

A Descriptive Study of Emotional Well-Being Among Women in Ghana

by

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Thesis submitted in partial fulfillment of
the requirements for the degree of Master of Science in the
Duke Global Health Institute in the Graduate School
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ABSTRACT

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Abstract

Mental illness is prevalent worldwide in all cultures with varying manifestations. Its socioeconomic impact cannot be underestimated. Mental health accounts for as much as 14 percent of the global disease burden (Prince, et al. 2007) and depression is ranked as the fourth leading contributor to the global disease burden. Nevertheless, mental health remains largely ignored worldwide, especially in developing nations.

This cross-sectional study, examines depression in two rural districts in Ghana, West Africa. Ghana, like many African nations, consists of many ethnic groups, with lineage networks that dictate personal and public behaviors. Ghana is unique in that approximately half of the population belongs to the Akan, matrilineal clan. The study hypothesized that by examining two clan groups (the Akan and Ga-Adangbe) that differed in lineage a statistically significant difference in rates of depression would be ascertained.

Upon receipt of ethical board approval from the Duke University Institutional Review Board in Durham, NC and Noguchi Memorial Institute for Medical Research Institutional Review Board in Ghana, researchers using the Depression Anxiety Stress Scales Short form (DASS-21) in a geographically randomly selected sample to measure depression as well as anxiety and stress among the participants and a demographic

survey, researchers compared the prevalence of depression between the matrilineal Akan clan and patrilineal Ga-Adangbe clan. Data was analyzed using STATA 11.0.

The results indicate a rejection of the null hypothesis. There is a statistically significant difference in depression score between the women in the Ga-Adangbe clan and Akan clan. This study reports high co-morbidity of anxiety and stress with depression. Further research should expand to include other tribes in Ghana and other mental illnesses.

Dedication

This thesis is dedicated to my family for their unwavering and selfless support throughout this project and the mental healthcare workers who work tirelessly to make an impact in the lives of those suffering with mental illness.

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1. Introduction

1.1 Background

Mental illness manifests itself in varying degrees in all cultures. Its worldwide socioeconomic impact cannot be underestimated. The World Health Organization (WHO) (2010) estimates one in four patients seeking health care services has at least one mental, behavioral or neurological disorder that remain largely undiagnosed. The WHO (2010) moreover argues that a relationship can be found between chronic and infectious disease and mental illness. Less than 1 percent of health care expenditure in middle and low-income countries is devoted to mental health (WHO 2010). In the background of this woeful lack of adequate funding, mental health remains one of the significant contributors to morbidity, accounting for as much as 14 percent of the global disease burden (Prince, et al., 2007). Mental health patients in addition to the dismal attention from their own governments and the international community, have to combat the stigma, lack of understanding and misdiagnosis of mental diseases. It is indeed impossible to meaningfully discuss global health without considering the impact of mental health.

Depression is the greatest contributor to global mental illness and remains the leading cause of disability measured by Years Lived with Disability (YLDs). Depression is rated the fourth leading contributor to global disease burden estimated as Disability

Adjusted Life Years (DALYs) and among men and women aged 15-44, depression is the second leading cause of DALYs.). Consistently high co-morbidity exists between depression, anxiety and mood disorders and in the United States, 50 to 60 percent of those diagnosed with depression also suffer from anxiety disorder (Brown and Barlow 1992). This pattern suggests the impact of depression may be underestimated in the scope of mental illness and certainly in regard to health overall. Consequently, when examining depression within a population it is important to also examine anxiety.

The National Institute of Mental Health further describes depression as a frequent co-traveller with heart disease, stroke, cancer, HIV, diabetes, and Parkinson's Disease (Kytle et al 2010). With 121 million suffering from depression and 25 million suffering from schizophrenia among many other mental and neurological disorders, it is clear that more emphasis must be placed on mental health globally (WHO 2010).

The WHO (2010) defines "depression" as a dynamic disease characterized by a continuum of behavioral and physical symptoms including anhedonia, feelings guilt or low self-worth, disturbed sleep or appetite, low energy, and poor concentration. Female sex, lack of cash savings, job loss, and infertility are statistically significant risk factors for depression in developing nations; episodes of poverty or economic stress often trigger episodes of depression, which can in turn lead to worsened impoverishment (Patel, Abas, Broadhead, Todd, & Reeler, 2001). Although increased risk of death

remains the ultimate and significant adverse outcome of depression; 'crippling' lifetime depression related morbidity manifested with poor dietary habits, medication non adherence and general functional impairment, cannot be underestimated (Cassano & Fava, 2002).

1.2 Study Setting

The Republic of Ghana is a constitutional democracy located in West Africa with a population of approximately 24 million composed of several ethnic groups, the Akan, the Mole-Dagbani, the Ewe, the Ga-Adangbe, the Guan, the Gurma, the Grusi, and the Mande-Busanga (Ghana Statistical Service 2011). The literacy of Ghanaian people for only Ghanaian languages is 6.4 percent and for both English and Ghanaian language is 34.6 percent (Ghana Statistical Service). Ghana is also the fastest growing economy in Sub-Saharan Africa. It is estimated that in 2020, Ghana will transition to a middle-income nation (Government of Ghana, 2011).

1.3 Ethnic Groups

Lineage networks and linkages largely dictate personal and public behaviors in Africa. This study examines the prevalence of depression among women of two major ethnic groups in Ghana – the Akans and Ga-Adangbes. Given that women are twice as likely to develop depression worldwide (Patel et al 2001), this study looks exclusively at the prevalence of depression in women.

The Akan people are one of the few matrilineal groups in West Africa while the Ga-Adangbe is a patrilineal group. The Akan and Ga-Adangbe constitute approximately 49.1 and 8.0 percent of the population respectively (Asante & Gyimah-Boadi, 2004).

The Akans are rooted in the belief of the *abusua*, which represents the family of children born into a mother's lineage. The adult descendants of the grandmother are the individuals entrusted with decision-making for the family as well as inheritance recipients (Clark, 1999). The tradition states that the mother passes on the *mogyaa*, blood, from maternal ancestors and the father passes on the *ntoro*, spirit from his father, believed to be important in regards to the child's health.

While there are laws that allow the preservation of land and resources for the children and wives in Ghana, the tradition is ever present (Clark, 1999). As a result of Christian colonialism the Akan tradition of rule somewhat weakened. Christians and colonialists made a concerted effort to reduce the importance of matrilineal lines and emphasize the importance of the "nuclear" or Western family. This, in addition to the rejection of traditional customs by some government officials in the 1970s, led to national laws reserving two-thirds of property for a man's wife and children. These laws also allow for women to legitimately claim housing and land "lineage-inherited resources to support their children, whom they are raising for the lineage" (Clark, 1999) (Asante & Gyimah-Boadi, 2004). However, traditional customs are still retained and

practiced. Given that the man passes on his spirit to his children, his job was always to feed and train his children. In present-day, this is executed in the form of paying for school fees and food. Modern day Akans still practice the meeting of elders to make decisions in regards to important social institutions such as funerals and marriages as well as inheritance, and other major financial issues. Although traditional laws reserve land and some inheritance for conjugal family units, much of these laws are unenforced, with final decisions resting on the judgment of family elders (Clark, 1999). The importance of kin is visible through the channels in which assistance is requested. Often job referrals, school sponsorship, housing and domestic help, and loans are based on lineage lines. Culture and ethnic traditions are not static, nor are kinship obligations. Thus as globalization creates an impact on modern Ghana, obligations to lineage reflect and adjust traditional customs.

