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Childhood attention deficit hyperactivity disorder: A stress factor for African immigrant mothers

Helen Agatha Awatefe
Walden University

Walden University

College of Health Sciences

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Helen Awatefe

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Review Committee
Dr. Amany Refaat, Committee Chairperson, Public Health Faculty
Dr. Vasileios Margaritis, Committee Member, Public Health Faculty
Dr. Namgyal Kyulo, University Reviewer, Public Health Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
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Abstract

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by

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MPH, Walden University, 2013

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Children between the ages of 6-17 years suffering from childhood attention deficit hyperactivity disorder (ADHD) need constant attention as they are more likely to be accident proned, hospitalized, disruptive, and educationally challenged. The constant attention required for children with ADHD may impose stress on mothers and primary caregivers, yet this stress has not been sufficiently studied. The objective of this study was to fill a gap in literature by studying the stress experienced by African immigrant mothers living in the United States who are living with and caring for a child with ADHD, and then comparing the level of stress reported by African immigrant mothers and African American mothers caring for children with and without ADHD. The study had a quantitative, case-control design, and used the parental stress index-short form (PSI-SF) and a 9-item demographic questionnaire as the survey instruments. One hundred twenty-five African immigrant and African American mothers participated in the study. Data collected from the mothers were analyzed for descriptive. ANOVA and Regression analysis were performed using SPSS version 21. The results showed that African immigrant mothers caring for a child with ADHD had significantly higher stress levels than those not caring for a child with ADHD. African American mothers also caring for a child with ADHD had significantly higher stress than African American mothers not caring for a child with ADHD. African immigrant mothers caring for a child with ADHD had significantly lower stress than African American mothers caring for a child with ADHD. These findings may initiate interventions that would help mothers provide quality care of life for themselves and for their children suffering form ADHD.

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Dedication

This dissertation is dedicated to my children, Oluwafifehan (Ife), Olufunmilayo (Ayo), Tolulope (Tolu), Oluwafemi (Femi), and Oluwatobi-Moses. You guys are my joy and inspiration as I walked this journey. May God Almighty bless you all.

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In life we must make sacrifices to accomplish those things we desire most. Completing this dissertation and indeed my Ph.D. required such sacrifice, dedication, and focus. I will like to thank my Chairperson, Dr. Amany Refaat, for accepting to chair my dissertation. Your dedication, timeliness, and encouragement were much needed guidance that helped to complete this process. I appreciate you.

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To Walden University professors and staff who lighted the path for me as I walked this journey including my URR, Dr. Namgyal Kyulo, I say a very big thank you.

To my children, husband, my parents and brother, my American Red Cross colleagues, my friends at Kingdom Based Ministry, fellow parishioners and friends at St Mary's Catholic Church and school of Landover Hills, to all my SMD HEAT family, organizations and doctors, clinics, family, friends, and well-wishers that assisted me during my extensive data collection period, I thank you all, may God bless each and every one of you.

The Journey to Success is never an easy one but with God all things are possible. Father, take all the Glory.

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Chapter 1: Introduction to the Study

Introduction

There is a long standing recognition and concern that parental stress difficulties can have an impact on children's development (Hosseinkhanzadeh, Yeganeh, Rashidi, Zareimanesh, & Fayeghi, 2013). The relationship between a mother's mental health and children's adjustment and behavior have been consistently described by researchers (Hosseinkhanzadeh, et al, 2013). Mensah and Kieman (2009) stated that a mother's mental health can have very strong impact on the children's cognitive development. Studies across the globe have also reported significant parental stress and family disruption due to attention deficit hyperactivity disorder (ADHD) in their children (Floyd & Gallagher, 1997; Hosseinkhanzadeh, Yeganeh, Rashidi, Zareimanesh, & Fayeghi, 2013; Hosseinkhanzadeh, Yeganeh, Rashidi, Zareimanesh, & Fayeghi, 2013). Studies done on the disturbances and conflicting nature of interactions between parent and child with ADHD documented that ADHD children were less compliant, more inattentive, less likely to remain on task, and displayed more disruptive or hyperactive behavior than most children of same age (Wells et al., 2000). Many children with ADHD would go through life without the right kind of help to succeed, leading to a higher crime rate, higher suicidal rate, and causing strife in modern society despite improved technological knowledge (Wells et al., 2000). Parents, and especially mothers, become frustrated at their inability to provide their children the help they need in a timely and successful manner because they were ill equipped to cater to such special children (Floyd &

Gallagher, 1997; Hosseinkhanzadeh, Yeganeh, Rashidi, Zareimanesh, & Fayeghi, 2013; Wells et al., 2000;).

In most third world countries including Africa, mental disability is a serious source of concern especially to the immediate families of the person affected (Prudent, Johnson, Carroll, & Culpepper, 2005). One line of reasoning was that mental disability especially in a child was a "curse" to the family (Prudent et al., 2005). For this reason, the first line of intervention was to seek spiritual healing, especially as many did not trust the medical system (Um-e-Kalsoom & Waheed, 2011). While seeking spiritual help was good, it did not always resolve the problem which led to rejection and frustration and a lot of psychological traumatization especially directed towards the mothers of such children (Prudent, Johnson, Carroll, & Culpepper, 2005; Um-e-Kalsoom & Waheed, 2011). Hence, it is necessary to understand the problems associated with ADHD in terms of stress as related to the caregiver mothers.

ADHD is a mental illness that has not gained significant recognition as a chronic disease (Lando, Williams, Williams, & Sturgis, 2010). In the United States, there is a rising increase in the incidence of ADHD cases in children, especially between the ages of 6-17years (Center for Disease Control and Prevention (CDC), 2013). There has also been a longstanding recognition and concern that parental stress difficulties can have an impact on children's development (Mensah & Kiernan, 2009). Globally, the relationship between a mothers's mental health and her children's adjustment and behavior have been described by a number of researchers (Dada, 2012; Hosseinkhanzadeh, Yeganeh, Rashidi, Zareimanesh & Fayeghi, 2013; Mensah & Kiernan, 2009; Pimentel, Vieira-Santos,

Santos, & Vale, 2011). Mensah and Kieman, (2009) stated that a mother's mental health can have very strong impact on her children's cognitive development. Findings from many studies have increase the knowledge about ADHD including factors showing significant elevation in parental stress and family disruption due to ADHD in a child (Floyd & Gallagher, 1997; Hosseinkhanzadeh, Yeganeh, Rashidi, Zareimanesh, & Fayeghi, 2013). A high level of stress among mothers of young children have also been documented in a U.S. Surgeon General's report on the topic (1999, 2011). This report and other studies explained that stress affects approximately 44% of mothers with special needs children (Hosseinkhanzendeh et al., 2012), and the World Health Organization (2009) also stated that stress was a common mental health disorder which leads to depressed mood, loss of appetite, sleep disturbance, loss of interest or pleasure, low self-esteem, poor concentration, low energy level, and poor parenting style (Um-e-Kalsoom et al.,, 2011).

Although the relationship between maternal stress and ADHD has been studied among many westernized populations, this relationship has not been studied among African immigrant mothers in the United States caring for a child with ADHD. For this reason, there is not much documented data to aid in understanding the effect of childhood ADHD in relationship to the amount of stress the African immigrant mother goes through, especially as the demand for care for the ADHD child is chronic and life long. Many African immigrant mothers travel outside their home countries without much moral or financial support (Prudent, Johnson, Carroll, & Culpepper, 2005). Some arrive without proper immigration status, in an unstable marital relationship, and are trying to

get some education in a foreign land or just to get a better life in a developed country, and they still have to cope with a child suffering from ADHD (Arrau, 1991; Prudent et al., 2005).

ADHD is one of the most commonly diagnosed mental health conditions of childhood with a large genetic etiology (Brown, 2013). ADHD is a global problem with similar signs and symptoms (Brown, 2013). However, interpretation and response to the condition varies from culture to culture by parents, family members, professional care givers, and others (Brown, 2013). Unfortunately, ADHD can persist into adulthood. Recent research has shown that many people with ADHD functioned relatively well without much manifestation of the condition until adolesence or adulthood, when greater challenges to related functions were encountered (Brown, 2013). It had been posited that in ADHD persons, alterations in the nonardrenaline and dopamin pathway can lead to elevated cortical processing in the areas of the brain that are involved with attention; alertness; and executive functions, thereby hindering the ability to plan, memory work, abstract reasoning, and mental flexibility, for this reason children suffering from ADHD need constant attention as they are more likely to be accident prone, hospitalized, disruptive, and educationally challenged (Bennett, Brewer, & Rankin, 2011). ADHD is a good example of a chronic disease and as such, can impose tremendous stress on the parents of children with the condition (Bennett et al.,2011), especially on the mothers who are ususally their care providers.

Immigrants, especially African immigrant mothers, bear the additional burden of a lack of social support from the extended family system as would be available to them in

their native countries. These immigrants are faced with an environment that is not supportive of their traditionally accepted parental style and interpretation of an acceptable child's behavior coupled with the additional factors of being an African immigrant, a minority, a woman with a limited family and social support network, limited finances, and a heavy emotional burden (Arrau, 1991; Prudent, Johnson, Carroll, & Culpepper, 2005). Therefore, the objective of this dissertation was to examine whether childhood ADHD was a stress factor for the African immigrant mothers caring for a child with the condition and if that stress level was higher than for other mothers in similar situation.

The social change implication of this dissertation was to help create an awareness of ADHD by empowering people living with the condition and their caregivers, especially the African immigrant mothers, with the necessary support and resources that would increase their knowledge of ADHD. This would help them change their lifestyle to promote quality health for themselves resulting in better parenting skills to help them nurture their ADHD child into an independent and productive adult. Participants would understand laws and regulations that would help them integrate and adjust their lifestyle to accommodate their ADHD child without fear, blame, or stigmatization.

The remainder of this chapter will summarize the problem, research design, and methodology. The problem statement and how the research was designed are outlined, and the research questions and hypothesis are also presented. Conceptual frameworks that guided the study are explored by me using many different theories. I also defined key terms and explored and identified the study's assumptions, delimitations, limitations, and significance. This chapter sets the stage for the literature review in Chapter 2, which

describes in detail the problems associated with childhood ADHD and the African immigrant mother caring for a child with the condition, while Chapter 3 provides the study methodology.

Background

Stress and depression among parents of children with ADHD has been studied in many westernized countries. Parental variables such as attitude and competence have been implicated as determinants of the level of socio-development in children with ADHD (Arrau, 1991). In the African culture both at home and diaspora, traditional beliefs, religious beliefs, and cultural orientation play a significant role on parental practices and parental expectations from a child (Prudent et al., 2005). There is an adage in African that states, "remember whose child you are." Therefore, the environment, culture, religion, and family support system are blended in the African child's upbringing, so that an individual's behavior is taken as a reflection of the family, both nuclear and extended (Arrau, 1991; Prudent, Johnson, Carroll, & Culpepper, 2005). In this context, parents tried to strike a balance to give their children the best parental upbringing they can afford and in return expected the best from the children. Hence, any issue that posed a threat to that balance was seen as a threat to the family and to the cultural community as a whole. Mothers being the primary caregivers in this tradition, become the first line of attack when something was perceived to be wrong in their children which could lead to stress, anxiety, depression, failed marriages, and family disruption, especially when the situation is improperly managed (Arrau, 1991; Prudent, Johnson, Carroll, & Culpepper, 2005).

In a study by Datta (2002), on burden among the caregivers of children with intellectual disability, the researcher provided causes of stress, burden, and applicable variables, including strategies to support the situation of mothers caring for their mentally ill children. Some of the factors noted in regards to maternal stress included such variables as culture, ethnicity, level of parent's education, and religious affinity (Datta, 2002). According to Datta's study, burden from a child having a mental disability has the capability to erode the family relationships, activities, and quality of life. Datta noted that resilience in the family structure provided good coping strategies and helped the family to rebound from adversity at the individual and systems levels. Notwithstanding, many children suffering from ADHD have a lifelong problem. Systemic strategies must therefore be in place to help provide better quality of life for both mother and child. ADHD is more than just a simple listing of behavioral characteristics of the condition, but involves a more integrated complex understanding of how the brain functions, develops, and undergoes cognitive functions associated to the disorder at various stages of life (Brown, 2013).

This dissertation study used Bandura's (2001) social cognitive theory as one of the theoretical lens to view the problem. This theory describes behavioral changes in the individual and the relationship between a person's personal life and the experiences they undergo (Bangura, 2001). Janlert and Hammarström (2009) and Selye (1976) provided the theoretical lens to describe stress model theory and the relationship between psychosocial stimuli and health outcomes. Selye defined stress as the nonspecific response of the body to the demands introduced to it and proposed that the body's stress

was as a result of psychosocial and psychobiological general adaptation syndrome. Lazarus (2006) described stress as a two way process involving an external stressor and a response from the individual experiencing this stress. A stressful expirence involves a person and their interaction with the environment as well as the impact of that interaction. Stress does not affect all people equally, but can lead to illness and negative experiences (Glanz et al. 2002; Janlert & Hammarström, 2009; Lazarus, 2006; Sincero, 2012). Other pathways and outcomes of the physiological stress response are explored in-depth in Chapter 2.

Problem Statement

Parental stress and family disruption due to mental illness, including ADHD in a child, has been widely studied in Europe and America (Floyd & Gallagher, 1997Hosseinkhanzadeh, Yeganeh, Rashidi, Zareimanesh, & Fayeghi, 2013; Parkes, Caravale, Mercelli, Franco, & Colver, 2011). Maternal stress, a subset of parental stress, occurs due to a mother's perception of the high demand and fear of caring for a mentally ill child with limited resources (Theule, 2013). ADHD is one of the most commonly diagnosed childhood behavioral disorders, and it is defined by the American Psychatric Association's Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) as a disruptive behavorial disorder (Maddox, Scholar, & Wilson, 2008). Most children suffering from mental illness need constant attention as they are more likely to be accident prone, hospitalized, disruptive, and educationally challenged (Theule, 2013). However, ADHD affected children have all of these symptons as well as inattention, hyperactivitivty disorder, impulsive behavior, and forgetfulness (Center for Disease

Control and Prevention, 2010). As a chronic disease, ADHD in a child can impose tremendous challenges on parents (Bennett, Brewer, & Rankin, 2011; Pimentel et al., 2011) especially on the mothers and worse if that mother is a single parent.

Childhood ADHD as a stress factor for the African immigrant mother; however, had been understudied (Floyd & Gallagher, 1997; Hosseinkhanzadeh et al., 2013; Theule, 2013), and not much had been done to associate a child's having this disabiliy to the amount of stress in their African immigrant mothers, especially as the demand for care for the ADHD child is chronic and life long. Many of these African immigrant mothers travelled outside their home countries without much moral or financial support, some without proper immigration status, with unstable marital relationships, and are trying to get some education in a foreign land while still coping with a child suffering from ADHD (Floyd & Gallagher, 1997; Hosseinkhanzadeh et al., 2013; Theule, 2013).

The African immigrant in the United States as a subject lacked research data due to immigration problems, minority status, fear, and stigmatization of their families and were more excluded from scientific and clinical research leading to very minimal data to support their health and mental well being (Ward, Seller, & Pate, 2000). The implication was that this exclusion created a gap in available evidence on which policies and interventions could be based upon to serve this growing population which has resulted in diminished the quality of care available to them, and by extention, to their ADHD child even as diagosis of the condition in young children continue to increase (CDC, 2010) .

The aim of this study was to fill the gap in the literature by using a quantitative, case-control research approach to examine whether an association existed between

childhood ADHD and the level of stress experienced by immigrant mothers of African origin living in the United States who are living with and caring for a child that has ADHD. A further aim of the study was to statistically compare whether the immigrant African mother caring for a child with ADHD had a more significant stress burden than the African American mothers also caring for a child with ADHD.

Purpose of the Study

The purpose of this quantitative study was twofold: (a) to examine whether there was a direct relationship between childhood ADHD and the level of stress exhibited by the African immigrant mothers; and (b) to compare whether African immigrant mothers caring for a child with ADHD had higher stress levels than African American mothers caring for a child with ADHD, African immigrant mothers caring for a child without ADHD, and African American mothers caring for a child without ADHD. This empirical research focused on the fact that there was a significant amount of literature on caregiver mothers and their stress level, but there was inadequate literaure to address the stress level of African immigrant mothers caring for a child with a disability such as ADHD especially, considering the fact that caring for a child with ADHD can be a lifelong issue.

Research Questions and Hypotheses

I generated four questions to research the problem and proposed four hypotheses for the cross sectional survey:

Research Question 1: To what extent was childhood ADHD associated with stress among African immigrant mothers?

$H_0$1: Childhood ADHD was not associated with maternal stress in African immigrant mothers caring for a child with ADHD.

H_A1: Childhood ADHD was associated with maternal stress in African immigrant mothers caring for a child with ADHD.

Covariable 1: Immigration status

Dependent Variable 1: Maternal stress

Independent Variables 1: Childhood ADHD, socioeconomic status, level of maternal education, and marital status.

Research Question 2: To what extent was the gender of a child with ADHD associated with stress among African immigrant mothers?

$H_0$2: Child gender differences were not related to stress among African immigrant mothers.

H_A2: Child gender differences were related to stress among African immigrant mothers.

Covariable 2: Gender

Dependent Variable 2: Maternal stress

Independent Variable 2: Caring for male or female ADHD child.

Research Question 3: To what extent were immigrant mothers of African origin who were caring for their ADHD affected child different in stress level compared to African American mothers also caring for their ADHD affected child?

Research Hypothesis 3

H_0:3 Immigrant mothers of African origin who were caring for their ADHD child

had similar stress levels compared to African American mothers also caring for their ADHD child.

H_A:3 Immigrant mothers of African origin who were caring for their ADHD child had different stress levels compared to African American mothers also caring for a child with ADHD.

Covariable: Immigration Status; Dependent Variable: Maternal Stress; Independent Variables: Childhood ADHD.

Research Question 4: What was the difference in stress level between mothers of African origin caring for a child with ADHD and mothers of African origin, of similar age, caring for a child without ADHD?

Research Hypothesis 4

H_0:4 Mothers of African origin caring for a child with ADHD did not experience more stress than mothers of African origin caring for a child without ADHD.

H_A: 4 Mothers of African origin caring for a child with ADHD experienced more stress than mothers of African origin caring for a child without ADHD.

Covariable: Age; Dependent variable: Maternal stress; Independent variable: Care of ADHD child and care of child without ADHD.

Theoretical Framework

The theoretical framework on which the study was based was the social cognitive theory which was used as a lens to help understand behavioral changes in and around an individual (Bandura, 2001). In Bandura's (2001) book on social cognitive theory (SCT), SCT was described as an ongoing, dynamic process of how one's personal life, the

environment they lived in, and their human behavior interacted with one another and exerted a concrete influence on each other. This theory was based on the believe that people learn not only from their life experiences, but also by observing other people's actions as well as the benefits or lack thereof, of those actions (Bandura, 2001; Schunk, 2001). Another theoretical frame work on which the study was based was the stress model theory, which incorporated elements from the biomedical (Selye, 1976) and the psychological fields (Lazarus, 2006). The biomedical theories focused on physiological mechanisms to explain the correlation between physical circumstances (immigration status) and biological phenomena (mental illness; Lazarus 2006). The stress model outlined the relationship between psychosocial stimuli and health outcomes (Janlert & Hammarström, 2009).

Nature of the Study

In this study, I used the quantitative method. I used a case-control design, including the use of instruments to conduct studies on mothers caring for a child with ADHD and those caring for a child without ADHD between the ages of 6-17 years in the state of Maryland. The criteria for choosing this age was based on studies indicating that DSM-IV diagnosis of ADHD required a child to experience the ADHD characteristics, such as attention deficit, hyperactivity, and impulsivity in at least two settings-- the home or at school. Therefore, mothers of school age children between the 6-17 years age range were chosen. All mothers who participated in the study were recruited from schools and organizations in the same area. Data collected from mothers were analyzed for descriptive and inferential statistics using SPSS. The results obtained were used to

integrate the findings in a way that helped to provide better knowledge of the factors surrounding the case. Participants completed a consent form and filled out questionnaires. The significance of the quantitative design was for achieving generalizability within this population and the use of a case-control design was beneficial for capturing data from this population.

Maternal stress was the dependent variable; the independent variables were childhood ADHD, socioeconomic status, immigration status, education, marital status, age, and gender of child with ADHD. The instrument used was survey questionnaires. Parental stress was measured using the parental stress index short form (PSI-4-SF) (Abidin, 2012). The results obtained from the study were used to help create awareness for the situation of this population. The case-control design was best to examine any association (Creswell, 2003). The instrument used was existing survey questionnaires with established validity and reliability of scores from previous work obtained with permission. Using a high content validity instrument helped to reduce Type II error and provided better internal consistency (Creswell, 2003).

Definitions of Terms

African immigrant women: As used in this study, are women of African decent, born in Africa and migrated to the United States.

African American women: Defined in this study as women of African decent born in the United States.

Attention deficit hyperactivity disorder (ADHD): ADHD is a chronic neurological disease condition that causes impairments most noticeable during preschool years in 3-

7% of children. It is characterized by impulsivity, inattention, and hyperactivity which can continue into adulthood (American Psychological Association (APA), 2013; CDC, 2010).

Case-control design: The case-control design was also known as retrospective studies or case-referent studies. It compared patients that had the disease of interest (cases) with patients that do not have the disease (controls). It looks back in retrospect to compare the frequency of the exposure to a risk factor of the disease as present in each group as a way to determine relationship between the risk factor and the disease of interest. It was also observational, in that it did not attempt to change the cause of the disease. In most situations it was used to estimate odd ratio (Creswell, 2009).

Cases: For this study were African Immigrant mothers caring for a child with ADHD and African American mothers caring for a child with ADHD.

Controls: For this study were African Immigrant mothers caring for a child without ADHD and African American mothers caring for a child without ADHD.

Descriptive statistics: These statistics allow a researcher to summarize and organize data in a more organized and effective manner. This tool allows for the descriptive collections of statistical observations and making the information more understandable (Nachmais & Nachmais, 2008).

Parental Stress Index-Short Form (PSF-4-SF): The PSI-4-SF was an instrument for screening and measuring parental stress. It was a self-reported measure developed from the perspective that the stress a parent experienced was a function of characteristics

of both the child and the parent, as well as their unique style of interaction (Abidin, 2012).

Social Cognitive Theory (SCT): SCT is the dynamic process of how one's personal life, the environment they live in, and the human behavior interact together and exert a concrete influence on each other (Bandura, 2001).

