

**PREDICTING ADOLESCENTS' QUALITY OF LIFE USING
DISCRIMINANT ANALYSIS**

BY

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**A DISSERTATION SUBMITTED TO THE DEPARTMENT OF
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Abstract

Background

Psychosocial functioning and depression is associated with a wide range of impacts on adolescents' quality of life. In Nigeria, studies assessing the importance of the domains of psychosocial functioning and depression in distinguishing between the categories of quality of life and classifying adolescents into these categories have been limited in literature. This study investigated the domains of psychosocial functioning and child depression that significantly distinguish between the categories of quality of life and also classify into these groups.

Methods

Data for a total of 2019 adolescents aged 10-19 were extracted from Benue State cross-sectional study. Preliminary analyses on their socio-demographic information were performed using descriptive statistics. Differences between categories (groups) of Quality of Life (low, moderate and excellent) on the basis of the attributes of the adolescents in terms of their psychosocial functioning and depression status, indicating which attributes contribute most to group separation were investigated using discriminant analysis. Chi-square analysis was used to assess the association between socio-demographic characteristics of the adolescents and levels of Quality of Life. The inter-relationships between the domains of Quality of Life and the adolescents age, position in the family, domains of psychosocial functioning and child depression status was assessed using correlation analysis.

Results

Participants were 14.7 ± 2.05 years old. Higher levels of the domains of quality of life were significantly correlated with lower levels of the domains of Children's Depression Inventory (CDI) with ineffectiveness significantly having the highest strength of correlation ($r = -0.23$, $p < 0.001$). There was also significant correlation between the domains of Quality of Life and the adolescents' psychosocial functioning with prosocial behaviour being the domain of SDQ with the highest strength of relationship ($r = 0.31$, $p < 0.001$). Both hyperactivity ($F = 67.41$, $p < 0.001$) and ineffectiveness ($F = 44.2$, $p < 0.001$) were strong significant discriminating variables that predict the adolescents' levels of physical health while adolescents' position in the family did not determine their physical health. Prosocial behaviour ($F = 59.98$, $p < 0.001$) and negative mood

symptoms ($F=21.86$, $p<0.001$) were strong significant discriminating variables that distinguish between the adolescents' levels of psychological health. Also, prosocial behaviour ($F=82.41$, $p<0.001$) and ineffectiveness ($F=31.19$, $p<0.001$) were strong significant discriminating variables that predict the adolescents' levels of total quality of life.

Conclusions

Adolescent's psychosocial functioning and depression status relates with their physical health, psychological health, social relationship, environmental health and total quality of life. Having this information about adolescents, discriminant analysis can be used in predicting adolescent's quality of life in that prompt intervention programme could be put in place for them.

Keywords: Adolescents, Psychosocial Functioning, Quality of Life, Child Depression, Discriminant Analysis.

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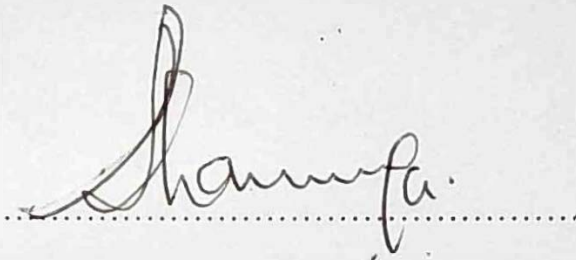
I express my profound gratitude to my husband for all his support and encouragement throughout the course of this programme. May God continue to bless you, Sir.

I cannot but thank my friends and colleagues for their support and commitment. Thank you all.

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CERTIFICATION

This is to certify that this project work was carried out by Odunlami Grace Alaba of the Department of Epidemiology and Medical Statistics, Faculty of Public Health, College of Medicine, University of Ibadan.



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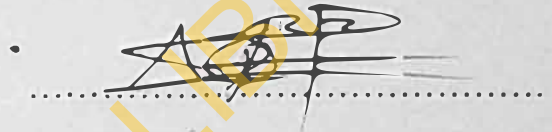
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DEDICATION

I dedicate this project work to the Almighty God, the giver of life, the beginning and the end, the author and finisher of our faith.

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CHAPTER ONE

INTRODUCTION

1.1 Background

The terms “quality of life” and “well-being” are often used to measure different realms of an individual’s satisfaction with existence and experience in an attempt to understand how social, individual, and emotional factors influence behaviour and lifestyle (Gonçalves et al., 2010). The World Health Organization’s Quality of life (WHOQoL) assessment defines quality of life as “the individuals’ perception of their position in life in the context of the culture in which they live and in relation to their goals, expectations, standards, and concerns” (De Vries and Van Heck, 1997). Dissart and Deller (2000) argue that a person’s quality of life is dependent on the exogenous (objective) facts of his or her life and the endogenous (subjective) perception he or she has of these factors and of himself or herself. Life opportunities can manifest themselves in various ways, such as availability of resources to an individual or an individual’s perception about their quality of life, defined as the impact of some socio-demographic factors, social relationship, specific illness, or health services policy on quality of life (Drotar, 1998).

“Adolescence” is derived from the Latin word ‘adolescere’ meaning “to grow up” (Macmillan Dictionary for Students, Macmillan, Pan Ltd.). The term adolescence is a sociological construct, like other developmental phases in human growth and development, though, some experts view the term as a construct applied by adult members of the society to describe the person who is in the transition to acquire biological features peculiar to the adult population group (Ikorok et al., 2006). The period of adolescence is most closely associated with the teenage years (Erikson, 2009), though its physical, psychological and cultural expressions may begin earlier and end later. Children from a young age start to formulate ideas, beliefs and attitudes about their health and well-being. Adolescence is a time of opportunity to prepare for healthy and productive adulthood, and to reduce the likelihood of problems in the future. It is also one of risk when health problems that have serious immediate consequences can occur or when problem behaviours that could have serious adverse effects on health in the future are initiated.