Much of the past research in Africa is based on patriarchal societies, which have a marked difference from that of matrilineal societies, such as the Akan, especially in regard to decision-making. Upon the examination of the literature on decision-making, the importance of fertility and contraceptive use is one medium in which researchers have compared matrilineal and patrilineal ordered cultures. There is extensive research that paints Africa as a place where men make decisions regarding contraceptive use and family planning. In Ghana, studies of the Akans indicate that in contrast to non-Akan

women, Akan women play the major role in the decision-making process especially regarding contraceptive use and family planning (Takyi & Dodoo, 2005). Much of this is a result of the family support that the Akans receive from their extended matrilineal family. Non-Akans however, lose much of their rights as they join the husband's lineage upon marriage, essentially allotting more power and control to the man (Takyi & Gyimah, 2007). The matrilineal system found among Akans ensures social support, freedom, and benefits not common among non-Akans (Takyi & Dodoo, 2005). Consequently, they experience a level of autonomy not found among their patrilineal counterparts (Takyi & Gyimah, 2007).

The Akans have much stronger lineal ties than conjugal ties. This creates a sense of security that is not as common among non-Akans. This sense of independence is further illustrated in combining resources. Akan are less likely to combine resources than their patrilineal counterparts adding a level of autonomy for women from their husbands (Takyi & Gyimah, 2007). Preferences and needs of the conjugal unit are often subordinated to the interests of lineage. A woman's access to land and children is independent of her relationship with her husband, contributing to a sense of autonomy. Bride wealth, a characteristic of African marriages, where men must provide compensation for his wife upon marriage, is approached differently among Akans and non-Akans in Ghana as well. While many note, that this exchange transfers power and

decision-making ability to men, the effect is not as profound within the Akan clan, where the amounts are simply tokens as compared to the non-Akan who tend to have larger amounts of money invested. Financial differences between Akans and non-Akans are greatly linked to the lineage and inheritance. Akan women upon entering marriage maintain their matrilineal lineage and inheritance, including access to vital land.

According to Takyi and Dodoo (2005) matrilineal societies award greater levels of independence to women, creating a more egalitarian relationship within genders and decision-making. Akans also have a distinct approach to decision making within marriages. The woman exerts significant power in decision-making but is supported by her family, which plays a vital role in the process as well. This is not found in non-Akan marriages in Ghana (Takyi & Dodoo, 2005). Non-Akans in Ghana in contrast are characterized by greater male dominance and financial support similar to that of many patriarchal societies of sub-Saharan Africa; as a result, more women tend to lack independence (Takyi & Gyimah 2007).

Gender roles as defined by kinship lines have been studied in regards to dissolution of marriage, family planning, and contraceptive use. Despite the interaction of many of these factors and mental health, little research has been conducted comparing the two.

1.4 Mental Health in Ghana

It is estimated that 2, 166, 000 people suffering from moderate to mild mental disorders in Ghana. There are an additional 650,000 suffering from severe mental illness of the 24 million people living in Ghana. With only 3 psychiatric institutions and 15 psychiatrists, the treatment gap for mental illness is 98 percent (Quinn, 2007) (World Health Organization, 2007). The World Mental Health Survey estimates that approximately 3 percent and 10 percent of the adult population are suffering from severe and moderate to mild mental disorder respectively. Depression accounts for 12 percent of the inpatient diagnosis in psychiatric hospitals (World Health Organization, 2007).

Field (1960) noted that depression was the most common mental illness in rural Ghana. The depression she observed was linked to family issues and was explained as a result of witchcraft. However, since its initial description in Ghana, mental illness is now believed to come from an assortment of sources by many Ghanaians (Ofori-Atta & Linden 1995).

1.5 Depression in the Developing World

Culture and depression are inherently intertwined. Patel and colleagues (2001) emphasize the importance of culture on the recognition of depression. Patel and colleagues also identified lack of cash savings, job loss, and infertility as risk factors for

women developing depression and found a strong association between depression and cycles of poverty.

Women are twice as likely to develop depression worldwide (Patel et al. 2001). Depression is associated with lack of power in decision-making and problems within the family or child rearing (Sackey & Sandy 2009). Marriage is considered a protective factor in the onset of depression, however in developing nations it plays an interesting role. Given that with marriage in many developing nations, especially in Sub-Saharan Africa, women lose most of their autonomy, its effect can be very significant. Several studies suggest that women who are empowered and share equity in relationships are much less likely to have a depressive episode (Sackey & Sandy 2009) (Ward 2007) (Mirowsky 1985) (Kivela, Luukinen, Sulkava, Viramo, & Koski, 1999). Other factors associated with depression include family size, major life experiences, somatic health, and gender (Reinherz, Giaconia, Hauf, Wasserman, & Silverman, 1999).

Cultural context has proved to be an imperative aspect in the recognition and treatment of depression. Patel and colleagues like many researchers found cultural manifestations of depression in Zimbabwe. In a review of studies in developing nations, Ward (2007) concluded there was a great need for additional cross-cultural studies regarding mental health and argued as a necessity for studies looking at specifically at decision-making and empowerment and their role in depression.

1.6 Hypothesis

Culture undeniably influences depression and the treatment of depression. The role of women as defined by their culture may also play a role in depression. This study examines the Akan and Ga-Adangbe culturally defined role of women and quantitatively measures the prevalence of depressive symptoms to further examine this interaction. Previous literature suggests that a lower prevalence of depression may be found in the Akan, traditionally independent women, when compared to the prevalence of depression in the Ga-Adangbe women, where women are less likely to work and have less of a sense of empowerment. Thus this study hypothesizes that Akan women are less likely to have depressive symptoms than women in the Ga-Adangbe clan.

2. Methods

2.1 Consent Process and Ethics

The study received approval from the Duke University Institutional Review Board in the United States and the Noguchi Memorial Institute for Medical Research Institutional Review Board in Ghana. Participation and enrollment in the study did not begin until final approval from both ethics boards were provided.

This study used local community health workers from the Ghana Health Service and researchers from the Dodowa Health Research Centre to initiate the consent process. The first step in the consent process, after IRB approval, was community entry. The investigator presented the study to the chief of each village before individual consent was administered. After receiving approval from the chief the investigator administered verbal consent with an interpreter individually to each participant. Study volunteers were given the opportunity to ask questions then agree or abstain from participation in the study. If the volunteers agreed to participate, they then signed a consent form or used a thumbprint if illiterate in the presence of a witness. Both the chief and study volunteers were given copies of the consent form with contact information for the investigator in country and the ethics boards in both Ghana and the United States.