Stress: Stress denotes the wear and tear on the human body as life experiences causes a person to make adjustments in a continually changing environment. Different types of stress include parental, emotional, and maternal (Krohne, 2002).

Assumptions

Participants who volunteered to participate in the study were assumed to do so of their own free will. Other assumptions included, participants completed the questionnaires truthfully to the best of their ability, the case-control design was better for establishing association as it allowed for simulteneously looking at multiple risk factors, using different controls would enhance the power of the data, and the chosen controls was appropriate for the population of interest (Gallin, 2002). The inclusion criteria was based on being an African immigrant or African American mother of a child with ADHD for the case group or of a school age child for the control group and being African immigrant woman irrespective of current U.S. immigration status. Exclusion criteria included the inability to understand the English language and having a child with ADHD that was above 17 years old. Using these criteria, it was assumed that the inclusion and exclsion criteria were appropriate for this design (Creswell, 2009). Based on the reliability of instrument from other studies, it was also assumed that the PSI-4-SF was the

most appropriate instrument for measuring the identified variables and that the study was carried out in a safe manner for participants and researcher.

Scope and Delimitations

The case-control design was not based on random selection of the population of interest; hence, for this study causation was not be inferred (Creswell, 2009). Rather, samples were chosen as convenience samples even though it could introduce errors such as selection bias and reduce validity. However, careful selection of the right statistical analysis for the study helped minimize any confounders or bias (Novick, 2008). Another important consideration for this study was the method of instrument delivery, whether to use mail only or to use both mail and email for faster and more efficient response rates even though the full impact of using emails was unknown. In addition, there was the possibility for the instruments used not to be sensitive enough to capture changes or differences as perceived by participants. Hence, to mitigate this problem, a verified instrument, the PSI-4-SF, was used. Ethical issues included the use of informed consent. With this consent, participants were informed of what needed to be done and when and how they could be affected. The consent was voluntary on the part of all participants and it ensured participants' safety, respect for the person, beneficence, and justice.

Though results might not be generalizable, due to a convenience sampling method, the results obtained gave an accurate analysis of the impact of the condition on the population studied. Reliability considered whether outcome variables measured were sufficient to capture efficacy. To deal with these issues, it was important to understand the dissertation goals and the type of data required to provide the strongest evidence

(McKenzie, 2009). For this reason, adequate data collection and the reliability of instrument used were important. Delimitations that identified experimental boundaries included the participant's ability to speak and understand the English language in order to complete the PSI-4-SF. It was beyond the scope of this study to include findings for mothers caring for an adult with ADHD.

Limitations

Participation was all inclusive that is, as long as participants understood the English language, irrespective of whether they were originally of a different mother tongue (French, Swahili, Yoruba, Ibo, Urhobo, and others), they were included to make the process flexible and more efficient in capturing this data. Study generalizability was limited to this population because of convenience sampling; however, since causation was not implied, the study was enhanced by the large participant pool. Moreover, this being a case-control study, the focus was on the relationship between different variables to include childhood ADHD and maternal stress, but did require appropriate matching conditions to adequately capture cases and controls (Gallin, 2002, p.189). Additional limitations of this design included the tendency for a large sample size, which made the study expensive to conduct. Also, the design may not have allowed ideas to evolve as the study progressed since the cases were already identified. Moreover, mental illness, of which ADHD is a type, carried a stigma among people of African descent. Recalling behavior patterns and maternal relationship with the ADHD child proved a sensitive topic for some mothers which could have resulted in inaccurate information that could have introduced a recall bias (Gallin, 2002).

Significance

According to CDC, (2011), statistics indicated that one in every four American families had a member suffering from mental illness and that two out of every 100 young adults could be affected by serious brain diseases by the ages of 18-30. Also, the DSM-IV (APA, 2013) stated that ADHD was characterized by persistent developmentally inappropriate levels of impulsivity, inattention, hyperactivity, or any combination of these factors that interferes with functioning and several symptoms needed to be present in more than one setting (CDC, 2013). The significance of this study was to use the results and information obtained as useful tools to promote health by providing necessary assistance and resources for children with ADHD and their families. The analysis of stress in the African immigrant population of mothers caring for a child with ADHD would help people living with ADHD and their families cope and improve on their quality of life by implementing and integrating services and polices that enable these women to change their lifestyle so they are better able to participate fully in the rigorous processes of life, like keeping a job, concentrating on a task, caring for themselves, and believing in their self-worth as well as understanding how to help their child attain their full potential despite their condition.

According to the World Health Organization (2009), stress is a common mental health disorder which leads to depressed mood, loss of appetite, sleep disturbance, loss of interest or pleasure, low self-esteem, poor concentration, and low energy level (Um-e-Kalsoom and Waheed, 2011). Since there was little or no information nor data on this subject population, and considering the fact that caring for a mentally ill child with

ADHD was in itself a challenge, coupled with the additional factors of being an African immigrant, a minority, a woman, having a limited family and social support network, and limited finances, results obtained from this research would be useful to guide and inform policies and interventions for this population.

This study may also be significant as it focused on and addressed an increasing but under researched minority population of the African immigrant woman's mental well being. The quantitative approach used provided empirical evidence for future research by students and professionals that may promote health in the African immigrant communities and provide a better understanding of the issues surrounding this population's struggles in caring for their mentally ill children and the requirements to promote better health and mental wellness for themselves and their families. Using this approach to study this population could lead to positive social change in promoting access to policies and interventions that are beneficial to the population as stress can be detrimental to a person's mental health and can compromise their ability to adequately care for themselves and their loved ones.

Summary

ADHD is a mental condition that is subjective and requires every level of intervention to help the individuals affected and their family members, especially African immigrant mothers, cope with the disorder and strive to achieve a better life. There are many factors affecting the African immigrant women caring for their mentally ill children. Such factors include socioeconomic instability, emotional stress, lack of or inadequate social support, discrimination, and insufficient income (Floyd & Gallagher,

1997; Hosseinkhanzadeh et al., 2013; Theule, 2013). All of these factors include a plethora of daily living challenges, both intrinsic and extrinsic, which increase the burden of stress experienced by this population. Additional maternal health problems like high blood pressure, anxiety, depression, and family dysfunction also increase this burden (Datta, 2002). Unfortunately, a negative emotional expression by these mothers eventually creates problems for them and even more problems for the ADHD child (Datta, 2002).

Studying these underlying factors and the various issues impacting stress in parenting and caring for a child suffering from ADHD in the African immigrant context will help immigrant mothers and other care providers including social workers, trained healthcare nurses, local health departments, and politicians to collect facts based on reliable statistical measurements that are useful, informative, educative, and influential in promoting laws and policies on behalf of people living with mental illness (National Alliance for Mental Illness (NAMI), 2010). This knowledge could be used to help better equip and boost the self-confidence and knowledge of African immigrant mothers and the family members of these children and sensitize them to the condition. The family support for people living with the ADHD condition cannot be overemphasized, and advocating for laws and regulations to protect their rights as human beings is also important as they help to influence health related behavior of the individual as well as their care providing mothers.

Furthermore, governmental policies and medical and social campaigns would help such women find positive social support and networks that could reduce stressors and

increase quality of life. As a mother's quality of life improves, her level of self-esteem increases and her mental well-being is elevated. Additional income and general support from the government and general public in recognition of this situation will greatly enhance policies and the practice of managing the problem. Educating the African immigrant women in recognizing where to find help, caring for their health, and networking with others in similar situations are ways in which the findings from this study can help the cause of these women.

In Chapter 2, a comprehensive review of literature including etiology, theories, pathways, and outcomes of the physiological stress response as applicable to mothers caring for a child with ADHD will be explored. Also, the cost and treatment of the condition, genetic, and environmental contributions will be discussed. Racial and ethnic disparities; immigration issues; and social support systems will be explored in depth.

Chapter 2: Literature Review

Introduction

Childhood ADHD as a stress factor for African Immigrant mothers is a great issue that has been under researched. Literature has shown that African immigrant women are one of the most under researched populations in the United States. The fact that this category of women are equally burdened with the problem of having a child with a mental health disability that is life long is the essence of this study with which I also sought to understand whether it adds an additional burden for the African immigrant mother.

For the scope of this research, the concentration was focused on ADHD as a stress factor for African immigrant women caring for their disabled child. The parameters of this research are discussed in this chapter, presenting past and current peer-reviewed and credible information on childhood ADHD and African immigrant women caring for a child with this particulaer form of mental illness. The methodology and scientific approach used for this research are argued for using scientifically based literature.The literature that I examined was grounded in stress theory and social cognitive theory, which were the conceptual framework outlined in Chapter 1.

My literature review on this topic began with a related peer-reviewed article search, internet search, and search for other related books from credible authors. Secondary sources led to primary articles. A foundation was laid for the understanding of

concepts of childhood ADHD, stress burdens of African immigrant mothers while the conceptual framework and theories are used to guide the study.

My research began at Walden University's library using EBSCOhost to search the databases including SAGE, Academic Search Premier, and Medline. These databases were used as the primary databases for related topics in a concurrent and consistent manner. Other topics for the dissertation were obtained from Google, Google Scholar, (NAMI), National Institute of Health (NIH), Children and Adults Attention Deficit Disorder (CHADD), and U.S. Immigration Services online.

The estimated population of African immigrants in the United States (AIUS) was about 881,300 in the year 2000 with 80,281 of that population being accounted for in the Washington DC, Maryland, Virginia, and West Virginia area (United States Census Bureau, 2013). As of 2009, that population had escalated to over 2.25 million Africans, which is about 2.8% of the U.S. immigration population (Ward, 2010). Another study provided a more conservative number of between 200,000 in 1980 to 1.5 million in 2009, which is 3.9% of the 38.5 million U.S. immigrants (McCabe, 2011). The population in the state of Maryland in 2011was 5,884,563, of this number, 881,138 reside in Prince Georges County and 65.3% of these are African Americans (United States Census Bureau, 2013). However, all of the authors agreed that most of the African immigrants to the United States were from Nigeria, Ghana, Ethiopia, Eritrea, Egypt, Somalia, and South Africa though the great majority are from the West African coast (AIUS, 2013; McCabe, 2011; Rich, Spielberger & D'Angelo, 2012; Ward, Seller & Pale, 2000). Even with this large number of African immigrants, research focusing on the African immigrants was

sparse, largely due to immigration issues. Unfortunately, the African immigrant women were even more excluded from scientific and clinical research leading to very minimal data to support their health and mental well being (Ward, Sellers, & Pale, 2000).

In general, African immigrants are burdened with many concerns, including but not limited to cultural displacement, language barriers, communicion challenges, housing problems, and the inability to negotiate the medical and educational systems (Ward et al., 2000.). According to Purrit (1978) and Hugo (1997) as cited in Ward et al., (2000), African immigrant students who made up the initial immigrant population, adapted poorly to weather, educational negatiation, employment, and communication issues. In particular, women of African descent were at greater risk of serious challenges based on the change in their traditional gender roles and expectations, marital conflicts, racism, a new minority status, decreased external family member assistance, decreased family support and network, increased socio-releational responsibilities, working outside the home, and managing the family resources both in the United States and in their home countries (Ward et al., 2000). Today, these problems are still present and are still experienced by the African immigrants creating a unique set of health and mental imbalance issues for African immigrant women.

Stress and family disruption due to mental illness including ADHD in a child had been widely studied in Europe and America (Floyd & Gallagher, 1997) Hosseinkhanzadeh et al., 2013; Parkes, Caravale, Mercelli, Franco & Colver, 2011; and the literature maintained that maternal stress is a subset of parental stress and occurs due to a mother's perception of the high demand and fear of caring for their mentally ill child

with limited resources (Theule, 2013). Childhood ADHD as a stress factor for the African immigrant mother however, has been understudied (Floyd & Gallagher, 1997; Hosseinkhanzadeh et al., 2013; Theule, 2013) and not much had been done to associate a child's having this disabiliy to the amount of stress in their African immigrant mothers, especially as the demand for care for the ADHD child was chronic and lifelong. Many of these African immigrant mothers traveled outside their home countries without much moral or financial support, some without proper immigration status, with unstable marital relationships, trying to get some education in a foreign land and still coping with a child suffering from ADHD and other forms of mental illness (Hosseinkhanzadeh, Yeganeh, Rashidi, Zareimanesh & Fayeghi, 2013; Theule, 2013; Floyd & Gallagher, 1997).

Although mental illness has not gained full recognition as a chronic disease (Lando, Williams, Williams, & Sturgis, 2010) in the United States, there is a rising increase in the incidence of mental health cases in children especially between the ages of 14-17years. Also documented was a high level of stress among mothers of young children (U.S. Surgeon General, 1999, 2011). Stress affects approximately 17% of adolescents and young adults nationally (U.S. Surgeon General, 2011). The World Health Organization (2009) stated that stress was a common mental health disorder which leads to depressed mood, loss of appetite, sleep disturbance, loss of interest or pleasure, low self-esteem, poor concentration, and low energy level (Um-e-Kalsoom &Waheed, 2011). Scholarly evidence continued to indicate an increase in the rate and prevalence of mental health problems including stress, depression, ADHD, bipolar disorder, and suicide (Um-e-Kalsoom &Waheed, 2011). The incidence of suicide attempts reached a peak during the

mid-adolescent years, and mortality from suicide, which increased steadily through the teens, was the third leading cause of death at that age (CDC, 1999; Hoyert et al., 1999). Apart from this group, women in general, working mothers and mothers caring for a mentally ill child specifically, regardless of whether they are married or single, also faced much stress and adverse health effects, possibly because they bear a greater and more diffuse work load than men or other women(University of Maryland Medical Center, 2011)This phenomenon had been observed in women in the United States and in Europe, and it was assumed that such stress may also have a very harmful effect on their children (University of Maryland Medical Center, 2011).

Emerging evidence continued to point to an increase in the prevalence of mental health problems among adolescents and young adults, particularly in the case of ADHD (U.S. Surgeon General, 2011). Whether this increase was due to better diagnosis, an actual increase in prevalence, or both, was unknown, but what was formally known was that half of all lifetime cases of mental illness was recognized to begin by age 14 and three-quarters by age 24 (Kessler et al., 2005). However, the statistics has evolved. According to the DSM-IV, the earliest onset of ADHD by diagnosis and for treatment was 7 years of age (Lingineni, Biswas, Ahmed, Jackson, Bae, & Singh, 2012). Despite effective treatments, there are typically long delays which can sometimes take decades, between when individuals first experienced clinically significant symptoms and when they first sought and received treatment(Lingineni et al., 2012).

Assessment and referral practices are standardized and well developed for ADHD diagnosis in the United States, but in most developing countries this is still

underdeveloped, especially in the African continent(Oh, Park, Suk Song, & Im, 2012). For parents whose children have this condition in the African continent, underdiagnosis was mostly due to the parents' belief that the problem was a disciplinary issue and not associated to any form of mental illness (Oh, Park, Suk Song, & Im, 2012). This belief mind set is particularly important because any form of mental illness in the African context was called "madness" and carried a stigma which no parent would like to associate with their child (Oh, Park, Suk Song, & Im, 2012). However, research has shown that ADHD is a global problem and is as prevalent amongst Africans as in other populations (Oh, Park, Suk Song, & Im, 2012). The African immigrants in the United States are minority populations and have peculiar issues related to immigration and many lack access to health care for themselves and for their children. Women in this population are more affected by this problem as many are the primary care givers to their ADHD affected child. Studies showed that early recognition and management of children with this disorder was essential for redirecting their educational and psychosocial development (Oh, Park, Suk Song, & Im, 2012). Therefore, when an African immigrant mother is sensitized to the condition without attaching the "madness" sigmatization to the condition and comes to the realization that ADHD was a genetically neuro-developmental condition that was manageable, they would be better able to cater for their own mental health and provide the type of nurturing environment to help the ADHD child lead a quality lifestyle with reduced injury rate, lower school dropout rate, and better self esteem and social competencies (Oh, Park, Suk Song. & Im, 2012) and become a more productive adult.

Attention Deficit Hyperactivity Disorder (ADHD)

First diagnosed some 100 years ago as a childhood disorder predominantly in boys, ADHD was first described as hyperactivity or hyperkinetic disorder of childhood (Curatolo, D'Agati, & Moavero, 2010). The disorder was formarly known as attention deficit disorder (ADD) and is a neurological disorder(Curatolo, D'Agati, & Moavero, 2010). Houghton, Douglas, and West (1999) citing Barkeley (1997) proposed that ADHD was a disorder that impaired behavioral inhibition and executive functions leading to problematic behavioral challenges. The disorder is characterized by higher than normal activity levels; talkativeness alone or with others; poor behavioral restrictions; lack of focus; inability to pay attention to instructions; sufferers being less likely to change subsequent responses to tasks after they made an error, despite purnishment or performance feed back; substantial functional impariment; hyperactivity; and impulsivity (Curatolo, D'Agati & Moavero, 2010; Houghton et al, 1999; Lingineni et al., 2012; Matza, 2005).

ADHD, which is the focus of this research, is one of the most commonly diagnosed chronic mental conditions of childhood with substantial genetic etiology, and it is a global problem (CDC, 2011). The condition is characterized by a persistent pattern of developmentally inappropriate levels of hyperacitivity, impulsive behavior, and attention defects (Theule, 2013; Matza, 2005). ADHD is a chronic neurological disease condition most noticeable during preschool years (CDC, 2011). It is found in all nations and across demographic, ethnic, and social divides (CDC, 2011). Children with this disorder find it difficult to perform organizational tasks, perform executive functions, or focus on a task

for very long (CDC, 2011; Matza, 2005). It is a childhood developmental disability, characterized by attention problems, impulsive behavior, over-activity (and in some children under-activity), anxiety issues, disorderly conduct, learning disability, obsessive -compulsive behavior, epilepsy, tic disorders, depression, and bipolar and sleep disorders (Matza, 2005; Trevathan, 2009). It has been suggested that people with ADHD were more susceptible to substance abuse and drug use than people without the condition (CDC, 201; Trevathan, 2009 p. 557). ADHD as a brain disorder can also be inherited (Oh, Park, Suk Song, & Im, 2012; CDC, 2011). Children who suffer from this disease are usually looked at as lazy, day dreaming, or as having poor behavioral issues, but the reality is that it is a neurological disorder that has no medical cure though it can be managed to a large extent to give the sufferer a chance at normal living (CDC, 2011).

Incidence and Prevalence of ADHD

ADHD occurs in 2-7.5% of all school age children which is about 2 million children in the United States. It was estimated that 60% of those children will maintain the disorder into adulthood (Bryant, 2005; CDC, 2011; Trevathan, 2009). Epidemiological statistics vary by state; in the state of Maryland, 2.6% of children have the condition at some time which translates to about 31, 272 of the 1,206,444 children between the ages of 2-17years in the state (CDC, 2011). 7.8% of children currently have the condition which is about 94,793 children in Maryland alone (CDC, 2011). Of this group, African American children with the condition are estimated at 25,313, Caucasians, nonHispanic, 47,049, Hispanics, 8,199 and others, 11,731 (National Survey of Children's Health, 2012). According to the CDC, epidemiological trends showed that in 2007, 9.5%

of children from 4-17 years old were diagnosed with ADHD, which was about 5.4 million children with an average increase of 5.5% per year from 2003 to 2007 and that more boys (13.2%) were affected than girls (5.6%;CDC, 2010). However, despite the fact that ADHD affects males at a higher rate than females in childhood, this ratio seems to even out by adulthood (CDC, 2011).

Again studies show that in 2007 one million more children were diagnosed with ADHD compared to 2003 this appeared to be a 22% increase. In that same year, 2007, 4.1 million children were diagnosed, and 2.7 million received ADHD medications (CDC, 2011). However, in 2003 3.7 % Hispanic/Latino children were diagnosed with ADHD and by 2007 this had increased to 5.6%. In this same time nonHispanic/Latino children with ADHD increased from 8.6% to 10.5%. By age, in 2003, 5.7% of children 4-7 years had been diagnosed, ages 11-14 had 9.8% and ages 15-17 had 9.8% diagnosed. By 2007, this number had increased to 6.6%, 11.2% and 13.6% respectively, (CDC, 2011). This observed increase was likely because of better diagnosis and a larger focus on the disease. The CDC reported that studies indicated that boys were more likely to be diagnosed with the disorder as compared to girls. In line with those studies, two Morbidity and Mortality Weekly Report (MMWR) reports on ADHD also indicated a male: female ratio of about 2.5:1. (CDC, 2011). Internationally, in Canada, prevalence rate was 9% for boys and 3.3% for girls, China estimate was the same. The disease is not peculiar to children alone, in the United States about 2%-4% adults have the condition but for the scope of this study we focused on children between the ages of 4-17 years.

Prevalence of the condition vary and risk factors include age, male gender, chronic health problems, family dysfunction, low socioeconomic status, presence of a developmental impairment and urban living (Antshel et.al.2011). Epidemiologists believe that actual temporal trends in the disease frequency for ADHD are difficult to estimate but there are treatments and modern technology to help detect the problem on time and for help to be administered, in reasonable time to assist the affected child develop living skills for independent living. As with many neurological disorders, the severity of cases differs from one individual to another (Trevathan, 2009). However, researchers and clinicians agreed that children and adults with ADHD needed love, guidance and assistance not criticism or punishment. They are not unintelligent; rather, they are burdened with a neurological problem.

Etiology and Symptoms

Attention deficit hyperactivity disorder presents with conduct problems, anxiety, stress, learning disability, developmental disability, and hyperactivity (Theule, 2013). Children with ADHD have trouble paying attention, controlling impulsive behaviors and/or are overly active. Symptoms also presents with daydreaming, easy distraction from schoolwork or play, forgetting things, talking too much, acting and speaking impulsively, inability to play quietly, interrupting others and squirming or fidgeting (APA, 2013). The condition has a rather complex etiology and though it was first diagnosed some 100 years ago as a childhood disorder predominantly in boys, and was first discribed as hyperactivity or hyperkinetic disorder of childhood (Curatolo, D'Agati and Moavero, 2010), there are many theories for ADHD etiology but the most popular

was that it was a biological disorder rather than the result of poor parenting (Curatolo et al., 2010).