1.2 Statement of Problem

Adolescents have challenges; in particular, health care for this age group tends not to be receiving priority attention in Nigeria such that many adolescents are affected about matters concerning their health and survival. There is high level of ignorance about authentic problems of adolescents in society and how they feel about their quality of life (UNICEF, 2013). If their quality of life is not good and life is not satisfactory for them, they engage in many dangerous activities which they take to adulthood when it is difficult to change. According to UNICEF, 2013, of the 22.3% that are adolescents in Nigeria, 42.2% are left under inadequate care. Majority of Nigerian parents of these adolescents are poor with 71% of the population living on less than one dollar a day and 92% on less than two dollars a day and about 64% of households in Nigeria consider themselves to be poor while 32 per cent of households say their economic situation had worsened over a period of one year (UNICEF, 2007). Quality of life and general living conditions in Nigeria are poor, especially for children and adolescents and their mortality rates are high, the weakened Public Health Care (PHC) system with low coverage of key interventions has resulted in the persistence of high disease burden; HIV/AIDS remains a major issue of concern among children and adolescents who are left not catered for in Nigeria with a prevalence rate of 4.4% (UNICEF, 2007). Majority of adolescents are still walking on the streets and national income is getting lower where these adolescents could have helped if they are helped to grow well into responsible adults. With a Gross national income (GNI) per capita of 2,069 dollars, Nigeria lags behind countries like Equatorial Guinea (17,608 dollars), Botswana (13,049 dollars) and Gabon (12,249 dollars) (United Nations Quality of life Index, 2011). Some adolescents may be more vulnerable to distress than others (Lindqvist et al., 2007), and as such the impact on their quality of life may also be understudied. Nafarious youthful activities are widespread in Nigeria which has created a lot of concern to the society, government and other stake holders; in primary schools, peers engage in organized crimes and disrupt normal academic programs, in secondary schools and most Nigerian universities, the activities of secret cults are known to have been source of threat to lives and property (Hamisu et al., 2014). WHOQOL-BREF reflect worse conditions of physical environment, conduct problems and quality of life in the rural areas than in the urban (Takashi et al 2006). All these pose problems and suggest needs and a requirement for quick measures to provide better and more specific supports and interventions for adolescents.

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1.3 Justification

Many researches had been done using discriminant analysis on agriculture, banking and others to classify and predict. Many researches had also been done on adolescents and their quality of life using several other statistical techniques and tools but none has used discriminant analysis to classify and predict adolescents' quality of life in Nigeria. Adolescents represent one fifth of the global population; healthy, competent adolescents who enter the work force can raise the economic productivity of a country (World Health Organization, 2009). There is growing recognition of the economic benefits of investing in the healthy development of adolescents' quality of life, and the economic costs of not doing so. The evident high level of ignorance about authentic problems of adolescents in society (UNICEF, 2013) justifies that proper attention be paid to detect and identify vividly their level of quality of life and the peculiar problems relating to low quality of life of this population group. Understanding adolescent perception of health issues and well being is of vital importance to understanding how adolescents engage with their health and quality of life and this can result in both short-term and long-term population health gains if detected early enough (Keenaghan and Kilroe, 2008). There has been an increasing awareness of the need to pay special focus on the adolescent's health and quality of life (Okonta, 2007). Investing in the quality of life of adolescents earlier helps prevent the estimated 1.4 million deaths that occur globally every year due to road traffic injuries, violence, suicide, HIV and pregnancy related causes (World Health Organization, 2009). Their quality of life need to be detected early enough before it affects their reaction in life which may be difficult to correct later. Predicting and detecting their quality of life with the help of this study can fill the gaps in literature and increase adolescents' hope for the future thereby reducing deaths, violence, suicide, HIV and other related effects of low quality of life. These findings could be taken into account in policy making to provide better and more specific supports and interventions for them (Jin-Ding, et al., 2009) which will reduce juvenile delinquency and as a result create better adulthood and high life expectancy.

1.4 Objective of the Study

Main Objective

The main objective of this study is to investigate differences between categories (groups) of quality of life on the basis of the attributes of the cases, indicating which attributes contribute most to group separation.

Specific Objectives

- i. Assess quality of life (QoL) of adolescents across selected compositional and contextual factors.
- ii. Determine the most important psychosocial discriminator of quality of life of adolescents in Benue State, Nigeria.
- iii. Determine the most important mood disorder as the discriminator of the quality of life of adolescents in Benue State, Nigeria.
- iv. Test whether the important mood disorder and psychosocial discriminators can sufficiently predict QOL of adolescents in Benue State, Nigeria.

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CHAPTER TWO

LITERATURE REVIEW

2.1 Background

Understanding adolescent psychopathology involves observations across environmental contexts and societal settings (Lambert et al., 1998). When danger is not an issue, most experts view adolescent experimentation and environmental exploration as integral to the development of a healthy and individual sense of self (Hazen et al., 2008). Adolescents, in general, are under constant pressures, striving for independence, good quality of life and for a separate identity (Faulkner and Davey, 2002; Husna et al., 2012).

2.2 Quality of life of adolescents

The Constitution of the World Health Organization (WHO) defines health as "A state of complete physical, mental, and social well-being not merely the absence of disease" This can be assessed by measuring the improvement in the quality of life related to health care (World Health Organization 1997). According to the World Health Organization's Quality of life (WHOQoL) assessment, quality of life can be defined as "the individuals' perception of their position in life in the context of the culture in which they live and in relation to their goals, expectations, standards, and concerns" (De Vries and Van Heck, 1997). Kekic (2005) as well as Felce and Perry (1995) stated that quality of life factors are varied and extensive, and cover the wide range of life domains which include: material comforts, health conditions, recreational opportunities, social interaction, learning or education status, creative expression and diversity, cultural values, work environment, compensation and finance, professional development, leisure activities, safety, housing, and freedom of expression. In this era of globalization and technological revolution, education is considered as a first step for every human activity. It plays a vital role in the development of human capital and is linked with an individual's well-being and opportunities for better living (Battle and Lewis, 2002; Farooq, et al., 2011). Subjective well-being is generally considered to be comprised of three interrelated but distinct factors, namely the relative presence of positive effect, absence of negative effect and perceived quality of life, or life satisfaction (Huebner et al., 2004). The adolescent years are a key window for the development of several