2.2 Study Area and Sample

2.2.1 Study Area

A systematic stratified random sampling of villages from enumeration areas in Dangme West and Atwima Nwabiagya was conducted by the Ghana Statistical service providing 14 random villages containing women above the age 18 and of Ga-Adangbe and Akan ethnic backgrounds. The enumerated areas also used for the Ghana Health Service estimates approximately 15 people in each household. Therefore, the enumerated maps provided by the Ghana Statistical Service then highlighted seven random households in each of the 14 villages for the investigator to recruit study volunteers. The study focuses on women in rural Ghana; therefore more villages were selected in hopes of covering less dense villages and enumeration areas.

Dangme West is a rural district of the Greater Accra Region with a population of 96,800 people. The majority of its inhabitants are traders and subsistence farmers. Dangme is a part of the most densely populated part of Ghana. This district is mainly comprised of Ga-Adangbe people (Ghana Health Service, 2012).

Atwima Nwabiagya is one of the largest districts in the Ashanti Region. The population is approximately 129,000. The district is 36 percent rural and 64 percent urban/suburban (Ghana Health Service, 2012). Akan people heavily dominate this district.

2.2.2 Sample Size Requirements

An issue for the investigators was the lack of information on mental health in Ghana. Thus investigators relied on a 16 percent prevalence rate of depression found in a similar African nation, Nigeria (Afolabi, Abioye-Kuteyi , Fatoye, Bello, & Adewuya, 2008). To achieve a prevalence estimate with a 95% confidence interval of plus or minus 5 percentage points, and anticipating a 10 percent refusal factor, the required sample size was calculated to be 228 women. In each district 114 interviews from the Ga-Adangbe and Akan tribes were conducted. All of the women in the study were above the age of 18 and understood Akan or Ga.

2.3 Study Design

This is a cross-sectional study that compares the prevalence of depressive, anxiety, and stress symptoms in two ethnic groups in Ghana. Using enumerated maps drafted by the Ghana Statistical Service the researcher went to the fourteen rural villages, seven in each district, where the statistical service randomly selected seven different households. Upon determining eligibility and received consent, the questionnaire was administered. Study volunteers were asked to answer 21 questions from the Depression Anxiety and Stress Scale short form (DASS-21) in addition to a short demographic survey. Volunteers had the opportunity to withdraw or refuse to answer of the questions asked.

2.4 Study Instrument

The Depression Anxiety Stress Scales Short form (DASS-21) is used to measure depression as well as anxiety and stress among the participants (Appendix A). DASS is a 21 item self-report instrument that measures depression, anxiety, and stress. The instrument can be used in children as young as 12 years of age and adults (Psychology foundation of Australia). DASS-21 has been found to be an appropriate measure in non-clinical population (Henry & Crawford, 2005). The inventory has previously been used in Ghana among women (Sackey & Sanda 2008). DASS-21 takes three 7-item scales from the full version of DASS and asks respondents to answer questions based on a 4-point severity scale measuring the extent of each state over the past week. After pre-testing the survey instrument, the investigator worked with local public health practitioners to develop examples for the DASS-21. Examples were provided for questions that were more difficult to explain in the local vernacular (Appendix B).

The five level DASS-21 was categorized into a dichotomous variable. Participants within the categories: Mild, Moderate, Severe, and Extremely Severe, were grouped as having depression, anxiety, or stress. For depression, scores of 0 to 9 are Normal, 10 to 13 are Mild, 14 to 20 are Moderate, 21 to 27 are Severe, and over 28 is classified as Extremely Severe. For anxiety, scores of 0 to 7 are Normal, 8 to 9 are Mild, 10 to 14 are Moderate, 15 to 19 are Severe, and over 20 are Extremely Severe. For stress, 0 to 14 are Normal, 15 to 18 are Mild, 19 to 25 are Moderate, 26 to 33 are Severe and 34 and over are

Extremely Severe (Psychology Foundation of Australia, 2010). Those within the Normal and Mild categories were classified as not having depression, anxiety or stress.

Moderate, Severe, and Extremely Severe were classified as depressed, anxious, or stressed.

This study also used a questionnaire to measure variables associated with depression and collect demographic data (Appendix C). Affiliation with a clan was measured by self-identification and classification from parents. Religion, said to be a protective factor against depression (Blazer, 2012) was measured by a belief in a higher power, denomination, church frequency, and church or religious involvement in times of emotional distress. The demographic questionnaire also includes questions on marital status, work status, the number of children, education level, employment status of parents, household size, and history of "treatment" by a traditional healer. Household size was determined by the amount of people eating a meal prepared by the same person, as that is the most common method of measurement in Ghanaian health household surveys. The Ghana Bureau of Ghana Languages translated and back translated the instrument.

2.5 Hypothesis and Analysis

We hypothesize that among the Akan and Ga-Adangbe clans in Ghana, there is a statistically significant difference in depression score with an alpha value of 0.05 according to clan.

The study inventory was analyzed using STATA 11.0. Investigators used double entry data input in Microsoft Excel and imported the data into STATA 11. 0. Chi-square tests were used to measure associations between depression, anxiety, stress, and clan. Modes, medians, means, and proportions were calculated as applicable. The DASS-21 categorizes the total depression, anxiety, and stress scores into Normal, Mild, Moderate, Severe, and Extremely Severe. Investigators created dichotomous variables for depression, anxiety, and stress by group Normal and Mild as “normal” and Moderate, Severe, and Extreme Severe as “depressed,” “anxious”, and “stressed.” Comparisons of means were calculated for continuous variables using t-tests and ratios and proportions were calculated for categorical variables using Pearson’s Chi-squared tests. P- Values of equal or less than 0.05 were considered statistically significant. Correlation was interpreted by the Pearson’s correlation coefficient.

3. Results

3.1 Descriptive Characteristics

The age distribution of study participants is concentrated below the age of 50. A younger population is a characteristic of many nations in West Africa (Ashford, 2009). 85 percent of this study's participants were below the age of 65. However, it is important to note that age recall was imprecise. The majority of respondents identified with a religion and were married.

The total sample number used in the study was 228 with 114 women above the age 18 in each group. The mean age of participants was about 41. A high percentage (91) of study participants described themselves as Christian while 12 people (5.26%) did not identify with a religion (See Table I). There is a statistically significant difference between the Ga and Akan and their religious affiliation, however, there is still a high proportion of Ga-Adangbe (89.5%) who identify with a religion, specifically Christianity (See Figure 1). At the time of the study 74 percent of all respondents attended church more than three times a month and in cases of distress among several other options, most participants (43%) looked to religion for guidance.