Current theories hypothesized, that ADHD was a combination of genetic and environmental factors interacting during early life develpoment, leading to neurobiological complications (Asherson & Gurling, 2012; Collingwood, 2013; Curatolo et al., 2010; Ross, 2012). The result was the expression of alterations within different and diverse neural networks and deficits in neuropsychological functions. Researchers believed that people with ADHD had significant difficulties in several domains of attention and cognitive function as in problem solving, planning, orienting, alerting, cognitive flexibility, sustained attention, response inhibition, and working memory (Asherson & Gurling, 2012; Collingwood, 2013; Curatolo et al., 2010; Ross, 2012). Some domains in the brain, involving affective components, like motivation and delay aversion, are also affected. Motor difficulties, such as problems with sensory motor coordination, including poor handwriting, clumsiness, and marked delays in achieving motor milestones may also present. According to the Italian journal of paediatrics, Curatolo et al. (2010) in their article asserted that the prevalence of motor impairment in the ADHD population was estimated to be approximately 50%. Hence, motor problems were usually partially related to abnormalities in structure and/or function of the cerebellum and basal ganglia as is the case in ADHD (Curatolo et al, 2010).

Genetic Factors

Genetic factors have also been implicated in ADHD, though the mechanism of action is not completely understood. Twin, families and adoption studies of ADHD

supported a strong genetic contribution to the disorder, with heritability ranging from 60-90%. Genes regulating neurotransmitter systems have also been implicated in ADHD. In using candidate gene studies, substantial evidence was found implicating several genes in the disease etiology of the disorder, with meta-analyses supportive of a role of the genes coding for DRD4, DRD5, SLC6A3, SNAP-25, and HTR1B (Curatolo, 2010; Faraone & Mick, 2010). Studies using gene scans on potential alleles for ADHD demonstrated linkage on chromosomes 5p13, 6q12, 16p13, 17p11 and 11q22-25. Even though genome-wide association studies do not necessarily report significant associations after correction for multiple testing, Faraone & Mick, (2010), maintained that genetic studies helped to clarify the biological basis of the disorder. According to these authors, family studies documented familial transmission while adoption studies demonstrated how transmission occurred through biological, not adoptive relationships, and twin studies strongly indicated that ADHD was highly heritable where implicated genes account for about 75% of the disorder's variability in the population (Faraone & Mick, 2010).

Environmental Factors

Environmental factors also play vital roles in the pathogenesis of ADHD. Studies showed that prenatal associations of maternal lifestyle during pregnancy including, prenatal alcohol exposure, induced brain structural anomalies, especially in the cerebellum. For children exposed prenatally to alcohol, there was an increased risk of hyperactive, disruptive, impulsive behaviour within the range of psychiatric disorders. Other studies indicated that maternal smoking produces a 2.7-fold increased risk for ADHD. A dose-response relationship between maternal smoking during pregnancy and

hyperactivity had been reported due to an effect on nicotinic receptors, which modulate dopamine activity. Dopamine disruption was believed to be involved in the pathophysiology of ADHD (Antshel et al, 2011; Faraone & Mick, 2010).

Researches equally considered postnatal factors, where early deprivation of social environment, malnutrition and dietary deficiency during the postnatal period was thought to have significant effects. Curatolo et al. (2010) argued that an imbalance of essential fatty acid (omega-3 and omega-6) intake was potentially involved in the development of ADHD, although further evidence was required to establish this role. Iron deficiency was another candidate however; complex models of the etiology of ADHD incorporating gene-environment interplay may be considered in this case (Curatolo et al., 2010).

Recent studies focused on the joint effects of gene variants (of DRD4 and DAT1) and prenatal substance exposures on subtypes of ADHD children, these helped to demonstrate that smoking during pregnancy was associated with the combined ADHD type in genetically susceptible children (Antshel et al, 2011; Curatolo et al. 2010) and to support this finding, a significant interaction between DAT1 genotype and prenatal smoke exposure was found in males. Research indicated that men homozygous for the DAT1 10-repeat allele had higher hyperactivity-impulsivity than males from all other groups. However, despite the heterogeneity of the etiology and pathophysiology of ADHD, abnormal DAT density seems to be common among persons with ADHD. Growing evidence equally pointed to the involvement of the frontal cortex network as a likely contributor to the pathophysiology of ADHD and there are indications that for people with ADHD, some parts of their brain regions were slightly smaller or have

decreased activation compared to people without the disorder (Antshel et al, 2011; Curatolo et al. 2010). Even with this amount of research, the actual etiology of ADHD 100 years after its discovery, still remains elusive and calls for more research.

Treatment and Cost of ADHD

The percentage of children treated for ADHD in the United States increased dramatically from the 1980s to the 1990s according to Matza, Paramore & Prasad, (2005) and till date. ADHD is associated with impairment in many areas of a child's live, including academic performance, social functioning, and overall quality of life. Children with this condition are frequently discriminated against by their peers as early as the first day of contact, as a result of their tendency toward not only impulsive but, disruptive and aggressive behavior. ADHD has long-term negative outcomes for many children, including decreased educational attainment, work and school performance, and occupational instability compared to individuals without ADHD (Matza, Paramore, & Manishi, 2005).

In the United States, studies demonstrated that ADHD placed a substantial economic burden on patients, families, and third-party payers. A review study by Matza, Paramore,& Prasad, (2005), mentioned that medical cost studies consistently indicated that children with ADHD had much higher annual medical costs than either matched controls (difference ranged from $503 to $1,343) or non-matched controls (difference ranged from $207 to $1,560) without ADHD. They found that adult samples studied had similar results, with significantly higher annual medical costs among adults with ADHD (ranging from $4,929 to $5,651) than among matched controls (ranging from $1,473 to

$2,771).When other economic indicators for ADHD where examined they found that costs to families; costs of criminality among individuals with ADHD; costs related to common psychiatric and medical co morbidities of ADHD; indirect costs associated with work loss among adults with ADHD; and costs of accidents among individuals with ADHD all had a high cost impact. Treatment cost-effectiveness studies primarily focused on methylphenidate, which was a cost-effective treatment option with cost-effectiveness ratios ranging from $15,509 to $27,766 per quality-adjusted life year (QALY) gained. As new treatments are introduced it is important to evaluate their cost-effectiveness to provide an indication of their potential value to clinicians, patients, families, and third-party payers (Matza, Paramore, & Prasad, 2005). However, there are many different treatment options now available to patients in form of drugs or nondrug therapies.

Stress

The term stress was first used in physics to analyze how manmade structures designed to carry loads resisted deformation by external forces (Krohne, 2002). In the transition from physics to the social sciences the term stress denotes the wear and tear on the human body as life experiences causes a person to make the adjustments in a continually changing environment. There are physical and emotional components of stress which may create positive or negative feelings. Positive stress influence helps compel a person to action resulting in a new awareness and an exciting new perspective and outlook on life. Negative stress influence results in feelings of distrust, rejection, anger, and depression, that can in turn lead to health problems such as headaches, upset stomach, rashes, insomnia, ulcers, high blood pressure, heart disease, and stroke (Khrone,

2002; Selye,1973). In life situations such as loss of a loved one, the birth of a child, a job promotion, new relationship, or illness (mental or physical), stress would be experienced as an adjustment strategy. In adjusting to different circumstances, stress can act as a source of help or hindrance depending on how the individual reacts to it (Counseling Center at University of Illinois, 2007; Khrone, 2002). Therefore, stress can be defined as an individual's perception that an external demand exceeds their ability to cope with a situation. There are different types of stress such as emotional, parental and maternal stress. (Kubzansky & Kawachi, 2000).

Emotional Stress

Emotional stress arises due to the interaction between an individual and their environment as it affects the individual's responses and behavior. It may trigger behavioral, social or cognitive mechanisms that in turn can affect mental health in form of high level stress. As the stressor becomes overwhelming, it affects daily life functions and with time causes health problems like depression, anxiety and pain. ADHD is a mental illness that in itself presents with depression, negative thoughts, restlessness, and sleep disorientation. Thus it is not unlikely that ADHD patients may suffer from stress more than their non ADHD counterparts and that mothers caring for children with ADHD might suffer emotional stress as well, which would in turn trigger other physiological changes (Kawachi, 2000). However, the role of emotions in association with mental illness is still not clearly understood even though several longitudinal studies had been conducted to study this particular problem, but not much had been done to study how stress affects the ADHD patient or the mothers, especially African immigrant mothers

who are the primary caregivers of these children thus, further studies was required in this regard.

Parental Stress

Parental stress and family disruption due to mental illness in a child had been widely studied (Floyd & Gallagher, 1997; Hosseinkhanzadeh et al., 2013; Parkes et al., 2011;). For such stress, there are two underlying factors (1). The child factor arising from the illness ADHD in the child and (2). The parental factor arising from the parental functions of caring for a the ADHD disabled child. These combined stress effect leads to a condition known as total stress. (Theule, 2013). Total stress leads to problems in the parent- child relationship that negatively imapcts parenting mechanisms and affection due to challenged emotional disturbances (Theule, 2013). In this context, researchers agreed that a mentally ill child with ADHD create many challenges to the family dynamics (Datta, 2002 ; Hosseinkhanzadeh et al., 2013).

Maternal Stress

Maternal stress as a subset of parental stress is stress that occurs due to a mothers perception of the high demand and fear of caring for a child with an illness such as ADHD with limited resources. Therefore it was very critical to understand this concept espeically as related to the African immigrant mothers who were already over burdened with immigration, soci-economic, and socio- cultural problems.

Hoffman et al. (2013), argued that parenting a child with a disability was stressful to parents as they responded to the problem. In a study conducted by these authors, to examine children's sleep problem and severity for the mental illness of autism and

maternal stress levels using 72 mothers, they found that the mothers report of their children's sleep problems were eqivalent to their own perseption of their sleep difficulties. They also found that a childs age and gender, mothers sleep pattern, and disease severity as well as child's inability to sleep were significant predictors of maternal stress. They attributed this to the great demand and associated stress of caring for a chronically ill child by the mothers who acted as the child's primary caregiver (Hoffman, Sweeny, Lopez-Wagner and Hodge, 2013). A similar study by Datta et al., (2013) looked for demographic patterns, caregiver and child characteristics that predicted stress burden among primary caregivers of children with intellectual disability in India. Their study found that expressed emotions towards the child with intellectual disability, age of the child and income were significant factors that predicted caregiver stress (Datta et al., 2013). Dada and colleagues (2011) using a descriptive cross sectional study to look at factors associated with mental illness and caregiver burden in a Nigerian setting, identified 78% of the children's caregivers as their mothers. They also found that a child's level of functioning, psychiatric morbidity in the caregiver, and child's level of education were predictors of stress burden in their mothers and caregivers (Dada, Okewole, Ogun & Bello-Majid, 2011). Although these studies were on autism, intellectual disabilities and mental illness, the results obtained could be generalized to ADHD as they are all conditions of mental illnesses and sometimes are comorbid. Also, many of the primary care givers were usually the mothers of these children and even though the studies where from different parts of the world, the outcome for maternal stress was similar

Theoretical Foundation

Stress Theories

Whether emotional, psychological, parental or maternal,traditionally, stress is viewed as an adaptive function with a set of physiological response to a stressful stimuli (stressor). Even though perspections have changed to include cognitive and social elments in a holistic understanding of stressful responses, stress presents with emotional, terms of fight and flight response meaning that an outer stimuli can trigger the body's physiological changes to prepare it to fight the stressor or flee. After the experience, the body remains in the hyper-alert and arousal state for a time before homeostatic responses from the body balances out. The purpose of this section was to highlight various concepts about stress and its influence and relationship to health (Khrone, 2002; Rice, 2011).

Selye's Theory: Systemic Stress

Hans Selye (1907-1982), a Hungarian endocrinologist popularized the general adaption theory of stress. Selye defined stress as the non specific response of the body to the demands introduced to it and proposed that the body's stress was as a result of psychosocial and psychobiological general adaptation syndrome (GAS). Using a series of animal studies, he realized that when certain stimuli are applied intensely over a long period, it was capable of producing common effects in three stages. The initial stage produces an alarm response to the stimuli bringing about a mobilization of hormones such as adrenaline and neurotransmitters to resist the threat. The body however cannot maintain this stage for long if the stimuli continues thus a second stage of resistance mobilizes helping the body to further adapt. The body's parasympathetic nervous system

replenishes hormones released by the adrenal gland even though arousal remains elevated as blood glucose, cortisol and adrenaline levels remain high. During this stage the individual may appear normal but their blood pressure and heat rate are higher. If this mechanisms for resistance is compromised, the body becomes more vulnerable to health problems. If the stumuli persistists, the body enters the third stage of response which is exhaustion. In this stage the body's ability to resist the stimulant diminishes , the alarm response reappears but the body mechanism to fight is deplicted thus weakening the immune system, thereby exposing the body to damage, disease or death (Khrone, 2002; Rice, 2011).

However, it was observed by other researchers that there were additional componets in the stress cascade that Selye's theory failed to explain such as the cognitive aspects of the response to the stimuli. Holmes and Rahe in 1967 based on Selye's work, used a more systemic approach in resolving the issue raised by the Selye critics of how stressful events predicted future illness. Their work provided the means for scoring stress due to life events.

Lazarus's Theory: Psychological Stresss

Selyes work failed to address the psychological aspect of stress and it took the work of Richard Lazarus 1922-2002 an American psychologist, and a pioneer in the study of stress and emotion in relation to cognition, to help us understand this relationship. This work on emotions, defined emotions in terms of function and conditions as core relational themes including anger, fear, sadness, disgust and happiness. His work on stress was built around a cognitive theory to explain stress. Lazarus

described stress as a two way process that involved an external stressor providing the stress and a response from the individual experiencing this stress. Together with Folkman and Cohen in the 1908s, Lazarus, identified the cognitive appraisant processes as having a primary and secondary component that occurred simultaneouly. The explaination provided was that, when an individual was faced with a stressor, they had the ability to examine the potential threat which was primarily appraisaed as an event that was of no importance, good, negative, or challenging. The second part of the appraisal comes to play almost immediately as the individual looked at ways to cope with the situation. (Sincero, 2012, Lazarus, 2006, Glanz et al. 2002). A stressor as defined by Selye, Lazarus, Holmes and Rahe, are external or internal demand by the environment that were capable of creating an upset balance to the physical or psychological well being of an individual and required a restorative balance (Sincero, 2012).

French and Khan: Stress Model Theory

Other authors contributed to the stress theory. French and Khan's stress model theory incorporated elements from the biomedical and psychological theories. The biomedical theories focused on physiological mechanisms to explain the correlation between physical cirsumstances and biological stress. The stress model thus outlined the relationship between psychosocial stimuli and health outcome (Janlert & Hammarström, 2009).

Irrespective of the type of stress theory, all agreed that a stressful expeirnce involved a person and their interaction with the environment and the impact of that interaction. Stress does not affect all people equally, but can lead to illness and negative

experiences. The ability to cope with stress is the deciding factor of whether and how people will search for medical care and social support.

Social Support Theory

The social support theories are closely related to stress perspectives. These theories believed that in a family, friend and peer relational network, the ability to derive support from this network was essential for coping with stress. Thus the concept of support model was developed. The support model had two components: the direct and the buffer effects:

1. The direct effect model assumed lack of social network brought about immediate consequences. This component was used to demonstrate that the presence of human contact was fundamental to needs, and when lacking resulted in unfavorable reactions (Janlert & Hammarström, 2009).
2. The Buffer Effect Model Supports the assumption that social support acted as a shield against different types of stress such as issues of immigration status, unemployment, and lack of benefits (Janlert & Hammarström, 2009).

The current study was based on immigrant women coping with ADHD children as well as other problems they faced as African immigrants, and as minority women such as socio economic status, income level, unemployment, marital status, and immigration status. Literature ascerted that individuals in certain disadvantageous social status had higher stress levels than others people outside that social status since the social environment had some direct impact on the individual's life situations. All of the theories enumerated above provided the basis for undertstanding how the individual's social and environmental status helped to interprete their peculier situations into a harmless or

stressful one as well as how social status influenced the individual's ablity to cope or not cope with stressors (Kessler, 1979).

Social Cognitive Theory

Social cognitive theory was another lens to help understand behavioral changes in and around an individual. Bandura, (2001) in a book on social cognitive theory, (SCT) described SCT as an ongoing , dynamic process of how one's personal life, the environment they live in, and the human behavior interact together and exert a concrete influence on each other (Bandura, 2001). This theory was based on the belief that people learn not only from their life experiences, but also by observing other people's actions as well as the benefits or lack of those actions (Bandura, 2001; Schunk, 2001).

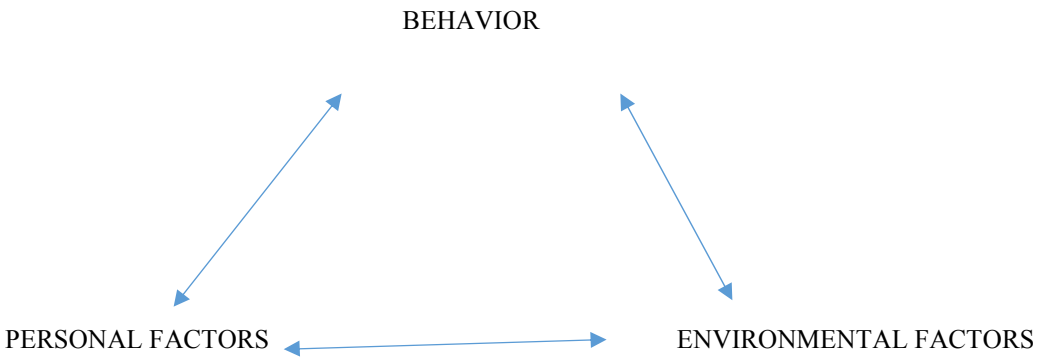

Figure 1. Overview of social cognitive theory and self efficacy: A conceptual model. Retrieved from www.utwente.nl. The diagram illustrated the interplay between behavior, the personal factor (Cognitive, affective, biological events) and the environment by Pajares, 2002.

Stress and emotion are products of cognition which is the way a person appraised or construed their relationship with the environment. In regards to this study, caring for a

child with a chronic condition such as ADHD can be appraised by the caregiver mother as a stressful condition which will affect her cognition. Though Lazarus' theory argued that emotional narratives were the best ways to understand stress by asking such questions as "what is stressful, to whom and why", Holme and Rahe provided the platform for the scales that were useful to measure stress; while Selye's theory provided the understanding of how stress affected the body and how it can cause illness. The models theory's to which Lazarus, French and Khan' s worked, contributed to immensly demonstrate how the individual was able to cope with stressful stituations with the help of social support and social cognition. Therefore, it was the objective of this study to use validated questionnaires to ask the mothers caring for a child with ADHD the what, who and why questions, and use parental stress factor as a measuring scale. The social support and social cognition served as management and coping mechanisms.

The Theory (Power) of Positive Thinking

The theory of positive thinking was based on the assumption that the mind was the source of reality as all thoughts represented a product of this reality. Studies show that personality traits like optimism and pessimism was able to affect many areas of your health and well-being. The positive thinking that typically comes with optimism was a key part of effective stress management. And effective stress management was associated with many health benefits. If one tended to be pessimistic they don't despair, one could learn positive thinking skills. Some health benefits of positive thinking include; increased life span, lower rates of depression and lower levels of distress, greater resistance to the common cold, better psychological and physical well-being, reduced risk of death from

cardiovascular disease, better coping skills during hardships and times of stress (Mayo Clinic, 2013).

Literature Review Related to Key Concepts

In coping with stress, individual's with good social support and social network in terms of family members, spouses, friends that cared for their social and material needs, were found in literature to be healthier, and thrived better both physically and mentally (Lincoln, 2000). Research also indicated that stress, was part of the outcome of lack of social communication which can trigger higher mortality, morbidity, depression and unfavorable health related issues. As seen above, the different theoretical frameworks used for studying social relations and health were based on stress and the individual's ability to cope in relation to health and well being. These theories were based on the ability or inability of adapting to stressful situations and the availability of resources to help cope with the stressful situation (Lincoln, 2000). In his article, Gordy (1996) argued that social support was equivalent to the combined effect of social, emotional and instrumental exchanges in which the individual appreciated themselves as important and meaningful to those people that were important to them. This definition was similar to that presented by Israel, Hogue and Groton, (1984) in defining social network as the specific set of linkages that a person used in interpreting life interactions and social behavior.

In addressing the factors that were associated with childhood ADHD as a stress factor for African immigrant mothers, the role of social and behavioral health determinats could not be underplayed. Social and environmental health factors are

influenced by behavioral factors, biological factors and health services; significant parental stress and family disruption due to ADHD in children had been suggested in many studies across the globe (Floyd & Gallagher, 1997; Hosseinkhanzadeh et al., 2013). Indicated in most cases, children suffering from mental illness particularly ADHD needed constant and substantial attention as they were more accident prone, disruptive, hyperactive, impulsive, hospitalized, and educationally challenged. Being a chronic disease, ADHD can impose tremendous stress on parents (Bennett, Brewer, & Rankin, 2011) especially on the mothers who are the primary care givers for these special needs children. Again literature posited that women in this situation were more emotionally stressed due to the close bond between them and their child, and because of other interactions with the environment as it affected the special needs child's responses, needs and behavior (Dada et al., 2011). Therefore, maternal stress when not carefully managed can trigger behavioral, social or cognitive mechanisms that can in turn affect the women's mental health in form of high level stress. If the stressor became overwhelming, it can affect daily life functions and with time can accumulate into health problems like family instability, depression, high blood pressure, anxiety and pain including the inability to properly care for the child with ADHD (Bennett, Brewer, & Rankin, 2011; Hosseinkhanzadeh et al. 2013; Khrone, 2002; Lazarus, 2006; Mensah, & Kiernan, 2010; Nursing theories, 2011; Rice, 2011).

Other social determinants and health inequalities that may lead to stress that affect mothers caring for a child with ADHD include the mother's age, gender of the child, ethnicity, social status and social network (McCarthy, 2000). Stress can also affect the

women's mental health leading to problematic health conditions including heart diseases depending on their social network and social support capabilities. In a research study of the risk factors for cardiovascular disease among people of African American decent, the Jackson heart study used a prospective, population based cohort design to research social factors like access to health care, source of care, insurance coverage as possible health determinant factors associated with behavioral risk for chronic diseases (mental health) including cardiovascular heart disease. However, results from the population studied suggested that some of the instruments used for measuring health outcomes did not necessarily consider certain health behaviors adequately, (Payne et al., 2005) nor did they consider the use of alternative health care by some particular race that was different from the general profile (Payne et al., 2005; Sincero, 2012).

For the population of women caring for their mentally ill children, this study was relevant as it related to mental health in terms of high level stress and as they are more reluctant to disclose their issues for fear of stigmatization, embarrassment and emotional over attachment (Hosseinkhanzadeh et al, 2013) so that in measuring effects, self reported evidence from this population may be biased hence the need for a careful research design.