disorders. Brain systems governing emotion and reward-seeking are fully developed by this time, but circuits governing judgment and self-inhibition are still maturing, causing teenagers to act on impulse, seek new sensations, and be easily swayed by their quality of life; all of which may draw them to take risks (National Institute on Drug Abuse, 2004). Children and adolescents need health services that are responsive and sophisticated to their needs and easy to access to increase their quality of life (Russell and Barker, 2005). In order to prevent low quality of life of adolescents, two things must be taken into consideration: factors that increase the risk of developing the problem must be identified, and ways to reduce the impact of these factors must be developed (Johnston, et al., 2013). Helping adolescents protect their health and social quality is an important public health priority (International Planned Parenthood Federation (IPPF), 2012).

2.3 Depression and Psychosocial Functioning of Adolescents

There is a growing number of studies indicating that depressed adolescents exhibit significant psychosocial deficits in adulthood, including impaired academic and occupational functioning, early childbearing, social difficulties and poor peer relationships, lowered life satisfaction, increased adversity, increased treatment utilization, criminal arrests, and reduced global functioning (Aronen and Soininen, 2000; Fergusson and Woodward, 2002). The term psychosocial well-being is used nowadays in the literature to refer to a wide range of issues like mental, emotional, social, physical, economic, cultural, and spiritual health (Linley, et al., 2009). Adolescent externalizing disorders, especially conduct disorder, have been repeatedly shown to be associated with longstanding negative consequences, including adult antisocial behaviour, arrests and legal contacts, early pregnancy, spouse abuse, physical aggression, and early mortality (Laub and Vaillant, 2000). Social well-being is considered an important component of overall well-being, in addition to the emotional and psychological types of well-being (Keyes, 2003). Although patterns are not always consistent, disadvantaged social statuses are generally associated with high levels of distress and high rates of disorder (Thoits, 2010). Psychological disorders among adolescents are related to suicide and problems in the family, social, and school environment (Jatobá et al., 2007; Shaw et al., 2005; Tomé et al., 2006). Adolescents with high levels of depression, attention problems, and delinquency score lower on standardized

achievement tests and tests of verbal and performance IQ than youth with low levels of problems (McLeod, 2012).

2.4 Strengths and Difficulties Questionnaire (SDQ)

The Strengths and Difficulties Questionnaire (SDQ) is a 25-item instrument developed to assess emotional and behavioural problems (Goodman, 1997). The Strengths and Difficulties Questionnaire was developed to generate scores for five domains of psychological adjustment among children and adolescents: hyperactivity-inattention, emotional symptoms, prosocial behaviour, conduct problems and peer problems (Dickey and Blumberg, 2004). The Strengths and Difficulties Questionnaire can be used as a screening tool for clinical assessment of mental disorders and for epidemiological research (Goodman et al., 2000).

2.5 Child Depression Inventory (CDI)

The Children's Depression Inventory (CDI) is a 27-item, self-rated, symptom-oriented scale suitable for youths. The CDI is sensitive to changes in depressive symptoms over time and is a useful index of the severity of the depressive syndrome (Kovacs, 2004). Scales on the Child Depression Inventory (CDI) are: Negative mood, which reflects feeling sad, feeling like crying, worrying about "bad things", being bothered or upset by things, and being unable to make up one's mind; Interpersonal problems, which reflects problems and difficulties in interactions with people, including trouble getting along with people, social avoidance, and social isolation; Ineffectiveness, which reflects a negative evaluation of one's ability and school performance and Negative self-esteem, which reflects low self-esteem, self-dislike, and feelings of being unloved (Multi Health System 'MHS', 2004).

2.6 Discriminant analysis

Discriminant analysis, originally developed in 1936 by R.A. Fisher, is a multivariate method of classification of observations (Wang, 2008). It is similar to regression analysis except that the dependent variable is categorical rather than continuous (Draper and Smith 1981). It is a parametric technique used to determine which weightings of quantitative variables or predictors best discriminate between two or more groups of cases, and do so better than chance (Cramer,

2003). The usefulness of a discriminant model is based upon its accuracy rate, or ability to predict the known group memberships in the categories of the dependent variable. Discriminant analysis is used to analyze relationships between a non-metric dependent variable and metric or independent variables. It attempts to use the independent variables to distinguish among the groups or categories of the dependent variable. The analysis creates a discriminant function which is a linear combination of the weightings and scores on these variables. The maximum number of functions is either the number of predictors or the number of groups minus one, whichever of these two values is the smaller. (Ramayah et al, 2010). After using an existing set of data to calculate the discriminant function and classify cases, any new cases can then be classified. Discriminant analysis has been applied in predicting the class of degree for graduating students in a university system (Erimafa et al., 2008), predicting bankruptcy (Lonneke, 2005), predicting male and female contraceptive behaviour and recognition of human face images (Geis and Kamran, 2007).

2.6.1 Assumptions of Discriminant Analysis

The assumptions of discriminant analysis are as follows:

- i. Population covariance must be equal for each group.
- ii. Each group must be drawn from a population where the variables are multivariate normal.
- iii. There must be two or more groups.
- iv. There must be at least two cases per group.
- v. There can be any number of discriminating variables, provided that they are less than the total number of cases minus two: $0 < p < (n - 2)$
- vi. No discriminating variable may be a linear combination of the other discriminating variables.
- vii. The independent or discriminating variables need to be interval while the dependent variables, the groups into which observations are classified, need to be nominal.

2.6.2. Goals of Discriminant Analysis

The main Goals of Discriminant Analysis are as follows:

- i. To investigate differences between groups on the basis of the attributes of the cases, indicating which attributes contribute most to group separation.

- ii. To determine the most parsimonious way to distinguish between groups.
- iii. To classify cases into groups.
- iv. To test theory whether cases are classified as predicted.