Table I also highlights the level of education of the respondents. This variable was particularly difficult to categorize due to major changes in the educational system where years of middle school did not exist as well as differing lengths for each level of schooling. Consequently, the categories are primary and greater than primary, without

distinction of completion of each level. Primary school includes elementary and middle school while greater than primary school include upper grade school and post grade school education. The demographic survey indicates that approximately 66 out of 228 respondents received no education while only three respondent received tertiary education. Both groups most frequently indicated primary school as their highest level of education. Education level was also statistically significant between tribes however it is important to note that there is a relatively low level of education between both groups (See Figure 2). The table also indicates that farming was the most common occupation, followed by trading and selling food and most participants have worked in their current occupation for less than 10 years. More Akans reported being married than Ga-Adangbes at approximately 76 percent and 56 percent respectively, and the majority of respondents (36%) reported being married for less than 10 years. The Akans were more likely to have a household size of six to ten people as compared to the Ga who were more likely to have a household of five or less people. The majority of the participants' mothers worked (87%), with the majority being farmers and traders. Similarly, the majority of the fathers of respondents worked (96%), many of which were farmers, especially among the Akans. It is important to note that recall for age, length of marriage, occupation, and other measures of time are imprecise as the cultural construct of time within the sample areas is different than that of more urban areas.

For emotional support, 74 percent of the Akan women surveyed turned to God or Church, while the majority of Ga women (70%) turned to family. This is particularly striking because as a member of a patrilineal tribe, a husband may serve as a major source of support, and 44 percent of the Ga women were not married (See Figure 3). However in comparing depression and marital status in approximately the same proportion of women were classified as depressed in the “single” (31%) and “married” (29%) categories.

Only 11 percent of all participants reported visiting traditional healers. Of the 25 respondents reporting at least one visit to a traditional healer 5 reported emotional distress as a reason. The mean monthly income reported by respondents was 35 Ghana cedis, which is approximately 23.30 US dollars. Almost half of the data for income was missing and is consequently not used in further analysis.

3.2 Depression, Anxiety and Stress

Using a Pearson’s chi square test we are able to see that the difference between the Ga-Adangbe women and the Akan women in the presence of depression and stress are statistically significant with a p-value of 0.001. Difference in anxiety and clan are also significant (See Figure 4). Table III shows that 29.8 percent of all respondents were classified as depressed, 62.8 percent of which was Ga-Adangbe. Additionally approximately 26.3 percent of the Akans surveyed reported high levels of anxiety as compared to 52.6 percent of Ga-Adangbes.

The ages over 30 reported the highest percentage of depression (73.8), compared to the highest percentage from the ages 30 to 49 with anxiety (39.5), and the highest percentage above the age 50 with stress (41.4). 64 percent of all respondents reported primary school education, and of those respondents, 25 percent of them were classified as depressed. 29 percent of all respondents received zero education, and 42 percent of these respondents were classified as depressed. Almost 7 percent of the respondents were educated past primary school and of these respondents, 20 percent of them were classified as depressed. Similar results were found with stress and anxiety. Farmers had the greatest concentration of people classified as depressed (38%) than any other occupation. Similarly, they reported the highest concentrations of stress and anxiety. Approximately 56 percent of all participants had mothers who were farmers, 31 percent of which had anxiety, which was comparable to those who were classified as stressed. 52 percent of all participants who had no one to turn to were classified as depressed. 18 percent of respondent who turned to God were depressed and 36 percent of respondent who turned to family in times of distress were depressed. Those with higher levels of anxiety and stress reported similar sources of emotional support.

The DASS-21 measures the presence of depressive, anxiety, and stress symptoms over the past week. During this time the prevalence of depression was about 1.7 times higher in the Ga women as compared to the Akan. The prevalence of stress was approximately 21 percent in the Ga and 7 percent in the Akan (See Table III). In absolute

terms, Ga women are approximately 26 percent more likely to have high anxiety than the Akan women.

The DASS-21 is divided into five categories; however for the sake of analysis in Table VI, the last two categories “severe” and “extremely severe” were collapsed and grouped as “severe”. Using modified ridit scores a significant difference was found between clan and levels of depression, stress, and anxiety (See Table IV). Furthermore, the table highlights a significant difference between clan and comorbidity of depression, stress, and anxiety.

4. Discussion

4.1 Depression and Demographics

This cross-sectional study looked to examine the relationship between the matrilineal Akan clan and patrilineal Ga-Adangbe clan and the presence of depression, which was measured by the DASS-21, particularly among women. Investigators worked in 14 rural villages within the Atwima Nwabiagya and Dangme West districts of Ghana, West Africa to collect the data.

Overall approximately 29.8% of all 228 respondents were classified as depressed. This is higher than the World Health Organization's report of 11 percent, of those admitted in a psychiatric unit but lower than the 59.6 percent prevalence found in Nigeria (WHO, 2007) (Afolabi, Abioye-Kuteyi, Fatoye, Bello, & Adewuya, 2008). Additionally, approximately 10 percent of the Ghanaian community is estimated to suffer from mild to moderate mental illness.

Many factors might contribute to the differences in this rate, including the rural setting and different demographics in each of these samples as well as different methods of measurements and different definitions of "depression." The methodology is particularly significant given that mental health is greatly understudied in Ghana. While different numbers are reported, it is difficult to find reliable estimates that include the entire nation's different geographic, ethnic, and economic divisions.

The majority of the participants, in this study lived in households with 6 to 10 people. Despite the presence of the compound-style homes in Ghana, household size is decreasing as a result of the rapid urbanization (Arslan, 2011). Compound-style homes are large buildings that contain several families. The extended family that traditionally served as a support system is diminishing throughout much of Africa (Afolabi, Abioye-Kuteyi , Fatoye, Bello, & Adewuya, 2008). This is particularly relevant among the population of interest in this study because family and social support are important components of the lineages that are determined by clan. We found among those living in 1 to 5 person households a 33.7% rate of depression and a 25.7% rate among those living in 6 to 10 person households. This suggests that social support from an increased number of people in the household may influence the rate of depression, however the difference is relatively small.

Religious affiliation is a source of social support as well and is considered a protective factor of depression. Approximately 90.7 percent of all participants were Christian, while only approximately 5.3 percent of all participants did not identify with a religion and 4.0 percent identified as Muslim. Additionally, the level of education attained among study participants may influence the prevalence of depression reported. Though the majority of the participants in this study were enrolled in partial or complete primary school the amount of primary school may have an unmeasured impact; education is generally considered a buffer to the onset of depression (Cassano &

Fava, Depression and Public Health: An Overview, 2002). Socioeconomic status likely played a significant role, however due to cultural importance of money in the rural communities, very few respondents were able to report their weekly, monthly, or yearly income. There are several variables that are associated with depression; however, none are associated with clan, thus are causal intermediates, and cannot be adjusted for as confounders.

4.2 Interpretation of Bivariate Analysis

The results indicate that the prevalence of depressive, stress, and anxiety symptoms differs between these two clans, allowing us to reject the null hypothesis and accept the hypothesis. Using an alpha level of 0.05, Akan women were statistically significantly less likely to be depressed than Ga-Adangbe women.