Socio Economic Status

Based on research, there are indications that financial factors can also lead to elevated stress in any given population. Therefore, another good measure for stress in the

African immigrant mother caring for a child with ADHD was socioeconomic status (SES). Wealth distribution was a more effective measure for socioeconomic status as income was mostly associated with financial capital, occupational status and household income. Mothers living in U.S. with a child that had ADHD can be assessed for stress factors using wealth distribution (Bradley, & Corwyn, 2002). According to Berkman and Kawachi (2000), understanding socioeconomic status indicators such as education and income per capita was important. To adequately appreciate these factors, the highest level of education attained by the individual would provide better educational information and would serve as an important tool to measure. Income then becomes a useful socioeconomic indicator which is directly linked to wealth disposal and material condition that is influential to health (Berkman & Kawachi, 2000). With money, food can be bought; good housing, health insurance and recreational activities can be provided. Childcare which is also important to many mothers becomes more accessible, so also acquisition of clothing and general improvement of material conditions. Moreover, money can provide safe water, nutritious food, reduction of environmental hazards like waste treatment and removal. Thus, disposable income provided a buffering effect from daily stress in relationship to daily living and good condition of health (Berkman & Kawachi, 2000).

Socioeconomic position has a strong influence on an individual's working conditions and is dependent on their level of income and education, therefore, a strong socioeconomic position would reduce job stress, emotional stress, psychological stress, material and maternal stress as it provides the assurance that the home front was

adequately cared for. This factor, a strong SES, can tremendously reduce the burden of health problems for mothers caring for their ADHD children in terms of marital and material stress, cardiovascular diseases which are strongly association with stress and can provide a healthier living environment and medical support for their children. In contrast however, Groh (2007) suggested that poverty was a consistent correlate of stress and other mental health problems like depression and women were more directly impacted by it especially, women with minimal education, few social support and low income.

Health Discrimination

Health discrimination is another factor that impacts the health of a population. Whether pronounced or subtle it has the ability to influence the health and well-being of women caring for a child with ADHD. As in SES, gender, age, disability, social class and race are some of the factors that can be influenced by discrimination (Kreiger, 2000). Therefore, to measure discrimination these factors were considered such that the measurements would reveal the levels, types and forms of the discrimination, pathways involved, in a cumulative exploration of time or frequency; responses and resistance encountered and the effect on health and well-being for a target population. Discrimination was approached indirectly or directly as a health determinant, from the individual level or directly from the population level. To determine ethnic discrimination and associations with health outcome, Crengie (2012) in their research, measured racism directly at the individual level using 9107 randomly selected high school students from New Zealand. A diverse population of Europeans, natives, Asians and pacific groups, the study found that ethnic discrimination was commonly reported by indigenous and

minority groups and such people were more likely to report, extreme life styles, of smoking, alcohol abuse and feelings of suicide. The result of this study was similar to research results obtained in other areas including the United States. (Crengie, 2012; Guralnik, 1997; Krieger, 2000). This study by Crengie, (2012) was also applicable in the population of women caring for their ADHD children and helped us appreciate better the study of Hosseinkhanzadeh et al. (2013) that stated that discrimination by spouses, family members and the society, including a lack of social support and network produces psychosocial and emotional stress, family dysfunction, depression, and anxiety can significantly reduce an individual's quality of life (Hosseinkhanzadeh, 2013).

Income Dispersion

Income dispersion can be meaningful in increasing mean life expectancy such that proper redistribution of income per capita in a given society was helpful to people at the lower ladder of the poverty line as they climb up the ladder without necessarily causing those at the upper end of the line (the rich) to slide down too much. This way a better distribution of income and social amenities required for healthier living attainment. In his explanation, Kawachi (2000) maintained that the loss of health benefit suffered by the rich in a given society was usually significantly minimal compared to the health benefits to be gained by the poor when a proper income redistribution was in place both within and between societies (Kawachi, 2000). This observation was in keeping with Rodgers model of linking inequality and health. Rogers as cited in Kawachi (2000) upon examining cross sectional data obtained from different countries using the per capita GNP and income distribution measurement argued that the differences between the more

egalitarian countries with more equal wealth and opportunity distributions was about 5 to 10 years more in average life expectancy than for those countries with unequal income distributions. In addition Wilkinson (1997), in another document agreed that over time, mortality trends was lower in societies where there was better income distribution even after adjusting for poverty, average income, and other socioeconomic factors. This factor was used to explain the trend of lower levels of mortality observed in the more egalitarian societies as compared to no egalitarian societies as there is a much reduced health burden due to relatively less deprivation (Wilkinson, 1997). Unfortunately, for most of this population, women caring for a child with ADHD, income redistribution was a serious problem as majority of them were unpaid primary care givers, unemployed or underemployed. Even those employed were stressed out due to the high demand of care giving leading to poor job performance (Floyd & Gallagher, 1997).

Social Support

The impact of social support can be felt in an individual's ability of prevention, recovery and speed at which cure can be effected. A person's social needs can be promoted in many supportive ways including using communication devices, building relationships, and having access to information and heath materials through various sources including the Internet. The fundamental reason why social interaction was supportive was that a person's needs were met when they are provided with any kinds of support be it emotional support, instrumental support and / or informational support (Gordy, 1996).

Stress is a disease that is difficult to diagnose since most reports are self reported and there are no confirmatory laboratory tests (Lazarus, 2006; Selye, 1984). However, the condition was recognized and it is a very common psychiatric problem in the US and the world over. Stress occurs as a response of loss or adverse situations (Carney & Freedman, 2000). It is common in people with medically chronic illness (ADHD, anxiety disorder, autism, stroke, hip replacement, cardiovascular disease, infertility and pruritus) and amongst women caring for a child with ADHD especially where the condition is severe or co-morbid. Stress can interfere with the course or outcome of a medical condition irrespective of the fact that the stress onset could be due to that medical condition. It was noteworthy understanding that people without medical conditions also suffered from episodes of stress which may be resolved or become worse depending on individual situation (Carney & Freedman, 2000).

There are many factors affecting women caring for a child with ADHD. Such factors include socioeconomic instability, emotional stress, lack of or inadequate social support, discrimination and insufficient income. All of these factors including a plethora of daily living challenges both intrinsic and extrinsic increase the burden of stress experienced by this population. In additional, maternal health problems like high blood pressure, anxiety, depression and family dysfunction also increase this burden. Unfortunately, a negative emotional expression by these mothers could eventually create problems for them and even more problems for the child with the ADHD condition.

Therefore, it was and still is necessary to initiate epidemiology and public health research aimed at this population with the intent to provide strong interventional designs

that will fit these women and help them overcome their fears, and stress burden. Governmental policies and medical and social campaigns can help such women find positive social support and network that will reduce their life stressors and increase their quality of life. When a mother's quality of life improves, her mental well-being is elevated and her level of self-esteem increases. Also, additional income and general support form governmental and general public in recognition of this situation will greatly enhance policies and practice of managing the problem. Educating such women in recognizing where to find help, caring for their health, networking with others in similar situations are other ways in which intervention programs can help the cause of these women.

Health Disparities: Racial and Ethnic

Health disparities is the difference between groups of people that can affect how frequently a disease affects a group, number of people that can get sick, or the frequency in which a disease causes death. Many different populations are affected by disparities especially among racial and ethnic minorities including African immigrants, African Americans, and Latinos (Medline Plus, 2011). There continues to be an increase in health disparity in this population especially in regards to persons with stress (Ward, Nichols, and Freedman, 2010). Due to these disparities minorities experienced lower rates of quality health care, preventive care, and higher co-morbidity in conditions like heart diseases, cancer and other health issues and have a harder time obtaining health insurance due to their poor status (Ward et al., 2010). According to a study by Dunlop et al., 2003, investigating racial/ethical differences in rates of depression among preretirement adults,

African Americans reported more chronic conditions than Caucasians (88% vs. 77% reporting at least one such condition), especially for chronic conditions like arthritis, diabetes, hypertension, stroke, and obesity (Dunlop, Song, Lyons, Manheim, & Rowland, 2003). The study also found that people of Hispanic origin were similar to Caucasians in terms of chronic conditions, only exhibiting higher rate of diabetes and lower rate of heart disease. African immigrants especially women, African Americans and Hispanics had disproportionately more physical or functional limitations than Caucasians and were significantly less likely to consume alcohol or engage in regular exercise; had less education, income, and wealth; were less likely to have health insurance coverage; and were more likely to be unemployed. The greater prevalence of stress among ethnic minority groups observed in this study particularly among Hispanics was consistent with findings from other national studies (Dunlop et al. 2003).

Unfortunately the health needs of minorities with stress are high. Another challenge was that few health professionals have the required training and experience with the cultural differences of these populations resulting in such individuals experiencing difficulties when trying to access high-quality health care (Dunlop et al., 2003). Due to these disparities minorities suffering from stress have lower rates of quality health care, preventive care, and higher co morbidity in conditions like heart diseases, cancer and other health issues. They also experienced and have a harder time obtaining health insurance due to their SES (Ward, et al., 2010).

Despite the many researches on ADHD, it is still one of the most diagnostically controversial childhood conditions. However, much of the research have centered on

white, male, middle class individuals (Bryant, 2005). One reason for these controversies was that relatively little emphasis had been placed on cultural differences and diversity issues, such as ethnicity. According to Dwivedi and Banhatti (2005), culture exerts major influences in mental health, including behavior, tolerance, language, emotion, attention, and attachment, traumatic experiences, conduct, and personality, motivation, setting limits, parenting and child rearing. They opine that culture was important in how the environment in which an ADHD individual functions was structured and how that individual was understood and treated by others. It is therefore important to appreciate that the ADHD condition is intertwined between a complex interaction of the organic, cultural and environment factors. Another reason is that traumatized children tend to exhibit patterns of symptom clusters that mimic ADHD. As explained in Selye's theory, sustained traumatic experiences, such as child abuse and neglect, or failure to form a secure attachment in the early years of life, had the ability of creating a chronic state of hyper arousal (Lazarus, 1999) in a child that alters the neuroendocrine activities of the brain with cognitive, emotional, and behavioral changes (Dwivedi & Banhatti, 2005; Lazarus, 1999; Lazarus & Folkman, 2006; Selyes, 1983). Other reasons included international and cultural diversity and lack of treatment consensus among physicians as ADHD diagnosis varies internationally and even across the U.S.

African Immigrants in the United States

The United States migration information source noted that in 2009, two-thirds of the African immigrant's population in the U.S. was from East and West African especially from Nigeria, Ethiopia, Egypt, Ghana, and Kenya (immigration

information.org). African immigrants reported higher levels of English proficiency and educational attainment than other foreign born overall. During this period, 2009, an estimated 1.5 million African immigrant resided in the U.S. They made up 3.9 % of the total immigrant population and over one third of them resided in big cities like New York, California, Texas, and Maryland. The population size of the state of Maryland was 5,884,563 out of which 63.5% are African immigrants, and African Americans (United States Census Bureau, 2013). From this population, the identified population of children currently with the ADHD condition in Maryland is 94, 793 out of which 25,313 African immigrant African American children have been identified with the condition (National Survey of Children's Health, 2012).

Literature Review Related to Key Variables

Prior to 1965 many Africans would not voluntarily come to the U.S. and those that did came to study with the intent of going back to their home countries after their studies or for diplomatic missions. Political instability in their home countries and due to changes in immigration policies, African immigrants now are a fast-growing segment of the immigrant population. One literature estimated that Africans immigrated who came to the USA in 1985 were about 17,117. By 2009 that number had escalated to 1.5 million according to the United States Census Bureau, 2013 (United States Census Bureau, 2013; Seller, Ward, & Pate, 2006).

The modern African immigrants arrived as university students and remained in the U.S. to pursue occupational and economic opportunities but still maintained close ties to their countries of origin, contributing annual remittances to family members in those

countries, and making regular home visits (Apraku, 1991; Seller, Ward & Pate, 2006.). These African immigrants, as with other immigrant from other nationalities, are faced with multiple concerns including cultural displacement, housing difficulties, language and communication barriers, and problems negotiating medical and educational systems (Seller, Ward, & Pate, 2006). However, Ward et al. argued that though these issues may affect all immigrants, women immigrants in particular were at greater risk because of the changes in gender role expectations and conflicts, race and new minority status, decreased assistance from extended family members, and increases in socio-relational responsibilities such as working outside the home and managing family resources in the U.S. as well as in their home country irrespective of the fact that some have gained naturalization (citizen) Status. This unique situation creates a set of risk factors for health problems among the African immigrant women (Ward et al., 2006). In a qualitative study of 5 participants to explore major health concerns in this population, Ward et al. found depression as a major health concern for these African Immigrant women. Though the study did not measure levels of depression nor did it make a clear distinction of whether these women suffered depression due to stress or whether the term depression and stress were used interchangeably. However, results from their investigation noted that the African immigrants were affected by lack of social support and network, gender role stress, racism and discrimination (Ward, et al., 2006).

In resonance with the study by Ward and his colleagues, Prudent, Johnson, Carroll, and Culpepper (2005) maintained that African immigrants lacked support especially from extended family as is practiced in their home countries and that the

American environment was not supportive of their interpretation of child behavior and traditional parenting style thus further creating tension in an already stressful environment (Prudent et al., 2005).

The birth of a child with a disability affects the dynamics and interaction among family members in any environment leading to possible crisis within family. The issue of ADHD though not necessarily life threatening in children is a mental health problem with very serious consequences among African families. Any sign of mental health problems are often seen as a stigma that can lead to serious problems in the parental system, marital relationships, sibling relationships, including among friends and neighbors. Such a change in the family dynamics can create emotions and physiological thoughts and pave the way for vulnerability in cognitive activities the outcome of which are behavioral problems, stress, depression and anxiety. The birth of a child with ADHD especially the hyperactivity type of the disorder, can impact the families significantly, because it is visible. Research agreed that parents of children with ADHD faced more psychological and emotional problems than parents of normal children (Hosseinkhanzadeh et al., 2013). But African immigrant mothers with a child with ADHD faced even worse problems.

The challenges associated with parenting a child with ADHD are unique and particularly stressful to the mothers of these children as they were mostly the first contact care giver for them. Those mothers, literature has found experience more stress than parents of normal children (Hoffman, Sweeney, & Hodge, 2009). A study conducted by these authors, found that the 104 mothers with a child having disability that participated

in the study had higher levels of stress compared to the 342 mothers of normal children measured using the parenting stress index scale. They maintained that the only score that did not differ between these groups was the attachment subscale that registered a lack of emotional closeness and a cold parent-child interaction. Even at that, the study found a close relationship pattern between the mothers and their disabled child.

A case study conducted by Prudent et al., (2005) captured the reality of the African immigrant's perspective of the cultural mentality of the Africans and African in Diaspora in respect to the particular problem of caring for a child with ADHD. In this study, the case was a 25 year old male with ADHD history of African origin. From the age of 3 he presented with impulsivity, hyperactivity and inability to focus on direction. He had problems at school and in the neighborhood. After diagnoses his parents accepted therapy but not medication until much later. Shortly afterwards, medication was withdrawn as it made the man sluggish with sleeping difficulties and loss of appetite. Social services threatened the parents for negligence towards the child for stopping his medication; the neighbors blamed the parents for inability to discipline their child. The parents believed a more disciplined and controlled environment would help the man and he was sent to a boarding school which was of no effect. This study depicted some of the cultural influences of the African immigrant environment and the way they perceived the ADHD condition as a discipline issue and not a mental illness. One reason for this perception was because of the issue of stigmatization as any case of mental illness was labeled as "madness" in their cultural setting Ward et al. (2006) or from unnatural forces (Prudent et al. 2006).

Summary

In the traditional African setting, the family's perception of the cause of the ADHD behaviors is very critical. Whether the cause was natural or unnatural was extremely important in the African immigrant belief system. "Natural" ailments were often attributed to nature while "unnatural" ailments are attributed to bad spirits or punishment inflicted by God in which case treatment may involve disciplinary actions, herbal medicine and religious intervention. In contrast, ADHD diagnosis in the US is mainly a medical one that involved pediatric and family medicine providers, social workers, and psychologists (Prudent et al., 2005). In the African setting, a child would not be taken to a primary care physician for care of a behavioral problem. ADHD manifestation as a negative behavior usually would be handled by parents, extended family, and school teachers through verbal discipline including preaching to the child, comparing the child to others, begging the child to behave, and humiliating the child or by corporal discipline and punishment inflicted by any member of the family, neighbors, and schoolteachers, all of whom are given full authority to educate and "correct" the child (Prudent et al., 2005).

Immigration to the U.S. thus posed a complex dimension to raising children. Most families find themselves devoid of the support of the extended family, in an environment that is not supportive of their interpretation of child behaviors and traditionally accepted parental disciplinary style in which case the child with ADHD most likely would be sent back home or to a boarding school in their country of origin. Although with increasing awareness of the condition the African immigrants more likely would combine

therapeutic foods that are considered cold in nature, natural sedatives and purgatives from traditional herbal medicine, religious treatments, and Western medicine to treat illness. Examples of folk treatments for ADHD as enumerated by Prudent et al., (2005), include mint tea, sweetsop (apple custard), or leaf teas (usually hot drinks) and baths with boiled leaves which are often used as natural sedatives and much prayers (Prudent et al., 2005). It was therefore the aim of this study to use a quantitative approach to gain understanding of the variables that affect stress in the context of the African immigrant mothers caring for a child with ADHD.

Chapter 3: Research Method

Introduction

In this chapter, I introduce the methodology employed for this research including the design, sample population, sample size, data collection process, instrumentation, operationalization of variables, data analysis plan, threats to validity, and ethical procedures. An overview of the study design is provided to include the rationale for using the cross-sectional design and its importance in studying the selected population.

The purpose of this study was to examine whether an association existed between childhood ADHD and the level of stress experienced by African immigrant mothers living and caring for a child with ADHD in the United States. Another purpose was to statistically measure whether the African immigrant mother caring for a child with ADHD had a more significant stress burden than the African American mothers also caring for a child with ADHD. The study was quantitative, using a case-control research design. This empirical research focused on the fact that there was a significant amount of literature on parents caring for a child with ADHD and their stress levels, but there was inadequate literature to address the stress level of the African immigrant mothers caring for a child with disability such as ADHD.

Research Design and Rationale

A good research design helps to drive the study in such a way as to reduce or minimize the introduction of error. For this study, the research methodology was

quantitatve. The design was a population based case-control design to measure association and compare relationships using a questionnaire. This design was used predominantly by studies where relationships were examined between properties and dispositions (Nachmais & Nachmais, 2008). African immigrant women are confronted with many concerns including cultural displacement, housing, language differences, and sometimes, communication problems. Though these issues pertained to most immigrants, the African immigrant women were especially at risk because of conflicts in changing gender expectations, as well as race problems, new minority status, decreased extended family assistance, and decrease in social responsibilities (Sellers, Ward, & Pate, 2006). All of these variables, including caring for a child with ADHD, created a significant set of risk factors that could lead to many health problems. Therefore, this study used a case-control design to find the odds of ADHD being a risk factor for this population.

The study population was divided into four groups (a) African immigrant mothers caring for children with ADHD (b) African American mothers caring for a child with ADHD (c) African immigrant mothers caring for children who do not have ADHD, and (d) African American mothers caring for children who do not have ADHD for comparison. All participants were residents of the state of Maryland. The case-control design used for the study was useful as it allowed for the study to measure different variables and simulteneously estimate the odds (Creswell, 2009; Nachmais & Nachmais, 2008). The significance of the quantitative design was for generalizability within this population.

Population

The main target population of my study were immigrant mothers of African origin caring for a child with ADHD. A second case group were African American mothers caring for a child with ADHD. These were compared to two control populations of African immigrant mothers caring for a child without ADHD and African American mothers caring for a child without ADHD for different variables. All participants were selected from the state of Maryland. My participants pool was from identified schools that cared for mentally ill children with ADHD. However, since the condition in the African immigrant population was still rather sensitive, additional recruitment for mothers of children with ADHD was through the CHADD, through NAMI and in identified churches with high African immigrant populations. Data collection was accomplished through questionnaires.

Sampling and Sampling Procedure

The case-control study was used to examine whether an association existed between childhood ADHD and the level of stress experienced by the participants who are African immigrant mothers who were living with and caring for a child between the ages of 6- 17 years with ADHD in the United States. For all the mothers caring for a child with ADHD, inclusion criteria was that the child had been diagnosed by a physician using the DSM-IV recommendation for having ADHD (Dada, Okewole, Ogun, & Bello-Mojeed, 2011; Mensah & Kiernan, 2009). The inclusion criteria for the other group of mothers were that they were of African descent caring for a school age child and could read and write the English language. The 6-17 years old age groups were chosen based on

other prevalence studies for school age children and because the PSI-4-SF instrument was specially designed for children ages 6-12 years old, which was within this age bracket. The exclusion criteria included that mothers of adult children with ADHD were excluded as were mothers who were unable to read and write in English. The choices on the PSI-4-SF ranged from strongly agree to strongly disagree. The participant's pool helped to test the hypothesis of whether childhood ADHD was a stress factor for African immigrant mothers caring for a child with ADHD. The sampling strategy used was convenience sampling (Nachmais & Nachmais, 2008). Based on the literature, this method was best if the group size was 20 or more so my sample size of 379 was more than adequate to reduce Type II error in this population, especially with a 50% response rate (Galin, 2009; Nachmais & Nachmais, 2008).

Sample Size Calculation

The population size of the state of Maryland was 5,884,563, out of which 63.5% were African Americans (United States Census Bureau, 2013). From this population, the identified population of children currently with the ADHD condition was 94,793 (United States Census Bureau, 2013). Of that number, 25,313 African American children (6-17 years) were identified with the condition (National Survey of Children's Health, 2012). The number of participants was statistically calculated for actual sample size. This calculation was based on the Roasoft internet calculator software EZSurvey version 2002d. The calculation used the sample size formulae:

$x = Z(^{c}/_{100})^{2} r\,(100-r)$

$n = {}^{Nx}/_{((N-1)E^{2}+x)}$

E=Sqrt $[^{(N - n)x}/_{n(N-1)}]$

n= sample size, E = margin of Error, N = population size

r =fraction of responses needed and Z(c/100) = critical value for the confidence level c. Normal distribution was assumed.

