115.75	.69	.91
I am dying inside takin care of this child.	29.53	125.61	.66	.91
I see my situation as entirely hopeless with this child.	29.92	129.75	.59	.92
I have stopped being myself since the problem of this child started.	29.14	123.12	.59	.92
There is virtually no enjoyment or happiness in my family because of this child	29.71	124.61	.59	.92
I feel sick inside discussing this child with anybody.	28.86	125.00	.61	.92
My physical health is often affected in the course of taking care of this child.	29.04	127.79	.49	.92
I feel like committing suicide because of this child.	29.69	128.98	.45	.92

Factor Analysis

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.59
Bartlett's Test of Sphericity	Approx. Chi-Square	909.65
	Df	120
	Sig.	.000

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.54	47.13	47.13	7.54	47.13	47.13	4.23	26.37	26.37
2	2.32	14.48	61.61	2.32	14.48	61.61	3.18	19.89	46.26
3	1.51	9.43	71.03	1.51	9.43	71.03	2.65	16.59	62.85
4	1.15	7.19	78.23	1.15	7.19	78.23	2.46	15.38	78.23

	Component			
	Hopelessness ɖ =.75	**Depression ɖ =.65**	**Social distress ɖ =.70**	**Stigma ɖ =.69**
I am almost going crazy trying to accept that I am the one that truly gave birth to this child.	.86			
I have lost my pride as a mother.	.84			
I have lost the hope of achieving much if I am still with this child.	.77			
This child threatens my career and success in life.	.72			
I see my situation as entirely hopeless with this child.	.68			
I don't see any future with this child.	.62			
I feel sick inside discussing this child with anybody.	.57			
There is virtually no enjoyment or happiness in my family because of this child		.89		
I feel like committing suicide because of this child.		.85		
I stopped looking forward to anything good in life with this child.		.72		
My physical health is often affected in the course of taking care of this child (feel fatigue often)		.68		
I sometimes secretly wish this child is dead so I can be free.			.90	
My life feels empty.			.63	
I am dying inside taking care of this child.			.58	
I have stopped being myself since the problem of this child started.				.79
This child has isolated me from friends and neighbours.				.78

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 12 iterations.

Cerebral Palsy Social Support Scale

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	CronbachAlpha if Item Deleted
I don't have enough money to take care of my child	**17.45**	**69.38**	**.42**	**.91**
There is a special person who is around when I am in need.	**19.47**	**54.59**	**.85**	**.84**
My family really tries for me	**16.76**	**65.73**	**.80**	**.86**
There is a special person with whom I can share my joys and sorrows	**16.82**	**63.61**	**.71**	**.87**
People around me are willing to suggest help or information about my child's condition	**19.12**	**60.49**	**.68**	**.87**
I get the emotional help and support I need from people around me.	**18.65**	**58.32**	**.16**	**.84**
I get mocked due to my child's health condition	**16.82**	**63.61**	**.51**	**.87**
People avoid me because of my child's condition	**17.14**	**61.49**	**.58**	**.87**
My spouse help me in taking care of my child	**18.55**	**57.32**	**.66**	**.84**
There is a special person with whom I can share my joys and sorrows	**17.82**	**62.61**	**.41**	**.91**

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.61
Bartlett's Test of Sphericity	Approx. Chi-Square	428.42
	Df	36
	Sig.	.000

Varimax Rotated Component Matrix[a]

	Components		
	Socio-emotional support (α = .9)	Financial and Moral Support (α = .72)	Stigmatisation (α = .89)
I get the emotional help and support I need from people around me.	.98		
There is a special person who is around when I am in need.	.94		
People around me are willing to suggest help or information about my child's condition	.91		
My family really tries for me	.70		
I don't have enough money to take care of my child		-.89	
My spouse help me in taking care of my child		.81	
There is a special person with whom I can share my joys and sorrows		.68	
I get mocked due to my child's health condition			.95
People avoid me because of my child's condition			.94

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 5 iterations.

Cerebral Palsy Caregivers' Burden Scale (CPCB)

Item-Total Statistics				
	Scale Mean if Item Deleted	**Scale Variance if Item Deleted**	**Corrected Item-Total Correlation**	**Cronbach Alpha if Item Deleted**
I sometimes get tired of taking care of my child	30.69	171.93	.48	.86
Taking care of my child has taken a lot from me.	29.65	179.15	.37	.86
I sometimes lock up my child because of his/ her condition	31.61	170.78	.48	.86
I feel strained when I'm with my child	29.59	176.29	.39	.86
My health has suffered because of my involvement with my child.	30.51	176.29	.47	.86
I feel that my social life has suffered because I am caring for my child	31.41	172.04	.61	.85
I secretly wish my child is dead	31.51	173.34	.44	.86
I get tired and sick from taking care of my child.	29.82	155.15	.58	.85
I have lost control of my dreams/ambitions since your child illness	28.59	159.46	.50	.86
I wish I could just leave the care of my child to someone else	28.57	143.79	.75	.83
I feel uncertain about what to do with my child	29.14	143.63	.78	.83
I get stigmatized because of my child.	29.20	141.71	.71	.84

Factor Analysis

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.50
Bartlett's Test of Sphericity	Approx. Chi-Square	710.49
	Df	66
	Sig.	.000

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.97	41.41	41.41	4.97	41.41	41.41	3.96	32.97	32.97
2	3.17	26.44	67.85	3.17	26.44	67.85	3.06	25.50	58.47
3	1.11	9.28	77.13	1.11	9.28	77.13	2.24	18.66	77.13

Varimax Rotated Component Matrix[a]

	Component		
	Personal strain (α = .9)	Role stain (α = .9)	Social strain (α = .9)
I wish I could just leave the care of my child to someone else	.91		
I feel uncertain about what to do with my child	.89		
I get stigmatized because of my child.	.88		
I get tired and sick from taking care of my child.	.85		
I have lost control of my dreams/ambitions since your child illness	.70		
I sometimes get tired of taking care of my child		.87	
Taking care of my child has taken a lot from me.		.81	
I sometimes lock up my child because of his/ her condition		.78	
I feel strained when I'm with my child		.74	
I secretly wish my child is dead			.88
My health has suffered because of my involvement with my child.			.70
I feel that my social life has suffered because I am caring for my child			.64

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.