According to this study, depression, stress, and anxiety have a high comorbidity with one another, which has been found in several other studies. Stress and age according to the chi square test are also significant. We found the presence of emotional support and decreased stress, depression, and anxiety were also statistically significantly associated.

4.3 Limitations

There were several limitations to this study. The first limitation is the language of the inventory used. The DASS-21 is an English inventory that uses English phrases that may not be natural in the context of Ghana. An example of this would be the question,

“Are you feeling down and blue?” Though the phrase does not exist in the local context the researchers provided examples to describe the sentiment desired (Appendix A).

There was also a possible bias because the investigator understood the Akan dialect but did not understand the Ga-Adangbe dialect. To control for this bias an interpreter was used with both groups, however it is possible that a bias was still present. The concept of time in rural Ghana is very different from that of the West, thus questions that asked about time periods such as age, marital length, and length of employment provide imprecise answers.

Selection bias may also have been present in this study. For example, it is possible that at the time of interview, possible participants were working and unable to participate in the study. However, it is impossible to measure how the results may have changed, given that those possible participants did not answer the questionnaire. Additionally, this study enabled geographic randomization of two districts heavily concentrated in rural Akan and Ga-Adangbe women. Thus the results cannot be generalized to all Akan and Ga-Adangbe women who may be from other districts with differing characteristics such as urban areas, different employment opportunities, or less clan and tribal homogeneity.

We did not find that religion, marital status, presence of a child, education level were significant when matched with any of the categories, however this may be a result of under-powering. Additionally this study created a dichotomous variable by grouping

the categories normal and mild as normal and moderate to extremely severe as “depressed”, “anxious”, or “stressed.” This grouping allows for a more true estimate of the cases of depression however it does not include those who may be depressed but not classified in the moderate or higher categories.

In cross-sectional research, the intent is to measure symptoms at that moment in time. Given that depression is a cyclical disorder, it is possible that participants may have had depressive symptoms before but not in the past week as the DASS-21 asks. Similarly, those with the depressive symptoms may not exhibit them the following week. Interview bias may have affected the results as well. Though the research team was trained and had experience, it is possible that the women’s responses were influenced by the presence of an investigator. It is also important to note that while the villages were randomized, the results of this study can only be generalized to women within these tribes within the rural areas. The ethnic and cultural distinctions within urban areas vary drastically from that of rural Ghana.

4.4 Conclusions and Implications

Kinship studies have looked at various implications of matrilineal lineage mainly within Ghana. While many of the studies, look at traditional systems, social issues, and a few economic repercussions, little has been done with health. Mental health in Ghana is severely understudied. There is a need to understand the etiology and manifestations of mental illness in the Ghanaian context. Before any action or policy can be outlined, one

must understand the nature and foundation of mental health and its relationship with the people in the country. With approximately half of the population in matrilineal tribes, one must also begin to understand the implications of tribe on mental health. This study shows that there is a statistically significant difference between depression, anxiety, and stress and clan. Future studies should look to replicate these findings among other patrilineal tribes in Ghana as well as more regions. Studies looking at prevalence rates among those married and single within these clans may contribute to understanding the relationship between clan and mood disorders. Additionally, prevalence studies should investigate other mental illness. It is clear that social support and family support influence the presence of these common mental disorders (CMD). Interventions encouraging social support and gender equity should be implemented in communities where the matrilineal order does not provide it. While there is a statistical difference, this study still shows relatively high prevalence rates of these CMDs. In a nation with a 98 percent treatment gap differential in mental health (WHO, 2007), it is important that policy makers place more emphasis on the needs of their constituents. Community and/or church based initiatives can also begin to work towards closing the gap. In 2007 Prince stated in the Lancet, "There is no health without mental health." This statement is certainly true in Ghana as well. This study has clearly illustrated that there is a relatively high prevalence of depression in the rural areas surround two of the largest cities in Ghana, the impact of which can be assumed is much greater.

The potentially great impact of the relatively high depression rates in rural areas surrounding the two largest Ghanaian cities indicates a need for the inclusion of mental health initiatives in Ghanaian health policy.