The calculator used a sample size power calculation of 95% confidence interval with a 5 % margin of error for a 50% response distribution. The resulting sample size was 379 participating children (Raosoft Sample Size Calculator, 2013). A similar total sample size of 379 was obtained using a G*Power software, version 3.1 (Faul, Erdfelder, Lang, & Buchner, 2009). For this calculation, an a priori power *t*-test for difference between two independent means was used. The observed effect size was set at 0.5, for a moderate effect and based on the Cohen's *d* effect size index; alpha was set at 0.05 and power at 0.95.

However, since some mothers may have more than one child with the condition, the estimated number of participating mothers may be lower than this figure. All participating mothers were then divided into the four categories mentioned above.

Procedure for Recruitment, Participation, and Data Collection

Procedure for Recruitment

For this survey to be conducted, permission was obtained from the Walden University Institutional Review Board (IRB) with approval number 10-08-14-0173189, the Maryland Board of Education, and from principles of the identified schools or directors of the organizations where participants were recruited. Participants were asked

to fill out the informed consent forms if they were interested in the study and were informed that participation was voluntary. Participants were informed of their freedom to decline being in the study with no penalty to them or their children and their right to stop participation at any time during the process without fear of reprisal.

Participation

Once participants were identified based on the inclusion/exclusion criteria mentioned, they were read an introductory script describing the study along with a prepared package that included the consent forms and questionnaires. Data were populated over a 6 week period. However, there was some flexibility in data collection to accommodate most participants who agreed to be in the study. Incorrectly filled in or uncompleted data were counted as missing data. Participants were informed that this survey was strictly for research purposes alone and information obtained was not going to be shared with others.

A copy of the demographic questionnaire is included as Appendix A. Appendix B is the letter of agreement from the author of the instrument (the company, PAR, which sells this instrument on behalf of the authors provided authorization to use the instrument upon lawful purchase). Appendix C is the instrument to be used and Appendix D is the letter of cooperation.

Data Collection

In order to collect data from the participants, I put together packets containing both questionnaire and consent form in an envelope. These packets was distributed to

participating mothers and collected after they responded to it. All participants were recruited from the state of Maryland. Recruitment areas included schools and organizations including CHADD, NAMI, and African churches with identified large immigrant populations. Permission was sought and obtained from these organizations to allow me to post flyers informing mothers about the project. Also with permission, I was allowed to distribute the research questionnaires and was able to collect them within the agreed time frame. Demographic data provided by participants included the gender of their child with ADHD; the number of children in their household ; the number of children in the household with ADHD; race; marital status; religion; and the mother's level of education, income and employment status. Other data collected were on the PSI-SF questionnaire. At the end of the process, participants were thanked for their time.

Instrumentation and Operationalization of Construct

The DSM-IV (APA, 2011) requirement for ADHD mandated that for a child to meet the criteria for ADHD diagnosis, the child must have the condition in at least two different settings, consecutively for at least 6 months. Some studies that researched this condition used the Disruptive Behavior Disorder (DBD) rating scale described by Pelham et al. (Ambuabunos, Ofovwe, & Ibadin, 2011); the Maternal Behavior Research Instrument (MBRI) by Schaefer et al., in 1959 (Oh, Park, Suk, Song, & Im 2012), and the Parental Stressor Scale by Carter, Miles, Buford, and Hassanein (1985). However, for most studies on parental stress for children with ADHD, the Parenting Stress Index by Abidin (1995) was most useful. This study also used the PSI-4-SF. Parental stress and total stress were measured using the PSI-4-SF. The results obtained from the study will

help create awareness for the situation of this population. The case-control design was determined from literature to be the best method to examine association of different variables likely associated with the condition at the same point in time (Creswell, 2003). The instrument used for the study was existing instruments with established validity and reliability of scores from previous work obtained with permission. The use of high content validity instruments was to help reduce Type II error and provide better internal consistency (Creswell, 2003).

Operationalization of Variables

All participating mothers completed the PSI-4-SF (Abidin, 1995). The PSI-4-SF offered a quick and easy method of screening and measuring parental stress. It was defined as a self-report measure developed from the perspective that the stress a parent experiences was a function of characteristics of both the child and the parent, as well as their unique style of interaction (Abidin, 1995). The original PSI was a 120-item version (Abidin, 1995). The 36-item short version was developed identical to the original in response to researchers demand (Abidin, 1995). The 36-item version was composed of three subscales: parental distress (emotional distress in the parenting role), parent-child dysfunctional interaction (problematic parent-child interactions), and difficult child (problematic child behavior or demands (Abidin, 1995). Items were scored according to a 5 point scale of 1 being strongly agree, 2 being agree, 3 being not sure, 4 being disagree, and 5 being strongly disagree (Abidin, 1995). A total raw score of greater than 90 indicated elevated stress, as it falls above the 90th percentile in the normative group(Abidin, 1995). Additionally, a defensive responding scale was computed based

upon items commonly endorsed by all parents, in order to determine whether the respondent's answers should be considered valid (Abidin, 1995). When a score was lower than 11 it fell on the defensive responding scale which is considered as defensive, making the PSI-4-SF protocol's validity questionable (Abidin, 1995). Test-retest reliability of the PSI-4-SF total score and the subscales ranges from .68 to .85 (Abidin, 1995). Internal consistency (alpha) for the short form total score and subscales ranges from .80 to .91 (Abidin, 1995; Nereo, Fee, & Hinton, 2007). The PSI-4-SF had been used to study diverse populations including parents of children with health problems and disabilities and provide evidence of the relation between parenting stress and support, income, adolescent parents, African American, developmental disability, and lower SES with data to support validity in these populations (Abidin, 1995).

The PSI-4-SF measurement instrument for this study's variables, obtained with permission, made it possbile to analyze data obtained through regression analysis. The research design was a case-control research design employing convience sampling of participants. The research questions and hypothesis in Chapter 1, reflected the usefulness of this type of analysis.

Data Analysis Plan

Statistical Package for Social Sciences (IBM SPSS) Version 21 was the software used for data analysis. The PSI-4-SF which was the instrument for the study was hand scored using the PSI score card. A linear regression was used to analyze the combined groups of mothers. However, the statistical tests performed were based on whether the assumptions generated in the research hypothesis were met as described below.

Research Questions

In other to appreciate the problems faced with this population study, the research questions are again revisited in this section.

Research Question 1: To what extent was childhood ADHD associated with stress among African immigrant mothers?

$H_0$1: Childhood ADHD was not associated with maternal stress in African immigrant mothers caring for a child with ADHD.

H_A1: Childhood ADHD was associated with maternal stress in African immigrant mothers caring for a child with ADHD.

Covariable 1: Immigration status

Dependent Variable 1: Maternal stress

Independent Variables 1: Childhood ADHD, socioeconomic status, level of maternal education, and marital status.

Research Question 2: To what extent was the gender of a child with ADHD associated with stress among African immigrant mothers?

$H_0$2: Child gender differences were not related to stress among African immigrant mothers.

H_A2: Child gender differences were related to stress among African immigrant mothers.

Covariable 2: Gender

Dependent Variable 2: Maternal stress

Independent Variable 2: Caring for male or female ADHD child.

Research Question 3: To what extent were immigrant mothers of African origin who were caring for their ADHD affected child different in stress level compared to African American mothers also caring for their ADHD affected child?

Research Hypothesis 3

H_0:3 Immigrant mothers of African origin who were caring for their ADHD child had similar stress levels compared to African American mothers also caring for their ADHD child.

H_A:3 Immigrant mothers of African origin who were caring for their ADHD child had different stress levels compared to African American mothers also caring for a child with ADHD.

Covariable: Immigration Status; Dependent Variable: Maternal Stress; Independent Variables: Childhood ADHD.

Research Question 4: What was the difference in stress level between mothers of African origin caring for a child with ADHD and mothers of African origin, of similar age, caring for a child without ADHD?

Research Hypothesis 4

H_0:4 Mothers of African origin caring for a child with ADHD did not experience more stress than mothers of African origin caring for a child without ADHD.

H_A: 4 Mothers of African origin caring for a child with ADHD experienced more stress than mothers of African origin caring for a child without ADHD.

Covariable: Age; Dependent variable: Maternal stress; Independent variable: Care of ADHD child and care of child without ADHD.

I measured the data by quantitative methods based on standardized data collection, and survey questionnaires as described by McKenzie, (2008). In this study, instruments used for the research included demographic questionnaires, in which 9 variables were measured (race, age, education level, family history and gender). Descriptive data was processed and analyzed for frequency distribution using the SPSS. Instruments used were questionnaires. The data analysis included descriptive statistics showing a histogram with a normal distribution curve. Data collected from the mothers were analyzed for descriptive and inferential statistics using SPSS.

The frequency distribution examined the pattern of response to each independent or dependent variables being investigated (Nachmais & Nachmais, 2008). Univariate statistics was used to measure mean, which was the sum of all the observations, median the positional measure that divides the distribution into equal parts, the mode representing the category of observation that most frequently occurred in this distribution, variance describes how the distributions were spread out, and standard deviation indicative of homogeneity in the population sampled was used to construct a normal distribution curve using SPSS statistical software. When the assumptions for the study were met, a bi-variate or multivariate inferential statistics was measured. A measure of variance and degree of freedom was performed using a t-test to measure continuous variables vs. a dichotomous independent variable. For comparing independent, categorical variables, a Chi-square test was performed. Depending on the sample type, a non-parametric test like Mann-Whitney or the Wilcoxon matched test was used if the studies assumptions were not met for the *t*-test. Bivariate analysis with each individual

variable and a multivariate analysis with all the variables was used to obtain the unadjusted and adjusted odds ratio (*OR*) (Lingineni, Biswas, Ahmad, Jackson Bae & Singh, 2012). The odds expectation that groups would differ in the PSI-4-SF subscales was also tested using bi-variate correlation for dependent continuous variables vs. independent continuous variables, and a multi regression for dependent continuous variables vs. two or more independent continuous variables. The expectation that groups differed in the PSI-4-SF subscales was tested using ANOVA by comparing a continuous dependent variable with one or more independent categorical variables. However, where the assumptions were not met, the non-parametric Kruskal-Wallis analysis of ranges applied. The Levene's test for quality of variance helped to indicate whether our hypotheses of relationship between variance held true or not. Therefore, where the Levene's test of less than 0.05 was significant and if it was greater than 0.05, we assumed there was no significant difference. All missing data were reported.

Correlation measures relationships between two or more naturally occurring variables. Logistic regression, linear regression, Pearson Correlation, was used to measure the degree and the direction of the linear relationship between any two statistically designated variables (Marrow, 2008). If each independent variable and coverable was categorical and variable was normally distributed, a *t*-test or ANOVA was performed. If each independent variable and covariable and dependent variable was not normally distributed, a Mann-Whitney U test or Kruskal Wallis was performed. If each independent variable and covariable and dependent variables were continuous and normally distributed a Pearson's (r) was measured.

Where each independent variable and covariable and dependent variables were continuous but not normally distributed, a Spearman's rho was measured.

If dependent variable was normally distributed a linear regression analysis was performed. If a dependent variable was not normally distributed, a transformation to binary categorical variable occurred, and the median was used as the cut point to integrate the findings in a way to help provide better knowledge of the factors surrounding the disorder and maternal stress. These measurements are summerized in the table below.

Threats to Validity

Validity of measurement was used to determine whether the instruments measurement was accurate and measured what it was supposed to measure as described by Abidin, (1995). There were basically three types of measurement validity considered. Construct validity, empirical validity and content validity as described by McKenzie, Neiger, andThackeray (2005); Nachmais, and Nachmais (2008) Construct validity was established in this study by relating the measuring instrument to the general theoretical framework in which the instrument was used to determine the degree of inference that was statistically obtained from the design. The construct referred to the initial concept, notion, and hypothesis and questions which determines the data to be gathered and how to gather it (Golafshani, 2003). The empirical validity compared whether the predicted result had any strong relationship with the actual results obtained from the study when measuring similar variables (Nachmais & Nachmais, 2008). The content validity was

used to determine the relevance of the measuring PSI-4-SF instrument to the characteristic of the variables measured.

Reliability for the design defined the consistency of the measurement instrument in generating accurate results over time in a reliable and repeatable manner. For the design to be valid over time, the degree of measurement remained the same every time. Also, the measuring instrument was stable and measurements were similar within the given period of time (Golafshani, 2003).As all of these criteria were met by the design the internal consistency was deemed reliable and the design valid. However, the PSI-4-SF came with a given level of reliability (Abidin, 1995). Yet, conducting a test-retest measurement for this particular population of African immigrant mothers caring for a child with ADHD may have provided instrument stability to the design as a strong indicator of repeatability. The large sample size and the confidence intervals was to help establish a high precision (Galin, 2002) and ensuring that the participants were correctly assigned to their respective groups minimized threats to internal validity. Understanding which statistical test was appropriate for this population and the use of both parametric and non-parametric test appropriately (Creswell, 2009), was also intended to reduce threats to external validity.

Ethical Consideration

The vulnerability of the target population was taken into careful consideration to ensure all ethical matters were adequately addressed. IRB approval for the study was obtained and all participants signed a well-articulated consent form and kept a copy, while the researcher explained the contents and study procedure to the individual's level

of comprehension before the questionnaires were filled out. Ethical considerations during sampling included the use of informed consent. With this consent, participants were provided with explanation of the study purpose, procedures, benefits and risks, confidentiality and privacy for health information and how participants can be affected. Participants were told that their information was only be used for the research alone and would not be shared. Consent was voluntary on the part of all the participants. The study ensured participant safety as primary concern, respect for the person, beneficence and justice.

Summary

This disertation used a quantitative survey design with a convenience method of data collection. The survey instrument was the PSI-4-SF and a 9-point demographic form. The instrument used for the study was existing instruments with established validity and reliability of scores from previous work obtained with permission. The use of high content validity instruments was to help reduce type II error and thus provided better internal consistency (Cresswell, 2003). The case-control design was determined from literature to be the best method to examine association of different variables likely associated with the ADHD condition.

Chapter 4: Results

Introduction

The purpose of this study was to examine whether an association exists between childhood ADHD and the level of stress experienced by African immigrant mothers and African American mothers caring for a child between the ages of 6-17 years with the condition. The study was done in the state of Maryland which had a high presence of African immigrants and African Americans. Four different research questions and hypotheses were tested using the responses from the 36-point PSI-4-SF and a 9-point demographic questionnaire to measure the stress level for this population as stated. The research questions and hypotheses were:

RQ1: To what extent is childhood ADHD associated with stress among African immigrant mothers?

$H_0$1: Childhood ADHD was not associated with maternal stress in African immigrant mothers caring for a child with ADHD.

H_A1: Childhood ADHD was associated with maternal stress in African immigrant mothers caring for a child with ADHD.

RQ2: To what extent was the gender of the child with ADHD associated with stress among African immigrant mothers?

$H_0$2: Child gender differences were not related to stress among African immigrant mothers.

H_A2: Child gender differences were related to stress among African immigrant mothers.

RQ3: To what extent did immigrant mothers from African origin, caring for their ADHD affected child, have a different stress level than African American mothers also caring for their ADHD affected child?

$H_0$3: Immigrant mothers from African origin, caring for their ADHD child, had similar stress levels when compared to African American mothers also caring for their ADHD child.

H_A3: Immigrant mothers from African origin, caring for their ADHD child, had different stress levels when compared to African American mothers also caring for their ADHD child.

RQ4: What was the difference in stress level between mothers of African origin caring for a child with ADHD and mothers of African origin, of similar age, caring for a child without ADHD (a healthy child)?

$H_0$4: Mothers of African origin caring for a child with ADHD did not experience more stress than mothers of African origin caring for a child without ADHD (a healthy child).

H_A4: Mothers of African origin caring for a child with ADHD experienced more stress than mothers of African origin caring for a child without ADHD (a healthy child). In Chapter 4, I will present the results of the various analyses, including descriptive statistics for key variables, inferential statistics using IBM SPSS Version 21 software, the results obtained from the associated hypotheses of the four research questions posed, and the associated tests. My presentation of results will be followed by a summary.

Data Collection

Over a 6 month period, from October 2014 to April of 2015, 300 packages containing a demographic sheet, the PSI-4-SF and a copy of the informed consent was distributed in churches, schools, and ADHD clinics within the state of Maryland. A sample size approximation was conducted based on alpha level (significance level), effect size, and power. The alpha level, also known as the *p* value, is the probability of a Type I error occurring or the capability to reject the null hypothesis when it is true. For this study, as with many other studies, the alpha level was set at 0.05 to claim statistical significance, meaning there are five chances out of 100 for rejecting the null when it is true (Creswell, 2010, Munro, 2005). The effect size measured the strength of the relationship between the dependent and independent variables and is given as r^2. For this study, the effect size was the measure of the relationship between maternal stress and caring for a child with or without ADHD, socioeconomic variables, marital status, and African immigrant or African American status. Effect sizes can be calculated as small, medium (moderate), or large effect at 0.02, 0.15, and 0.35 respectively (Galin, 2012, Munro, 2005).The statistical power of a study is the probability that a Type II error will not occur or the failure to reject the null hypothesis when it is false (Galin, 2012, Munro, 2005).

In Chapter 3, the sample size was calculated to be 379 children. Based on the assumption that some mothers will have more than one child with the condition, 300 questionnnaires were distributed randomly in a convenient sampling format to obtain a high participant response rate. 130 participants responded by filling out their packages.

Of these 130 respondents, five were eliminated for missing data. 125 completed both surveys. The data collection plan was consistent with the original plan outlined in Chapter 3, except the response rate was much lower than expected over the 6 month period. After 6 months, data collection concluded. A decision was then made to conduct a post hoc power analysis for this output to justify whether this adjusted sample size had enough power to statistically analyze the results of the study.

A post hoc analysis was conducted using a G*Power software, Version 3.1 (Faul, Erdfelder, Lang, & Buchner, 2009). Using the *t*-test with an observed effect size of 0.5, for a moderate effect based on Cohen's *d* effect size index for independent samples, I ran *t*-tests for the two independent and normally distributed populations. The mother's age was the independent variable since it fulfilled this assumption and stress was the dependent variable.

Therefore, for the equation $d = (\mu 2 - \mu 1) / \sigma$

We have,

d = mean ageM for AIADHD- mean ageM for AAADHD /standard deviation

d = (44-40) /8=0.5. (See Table 3)

With an alpha probability level of 0.05 and a sample size of 125, observed power of 0.869 was obtained. The actual study sample size of 125 yielded a power of 0.869, and therefore, the 125 participants was deemed adequate.

From the observed power of 0.869 sample size was calculated as:

$$n = \left[\frac{z_{\alpha/2}\sigma}{B}\right]^2$$

$\sqrt{\frac{10^2}{18} + \frac{10^2}{18}} = 2.36$

3/2.36 – 1.96 = -0.69

P ($z \leq$ -0.69) = 0.31 to see a 3 point difference

100(2) $(0.869+1.96)^2/ (3)^2 = 177$

100(2) $(0.869+1.96)^2/ (4)^2 = 100$

n = sample size, *z* = 1.96, *p* = power. Ȯ = standard deviation. μ = sample mean

From this calculation, my response rate was 31% power to see a 3 point difference. A sample size from 100 to 177 was adequate for the study to see a small to medium effect. Power for this study was set at 0.80 to minimize the chances of committing a Type I error (Galin, 2012, Munro. 2005). The study was set to a power of .80 at alpha of 0.05 and r^2 of 0.5 for a small to moderate effect using Cohen's (1988) criteria. Moreover, many other authors including Gagliano Lambertti and Germano (2014), Sale and Joska (2014), Whitney and Smith (2014), and Theule, Wiener, and Rogers (2011) used sample sizes of between 88-150 participants for similar studies effectively. Therefore, a sample size of 125 with a response rate of 33% (125/379) was justified adequate enough to run the statistics for this population study, even allowing for expected attrition and possible moderating factors.

According to Abidin (2012), if one question was uncompleted on the PSI, it was suggested to add up the total score for that quadrant and divide by the number of answered questions to give an estimate of what the response would have been and use this value for the total scoring. Where two or more questions were omitted, that survey

was eliminated as missing data. Out of the 125 participants, some mothers felt uncomfortable giving their date of birth. In such cases the mothers were asked to give their age. Three out of this total refused to comply. The PSI-4-SFwas used to measure maternal stress. This 36 question scale instrument measured parental stress, child related stress, and the mother caring for a child's related stress. These correspond to the three domains: parenting distress (PD), which included such statements as "I feel trapped by my responsibility as a parent," difficult child (DC), which included such responses as "Sometimes my child does things that bother me just to be mean." and parent-child dysfunction interaction (PCD-I), which included such responses as "My child makes more demands on me than most children." Mothers rated their agreement with each item on a 5-point scale from 1(strongly agree) to 5 (strongly disagree). Each domain generated a stress score which was coded. Included in the PSI-4-SFpackage was a hand scorable answer sheet, which the examiner used to recode, record, and score the answers from the various subscales. From these subscales, a domain raw score total was obtained, which was converted to percentiles for reference purposes. A higher score on a domain represents a greater level of stress as perceived by the population's mothers. The combined domain had a cut-off point and levels of maternal stress above this point was indicative of high stress. The normal range for scores was within the 16th to 84th percentile (raw scores of 54-109), scores of 85th to 89th percentile were considered high and scores of the 90th percentile (raw scores of 110+) and above were considered clinically significant (Abidin, 2012, p. 59). According to research reports, results falling above the 90th percentile reflected a high level of total parental distress (Abidin, 2012;

Theule, Wiener, Roger, & Marton, 2010). However, the percentile values were not included in this study analysis. The PSI-4-SF had been used fequently for its sound reliability and validity as discussed in Chapter 3 (Abidin, 2012) and only the raw scores for total stress was used to measure the level of stress experienced by the mothers in this population.

The raws scores, percentile, and demographic data were mannually exported from the PSI score sheet into SPSS Version 21.0 software. In order to obtain the best possible distribution of responses for the statistical analysis, four domains were created for each of the four groups to be analyzed as African immigrants with ADHD (AIADHD), African immigrants without ADHD(AInoADHD), African Americans with ADHD (AAADHD), and African Americans without ADHD. The variables of age M, age C, grade C, TSTR, TperSTR (mother' age, child's age, child's grade, total stress and total percentile stress, respectively) were entered as scale variables. The variables of marital status, education, income, and employment were coded and entered as categorical variables. Gender was coded as male and female for each domain and entered as categorical variables. This variable was recoded MaleADHD as Group 1 and Female ADHD as Group 2 for the AI/AA ADHD domains. For some analysis, total stress (TSTR) was recoded into ADHD and labeled Group 1 representing mother's whose children had the condition and noADHD was labeled Group 2, representing mother's whose children did not have the ADHD condition.