Discriminant Functions

In the simplest classification scenario we have two groups, w_1 , w_2 , the decision rule of is:

If $g(x) > 0$ then w_1

If $g(x) < 0$ then w_2

$g(x) = 0$ defines the decision surface that separates the two classes.

If $g(x) = 0$, assignment is undefined, that is., can go either way

2.6.3 Interpreting Discriminant Analysis Results

Group Statistics Tables

The Group Statistics and Tests of Equality of Group Means tables are used to predict a group membership, it examines whether there are any significant differences between groups on each of the independent variables using group means and ANOVA results data. If there are no significant group differences it is not worthwhile proceeding any further with the analysis. But if there are, it provides strong statistical evidence of significant differences between means of groups with the predictive variable producing values of 'F' and the one with the highest 'F' proving to be the strongest discriminator. (Este'vez et al., 2004).

Log Determinants and Box's M Tables

In discriminant analysis the basic assumption is that the variance-co-variance matrices are equivalent. Box's M tests the null hypothesis that the covariance matrices do not differ between groups formed by the dependent variables. A non-significant test retains the null hypothesis that the groups do not differ. However, with large samples, a significant result is not regarded as too important. Also for this assumption to hold, the log determinants should be equal or similar. (DRE research technology group, 2015)

Table of Eigen Values

An eigen value indicates the proportion of variance explained (between-group sums of square divided by within group sum of squares) by the model. That is, the percentage of the variation in

the grouping variable explained, whether group a, b or c .The magnitudes of the eigen values are indicative of the functions' discriminating abilities describing how much discriminating ability a function possesses. A large eigen value is associated with a strong function. This provides information on each of the discriminant functions (equations) produced. The maximum number of discriminant functions produced is the number of groups minus 1. (Anderson, 2006)

Wilks' Lambda

Wilks' lambda indicates the significance of the discriminant function and it is analyzed by a Chi-square statistic testing that the canonical correlation of our predictor variables and the outcome variables is equal to zero. That is, the null hypothesis is that the function has no discriminating ability. (The canonical correlation is the multiple correlations between the predictors and the discriminant function. A high correlation indicates a function that discriminates well.) This hypothesis is tested using this Chi-square statistic. The p-value associated with the Chi-square statistic evaluates the null hypothesis at a given alpha level, such as 0.05; if the p-value is less than alpha, the null hypothesis is rejected. If not, then we fail to reject the null hypothesis (DRE research technology group, 2015)

The Standardized Canonical Discriminant Function Coefficients Table

These coefficients can be used to calculate the discriminant score for a given case. The score is calculated in the same manner as a predicted value from a linear regression, using the standardized coefficients and the standardized variables. The distribution of the scores from each function is standardized to have a mean of zero and standard deviation of one. The magnitudes of these coefficients indicate how strongly the discriminating variables affect the score. The sign indicates the direction of the relationship. The larger the coefficients of a predictor in the standardized discriminant function, the more important their roles in the discriminant function. That is, variables with large weights are those which contribute mostly to differentiating the groups. Good predictors tend to have large weights (Bian, 2014).

The Structure Matrix Table

This is also another way of indicating the relative importance of the predictors. Many researchers use the structure matrix correlations because they are considered more accurate than the Standardized Canonical Discriminant Function Coefficients. The structure matrix table shows the correlations of each variable with each discriminate function. These Pearson coefficients are structure coefficients or discriminant loadings. They serve like factor loadings in factor analysis. By identifying the largest loadings for each discriminate function the researcher gains insight into how to name each function. Generally, just like factor loadings, 0.30 is seen as the cut-off between important and less important variables (Este'vez et al., 2004).

Group Centroids Table

A further way of interpreting discriminant analysis results is to describe each group in terms of its profile, using the group means of the predictor variables. These group means are called centroids. The group centroid is the mean value of the discriminant score for a given category (group) of the dependent variable. Cases with scores near to a centroid are predicted as belonging to that group (Geis, 1984).

Fisher's linear discriminant function

This is a predictive model developed by the analysis. After using an existing set of data to calculate the discriminant function and classify cases, any new cases can then be classified using the newly built function. For each case, the response for each variable in the final model is multiplied by the coefficient produced by Fisher's Linear Discriminant Functions. Then, the products are added, resulting in linear composite for each case. An adolescent will be predicted to be in the group that has the highest sum. (Wei, 2005).

Classification Table

The classification table is simply a table in which the rows are the observed categories of the dependent variable and the columns are the predicted categories, using an existing data as a testing tool for the predictive model built by the analysis. When prediction is perfect all cases will lie on the diagonal. The percentage of cases on the diagonal is the percentage of correct classifications (Wang, 2008).

CHAPTER THREE

METHODOLOGY

3.1 Data Source and Study Design

This present study used secondary data from a cross sectional analytic study conducted in Benue state, Nigeria. The parent study was funded by the Fogarty International through Medical Education Initiative in Nigeria (MEPIN), University of Ibadan. The study was a state wide survey conducted among children and adolescents in Benue state, Nigeria. Data were collected from different secondary schools in Benue state (Akpa et al., 2015).

3.2 Study Population

The study comprised of children and adolescents with age range of 10-19 years in Benue state secondary schools who were recruited into the study conducted by MEPIN in 2012.

3.3 Research Instruments

3.3.1 Socio-Demographic Questionnaire

Socio-demographic characteristics measured include adolescent's age, gender, education, area of residence, ethnic group, family type, family status, and so on. Adolescent's information about his/her parents was also collected.

3.3.2 Strengths and Difficulties Questionnaire (SDQ)

A self-rated Strengths and Difficulties Questionnaire (SDQ) was used to assess adolescent's psychosocial outcomes. The SDQ (an established instrument) asks 25 questions (Goodman, 1997) rated on a three-point likert scale that ranges from "Not true, somewhat true and certainly true". This covers five domains: emotional symptoms, conduct problems, hyperactivity, peer problems and prosocial behaviours (Akpa et al., 2015). For each of the five domains, the scores could range from 0 to 10. The summation of the emotional symptoms, conduct problems, hyperactivity, peer problems and prosocial behaviours were then computed to yield the total

difficulties per participant which could range from 0 to 50. A higher score indicates greater difficult.