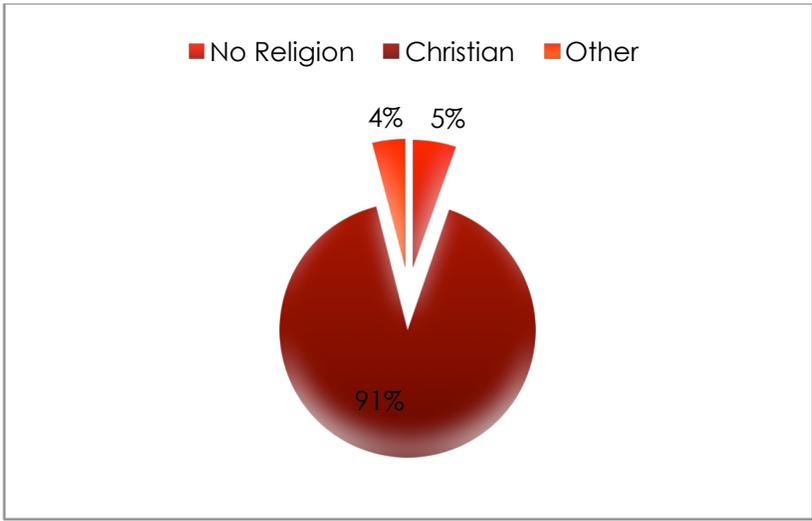


Figure 1: Religious Affiliation

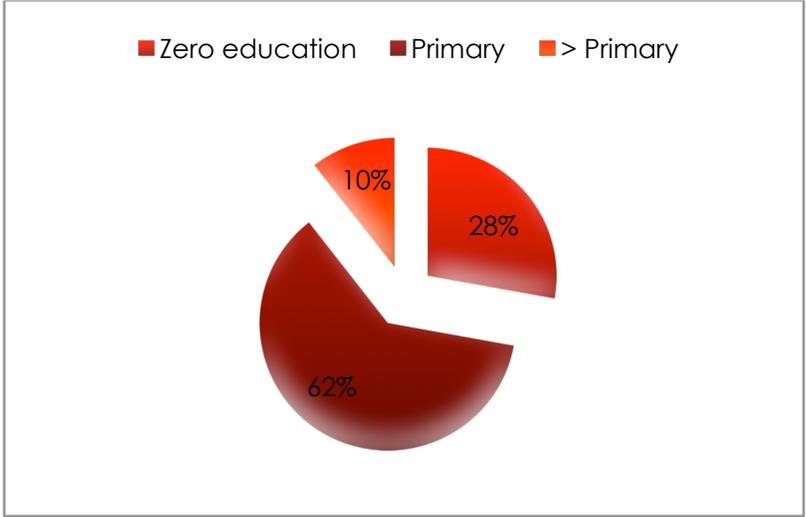


Figure 2: Education Level

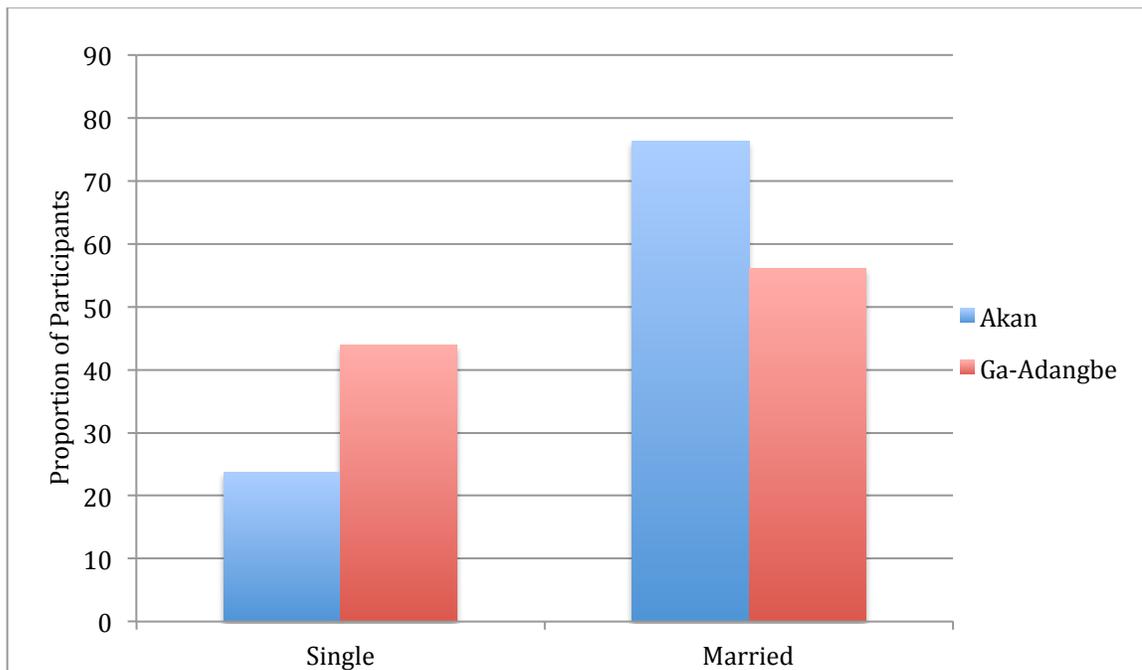


Figure 3: Marital Status by Clan

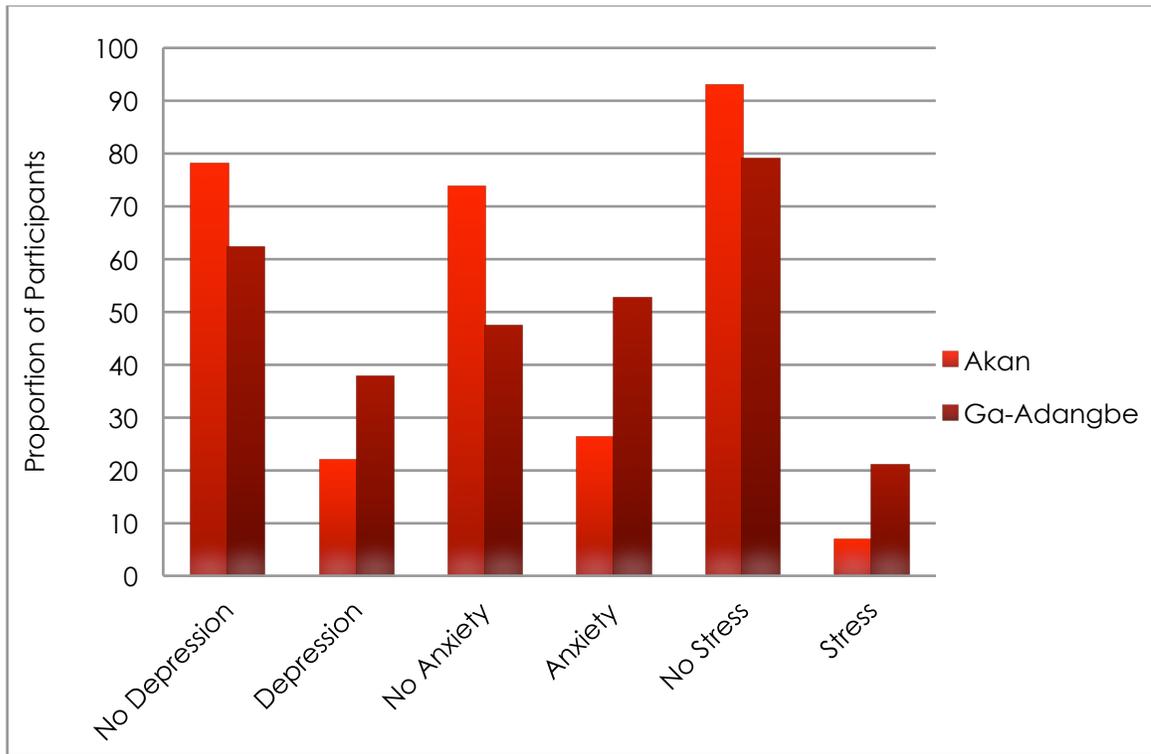


Figure 4: Depression, Anxiety, and Stress

Table I: Socio-Demographic Characteristics

Characteristics	Akan N (%)	Ga-Adangbe	Total	P-value
Age group* (years)				
0 – 30	36 (31.9)	42 (38.5)	78 (35.1)	0.515
31 -49	44(38.9)	41 (37.6)	85 (38.3)	
≥ 50 years	33 (29.2)	26 (23.9)	59 (26.6)	
Religion				
No Religion	0 (0.00)	12 (10.5)	12 (5.3)	<0.001
Christianity	110 (96.5)	97 (85.1)	207 (90.8)	
Other	4 (3.5)	5 (4.4)	9 (3.9)	
Church Frequency				
Zero times a month	14 (12.3)	13 (11.4)	27 (11.8)	0.552
Once a month	13 (11.4)	20 (17.5)	33 (14.5)	
≥ Twice a month	87 (76.3)	81 (71.1)	168 (73.7)	
Level of education*				
Zero	23 (20.4)	43 (37.7)	66 (29.1)	0.012
Primary	83 (73.4)	63 (55.3)	146 (64.3)	
> Primary	7 (6.2)	8 (7.0)	15 (6.6)	
Employment Status				
Employed	104 ((91.2)	89 (78.1)	193 (84.7)	0.006
Unemployed	10 (8.8)	25 (21.9)	35 (15.3)	
Occupation*				
Farmer	61 (58.6)	38 (42.2)	99 (51.0)	<0.001
Trader	8 (7.7)	34 (37.8)	42 (21.7)	
Food Vendor	24 (23.1)	4 (4.4)	28 (14.4)	
Other	11 (10.6)	14 (15.6)	25 (12.9)	
Occupation length				
0 years	10 (9.3)	25 (22.1)	35 (15.8)	0.025
0 – 10 years	55 (50.9)	59 (52.2)	114 (51.6)	
11 – 20 years	17 (15.7)	13 (11.5)	30 (13.6)	
≥ 21 years	26 (24.1)	16 (14.2)	42 (19.0)	
Household size*				
0	1 (0.9)	1 (0.9)	2 (0.9)	0.144
1 -5 people	38 (33.6)	54 (47.4)	92 (40.5)	
6 – 10 people	64 (56.6)	49 (42.9)	113 (49.8)	
>10 people	10 (8.9)	10 (8.8)	20 (8.8)	