Descriptive Statistics

Descriptive statistics for the main study variables were computed for the entire study population including a frequency distribution to examine the pattern of response to each independent or dependent variable under investigation using SPSS Version 21. Participants in this study included 52 (41.6%) African American mothers caring for a child without ADHD, 37 (29.6%) African immigrant mothers caring for a child without ADHD, 18(14.4%) African immigrants caring for a child with ADHD, and 18(14.4%) African American mothers caring for a child with ADHD to give a total of 125 mothers. The mean age for all mothers was 43.27±7.9 years, $N = 122$ with three missing data. The participants' distribution was between the ages of 20 years to 61 years. The mean age for African immigrant mothers caring for a child with ADHD (AIADHD) was 44.18 ± 7.5years with $N = 18$. The mean age for African immigrant mothers without ADHD (AInoADHD) child was 44.46±5.7years with $N = 36$. The mean age for all African immigrant mothers was 44.37±6.3years with $N = 55$; The mean age for African American mothers caring for ADHD (AAADHD) child was 39.76±8.0years with $N = 18$ and the mean age for all mothers caring for a child with ADHD was 41.97±8.0 years with $N = 36$. The mean age for African American mothers without ADHD (AAnoADHD) child was 43.30 ± 8.5 years with $N = 53$. The mean age for all mothers not caring for a child with ADHD was 43.76 ± 7.5years with $N = 89$. Figure 2 shows a histogram distribution with normal curve for all repondent mother's age distribution with mean and standard deviation.

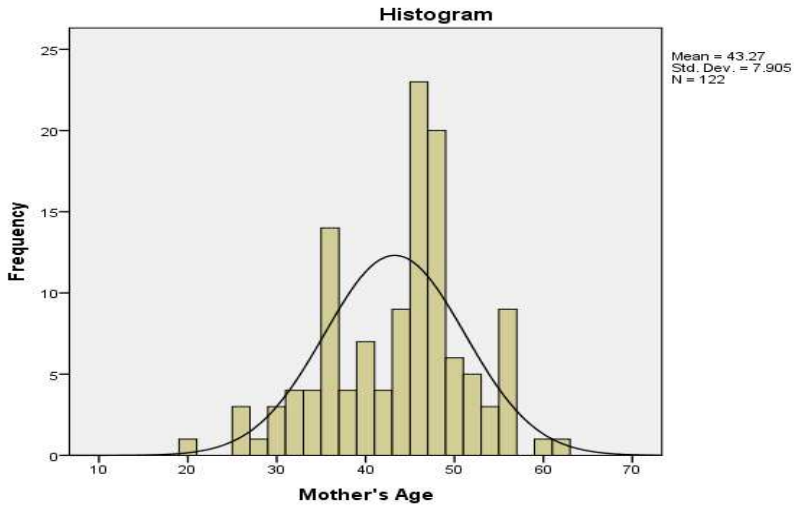

Figure 2. Histogram for respondent mothers' age distribution.

The ages of children whose mothers were sampled ranged between 6-17years with a mean age of 12 (± 4)years for all children. The mean age for a child with ADHD was 11.9 ± 4 years , without ADHD was 13 ± 5. Prevalence of child with ADHD indicated more male (67%) than females children (33%). For children without ADHD prevalence was similar for this population as presented in table 1.

Table 1

Descriptive Statistics for Scale Variables Age M, Age C, and Grade C for All the Groups Showing Mean and Standard Deviations

	AIADHD	AInoADHD	AAADHD	AAnoADHD	ALL
AgeMother(years)	44.18 ± 7.5	44.46±5.7	39.76±8.0	43.30±8.5	43 ± 8
AgeChild(years)	12.5± 2.73	nd	10.56± 3.2	nd	
GradeChild	6.89± 2.9	nd	5.11± 3.3	nd	

Note. nd = No data collected.

Gender analysis as reported by the mothers for this population showed that male African immigrant children with ADHD were 10 (55.6%), African American 12 (61.1%) and female African immigrant children with ADHD were eight (44.4%) and African American six(38.9%). When all males and females children with ADHD were analyzed results showed that more boy children had the condition than girl children, which was in keeping with the information from other authors.

The SES of this population comprised a combination of eduction and income. On education level, African immigrants reported predominantly college level education 72.2%, high school 27.8%; while African Americans reported 70% high school, 20% college and 10% below high school. Employment status was coded 1-5 where 1= Unemployed; 2= employed; 3=Part time 4= Housewife 5= Self-employed. All of these categories are as shown on the demographic page in Appendix B Demographic Questionnaire.

Measurement for means, median, variance and range for those variables used to predict stress including, AgeM, Age C and GradeC, and frequecy and percentages for employment, yearly income, education and marital status was performed. Participants for this study were African immigrant and African American mothers between the ages of 20 years to 61 years. The mean age for all mothers was 43 ± 8years. The mean age of the mothers caring for a child with ADHD was 44 ± 8 years and ranged from 31years to 60 years Marital status was categorized into 5 categories with 1= married and 5= in a realationship with the mode as 1. Grade of the children whose mothers were measured ranged from grade 1 to 12. Table 2 shows the breakdown of frequencies and percentages

for the entire population N = 125 for all the variables measured in the study. 89(71.2%) of the respondent mothers reported being employed full time. 13(10.4%) reported being unemployed while 23(18.4%) reported having some other category of employment. 48(38.4%) reported earning a yearly income of $75, 000 and above, while 10(8.0%) reported earning less than $15,000. Education, 87(69.6%) reported they had college level education and 35(28.0%) reported they had a high school education. 2.4% had less than high school education. Marital status showed 89(71.9%) reproted being married, 15(12.0%) reported being single and 10(8.0%) reported being divorced.

Similar statistics comparing the 55 African immigrant respondents in this category showed that 46 (83.6%) were married while of the 70 African American respondents 42(60%) reported being married. There was a higher rate of divorce in the African Americans (12.8%) respondents than with the African immigrants (1.8%). Mothers education was between high school diploma and college level. Majority of the African immigant women indicated they had a college level education; 29 (50%) were employed and on the salary scale 13 (22.4%), with an annual average income of between $50,000- $75, 0000; while 21 (36.2%) indicated income above $75, 000 whereas 22 (36%) of the African American women had a high school diploma and 46 (59.9%) had a college education. 52 (87%) indicated being employed and on the salary scale, 18 (24%) had an annual average income of between $50,000- $75, 0000; while 28 (33.8%%) indicated income above $75, 000. These statistics are as described in table 2.

Table 2
Descriptive Statistics for Categorical Variables; Marital Status, Employment, Income, Education and Gender for all the Groups Showing Frequencies and Percentages

	AIADHD	AInoADHD	AAADHD	AAnoADHD	ALL
Marritalstatus					
Married	15(83.2)	30(83.3)	8(44.4)	34(64.2)	89(71.2)
Divorced	1(5.6)	1(2.8)	6(33.3)	5(9.4)	10(8.0)
Widow	1(5.6)	1(2.8)	3(16.7)	1(1.9)	4(3.2)
Single	1(5.6)	4(11.1)	1(5.6)	9(17.0)	15(12.0)
Relationship	0	0	0	4(7.5)	7(5.6)
Employment					
Unemployed	1(5.6)	6(16.7)	3(5.5)	3(5.7)	13(10.4)
Employed	10(55.6)	21(58.3)	16(88.9)	46(86.8)	89(71.2)
Part time	7(38.9)	1(2.8)	1(2.8)	1(1.9)	8(6.4)
House wife	0	5(8.3)	1(2.8)	3(5.7)	8(6.4)
Self Empl.	1(5.6)	3(13.9)	0	0	7(5.6)
Income					
<$15000	2(11.1)	1(2.8)	1(5.6)	6(11.3)	10(8.0)
$15000-34999	2 (11.1)	6(16.7)	3(16.7)	4(7.5)	15(12.0)
$35000-49999	2(11.1)	9(19.4)	6(33.3)	5(9.4)	21(16.8)
$50000-75000	6(33.3)	8(22.2)	4(22.2)	14(26.4)	31(24.8)
>$75000	6(33.3)	14(38.9)	4(22.2)	24(45.3)	48(38.4)
Education					
9th grade	1(5.6)	0	1(5.6)	1(3.8)	3(2.4)
High sch.	5 (27.8)	5 (13.9)	8 (44.4)	15 (26.4)	33(28.0)
College	12(66.7)	31(86.1)	9(50.0)	37(69.8)	89(69.6)
Gender					
Gender male	10 (55.6)	22(61.1)	12(66.7)	36(66.0)	80(60.1)
Genderfemale	8(44.4)	14(38.9)	6 (33.3)	17(34.0)	45(39.86)
N	18	36	18	53	125

*Combined group results are not presented.

Analysis of the total stress score ranged from 30 to 167 with a mean of 74.6 ± 27.4; N = 125. African American mothers caring for a child without ADHD showed a mean stress score of 61.8 ±14.4 while African immigrant Mothers caring for a child

without ADHD had 60.0 ±18.0. African American mothers caring for a child with ADHD scored the highest with a mean of 116.9±23.2 and a maximum range of 167 while African immigrant mothers caring for a child with ADHD had a mean score of 98.1±12.6 with a maximum score range of 124 indicating less stress than the African American mothers, even though both groups are in the clinically significant percentile range. The mean stress score for the combined group with ADHD was 108.2±20.0 and for the combined score for no ADHD group was 60.9±16.2 results are as shown in table 3.

Table 3

Descriptive statistics for total stress score for four different groups

	Minimum	Maximum	Mean	SD
Total stress score	36.0	167.0	74.6	27.4
AIADHD	79.0	124.0	98.1	12.6
AAADHD	73.0	167.0	116.9	23.2
AInoADHD	36.0	99.0	60.0	18.0
AAnoADHD	36.0	92.0	61.8	14.4

Inferential Statistics

Tests for Normality

To test the hypotheses for this study, a normality test was conducted for the dependent variable Total stress which represents maternal stress and all of the independent variables using the Shapiro-Wilk test for each research question. The test results showed that total stress was normally distributed at $p < 0.36$ which was above the $p < 0.05$ level. A visual inspection of the Historgram, Q-Q plots and dots plots all indicated a normal distribution. The Shapiro-Wilk test also showed a normal distribution

for the independent variables; mother's age, age of child, child's grade, gender for (AIADHD and AAADHD) mothers caring for a child with ADHD. Marital status, Employment, income and education level were however, statistically significantly different from a normal distribution.

Data analysis for this population followed the outline plan in chapter 3 table 1. Univariate analysis, chi square, one-way analysis of variance (ANOVA) with post hoc Turkey, R-E-G-W-Q for equal variance and Dunnett's *C* for unequal variance. Independent sample *t*-test for continuous dependent variable and independent variables Independent samples *t*-test for dichotomous IV and continuous DV, one-wayANOVA for one or more categorical IV/ continuous DV, and linear regression were conducted for data that was normally distributed, simple logistic regression for dichotomous DV and continuous or categorical IV; and nonparametric analysis using Mann-Whitney test or the Kruskal-Wallis bivariate test was performed to determine whether there were differences in stress for those variables that were not normally distributed. To test for unequal variance so as to control for Type1 error across pairwise comparisons a Levene's test was performed.

To examine the reseach questions and to test the four hypothesis for ADHD as a stress factor for African immigrant mothers caring for a child with the condition, a univariate analysis was performed. The assumptions for this tests were based on 1. The dependent variables are normally distributed for the defined populations. 2.There exists an equal population variance: however if the group size was different the statistics that did not assume equal variance was used as computed by the spss. Since the dependent

variable was normally distributed and a Levene's test for equality of variance between the all mothers who had a child with ADHD (n = 36) and all mothers caring for a child without ADHD (n = 89) gave a value of F= 0.893 and p = 0.346 was not significant, equal variance was assumed. The t-test conducted for the same population gave t = -11.9 and p = 0.001 this calculation was significant for equal variance calculation as produced by spss.

Effects of Childhood ADHD on Maternal Stress: Hypothesis 1

The first research question asked to what extent was childhood ADHD associated with stress among African immigrant mothers? The null hypothesis predicted that childhood ADHD was not associated with maternal stress in African immigrant mothers caring for a child with ADHD. The alternative hypothesis was that childhood ADHD was associated with maternal stress in African immigrant mothers caring for a child with ADHD.

A normal distribution analysis conducted with the Shapiro-Wilk test, indicated normal distribution for the dependent variable total stress (maternal stress). Based on our assumptions above, an independent t-test was run to compare means of total stress between African immigrant mothers, with and without ADHD children. A Levene's test conducted F = 1.279, p = .263 showed equal variance. The independent variables; Income, employment, level of maternal education, gender and marital status were analyzed for normal distribution to test this hypothesis. The result obtained showed they were not normally distributed. Other independent variables for this population including mothers age, child with ADHD age, and grade of child with ADHD were normally

distributed $p<.001$. Mean of Total stress score for the entire population *N* (125) was 74.6 ± 27.4. AIADHD *N* (18), was 98.1 ± 12.6; AAADHD was *N* (18), was 116.9 ± 23.2, AInoADHD *N* (36), was 60.0 ± 18.0 and AAnoADHD *N* (53), was 61.8 ± 14.4 (*see table 3*). The mean stress score for the combined group with ADHD was 108.2 ± 20.0 and for the combined score for no ADHD group was 60.9 ± 16.2.A Mothers caring for ADHD child showed a higher total stress score compared to those not caring for a child with ADHD which was a difference of 47.3 points, meaning that the mothers caring for a child with ADHD reported 28% higher stress level than those not caring for a child without the condition for this population. African immigrants caring for a child with ADHD (98 ± 13) also showed about 24% higher stress score than African immigrant mothers not caring for a child with the condition (60 ± 18).

t- test: An independent samples *t*-test (table 6) was performed for AIADHD ($N = 18$, $M = 98.1 \pm 12.6$) $t\ (17) = 35.80$ $p = 0.01$ standard error (*SE*) was 2.77 at the 95% confidence level (*CL*) of 93.2-104.9. The analysis was also performed for AInoADHD ($N=37$, $M= 60.0 \pm 18.0$) $t\ (36) = 25.04$ $p = 0.01$, $SE =2.37$, 95% *CL* of 54.4-64.05. The mean difference for the two groups was 39.8 which were significant, but the result was contrary to the research hypothesis. For comparison, the same test was performed for the AAADHD ($N = 18$, $M = 116.9 \pm 23.2$) $t\ (17) = 21.99$ $p = 0.01$ and AAnoADHD ($N=52$, $M= 61.8 \pm 14.4$) $t\ (51) = 25.79$ $p = 0.01$. The 95% confidence interval for the differences in means for each group was moderately wide, and their ranges did not contain the zero slope The results of the t-test indicated that African immigrant mothers caring for a child

with ADHD reported statistically significantly higher stress than African immigrant mothers caring for a child without ADHD.

Table 4

Independent Samples t-test Statistics for Total Stress Score for the Four Different Groups

	N	M	SD	SE	*t*	*df*	*p*	CI95%	
								L	U
AIADHD	18	98.1	12.6	2.8	35.80	17	0.01	93.2	104.9
AInoADHD	37	60.0	14.2	2.4	25.04	36	0.01	54.4	64.1
AAADHD	18	116.9	23.2	5.3	21.99	17	0.01	106.1	128.6
AAnoADHD	52	61.1	14.4	2.4	25.79	51	0.01	57.2	66.87

Note. N=population size, *M*= means, *SD*= Standard Deviation, *t*=t-test, *df* = degrees of freedom, *p*=significant level, *CI*= 955 Confidence Interval at the Lower (L) and Upper (U) levels.

Independent samples *t*-test was conducted for African immigrant mothers caring for a child with ADHD vs. African immigrants not caring for a child with ADHD to further test the hypothesis whether childhood ADHD was a stress factor for the African Immigrant mothers. The test was significant for African Immigrant ADHD (present / not present); Levene's F=1.23, p = 0.26; $t\ (17)$ =10.93, p = 0.001 but the results were counter to the research hypothesis. African immigrant mothers caring for a child with ADHD on average reported almost higher stress than mothers not caring for ADHD child. There was a mean difference of 98.1 ± 12.6 vs. 60.0 ± 14.2 between the two groups, 3.6 (95% CI = 32.4 - 47.4). For the comparison African American ADHD (present / not present)

groups, a similar trend was observed $F = 0.04$, $p = 0.84$, $t\ (17) = 9.40$ $p = 0.001$. There was a mean difference of 116 ± 23.2 vs. 61.1 ± 4.4), 5.85 (95% CI= 43.2 - 67.4). The *t*-test results indicated there was statistically significant higher report of stress in the mothers caring for ADHD child $t\ (36) = 21.99$ $p <. 001$. The 95% confidence interval for the difference in mean was moderately wide. For the African immigrants, the eta square index indicated 39.8 % and African Americans, 55.3% of the variance was accounted for, by a mother caring for a child with ADHD.

A correlation analysis was performed for the associated variables to determine which was significant for AIADHD. A normality test for the variables indicated the Age M, Age C, Grade C were normally distributed hence a Pearson's *r* correlation was conducted. The result indicated that, two variables Age of child with ADHD (AgeC) and Grade of child with ADHD (GradeC) were strongly correlated $r\ (18) = .963$, $p < .001$. Similarly for comparison group, the AAADHD were analyzed and the trend was the same Pearson's $r\ (18) = .988$, $p < .001$. The variables Marital status, Employment, Income and Education were not normally distributed hence a Spearman's rho correlation was calculated. The results from this correlation analysis indicated that the variable Income was strongly correlated to stress rho $(18) = .535$, $p < .022$ in both African Immigrants and African American mothers rho $(18) = .501$, $p < .034$, caring for a child with ADHD.

One-way-ANOVA

Following the results of the normality test, the *t*- test, and the correlation analysis, a one way ANOVA was conducted to evaluate the relationship between level of stress experienced between the African immigrant groups and the effects of the demographic

variables; marital status, Income, Employment and Education (see table 2). The test assumption for this test was Normal distribution of the DV total stress, categorical IV and a continuous DV. The ANOVA, equal variance assumed, was statistically significant for only Education which had three levels, F (2, 15) = 6.18, p < .011. The η^2 (eta^2) = .452 indicative of a strong relationship between stress and education for AIADHD mothers (M = 99.06 ± 11.74, N =18). The SD ranged from 6.3 to 10.1 and the variance was 39.69 to 102.01(95%CI) with college level education as the main effect. ANOVA for AInoADHD F(4,31) =.212 p = .930 was not statistically significant. For the comparison group AAADHD, Income was the statistically significant variable, equal variance assumed. The ANOVA was statistically significant for the between subjects effect for AIADHD income F (4, 13) = 3.27 p < .046, η^2 =.502, (N =18, Mean = 117.33 ± 22.6) and the strength of interaction 55% indicated a strong relationship. The AAnoADHD, F (4, 48) = 2.55, p = .051 was not statistically significant indicating that income was not a factor for African immigrants mothers caring for a child with ADHD.

***Linear Regression Analysis*:**

Having confirmed the results that there was indeed a difference in means between the two groups of mothers, a regression analysis was conducted to evaluate the prediction of ADHD stress from level of mother's education based on the result of a Shapiro-Wilk's test for normal distribution which was normally distributed, homoscedasticty of data and data that was linear in distribution The criteria for this analysis were a continuous dependent variable with continuous or categorical independent variable. The objective for the linear regression was to reject the null

hypothesis when the coefficients were equal to zero. If the null hypothesis has a large *F* statistics, and the corresponding *p* value was less than alpha such that $p < 0.05$, then the null hypothesis was rejected. The regression coefficients (R^2), measures the strength of the association between dependent and independent variables. It explained how much of the dependent variable was explained by the independent variable. A linear regression analysis was conducted to assess the relationship between stress in African immigrants caring for a child with ADHD and the variable Education since other variables were not statistically significant. A scatter plot for these variables indicated a linear relationship to the extent that when stress (dependent variable) increased, the independent variables increased. The regression equation for predicting the AIADHD stress was

Predicted ADHD stress = 5.10 level of Education + 83.76, $R = 0\ .577$, $R^2 = 0\ .333$ F (1, 16) = 7.99, $p < 0.012$ with a Durbin Watson of 2.275, 95% CI of 1.28-8.93, B = 5.10 and the B constant = 83.76 showed that level of education had a positive correlation to mother's stress and predicted ADHD stress 33.3% from the linear relationship. The accuracy for prediction was strong and correlation was 0.58. The 95% CI was wide from 1.28 to 8.93 and did not contain a zero slope.

For the AIADHD mothers other correlation analysis for demographic variables gave Pearson's correlation for Stress vs. mothers age $r = 0.435$ $p < 0.04$; stress vs. education $r = .577$ $p < 0.006$; Age vs. Education $r = .460$ $p < 0.03$ for a 1-tailed. Indicating that ADHD stress for the AIADHD mothers was predicted by mother's age and level of education. Variable results that were not significant are not reported but all analysis conducted are shown in table 5.

From all of these results therefore, the null hypothesis was rejected and the alternative hypothesis was accepted and it was concluded that childhood ADHD was a stress factor for African immigrant mothers.