3.3.3 Children's Depression Inventory (CDI) Questionnaire

The Children's depression inventory (CDI) questionnaire also asked 27 questions rated on a three-point likert scale (ranging from "Not at all, sometimes and always") that comprises four domains which are negative mood/physical symptom, negative self esteem, ineffectiveness, and interpersonal problems (Kovacs, 2004).

3.3.4 Quality of Life Questionnaire

The adapted WHO Quality of life-BREF was also used to assess adolescents' quality of life. It has 24 items rated on a three-point likert scale divided between four domains: physical health, psychological, social relationship and environmental domain with rates that range from "Not at all, sometimes and always".

3.4 Data Management and Analysis

3.4.1 Data Management

This data was obtained from individual questionnaires of the Medical Education Partnership Initiative in Nigeria. Data on 2019 adolescents aged 10-19 years were used. Socio-demographic characteristics like age, sex, area of residence, tribe, family type, family status, position in the family, number of father's children, father highest level of education, father's occupation, mother highest level of education and mother's occupation were extracted from the whole questionnaire. Outcomes of the domains of the adolescents' quality of life: physical health, psychological health, social relationship and environmental health; domains of Child Depression Invention (CDI): negative mood symptom, negative self esteem, ineffectiveness, interpersonal problems and domains of Strength and Difficulty Questionnaire (SDQ): emotional symptoms, conduct problems, hyperactivity, peer problem, prosocial behavior were also extracted.

3.4.2. Missing and Out of Range Data

Data on a total of 2202 adolescents were initially extracted. However, it was observed that 139 (6.3%) of the adolescents were not up to 10 years of age and 44 (2%) were more than 19 years old. Data on these set of adolescents were completely deleted from the dataset. Also data with missing values were also excluded from the dataset. This resulted in a final total number of 2019 adolescents whose data were eventually used for this study.

3.4.3. Transformation of Child Depression Invention (CDI) Scores

T-scores were calculated for the raw scores of all the domains of Child Depression Invention (CDI) per participant to transform the total raw scores for each domain to T-scores. This was done to standardize the raw scores across the adolescents in order to allow them to be ranked fairly with CDI T-score of 65 or above identifying potentially clinically depressed individuals.

$$\text{T-score} = 50 + 10 \frac{(x - \text{mean})}{\text{standard deviation}}$$

where x is the raw score of the domains of child depression invention.

3.4.4. Transformation of quality of life Scores

Using the quality of life section of the questionnaire each raw score summation for each domain was transformed to a 0-100 scale using WHO Quality of life-BREF (2005) formula below

$$\text{Transformed score} = \frac{\text{Actual raw score} - \text{Lowest possible raw score}}{\text{Possible score range}} \times 100$$

where “Actual raw score” is the participants composite score, “Lowest possible raw score” is the lowest possible composite score and “Possible score range” is the difference between the maximum possible composite score and the lowest possible composite score. The transformed scale for the total quality of life was calculated by summing the transformed scores of the four domains and dividing by four.

3.4.5. Data Analysis

Descriptive statistics, including frequencies, mean and standard deviation were calculated for socio-demographic characteristics, the domains of Strength and Difficulties Questionnaire (SDQ) and the domains of Children's Depression Inventory (CDI) while chi square statistic was used to check for the significance of the relationship between socio-demographic characteristics of the adolescents and their quality of life.

Correlation analysis was also used to check for the significance of the interrelationships between the domains of Quality of Life with the domains of Strengths and Difficulties Questionnaire (SDQ), the domains of Quality of Life with the domains of Children's Depression Inventory (CDI) and the domains of quality of life with age, position in family and number of father's children.

3.4.6. Discriminant Analysis

Discriminant analysis was used to predict the adolescents' quality of life using the metric socio-demographic variable (age, number of father's children and position in the family), Strengths and Difficulties Questionnaire (SDQ) domain (emotional symptoms, conduct problems, hyperactivity, peer problem, prosocial behaviour) scores and Children's Depression Inventory (CDI) domain (negative mood symptom, negative self esteem, ineffectiveness, interpersonal problems) scores as predictor variables. The domains of quality of life: physical health, psychological health, social relationship, environmental health and total quality of life were categorized into low, moderate and excellent and were used as the outcome variables.

The discriminant analysis model used for this study was of the form:

$$D = v_1 X_1 + v_2 X_2 + v_3 X_3 + a = \sum v_i X_i + a$$

Where D = discriminate function

v = the discriminant coefficient or weight for that variable

X = respondent's score for that predictor variable

a = a constant

i = the number of predictor variables

A discriminant score is a weighted linear combination (sum) of the discriminating variables. The maximum number of discriminant functions is the number of groups minus one. For this project,

since there are three groups or categories of quality of life (low, moderate and excellent), two discriminant functions were produced. Function 1 distinguished low from moderate and excellent and function 2 distinguish between moderate and excellent.