Mother's Work Status	Akan N (%)	Ga-Adangbe N (%)	Total N s(%)	
Employed	107 (93.9)	92 (80.7)	199 (87.3)	0.003
Unemployed	7 (6.1)	22 (19.3)	29 (12.7)	
Mother's Occupation*				<0.001
Does not work	5 (4.5)	24 (21.4)	29 (13.0)	
Farming	87 (77.7)	41 (36.6)	128 (57.1)	
Trading	8 (7.1)	36 (32.1)	44 (19.6)	
Other	12 (10.7)	11 (9.8)	23 (10.3)	
Father's Occupation*				0.002
Does not work	2 (1.9)	7 (6.3)	9 (4.1)	
Farmer	80 (74.0)	59 (52.6)	139 (63.2)	
Fisherman	2 (1.9)	12 (10.7)	14 (6.4)	
Other	24 (22.2)	34 (30.4)	58 (26.3)	
Marital Status				0.001
Married	87 (76.3)	64 (56.1)	151 (66.2)	
Single	27 (23.7)	50 (43.9)	77 (33.8)	
Marital Length				0.004
0 years	27 (23.7)	50 (44.3)	77 (33.9)	
1 – 10 years	47 (41.2)	34 (30.1)	81 (35.7)	
11 – 20 years	14 (12.3)	16 (14.2)	30 (13.2)	
>20 years	26 (22.8)	13 (11.5)	39 (17.2)	
Sources of emotional support*				<0.001
No one	3 (2.7)	16 (14.2)	19 (8.4)	
God	84 (74.3)	14 (12.4)	98 (43.4)	
Family	23 (20.4)	79 (69.9)	102 (45.1)	
Other	3 (2.6)	4 (3.5)	7 (3.1)	
Traditional healers				0.053
No	96 (85.0)	106 (93.0)	202 (89.0)	
Yes	17 (15.0)	8 (7.0)	25 (11.0)	
*5 missing responses for age, 1 missing response for education, 34 missing responses for occupation, 1 missing response for household size, 4 responses missing for mother's occupation; 8 responses missing for father's occupation, 2 missing for emotional support				

Table II: Depression

	No Depression	Depression	Total	P-value
Age				0.053
0 - 30	61 (78.2)	17 (21.8)	78 (100)	
31 – 49	61 (71.8)	24 (28.2)	85 (100)	
≥ 50	35 (59.3)	24 (40.7)	59 (100)	
Total	157 (70.7)	65 (29.3)	222(100)	
Denomination				< 0.001
No denomination	7 (58.3)	5 (41.7)	12 (100)	
Christian	148 (71.5)	59 (28.5)	207 (100)	
Other	5 (55.6)	4 (44.4)	9 (100)	
Total	160 (70.2)	68 (29.8)	228 (100)	
Education level				0.029
Zero Education	38 (57.6)	28 (42.4)	66 (100)	
Primary	109 (74.7)	37 (25.3)	146 (100)	
> Primary	12 (80.0)	3 (20.0)	15 (100)	
Total	159 (70.0)	68 (29.9)	227 (100)	
Employment Status				0.563
Employed	134 (69.4)	59 (30.6)	193 (100)	
Unemployed	26 (74.3)	9 (25.7)	35 (100)	
Total	160 (70.2)	68 (29.8)	228 (100)	
Occupation				0.103
Farmer	61 (61.6)	38 (38.4)	99 (100)	
Trader	32 (76.2)	10 (23.8)	42 (100)	
Food Vendor	22 (78.6)	6 (21.4)	28 (100)	
Other	20 (80.0)	5 (20.0)	25 (100)	
Total	135 (69.6)	59 (30.4)	194 (100)	
Occupation length				0.531
0 years	26 (74.3)	9 (25.7)	35 (100)	
0 – 10 years	83 (72.8)	31 (27.2)	114 (100)	
11 – 20 years	20 (66.7)	10 (33.3)	30 (100)	
≥ 21 years	26 (61.9)	16 (38.1)	42 (100)	
Total	155 (70.1)	66 (29.9)	221 (100)	
Household Size				0.526
0	1 (50.0)	1 (50.0)	2 (100)	
1 -5 people	61 (66.3)	31 (33.70)	92 (100)	
6 – 10 people	84 (74.3)	29 (25.7)	113 (100)	
>10 people	13 (65.0)	7 (35.0)	20 (100)	
Total	159 (70.0)	68 (30.0)	227 (100)	

				0.307
Mother's Employment Status				
Unemployed	18 (62.1)	11 (37.9)	29 (100)	
Employed	142 (71.4)	57 (28.6)	199 (100)	
Total	160 (70.2)	68 (29.8)	228 (100)	
Mother's Occupation				0.088
Does not work	16 (55.2)	13 (44.8)	29 (100)	
Farming	98 (76.6)	30 (23.4)	128 (100)	
Trading	28 (63.6)	16 (36.4)	44 (100)	
Other	16 (69.6)	7 (30.4)	23 (100)	
Total	158 (70.5)	66 (29.5)	224 (100)	
Father's Occupation				0.257
Does not work	4 (44.4)	5 (55.6)	9 (100)	
Farmer	102 (73.4)	37 (26.6)	139 (100)	
Fisherman	9 (64.3)	5 (35.7)	14 (100)	
Other	39 (67.2)	19 (32.8)	58 (100)	
Total	154 (70.0)	66 (30.0)	220 (100)	
Marital Status				0.751
Single	53 (68.8)	24 (31.2)	77 (100)	
Married	107 (70.9)	44 (29.1)	151 (100)	
Total	160 (70.2)	68 (29.8)	228 (100)	
Marital Length				0.453
0 years	53 (68.8)	24 (31.2)	77 (100)	
1 – 10 years	61 (75.3)	20 (24.7)	81 (100)	
11 – 20 years	22 (73.3)	8 (26.7)	30 (100)	
>20 years	24 (61.5)	15 (38.5)	39 (100)	
Total	160 (70.4)	67 (30.0)	227 (100)	
Emotional Support				0.003
No one	9 (47.37)	10 (52.63)	19 (100)	
God	80 (81.63)	18 (18.37)	98 (100)	
Family	65 (63.73)	37 (36.27)	102 (100)	
Other	5 (71.43)	2 (28.57)	7 (100)	
Total	159 (70.3)	67 (29.7)	226 (100)	