Table 5
Summary of Linear Regression Analysis for Predictors of Maternal Stress in African Immigrant Mothers (AI) and African American (AA) Mothers Caring for a Child with ADHD

	B	*SE*	*Beta*	*F*	*t*	*p*	95% Con. Interval	
							LL	UP
African immigrants								
Mother's Age	0.39	0.40	0.25		1.57	0.14	-0.21	1.38
Child's Age	7.39	3.40	0.37		1.58	0.13	-0.004	14.78
Child's grade	1.03	3.20	0.25		1.04	0.31	-1.07	3.13
Marital status	-1.11	3.47	-0.08		0.32	0.76	-8.59	6.38
Employment	0.51	3.16	0.04		0.16	0.88	-6.31	7.32
Income	-0.03	2.19	-0.003		0.01	0.99	-4.77	4.71
Education	5.10	1.84	0.58	7.99	2.83	0.01	1.28	8.93
African American								
Mother's Age	1.15	0.73	-0.397		1.58	0.14	-2.72	0.42
Child's Age	11.35	11.18	1.588		-1.05	0.33	-12.80	35.49
Child's grade	-13.00	10.92	-1.841		-1.19	0.26	-36.58	10.59
Marital status	9.91	5.05	-0.285		-0.98	0.35	-15.84	5.96
Employment	-1.33	9.40	0.030		-0.14	0.89	-21.64	19.0
Yearly income	-14.78	4.63	-0.50	3.28	-3.20	0.05	-24.76	-4.79
Education	-6.92	9.55	0.198	0.24	0.79	0.48	-27.56	13.71

*ANOVA *F* shown for only significant data

Note: B= *B* coefficient, *SE*= standard error, Beta= Beta coefficient, *t*= t-test,*P*=significant level

Effect of Gender of Child with ADHD, Race and SES on Caregiver Mother: Hypothesis 2

The second research question was about gender of a child with ADHD and whether it was associated with stress among African immigrant mothers. The null hypothesis posited that child gender differences were not related to stress among African immigrant mothers. The alternative hypothesis posited that child gender differences were related to stress among African immigrant mothers. The Shapiro test for Normality showed a normal distribution for gender and for stress. Frequency and percentages for gender were presented in table 4. The independent t-test was conducted based on the assumption of a dichotomous IV and a continuous DV (total stress) and normal distribution; Levene's test indicated equal variance. Effect size *(d)* was manually calculated using the statistical calculator (www.danielsoper.com). This standardized index measures the effect size for a *t*-test when the mean and standard deviation for two independent samples are of equal size. The test result indicated there was no statistically significant effect for stress in relationship to gender of a child with ADHD for African Immigrants mothers t (17) = .537, P = .599. The effect size d = 0.288 indicated that the effect of gender of child with ADHD was small and not statistically significant for maternal stress. Although a *p*-value of 0.599 was indicative that there was a possibility for mild relationship between stress and gender, however, the effect was small. The trend was similar for African Americans with t (17) = .322, p = .751 or without ADHD child t (52) = .864, p = .391. The only group that was significant was African immigrant without ADHD child t (35) = -2.40, P = .022 but since this group was outside the research

question, no further examination was conducted. From these results, as shown in table 6, it was not possible to conclude that gender was associated with ADHD stress in the African immigrant mothers caring for a child with ADHD therefore the null hypothesis was accepted, that gender differences was not related to childhood ADHD among African immigrants.

Table 6

Means and Standard Deviation, t-test, and Effect Size for the Maternal Stress as a Function of Gender of Child with ADHD for African Immigrants and African American Mothers

	N	*M*	*SD*	*t*	*p* (*2-tailed*)	d
AI with Male ADHD child	10	96.4	12.6	-0.54	0.60	0.29
AI with Female ADHD child	8	100.1	13.1			
AA with Male ADHD child	12	115.0	21.7	-0.32	0.75	0.23
AA with Female ADHD child	6	120.8	28.0			
AI with Male ADHD child	10	96.4	12.6	-2.65	0.02	1.05
AA with Male ADHD child	12	115.0	21.7			
AI with Female ADHD child	8	100.1	13.1	-1.51	0.12	0.6
AA with Female ADHD child	6	120.8	28.0			
ALL with Male ADHD child	22	107.1	20.4	-0.13	0.89	0.04
ALL with Female ADHD child	14	108.0	22.0			

Group Differences: Hypothesis 3

The third research question examined the extent that immigrant mothers from African origin, caring for a child with ADHD was different in stress level compared to African American mothers also caring for their ADHD affected child. The null hypothesis predicted that Immigrant mothers from African origin, caring for their ADHD

child, had similar stress levels compared to African American mothers also caring for their ADHD child. Again maternal stress was the dependent variable with childhood ADHD as the independent variable. The research hypothesis for question 3 indicated that AIADHD groups would not be different in stress level compared to AAADHD groups. Mean comparison of total stress from both population indicated that African immigrants caring for a child with ADHD (98 ± 13) had less stress than African American mothers also caring for a child with ADHD (116.9 ± 23). Independent samples *t*-test for each group AIADHD t (17) = 35.8 p <.01 and AAADHD t (17) = 21.99 P <.01. These results suggested that the mean difference between the AAADHD groups was higher than for the AIADHD group and the difference were significant. However, when both groups were analyzed together to test for a relationship between the groups, the Shapiro –Wilk's test revealed the DV stress to be not normally distributed (N = 36). Based on this result, a non-parametric test was conducted using a new bivariate stress variable as the dependent variable. The variable Total stress was transformed and recoded into different (categorical) variables. The median cut off point was set so that all data above the cut of point was renamed AIADHD and labeled category 1 and all data below the cut-off point were renamed AAADHD and labeled category 2. A Kruskal Wallis test was then performed with these newly ranked variables. The results of the test found mean ranks 13.42 (N=18) for the AIADHD and mean rank 23.58 for the AAADHD categories. The Chi squared test was statistically significant $X^2(1, N = 36) = 8.387$ $p < .004$. To determine the relationship between groups, for categorical variables, the Mann-Whitney test was performed for the main effect ADHD stress. The result of this test gave Z = -2.896, P <

.004(2-tailed). The same test was performed for the demographic variables but they were not statistically significant at $P > .05$. To further investigate how well our model explained this variance, and to test for a relationship between AIADHD AND AAADHD a binary logistic regression was performed based on the results of the Shapiro-Wilk's test showing a non-normal distribution. A new bivariate stress variable was used as the dependent variables and covariates (predictors) as those variables found significant including education and income ($P <.008$). Total stress was re-coded into categorical variables ADHD/ noADHD where ADHD was all data above the medium cut off point of the combined stress group and no ADHD was all the data below the median level of the stress data. ADHD was renamed category 1 and no ADHD was renamed category 2. The logistic regression model was statistically significant $X^2(1, N = 36) = 9.316$ $p < .002$. *B* coefficient was .069 and *SE* of .029, Wald test was 5.851. The model explained 30% for a moderate correlation (Nagelkerke R^2 was .304) of the variance in stress and correctly classified 77% of the cases. The odd ratio (*OR*) was calculated as 1 – ExpB (1.072). This result is presented in table 11. Of the predictor variables, none were significant at $p < .08$. Presence of stress due to ADHD was thus the only strong predictor for this group showing that African immigrants reported less stress than the African American mothers when both were caring for a child with ADHD. The hypothesis that Immigrant mothers from African origin, caring for a child with ADHD will have similar stress levels compared to African American mothers also caring for a child with ADHD was therefore rejected at the 0.05 level and the alternative hypothesis that there was a significant difference in stress level between the two groups was accepted.

Table 7

Non-Parametric Test Results Comparing Means between African Immigrant Mothers African Americans with ADHD Child

	STRESS LEVELS				
	M	*SD*	(*t*)	*p*	Mean Ranks
AIADHD	98.1	12.6	35.8	0.01	13.42
AAADHD	116.9	23.2	21.99	0.01	23.58
AInoADHD	60.0	17.9	25.04	0.50	42.78
AAnoADHD	61.8	14.4	25.79	0.50	46.51

*X^2 (1, N = 36) = 8.387; Z = -2.896 p < .004

Group Differences: Hypothesis 4

Research Question 4 examined the difference in stress level between mothers of African origin caring for a child with ADHD and mothers of African origin, of similar age, caring for a child without ADHD (healthy child) The null hypothesis posited that mothers of African origin caring for a child with ADHD do not experience more stress than other mothers of African origin. The mean stress score for African immigrants with ADHD child was 98.1% ± 13 while African immigrant mothers without ADHD child scored 60.0 % ± 18. The mean difference between both groups was 38% which was significant at p = 0.01. To test whether there was any correlation between the two groups: A spearman's correlation r = 0.07 p = 0.79 was not significant but the independent *t*- test to test the null hypothesis gave t (17) = 7.14 p = 0.01. Standardized effect size d = 1.73. The 95% confidence interval of the slope from 26.8 – 49.3 however contained the zero value. A comparison analysis for African American mothers with ADHD child M = 116.9 ± 23.2 and African American mothers with no ADHD child M = 61.8 ± 14.4 gave

correlation results of $r = 0.24$ and a t- test $t\ (17) = 9.66$, $p = 0.01$ at 05% confidence from 43.1 to 67.1.

For comparison of strength of relationship, a nonparametric Kruskal-Wallis test was done based on a Shapiro-Wilk test result for the combined group which was not significant. Therefore the variable stress was ranked and recoded into categorical variables. The test result $X^2\ (1, N = 54) = 53.37\ p < .001$. The mean ranks for AIADHD group was 44.94 (combined $M = 72.5 \pm 23.2$) and the mean rank for the AInoADHD group was 18.78. The test was also significant for gender $X^2\ (1, N = 54) = 4.085\ p < .043$ mean rank for Males was 23.77 and Females was 32.52 (72.52 ± 23.15). The Mann - Whitney test was performed to evaluate the hypothesis for all demographic variables, the results were not statistically significant and are not reported. The only variable that showed a main effect was the presence of the ADHD condition and result was in the right direction $Z = -5.947\ p < .001$ to further investigate how well our model explained this variance, a binary logistic regression was performed. The stress variable was re-coded and categorized 1=ADHD, 2= noADHD. The logistic regression model was statistically significant $X^2(1, N = 54) = 54.43\ p < .001$; $B = .693$, $SE = .289$, *Wald* 5.77 $P < .006$. The model explained 30% of the variance in stress and correctly classified 72% of the cases, the (Cox & Snell R^2) showed a strong correlation .720 between the presence and absence of stress. The odd ratio (*OR*) was calculated as ExpB (2.000) this result is presented in table 9. Presence of stress due to ADHD was thus the only strong predictor for this group showing that African immigrants caring for a child with ADHD had the odds of reporting about two times more stress than the African Immigrant mothers not caring for a child

with ADHD. Other results for all demographic variables were not significant.

Total stress combined was not normally distributed using the Shapiro-Wilk test. A non-parametric test was conducted to determine differences in group. The result of the test found mean ranks (44.94, 18.78) $p < .001$respectively for AIADHD and AInoADHD. From this data, and data from the binary logistic regression, it was concluded that stress for the AIADHD mothers was significantly higher than for AInoADHD mothers W=153.00, $Z = -5.86$, $p < .001$ supproting the alternative hypothesis that there was a statistically significant effect between having a child with ADHD or not. Therefore, the null hypothesis suggesting that African immigrant mothers caring for a child with ADHD was similar in stress levels to African immigrant mothers not caring for a child with ADHD in this population of mothers sampled was rejected.

Table 8

Non-Parametric Test Results Comparing Means between African Immigrant Mothers with and without ADHD Child

	STRESS LEVELS				
	M	*SD*	*t*	*p*	Mean Ranks
AIADHD	98.1	12.6	35.80	0.01	44.94
AInoADHD	60.0	17.9	25.04	0.01	18.74
ALLADHD	108.1	20.04	32.39	0.01	
ALLnoADHD	60.91	16.23	35.41	0.01	
Gender					
Male(N=31)					23.77
Female(N=23)					32.52

X^2 (1, $N = 54$) = 33.22; $W = 153.00$, $Z = -5.86$, $p < .001$.
Gender X^2 (1, $N = 54$) = 4.085, $p < .043$

Table 9

A Summary of Binary Logistic Regression Analysis for Presence of ADHD and Maternal Stress in African Immigrant Mothers (AI) and African American (AA) Mothers Caring for a Child with ADHD

	B	SE	Wald	df	*p*	*OR*
AIADHD vs. AAADHD						
	0.069	.029	5.85	1	0.02	1.07
AIADHD vs. AInoADHD						
	0.693	0.289	5.77	1	0.01	2.00

Notes: B = B coefficient, *SE* = standard error, *Wald* = Wald test, *df* = degree of freedom, *P*=significant level *OR*= Odds Ratio

Summary

The purpose of this study was to examine the effcets of childhood ADHD on maternal stress for African immigrant and African American mothers. Regression analysis was performed to determine whether demographic variables had a relationship with the level of stress among the groups.The survey questions determined the eight parameters analyzed for stress among African immigrants and African American mothers. Shapiro-Wilk tests was conducted to determine normality of data. For those variables that were normally distributed, parametric bivariate testing with *t*-tests was used to determine whether there was difference in stress level for each group.

Correlation analysis was performed to determine those variables that were associated with stress. ANOVA was used to test for differences between stress and all the demographic variables. Regression analysis was performed for those variables that had a correlation and were associated to stress including age of child, grade of child, income

and level of education. For the combined groups, nonparemetric testing was performed for group variables that were statistically significantly not normally distributed. Kruskal-Wallis bivariate testing was conducted to test whether there were differences in total stress among the groups by race, gender, and the ADHD condition. The Mann-Whitney test was performed to determine whether there were differences between categorical variables including marital status, education, income, employment and gender. Binary logistic regression was used to determine whether demographic variables had a relationship with the presence or absence of ADHD stress.

The study results answered the four reasearch questions and hypothesis addressed. The statistical analysis of the study data supported the following: Hypothesis 1, that childhood ADHD was associated with maternal stress; Hypothesis 3, that African immigrant mothers caring for a child with ADHD experienced lower stress levels than African American mothers also caring for a child with ADHD; Hypothesis 4, that mothers of African origin caring for a child with ADHD experienced more stress than mothers of African origin caring for a child without ADHD. That child's age, grade, mothers income and education were factors that were determined by the study resluts as associated with ADHD stress directly or indirectly. However, Hypothesis 2 was not supported by the study data as results indicated that child gender diffrences was not related to stress among African immigrant mothers.

Although data showed that mothers of African American male children with ADHD reported slightly higher stress than African immigrant mothers caring for a male child with ADHD however, this information though reported, was not included in the

hypothesis. The results of the study are further discussed in-depth in Chapter 5, including social change implications, limitations, and future recommendations for continued research in this area.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The effect of childhood ADHD on the stress level experienced by African immigrant mothers, African American mothers, and other possible relationships involving variables such as gender, marital status, and socio economic factors (income, education, and employment) was the main objective of this study. The purpose of this chapter is to provide a comprehensive summary and interpretation of the research findings determined in Chapter 4. Results obtained from my study were compared to similar ones from the literature. The implications of these findings, integration of the results of this study with past studies in this area, recommendations for future research, and study limitations are described and then followed by the study's conclusion.

ADHD is one of the most commonly diagnosed mental health conditions of childhood with a large genetic etiology that can progress from childhood, to adolescence, and into adulthood (Brown, 2013). ADHD is a global problem with similar signs and symptoms including, inability to pay attention or remain focused, hyperactivity, and behavior control difficulties (CDC, 2011). Interpretation and response to the condition varies from culture to culture, by parents, family members, professional caregivers, and teachers (Brown, 2013; CDC, 2011; NIMH, 2012). Maternal stress, a subset of parental stress, is stress that occurs due to a mother's perception of the high demand and fear of caring for a child with an illness such as ADHD with limited resources (Brown, 2013; CDC, 2011; NIMH, 2012). Therefore, it was very critical to understand this concept

especially as related to the African immigrant mothers who are already overburdened with immigration, soci-economic, and socio-cultural problems.

Recruitment for this study was by convienence sampling using a 9-item survey questionnaire and a 36-item PSI-4-SF scale with 12 items for each of three domains: P-CDI, DC, and the PD scores. The combination of all three domains yielded the result for TSTR which was used for this study analysis. One hundred twenty-five African immigrant and African American mothers caring for a school age child between the ages of 6-17 years with or without ADHD responded and completed the survey package which were analyzed to find answers for four research questions using SPSS. Four groups of mothers were analyzed: African immigrants mothers with ADHD child N =18; African immigrant mothers without ADHD child N = 36; African American mothers with ADHD child N =18; African American mothers without ADHD child N = 53.

Descriptive statistics for this population indicated that 28% of the sampled population cared for a child with ADHD, 14% African immigrant mothers and 14% African American mothers. The mean age for all mothers sampled was 43 ± 8 years. The mean age for African immigrant mothers was 44 ± 8years and the mean age for African American mothers was 40 ± 8 years. The mean age for African immigrant children with ADHD was 12.5 ± 3years and their mean grade was 7th ± 3. The mean age of African American children with ADHD was 10.6 ± and the mean grade was 5th ± 3. Of the 54 African immigrant mother respondents, 83% reported being married and 1.8% reported being divorced. Of the 71 African American mother respondents, 60% reported being married and 12.8% reported being divorced. African immigant women indicated that a

majority had a college level education, 29 (50%) were employed, and 13 (22.4%) had an annual average income of between $50,000- $75,000, while 21 (36.2%) indicated annual average income above $75, 000. 22 (36%) of African American women had a high school diploma and 46 (59.9%) had a college education. 52 (87%) were employed while 18 (24%) had an annual average income of between $50,000- $75,000 and 28 (33.8%%) had an annual average income above $75,000.

For research question one concerned with the extent to which childhood ADHD was associated with maternal stress amongst African immigrant mothers, the *t*-test yielded the mean stress for AIADHD vs. AInoADHD as 98.1 ± 12.6 versus 60.0 ± 18.0 and $t\ (17) = 35.80$ versus $t\ (35) = 25.04$, $p < .001$ respectively. The independent *t*-test conducted to compare stress levels between mothers of both groups AIADHD and AInoADHD for the presence of childhood ADHD gave a statistically significant result at $p < .001$. The results indicated that there was a significant relationship between stress and childhood ADHD for African immigrant mothers caring for a child with ADHD. For comparison, AAADHD vs. AAnoADHD mothers was also analyzed and the result showed a similar trend which was statistically significant at $p < .001$.

To determine whether there was a correlation between the measured variables and total stress, a Pearson correlation analysis was conducted for those variables that were normally distributed (age M, age C, and grade C) and a Spearman's rho was conducted for those variables that were not normally distributed (education, income, marital status, and employment). The results obtained indicated that child's age (age C) and child's grade (grade C), had a correlation for the African immigrant mothers but were not

directly correlated to stress. When SES status which comprised of income, employment, marital status, and the mother's education was analyzed, the mother's level of education was the only variable that had a correlation to maternal stress.

Mothers were also presumed to be affected by psychological factors which could raise their stress levels including familial and environmental factors. Therefore, an one-way ANOVA was conducted between stress and all variables to examine if there was a significant difference between stress and the measured variables.The results obtained were only statistically significant for level of the mothers education for the African immigrant groups. But for comparison with the African American groups, the ANOVA was only significant for level of income. The association between stress and all other variables investigated for these populations were not statistically significant.

According to Fisher (1990) and Anapoulos (1992), although maternal stress can arise from many factors, for mothers caring for a child with ADHD, it was the child's ADHD that was the major source of stress. Based on this arguement, a regression analysis was conducted and there was significant indications that the presence of the ADHD condition was a strong predictor of maternal stress for the African immigrant mothers caring for a child with ADHD. Other copredictors were child's age and mother's level of education. For the African American mothers, the child's ADHD condition was also a strong predictor for maternal stress along with the child's age and the mother's level of income. However, for mothers not caring for a child with ADHD, these variables did not yield any significant results. Based on these results, the null hypothesis that childhood ADHD was not associated with maternal stress amongst African immigrant

mothers was rejected and the alternative hypothesis, that childhood ADHA was associated with maternal stress was accepted.

The second research question implied that the gender of a child with ADHD could be a possible source of stress for the African immigrant mothers. To investigate this hypothesis, an independent *t*- test was conducted. Results obtained indicated there was no statistically significant relationship between stress and gender of a child with ADHD for African immigrants mothers t (17) = .537, $p < .599$. The effect size $d = 0.288$ indicated that the effect of gender of child with ADHD was minimal and not statistically significant for maternal stress. Although a $p < .599$ was indicative that there was a possibility for mild relationship between stress and gender; however, the effect of that relationship was small. This trend was similar for African Americans with t (17) = .322, $p = .751$. For the African immigrant mothers, there was no dfference in stress level between caring for a male child or female child with ADHD even when total stress, marital status, and SES for mothers with male ADHD and female ADHD were analyzed. For African American mothers caring for a child with ADHD, a similar result was obtained. However, when both groups were combined and compared, the result showed a slightly more elevated stress in caring for a male child with ADHD then caring for a female child. However, this finding was not part of the hypothesis being investigated. Therefore, this result was further investigated in Hypotheses 3 and 4 that compared groups.

The third research question examined the extent to which African immigrant mothers caring for a child with ADHD differed in stress level compared to African American mothers also caring for a child with ADHD. From analysis of Hypothesis 1, the

mean analysis of total stress from both populations indicated that African immigrants caring for a child with ADHD (98 ± 13) had less stress than African Americans also caring for a child with ADHD (116.9 ± 23). Independent *t*-tests for each group, AIADHD $t\,(17) = 35.8\ p < .01$ and AAADHD, $t\,(17) = 21.99\ p < .01$ indicated that African American mothers caring for a child with ADHD had statistically significantly higher stress levels than the African immigrant mothers. However, when both groups were analyzed together for stress, the Shapiro-Wilk test indicated a statistically not normally distributed group; hence, to determine the relationship between groups, the nonparametric Mann-Whitney test was performed for the main effect, ADHD stress. The result of this test gave $Z = -2.896$, $p < .004$(2-tailed), which was statistically significant. However when other measured variables were analyzed, the results were not statistically significant at $p > .05$. A binary logistic regression model was statistically significant $X^2(1, N = 36) = 9.316$, $p < .002$ and showed that African immigrants reported less stress ($OR = 1.072$) than the African American mothers when both were caring for a child with ADHD.

The fourth research question examined whether there was a difference in stress levels between African immigrant mothers caring for a child with ADHD and African immigrant mothers not caring for a child with ADHD. For comparison of the strength of relationship, a nonparametric Kruskal-Wallis test was performed based on a Shapiro-Wilk test result for the combined group. The variable stress was ranked and recoded into categorical variables. The test result $X^2\ (1, N = 54) = 53.37$, $p < .001$ was significant. The mean ranks for AIADHD group was 44.94 and the mean rank for the AInoADHD group was 18.78. The test was also only significant for gender for the combined groups $X^2\ (1, N$

= 54) = 4.085, $p < .043$ mean rank for males was 23.77 and for females 32.52. Having established that the presence of ADHD was a significant source of maternal stress to mothers caring for a child with ADHD, a logistic regression analysis was conducted to determine how well the model explained the variation observed. The logistic regression model was statistically significant $X^2(1, N = 54) = 54.43$, $p < .001$ and showed that mothers caring for a child with the condition had an *OR* of 2.000 indicating that the African immigrant mothers caring for a child with ADHD were two times more likely to complain of stress than African immigrant mothers not caring for a child with ADHD.