For all the domains of quality of life, using the domains of Strengths and Difficulties Questionnaire, it was of the form:

$$D = v_1 (\text{emotional symptoms score}) + v_2 (\text{conduct problem score}) + v_3 (\text{hyperactivity score}) + v_4 (\text{peer problem score}) + v_5 (\text{prosocial behavior score}).$$

Also, for all the domains of quality of life, using the domains Children's Depression Inventory, it was of the form:

$$D = v_1 (\text{negative mood symptom score}) + v_2 (\text{negative self esteem score}) + v_3 (\text{ineffectiveness score}) + v_4 (\text{interpersonal problems score}).$$

Finally, for all the domains of quality of life, using the metric socio-demographic variables, it was of the form:

$$D = v_1 (\text{age}) + v_2 (\text{number of father's children}) + v_3 (\text{position in the family}).$$

Discriminant analysis was performed using SPSS version 18. Group statistics table was used to examine whether there are significant differences between groups on each of the dependent variables (F's) to check if it is worthwhile to continue with the analysis and the predictive variable with the highest 'F' showing to be the strongest discriminator among the others. The assumption of variance-co-variance matrices was also checked using log determinant and Box M's table to make sure it is not violated. Eigen values were assessed to be large in order to be sure that the discriminant functions were strong ones. Wilks' lambda was used to assess the significance of the discriminant functions with associated Chi-square statistic testing the null hypothesis that the function has no discriminating ability at alpha being 0.05. Fisher's linear discriminant function was developed as a predictive model classifying new cases. (For each case, the response for each variable is multiplied by the coefficient and the products are added for each category of the outcome variable). An adolescent will be predicted to be in the group that has the highest sum. Classification Table was used to check the percentage of correct prediction using the existing data of the adolescents as a testing tool on the predictive model built by the analysis.

CHAPTER FOUR

RESULTS

4.1 Characteristics of the adolescents

Table 4.1 showed the frequency distribution of adolescents based on their background information. The total number of the studied population was 2019: 54.3% were male while 45.7% were female. The mean age of the adolescents was 14.7 years. The ethnic composition of the adolescents was Tiv (57.8%), Idoma (7.2%), Igede (19.1%) and others (15.9%). About a half of these adolescents live in rural area and more than a half of them were from monogamous family. The table showed that 11.6% of the adolescents' fathers have no formal education.

Table 4.1: Frequency distribution of the characteristics of the respondents

Variable	Frequency	Percentage	Mean (SD)	Range
Gender				
Male	1096	54.3	14.7(2.05)	10-19
Female	923	45.7		
Age(Years)				
Tribe				
Tiv	1155	57.8		
Idoma	144	7.2		
Igede	383	19.1		
Others	317	15.9		
Area Of Residence				
Rural	902	47.5		
Urban	996	42.5		
Family Type				
Monogamy	1329	68.2		
Polygamy	621	31.8		
Family Status				
Parents Are Together	1471	74.6		
Parents Are Divorced	87	4.4		
Parents Live Apart	139	7.1		
Single Parent	274	13.9		
Father's Level Of Education				
No Formal Education	226	11.6		
Primary	237	12.2		
Secondary	468	24.1		
Tertiary	723	37.2		
Others	290	14.9		
Father's Occupation				
Farming	661	33.5		
Trading	155	7.9		
Civil Servant	769	38.9		
Private Employee	149	7.6		
Others	239	12.1		
Mother's Level Of Education				
No Formal Education	293	15.2		
Primary	376	19.4		
Secondary	504	26.0		
Tertiary	541	28.0		
Others	221	11.4		
Mother's Occupation				
Farming	638	32.5		
Trading	549	28.0		
Civil Servant	464	23.6		
Private Employee	130	6.6		
Others	183	9.3		

4.2 Descriptive Statistics of the Domains of Strength and Difficulties Questionnaire (SDQ).

Table 4.2 showed the scale for all the domains of SDQ per participant which are emotional symptoms (mean: 3.51 ± 2.21), conduct problems (mean: 3.05 ± 1.99), hyperactivity, peer problems and prosocial behaviour with range of 0 to 10 per domain. The summation of these domains yields the total difficulties per participant which ranges from 0 to 40. A higher score indicates greater difficulty.

Table 4.2 Descriptive Statistics of the Adolescents' Psychosocial Functioning.

Domains of SDQ	Maximum	Mean	Standard Deviation
Emotional Symptoms	10	3.51	2.21
Conduct Problems	10	3.05	1.99
Hyperactivity	10	3.29	2.00
Peer Problem	10	3.58	1.96
Prosocial Behaviour	10	6.57	2.31
Total difficulties	40		

4.3 Descriptive Statistics of the Domains of Children's Depression Inventory (CDI).

Table 4.3 showed the T-score for all the domains of CDI per participant which are negative mood/physical symptom (NMS) with mean 50.05 ± 10.04 , negative self esteem (NSE) with mean 50.01 ± 10.03 , ineffectiveness (INS), and interpersonal problems (IPP) with CDI T-score of 65 or above identifying potentially clinically depressed individuals.

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Table 4.3 Descriptive Statistics of the Adolescents' Depression Status.

Domains of CDI	Minimum	Maximum	Mean	Standard Deviation
Negative Mood	39	93	50.05	10.04
Negative Self Esteem	39	93	50.01	10.03
Ineffectiveness	30	92	50.00	10.01
Interpersonal Problems	30	82	50.03	10.04

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4.4 Relationship of Socio-Demographic Characteristics of the Adolescents with the levels of their Quality of Life.

Table 4.4 shows the relationship of socio-demographic characteristics of the adolescents with their respective quality of life. It shows that gender had no bearing with quality of life. But there was a high significance between the other socio-demographic characteristics and quality of life. The table shows that the proportion of the adolescents with low quality of life in the rural area (22.4%) was significantly higher than those in the urban areas (9.1%) ($\chi^2 = 87.99$, $p < 0.001$) while the proportion of the adolescents with low quality of life who were from monogamous homes (13.5%) was significantly lower than those from polygamous homes (19.5%) ($\chi^2 = 16.71$, $p < 0.001$). Also, the proportion of the adolescents with low quality of life whose fathers had no formal education (36.6%) was significantly higher than those whose fathers had tertiary education (5.7%) ($\chi^2 = 163.35$, $p < 0.001$).