Table III: Prevalence

Prevalence	Akan	Ga	Prevalence Ratio	Prevalence Difference
Depression Prevalence	25/114 0.219	43/114 0.377	1.719	0.158
Anxiety Prevalence	30/114 0.263	60/114 0.526	2.000	0.263
Stress Prevalence	8/114 0.070	24/114 0.211	2.999	0.140

Table IV: Depression, Anxiety, and Stress

	Normal	Mild	Moderate	Severe	Mean	Standard Deviation	P- value
Level of depression							0.001
Akan	76 (66.67)	13 (11.40)	17 (14.91)	8 (7.02)	1.63	1.01	
Ga-Adangbe	50 (43.86)	21 (18.42)	32 (28.07)	11 (9.65)	2.07	1.15	
Total	126	34	49	19			
Level of Anxiety							< 0.001
Akan	73 (64.04)	11 (9.65)	14 (12.28)	16 (14.04)	1.83	1.29	
Ga-Adangbe	42 (36.84)	12 (10.53)	28 (24.56)	32 (28.07)	2.61	1.50	
Total	115	23	42	48			
Level of Stress							0.0007
Akan	98 (85.96)	8 (7.02)	5 (4.39)	3 (2.63)	1.24	0.66	
Ga-Adangbe	77 (67.54)	13 (11.40)	13 (11.40)	11 (9.65)	1.65	1.08	
Total	175	21	18	14			
Comorbidity							<0.001
Overall comorbidity	0	1	2	3			
Akan	62 (54.39)	22 (19.30)	17 (14.91)	13 (11.40)			
Ga-Adangbe	27 (23.68)	28 (24.56)	32 (28.07)	27 (23.68)			
Total	89	50	49	40			

Appendix A

DASS₂₁		<i>Name:</i>	<i>Date:</i>
<p>Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you <i>over the past week</i>. There are no right or wrong answers. Do not spend too much time on any statement.</p> <p><i>The rating scale is as follows:</i></p> <p>0 Did not apply to me at all 1 Applied to me to some degree, or some of the time 2 Applied to me to a considerable degree, or a good part of time 3 Applied to me very much, or most of the time</p>			
1	I found it hard to wind down	0	1 2 3
2	I was aware of dryness of my mouth	0	1 2 3
3	I couldn't seem to experience any positive feeling at all	0	1 2 3
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1 2 3
5	I found it difficult to work up the initiative to do things	0	1 2 3
6	I tended to over-react to situations	0	1 2 3
7	I experienced trembling (eg, in the hands)	0	1 2 3
8	I felt that I was using a lot of nervous energy	0	1 2 3
9	I was worried about situations in which I might panic and make a fool of myself	0	1 2 3
10	I felt that I had nothing to look forward to	0	1 2 3
11	I found myself getting agitated	0	1 2 3
12	I found it difficult to relax	0	1 2 3
13	I felt down-hearted and blue	0	1 2 3
14	I was intolerant of anything that kept me from getting on with what I was doing	0	1 2 3
15	I felt I was close to panic	0	1 2 3
16	I was unable to become enthusiastic about anything	0	1 2 3
17	I felt I wasn't worth much as a person	0	1 2 3
18	I felt that I was rather touchy	0	1 2 3
19	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1 2 3
20	I felt scared without any good reason	0	1 2 3
21	I felt that life was meaningless	0	1 2 3

Appendix B

1. I found it hard to wind down.
 - a. At the end of the day when you were going to sleep did you have difficulty?
2. I was aware of dryness of my mouth
 - a. Did you feel as though there was no saliva in your mouth?
3. I couldn't seem to experience any positive feeling at all.
 - a. Let's say your child is about to get married or someone has prepared your favorite food, for some reason, were unable to find joy?
4. I experienced breathing difficulty.
5. I found it difficult to work up the initiative to do things
 - a. Was there a time when you had to prepare a meal or clean like you normally do but you could not find within yourself the energy to do so?
6. I tended to over-react to situations
 - a. Was your reaction to something much greater than what was needed? For example, cry when someone walked away or became very angry for a minor problem?
7. I experienced trembling
8. I felt that I was using a lot of nervous energy
 - a. Did you open a bag with much more energy than was needed? Or feel very tense
9. I was worried about situations in which I might panic and make a fool of myself
 - a. Let's say you were walking around the village did you think in your mind, oh! If I trip everyone will laugh at me and I will feel very uncomfortable?
10. I felt that I had nothing to look forward to
11. I found myself getting agitated
 - a. Did you feel very sensitive about things that made you get angry?
12. I found it difficult to relax
 - a. When you were sitting down to relax did you still feel very tense?
13. I felt down-hearted and blue
 - a. Did you feel sad without any real reason?
14. I was intolerant of anything that kept me from getting on with what I was doing
 - a. Did someone interrupt you from cooking and you became extremely angry?
15. I felt I was close to panic
16. I was unable to become enthusiastic about anything
 - a. Were you unable to be excited about something like someone giving you money?

17. I felt I wasn't worth much as a person
18. I felt that I was rather touchy
 - a. Did you feel sensitive about situations or did minor things irritate you?
For example someone joking around with you but instead of laughing you became very offended
19. I was aware of the action of my heart in the absence of physical exertion
20. I felt scared without any good reason
21. I felt that life was meaningless
 - a. Did you feel when you woke-up today, Why am I awake there's no reason for me to be here on this earth.

Appendix C

ID# _____

Region _____

What is your clan? ____ Akan _____ Ga-Adangbe
What is your tribe?(i.e. *Ashanti, Krobo, Fanti, etc*) _____

What is your mother's tribal affiliation?(i.e. *Ashanti, Ewe, Ga, Krobo...*)

What is your father's tribal affiliation?(i.e. *Ashanti, Ewe, Ga, Krobo...*)

Are you affiliated with a religion? ____ yes ____ no
If so...
What religion? _____

How often do you attend church every month? _____

Are you married? ____ yes ____ no

- How long have you been married? _____
- Does your husband work? ____ yes ____ no
 - What kind of work does he do? _____
 - Is his job ____ private ____ self employed ____ public
 - How long has he been working here? _____

Do you work? (i.e. *crafts, selling food, market, etc*) ____ yes ____ no

- What kind of work do you do? _____
- Is your job ____ private ____ self employed ____ public
- How long have you worked? _____
- If you do not work, would you like to work? _____

Do you have children? ____ yes ____ no

- How many children do you have? _____
- What are their ages? _____

What was your father's profession? (i.e. *farming, teacher, etc.*) _____

Did your mother work? ____ yes ____ no

- What did she do? _____ how long? _____

How many people live in your household? _____

What is your highest level of education? _____

What is your husband's highest level of education? _____

What is your age? _____

How often do you go to people in the church for emotional support in a month? _____

Have you ever seen a traditional healer? If so for what?
Physical symptoms? _____
Emotional symptoms? _____

What is the average income every month in your home?

If you feel stressed, to whom do you turn? _____

What is your age? _____

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