Interpretation of the Findings

Childhood ADHD

The results of this study were consistent with the research findings of Gagliano et.al. (2014), Whitney and Smith (2014), and Anastopoulos et. al. (1992) which agreed that mothers caring for a child with ADHD do in fact experience higher stress levels than mothers whose children do not have the condition. This situation was associated with the additional cost and management of the child's needs. Maternal stress affects a mother's ability to cope with daily life issues and a mother-child relationship can be influenced by higher levels of stress due to many factors, but especially when there is a problem with the child either physically, emotionally, or mentally (Whitney & Smith, 2014). Parental stress, including maternal stress, can impact a child negatively, including a child's ability to adjust to early interventions and has been associated with higher incidence of problem children and lower maternal mental health issues including anxiety and depression (Whitney & Smith, 2014) and maternal ADHD (Theule, Wiener, Rogers, &Marton,

2011). These factors were captured in the PSI-4-SF to include scores for parent child dysfunction and child disruptive behavior.(Abidin, 2012).

Although African immigrants and African Americans both have race as a common factor and both reside in the United States, there are fundamental differences in upbringing, culture, and social support systems that differentiate them. Notwithstanding these differences, both groups are usually lumped together in terms of social amenities and social aid, which was the reasoning behind comparing both groups for the variables analyzed to understand whether fundamental differences exist between them in terms of their response to stress when caring and/or not caring for a child with ADHD. While some studies have indicated an association between SES and maternal education as predictors of parental stress for families with a child that has ADHD (Theule,2011), other studies have reported no such association existed (Anastopoulos, 1992). The results obtained from this study showed that mothers caring for a child with ADHD in general, experienced more stress. For African immigrant mothers education was a predictor and age of child was a cofactor. For the African American mothers income was the major predictor. From the descriptive statistics measurements, mean age results obtained for the study showed that the African immigrant mothers were on average older than the African American mothers and a majority of the African immigrants indicated that they had college level education. These two factors perhaps are underlying factors, critical for dealing with a child that is having hyperactivity, inattention, or attention deficit issues. Theule (2010, 2011) insisted that the more mature the mother, the better able she was in controlling a dysfunctional situation. Also, the more educated the mother, the higher her

ability to cope, search, and understand the problems and deal with them (Theule, 2011). However, Sale and Joska (2014) manitained that marital status as a function of social support was important in dealing with stressful situaltions. This study's analysis of marital status did not yield significant results for both the African immigrants and African American groups analyzed, yet data showed that a majority of the African immigrants with ADHD child reported being married while there was a higher divorce rating and less married mothers within the African American respondents. Hence, it can be assumed that a strong family environment, good social support systems, good SES, and the maturity of the caregiver mothers are possible underlining predictor factors associated with maternal level of stress for African immigrants mothers caring for a child with ADHD, indicative of a small but positive effect.

Gender of Child with ADHD

The second hypotheses examined the issue of gender of the child with ADHD and whether it had a correlation with maternal stress. The main concern of this hypothesis was to examine the gender issue in the African immigrant population. This examination was motivated partially by the statement from authors that ADHD was more prevalent in boys than girls across all age groups (Perou & Bitsko, 2013; Primentel, Vieira-Santos, Santos, & Vale, 2011; Sale & Joska, 2014) due to potentially more problematic issues associated with male behavior than for females, including higher implusivity and male aggressiveness and executive function difficulties (Gagliano, 2014). The results from this study indicated that gender of the child with ADHD had no effect on the mother's stress level. A Spearman's rho, nonparametric correlation analysis of gender and ADHD was

not significant (r = -0.44 p = 0.07). Even when a gender regression analysis was performed to test whether other variables such as education, marital status, income and employment of mother had any association with maternal stress of mother's caring for a child with ADHD, the results obtained were not significant for this model p = 0.52. therefore, the null hypothesis was accepted that gender was not associated with maternal stress in African immigrant mothers caring for a child with ADHD.

This result is in agreement with Theule et al. (2013) who with other researchers like Anastopulos, (1992) mentioned that stress level of the caregiver mothers of ADHD children sterned more from the nature and types of the child's condition rather than from the gender of the child. However, there was indication from this study that mothers of male children with ADHD reported slightly different stress than the mothers of female children with ADHD , which was in keeping with the reports from Meyer & Sagvolden, (2006) when analyzed independently. However, when analyzed together, the effect became insignificant and this result was similar to that obtained by Datta et al., (2002).

Group Differences

The relationship between African immigrant mothers and African American mothers caring for a child with ADHD, was examined in this current study using a non paramentric test analysis to test whether both groups were similar in stress levels. The results obtained indicated a strong correlation between the levels of stress experienced between the groups which was significant. The null hypothesis was rejected because the difference observed between the groups was significant. However, in Chapter 2 of the literature review it was argued that mothers of African origin who migrated to the United

States of American had social support challenges, and might have a harder time getting SES due to immigration and other issues. Since these mothers might already be under immigration related stress, therefore, having and caring for a child with ADHD might create additional burden. Analysing the PSI-4-SF, for total stress score, the mean score fell above the 99th percentile indicating higher stress. It was observed that African American mothers, ($M = 116.9 \pm 23.2$) caring for a child with ADHD rather than the African immigrant mothers, ($M = 98.1 \pm 12.6$) $p < 0.01$ had a higher stress score. When predictive variables were analyzed it was observed that when race was controlled for, marital status and employment were statistically significant correlated but not directly on mothers stress level. The data collected on the demographic scale showed that most of the African immigrant mothers reported being married or in a relationship, than the African American mothers, The African American mothers reported a slightly higher level of divorce rate than the African immigrants, also, the African immigrant reported a majority college level education compared to the African American mothers. In both groups the age of the child with the condition did have a significant correlation with grade of the child but not with maternal stress as has been suggested by some studies, (Pimentel, Vieira-santos, Santos & Vale, 2011; Theule, 2013). However, despite the fact that, demographic analysis indicated that the African immigrant mothers were older, the regression analysis was not significant for maternal stress and mothers age for any of the two groups nor for any of the other variables measured. The presence of the ADHD condition was the only major predictor for stress that was significan and a logistic regression analysis to predict the odds of reporting stress between the African immigrants

and the African American mothers showed that African American mothers caring for a child with ADHD reported experiencing a higher stress level than for African immigrant mothers caring for a child with the condition.

This result could be due to the fact that majority of the African immigrants sampled reported having a college education and marital support which, despite the fact that they lack the general family support experienced in their home countries, are able to help them adjust. They are thereby empowered by the strength of their marital spouses and good education. Moreover, as suggetsed by Prudent, Johnson, Carrol, & Culpepper, (2005), African immigrants in general believe in a culture where behaviours consistent with ADHD are seen not as a mental health problem, but as a disciplinary problem which can be corrected or modified by parental discipline or prayed out by spiritual intervention and collective effort of the family and their spiritual organizations. African Americans on the other hand, differ somewhat in their belief system since in the United States, ADHD diagnosis and maintenace of ADHD is more psychologically and medically related (Prudentet al., 2005). Moreover, a study by Taylor, Washington, Artninian, & Lichtenberg (2007), suggested stressful environment and financial limitations as additional stress factors for the African American mothers. In that study, they provided evidence of positive association between lower income, education level and lack of social support as factors that contribute to increased stress (Tayloret al., 2007), especially when the mother also has to deal with a child with ADHD..

Studies by Pimentel, Vieira-Santos, Santos, & Vale, (2011); Datta, Russell, & Gopalakrishna, (2002), Prudent, Johnson, Carrol, & Culpepper, (2005), Yousefia, Far, &

Abdolahian (2011) have suggested a significant difference between the stress experienced by mothers caring for a child with ADHD and mothers caring for children without the condition The results from this study, to test the difference in stress level between African immigrant mothers caring for a child with ADHD and African immigrant mothers not caring for a child with ADHD was in agreement. Logictic regression analysis conducted showed that African immigrant mothers caring for a child with ADHD in this population reported two times a higher level of stress on the PSI-SF scale than African immigrant mothers not caring for a child with ADHD. A non parametric Kruscal Wallis analysis showed a strong positive correlation that was significant.When a similar analysis was conducted for African American mothers with and without ADHD child the results were similar Non paramentric Mann-Whitney test to compare stress and other variables measured in this study showed that only the presence of the ADHD condition had results that was statistically significant. This study results are in keeping with other studies which all agree that a child with ADHD was a the major source of stess to the mothers caring for them.

Limitations of the Study

Data collection took longer than anticipated due to adverse weather issues that arose in the state of Maryland during the winter of 2015 with the result that most of the schools and businesses were closed many times making it extremely difficult for the data collection process. Moreover, a lot of the Africans were biased about the survey with many, of the opnion that, ADHD was a “white people problem and nothing that a few spanking and some African discipline cannot rectify”. On the other hand, the African

American mothers were biased simply for the fact that it was a research. But for both groups, simply taking time to do a survey was just a problem and the researcher had to explain multiple times, the reason for conducting the survey to individuals and the fact that the survey took only a few minutes to complete. Similar participant limitations was also observed by Taylor et al., (2007). For the ADHD clinics, the complaint was that majority of their clients were not from my population pool and so it took time to get people willing to do the survey that met the criteria. Otherwise, this study was the first to examine and compare African immigrants and African Americans for the effects of ADHD on maternal stress. The use of quantitative study using and convenience sampling design allowed the study recruit participants from multiple locations and to clearly state the problem questions in specific terms (Creswell, 2003) but, the study itself was correlational; therefore caution must be applied in drawing conclusions about the results obtained. Randomized sampling would have provided more rigor for the study, but sampling from various locations also helped the validity of the results for generalizability and to identify the target participants while reducing selection bias. Moreover, many public health researchers used this design since predicting human behavior can be difficult and a controlled environment would have been impossible to mimic or control. Other limitations in this study include lack of a larger sample size which would have provided more powerful statistics to improve generalizability as the study sought to find association type relationships. However, the sample size used for the analysis was consistent with what was obtainable from other studies and agreed with a post hoc power calculation conducted. Another limitation was that many of the African immigrants were

unwilling to address their children as having ADHD and some were visibly agitated by this line of questioning. In such cases the participants were thanked for their honesty and allowed to discontinue.

Recommendations

This participant population was not very research friendly due to negative impacts of past researcher on their population, therefore, a longer time frame for recruitment and a more strategized effort to penetrate the population would be necessary and should be considered in future studies. There is much to be learnt from this population and it may be necessary to include fathers of the children to provide a more robust effect and better understanding of the predictive factors associated with this population whenanalyzing maternal-parental stress and ADHD. Based on the results obtained from this study, it is recommended that many more studies be conducted in this population especially on mothers caring for a child with ADHD, African immigrant mothers caring for a child with ADHD or any other mental illness and African American mothers especially those caring for a child with a disability.When a mother is stressed out, the family tends to suffer along with her. But most of the time both mother and child with ADHD go undiagnosed or underdiagnosed and therefore, do not receive quality care needed to improve the life. Studies like this will help to reach out to the communities and help educate and encourage mothers on how to better care for themselves and in so doing provide quality care for themselves and for their families. Findings from this current study, indicate that a more inclusive design like a mixed method design be used, as this will be most beneficial in capturing data. Most times a cross-sectional design like the one

used for this study many not quite capture certain componets in the respondents, therefore adding a qualitative aspect to the study will help the researcher listen to the mothers as their experiences differ across cultural and environmental divide. Moreover, Africans, whether immigrants or Americans are story tellers by nature and more could be learnt from their stories and experiences to futher help their situations.

Implications for Social Change

The objective of this study was to fill a gap in literature by studying the amount of stress experienced by African immigrant mothers living in the United States of America, living with and caring for, a child that had ADHD. The results obtained from this study have major implication for social change as it could serve as a platform for other reserchers to understand the necesity of futher investigation in this population of African immigrants and African Americans. The results of this study and future studies that may arise from it would help to initiate interventions that would help women provide quality care of life for themselves and for their children suffering for ADHD or other disabilites. This outcome could also be extended to Africans living in African and caring for a child with ADHD to reach out for medical intervention rather than using some form of punitive measures to try and correct a problem that is not of the child's making. It would also help to educate mothers who usually tend to apportion blame to themsleves in situations like this. Therefore. maternal intervention and parental intervention in general, would help to manage the behavior of the child with ADHD and promote positive change for both mother and child.

Conclusion

The main aim of this reserch was to investigate the effect of childhood ADHD on caregiver mothers of African origin and to compare whether African American mothers exhibit any similar parterns under similar circumstances. In the state of Maryland, and in most areas of the United States, African immigrants and African Ameriacns are usually combined together as African Americans eventhough, both groups differ in many respects. It was this diversity that propelled this research in part. A major finding of this current study was that both groups are usually combined because there was very little research evidence to suggest major differences between them even when such differences exist.

Results obtained from this study indicated that African immigrant mothers and African American mothers caring for a child with ADHD had significantly higher stress levels than mothers not caring for a child with the condition, irrespective of their race as demonstrated between African immigrants and African Americans analyzed. There was also evidence to suggest that gender of the child with ADHD was not necessarily a stress factors for the mothers caring for a child with the condition. Results from this study indicated that maturity of the mother, a good family support system and educations were salient but important factors that showed positive correlation to the level of stress the mothers may experience, however, the major stress predictor for these mothers as determined by this study results, was the presences of the ADHD condition itself.

Caring for a child with ADHD may be emotionally, psychologically amd spiritually stressful to a mother, but that stress could be managed carefully as shown with

the African immigrant data. Social change implication from this study may be imperative for future research to be performed within this population to better understand the problems of these mothers in their communities, provide basic help and intervention that are profitable to the health of both mother and child. A lot of the mothers who agreed to participate and whose children had the condition were willing to talk about the problems they faced and asked for help which was outside the scope of this research, once they were able to rise above their initial fear. It would be necessary for future researchers to put such factors into consideration when designing this nature of study.

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Appendix A: Demographic Questionnaire

Please answer the following questions to provide basic information. Completion of the demographic questionnaire is essential to determine the influence of variety of factors for this study. All records will remain confidential. Any publication of the study will not include the identity of participants in this study. Please check the appropriate items.

Gender of Child (ren) with ADHD: (Check) { } Male { } Female

Gender of Child (ren) without ADHD: (Check) { } Male { } Female

Number of children living with you at this time:_____

Number of child (ren) in household with ADHD: _____

Mother's Date of Birth: _____

Child with ADHD date of Birth: _____

Marital Status: Check which one is applicable

{ } Married { } Divorced { } Widowed

{ } Single { } in a relationship

Race of Origin: Check { } African Immigrant (Born in Africa)

{ } African American (Born in America)

Mother's education:

{ }Less than 9th grade { } High School diploma { }College degree or more

Grade of child (ren) with ADHD: _____ without ADHD _____

Current employment status:

{ }Unemployed

{ }Employed full-time

{ }Employed part-time

{ }Housewife

{ }Self employed

What is your occupation: _____

What is your yearly household income?

{ } Less than $15,000

{ } $15,000 -$ 34,999

{ } $35,000- $49,999

{ } $50,000-$75,000

{ } Above 75,000

Appendix B: Agreement Letter

April 30, 2014

Helen Awatefe

Walden University

Dear Ms. Awatefe,

Thank you so much for taking the time to contact me today regarding the use of the Parenting Stress Index™, Fourth Edition Short Form (PSI™-4-SF) in your research project.

As you requested, the purpose of this letter is to verify that you have our permission to use the published form of the PSI™-4-SF for your project based on your purchase of the PSI™-4-SF materials from us in January 2014. Based on our records, you purchased enough test forms to administer the test to as many as 25 participants.

In addition our records do indicate that you have completed the necessary qualification form to allow purchase of the PSI™-4-SF. Thank you for helping to insure the ethical use of psychological assessment products.

We very much appreciate your business and the opportunity to be of service to you. If you have any further questions or concerns, please do not hesitate to contact me.

Sincerely,

Vicki X

XXX-XXX-XXXX (phone)

--------- Forwarded message ----------

From: **Helen**

Date: Tue, Mar 4, 2014 at 2:52 PM

Subject: Copy right approval

To: "rra@eservices.virginia.edu" <rra@eservices.virginia.edu.

Dear Professor X

How are you? I spoke with you over the phone a few minutes ago regarding getting author's copyright agreement to be able to use your PSI-SF instrument. My name is Helen Awatefe. I am a Ph.D. candidate at Walden University. I am looking at children with mental illness and how their mother's stress level is affected. I have already purchased some of the materials, but I have difficulty sending the material to my chairperson and to Walden university institutional review board because of the copyright violation issue. I will therefore like an agreement letter giving me the right to share the instrument with my chairperson and my school since all correspondence with the school is via electronic method only.

Thanks for your anticipated help in this issue.

Best Regards,

Helen X.

Appendix C: Instrument

Record/Profile Form

Richard R. Abidin, EdD

Instructions:

On the inside of this form, write your name, gender, date of birth, ethnic group, and marital status; today's date; and your child's name, gender, and date of birth. This questionnaire contains 36 statements.

Read each statement carefully. For each statement, please focus on the child you are most concerned about and circle the response that best represents your opinion. **Answer all questions about the same child.**

Circle SA if you strongly agree with the statement.
Circle A if you agree with the statement.
Circle NS if you are not sure.
Circle D if you disagree with the statement.
Circle SD if you strongly disagree with the statement.

For example, if you sometimes enjoy going to the movies, you would circle A in response to the following statement:

I enjoy going to the movies. SA (A) NS D SD

While you may not find a response that exactly states your feelings, please circle the response that comes closest to describing how you feel. **Your first reaction to each question should be your answer.**

Circle only one response for each statement, and respond to all statements. **Do not erase!** If you need to change an answer, mark an "X" through the incorrect answer and circle the correct response. For example:

I enjoy going to the movies. SA A NS (X) (SD)

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SA = Strongly Agree A = Agree NS = Not Sure D = Disagree SD = Strongly Disagree

PSI-4 SHORT FORM

Answer Sheet

Name _____ Gender _____ Date of birth ___/___/___

Ethnic group _____ Marital status _____ Today's date ___/___/___

Child's name _____ Child's gender _____ Child's date of birth ___/___/___

SA = Strongly Agree A = Agree NS = Not Sure D = Disagree SD = Strongly Disagree

1.	I often have the feeling that I cannot handle things very well.	SA	A	NS	D	SD
2.	I find myself giving up more of my life to meet my children's needs than I ever expected.	SA	A	NS	D	SD
3.	I feel trapped by my responsibilities as a parent.	SA	A	NS	D	SD
4.	Since having this child, I have been unable to do new and different things.	SA	A	NS	D	SD
5.	Since having a child, I feel that I am almost never able to do things that I like to do.	SA	A	NS	D	SD
6.	I am unhappy with the last purchase of clothing I made for myself.	SA	A	NS	D	SD
7.	There are quite a few things that bother me about my life.	SA	A	NS	D	SD
8.	Having a child has caused more problems than I expected in my relationship with my spouse/parenting partner.	SA	A	NS	D	SD
9.	I feel alone and without friends.	SA	A	NS	D	SD
10.	When I go to a party, I usually expect not to enjoy myself.	SA	A	NS	D	SD
11.	I am not as interested in people as I used to be.	SA	A	NS	D	SD
12.	I don't enjoy things as I used to.	SA	A	NS	D	SD
13.	My child rarely does things for me that make me feel good.	SA	A	NS	D	SD
14.	When I do things for my child, I get the feeling that my efforts are not appreciated very much.	SA	A	NS	D	SD
15.	My child smiles at me much less than I expected.	SA	A	NS	D	SD
16.	Sometimes I feel my child doesn't like me and doesn't want to be close to me.	SA	A	NS	D	SD
17.	My child is very emotional and gets upset easily.	SA	A	NS	D	SD
18.	My child doesn't seem to learn as quickly as most children.	SA	A	NS	D	SD
19.	My child doesn't seem to smile as much as most children.	SA	A	NS	D	SD
20.	My child is not able to do as much as I expected.	SA	A	NS	D	SD
21.	It takes a long time and it is very hard for my child to get used to new things.	SA	A	NS	D	SD
22.	I feel that I am: (Choose a response from the choices below.)	1	2	3	4	5
23.	I expected to have closer and warmer feelings for my child than I do, and this bothers me.	SA	A	NS	D	SD
24.	Sometimes my child does things that bother me just to be mean.	SA	A	NS	D	SD

1. a very good parent.
2. a better-than-average parent.
3. an average parent.
4. a person who has some trouble being a parent.
5. not very good at being a parent.

SA = Strongly Agree	A = Agree	NS = Not Sure	D = Disagree	SD = Strongly Disagree

25. My child seems to cry or fuss more often than most children. ..... SA A NS D SD
26. My child generally wakes up in a bad mood. ..... SA A NS D SD
27. I feel that my child is very moody and easily upset. ..... SA A NS D SD
28. Compared to the average child, my child has a great deal of difficulty in getting used to changes in schedules or changes around the house. ..... SA A NS D SD
29. My child reacts very strongly when something happens that my child doesn't like. .. SA A NS D SD
30. When playing, my child doesn't often giggle or laugh. ..... SA A NS D SD
31. My child's sleeping or eating schedule was much harder to establish than I expected. SA A NS D SD
32. I have found that getting my child to do something or stop doing something is: (Choose a response from the choices below.) 1 2 3 4 5

    1. much harder than I expected.
    2. somewhat harder than I expected.
    3. about as hard as I expected.
    4. somewhat easier than I expected.
    5. much easier than I expected.

33. Think carefully and count the number of things which your child does that bothers you. For example, dawdles, refuses to listen, overactive, cries, interrupts, fights, whines, etc. (Choose a response from the choices below.) 1 2 3 4 5

    1. 1-3
    2. 4-5
    3. 6-7
    4. 8-9
    5. 10+

34. There are some things my child does that really bother me a lot. ..... SA A NS D SD
35. My child's behavior is more of a problem than I expected. ..... SA A NS D SD
36. My child makes more demands on me than most children. ..... SA A NS D SD

Please do not write in this area.

Appendix D: Letter of Cooperation

Letter of cooperation for data collection venue

St. Mary's Catholic School
7207 ANNAPOLIS ROAD
LANDOVER HILLS, MD 20784-2234
(301) 577-0031 www.stmarysllh.org

September 15, 2014

Helen Awatefe
9513 Underwood St.
Lanham, MD 20706

Dear Ms. Awatefe:

You have my permission to conduct your research study in our facility by contacting school parents via surveys.

Sincerely,

Principal

Appendix E: Letter of Cooperation for CHADD

Dear Ms. Awatefe,

This email confirms receipt of the letters of cooperation for Divine Connection Faith Ministries International, Inc., and CHADD. As such, you are hereby approved to conduct research with these organizations.

Congratulations!

Libby Munson
Research Ethics Support Specialist, Office of Research Ethics and Compliance

Leilani X

Information about the Walden University Institutional Review Board, including instructions for application, may be found at this link: http://academicguides.waldenu.edu/researchcenter/orec