Table 4.4 Association between Socio-Demographic Characteristics of the Adolescents and Levels of Quality of Life

Variable	Low Quality of Life	Moderate Quality of Life	High Quality of Life	χ^2	p-value
Gender				1.02	0.60
Male	164(14.8%)	735(66.2%)	211(19.0%)		
Female	143(15.3%)	362(67.4%)	162(17.3%)		
Area of residence				87.99	<0.0001
Rural	211(22.4%)	615(61.5%)	118(12.5%)		
Urban	92(9.1%)	693(68.2%)	231(22.7%)		
Tribe				91.58	<0.0001
Tiv	170(53.3%)	815(68.4%)	231(22.7%)		
Idoma	13(8.7%)	97(65.1%)	39(26.2%)		
Igede	115(28.9%)	240(60.3%)	43(10.8%)		
Others	21(6.5%)	220(67.9%)	83(25.6%)		
Family type				16.71	<0.0001
Monogamy	184(13.5%)	908(66.8%)	267(19.6%)		
Polygamy	126(19.5%)	429(66.3%)	92(14.2%)		
Family status				44.99	<0.0001
Parents are together	188(12.65%)	1000(67.0%)	305(20.4%)		
Parents are divorced	16(17.2%)	67(72.0%)	10(10.8%)		
Parents live apart	35(24.0%)	95(65.1%)	16 (11.0%)		
Single parent	75(25.4%)	182(61.7%)	38(12.9%)		
Father's highest level of education				163.35	<0.0001
No formal education	90(36.6%)	137(55.7%)	19(7.7%)		
Primary	64(25.6%)	158(63.2%)	28(11.2%)		
Secondary	80(16.7%)	334(69.9%)	64(13.4%)		
Tertiary	64(8.7%)	484(66.1%)	184(25.1%)		
Others	17(5.7%)	217(73.1%)	63(21.2%)		
Father's occupation				146.16	<0.0001
Farming	187(26.9%)	450(64.7%)	58(8.3%)		
Trading	23(14.3%)	113(70.2%)	23(15.5%)		
Civil servant	76(9.8%)	513(66.3%)	185(23.9%)		
Employee of private organization	12(7.9%)	99(65.1%)	41(27.0%)		
others	18(7.2%)	175(69.7%)	58(23.1%)		
Mother's highest level of education				232.36	<0.0001
No formal education	120(38.1%)	171(54.3%)	24(7.6%)		
Primary	77(19.5%)	282(71.4%)	36(9.1%)		
Secondary	61(11.9%)	366(71.3%)	86(16.8%)		
Tertiary	38(7.0%)	341(62.5%)	167(30.6%)		
Others	12(5.2%)	171(74.3%)	47(20.4%)		
Mother's occupation				148.39	<0.0001
Farming	177(26.3%)	437(64.9%)	59(8.8%)		
Trading	82(14.6%)	376(67.1%)	102(18.2%)		
Civil servant	32(6.9%)	321(68.7%)	114(24.4%)		
Employee of private organization	10(7.5%)	76(56.7%)	48(35.8%)		
others	17(8.8%)	132(68.0%)	45(23.2%)		

4.5 Inter-Correlations between the Domains of Quality of life and the Domains of Strength and Difficulties Questionnaire (SDQ)

Table 4.5 shows the inter-relationships between the domains of Quality of Life and the domains of Strength and Difficulties Questionnaire (SDQ). Higher scores on all the domains of QoL (PHD, PSD, SRD and END) were significantly correlated with higher scores on one another. On the other hand, higher PHD scores were significantly correlated with lower scores on all the domains of SDQ (ESS, CPS, HAS, PPS) except PSS where higher scores on PHD were significantly correlated ($r = 0.30, p < 0.001$) with higher PSS scores. Also, higher PSD scores were significantly correlated with lower scores on all the domains of SDQ except PSS where higher scores on PSD were significantly correlated ($r = 0.29, p < 0.001$) with higher PSS scores. In addition, while higher scores on SRD were significantly correlated with higher scores on both CPS and PSS, scores on the SRD were not significantly correlated with both HAS and PPS domains of the SDQ. Furthermore, higher scores on all the domains of SDQ were significantly correlated with higher scores on one another except PSS where higher scores on the other domains of SDQ (CPS, HAS and PPS) were correlated with lower scores on PSS.

Table 4.5 Inter-Correlations between the Domains of Quality of Life and the Adolescents' Psychosocial Functioning

Scale	1	2	3	4	5	6	7	8	9
1. PHD									
2. PSD	0.55**								
3. SRD	0.42**	0.44**							
4. END	0.64**	0.62**	0.52**						
5. ESS	-0.21**	-0.09**	0.01	-0.07**					
6. CPS	-0.16**	-0.05*	0.05*	0.02	0.48**				
7. HAS	-0.27**	-0.18**	-0.02	-0.14**	0.48**	0.49**			
8. PPS	-0.14**	-0.09**	-0.03	-0.07**	0.43**	0.43**	0.39**		
9. PSS	0.30**	0.29**	0.19**	0.31**	0.03	-0.18**	-0.24**	-0.14**	-

PHD-Physical Health Domain

PSD-Psychological Health Domain

SRD-Social Relationship Domain

END-Environmental Health Domain

ESS-Emotional Symptom Scale

CPS-Conduct Problem Scale

HAS-Hyperactivity Scale

PPS-Peer Problem Scale

PSS-Prosocial Scale

*-Correlation is significant at 5% level of significance

** - Correlation is significant at 1% level of significance

4.6 Inter-Correlations between the Domains of Quality of life and the Domains of Children's Depression Inventory (CDI)

Table 4.6 shows the inter-relationships between the domains of Quality of Life and the domains of Children's Depression Inventory (CDI). Higher scores on all the domains of QoL (PHD, PSD, SRD and END) were significantly correlated with higher scores on one another. On the other hand, higher scores on PHD, PSD and END were significantly correlated with lower scores on all the domains of CDI (NMS, NSE, INS and IPP) with ineffectiveness significantly having the highest strength of correlation ($r = -0.23$, $p < 0.001$). Also, while higher SRD scores were significantly correlated ($r = -0.06$, $p < 0.001$), ($r = -0.07$, $p < 0.001$)) with lower scores on both INS and IPP respectively, scores on the SRD were not significantly correlated with both NMS and NSE domains of the CDI. Furthermore, higher scores on all the domains of CDI were significantly correlated with higher scores on one another.

Table 4.6 Inter-Correlations between the Domains of Quality of life and the Adolescents' Depression Status

Scale	1	2	3	4	5	6	7	8
1. PHD								
2. PSD	0.55**							
3. SRD	0.42**	0.44**						
4. END	0.64**	0.62**	0.52**					
5. NMS	-0.20**	-0.13**	-0.03	-0.12**				
6. NSE	-0.21**	-0.10**	0.01	-0.08**	0.62**			
7. INS	-0.23**	-0.13**	-0.06*	-0.11**	0.60**	0.60**		
8. IPP	-0.12**	-0.11**	-0.07*	-0.10**	0.27**	0.31**	0.32**	

PHD-Physical Health Domain

PSD-Psychological Health Domain

SRD-Social Relationship Domain

END-Environmental Health Domain

NMS-Negative Mood Symptoms

NSE-Negative Self Esteem

INS-Ineffectiveness

IPP-Interpersonal Problems

*-Correlation is significant at 5% level of significance

** - Correlation is significant at 1% level of significance

4.7 Inter-Correlations between the Domains of the Adolescents' Quality of life and 'Age, Number of father's children and Position in the family'

Table 4.7 shows the inter-relationships between the domains of Quality of Life and 'age, number of father's children and position in the family'. Higher scores on all the domains of QoL (PHD, PSD, SRD and END) were significantly correlated with higher scores on one another. On the other hand, higher PHD scores were significantly correlated with lower NFC and PTF but with higher AGE ($r = 0.07$, $p < 0.001$). Also while higher PSD scores were significantly correlated with lower NFC and PTF, scores on the PSD were not significantly correlated with AGE. Although AGE is not significantly correlated with PTF, higher NFC scores were significantly correlated with higher PTF scores,

Table 4.7 Inter-Correlations between the Domains of Quality of life and the Adolescents' Age, Number of father's children and Position in the family

Scale	1	2	3	4	5	6	7
1. PHD							
2. PSD	0.55**						
3. SRD	0.42**	0.44**					
4. END	0.64**	0.62**	0.52**				
5. AGE	0.07	0.06	0.07*	0.08**			
6. NFC	-0.08**	-0.08**	-0.02	-0.11**	0.06**		
7. PTF	-0.06*	-0.06*	0.01	-0.08*	0.03	0.62**	-

PHD-Physical Health Domain

PSD-Psychological Health Domain

SRD-Social Relationship Domain

END-Environmental Health Domain

AGE-Age

NFC-Number of Father's Children

PTF- Position in the Family

* -Correlation is significant at 5% level of significance

** - Correlation is significant at 1% level of significance

4.8 Predicting Adolescents Physical Health using the Domains of (SDQ)

Table 4.8 shows the assessment of the discriminators of the adolescents' levels of physical health. Hyperactivity was found to be the strongest significant discriminator variable of the adolescents' level of physical health ($F=67.41$, $p<0.001$) while age and position in the family were not significant discriminators. The discriminant function that distinguished low physical health from moderate and excellent physical health (function 1), was found to significantly have very high discriminating ability ($W=0.89$, $\chi^2=224.58$, $p<0.001$). But the discriminant function that distinguished between moderate and excellent physical health (function 2), was found not to have significant discriminating ability. The three predictive models (low, moderate and excellent) for classifying new cases were also shown. Using the existing data on the adolescents' level of physical health as a testing tool on the predictive models, it was observed that 60.6% of the adolescents who actually had low physical health were correctly predicted to have low physical health, 23.1% of the adolescents who had moderate physical health were correctly predicted and 69.5% of those with excellent physical health were correctly predicted to have excellent physical health.

Table 4.8 Assessing Discriminators of Adolescents' Physical Health

Respondent's characteristics	M ₁	M ₂	M ₃	F	W	χ^2	$\chi^2(p)$
Constant	-34.06	-34.28	-35.21				
Age	3.41	3.40	3.45	1.72			
Number of father's children	0.21	0.21	0.19	3.53*			
Position in the family	0.13	0.11	0.11	2.02			
Emotional symptom	-0.11	-0.17	-0.33	35.88*			
Conduct problem	0.12	0.12	0.13	22.87*			
Hyperactivity	1.03	0.92	0.73	67.41*			
Peer problem	0.68	0.72	0.72	15.78*			
Prosocial Behaviour	1.23	1.40	1.57	53.40*			
C	60.6%	23.1%	69.5%				
f ₁					0.89	224.58	<.001
f ₂					0.99	6.78	0.45

M₁-Low physical health model; M₂-Moderate physical health model; M₃-Excellent physical health model; W- Wilks' lambda; f₁-Function 1; f₂-function 2; C-% of correct prediction.

* Significant at 5% level of significance

4.9 Predicting Adolescents Psychological Health using the domains of (SDQ)

Table 4.9 shows the assessment of the discriminators of the adolescents' levels of psychological health. Prosocial symptom was found to be the strongest significant discriminator variable of the adolescents' level of psychological health ($F=59.98$, $p<0.001$) while conduct problem was not a significant discriminator. The discriminant function that distinguished low psychological health from moderate and excellent psychological health (function 1), was found to significantly have very high discriminating ability ($W=0.91$, $\chi^2=166.46$, $p<0.001$). But the discriminant function that distinguished between moderate and excellent psychological health (function 2), was found not to have significant discriminating ability. The three predictive models (low, moderate and excellent) for classifying new cases were also shown. Using the existing data on the adolescents' level of psychological health as a testing tool on the predictive models, it was observed that 59.8% of the adolescents who actually had low psychological health were correctly predicted to have low psychological health, 21.2% of the adolescents who had moderate psychological health were correctly predicted and 64.7% of those with excellent psychological health were correctly predicted to have excellent psychological health.

Table 4.9 Assessing Discriminators of Adolescents' Psychological Health

Respondent's characteristics	M ₁	M ₂	M ₃	F	W	χ^2	$\chi^2(p)$
Constant	-32.98	-34.67	-35.60				
Age	3.36	3.43	3.42	2.93*			
Number of father's children	0.22	0.20	0.19	4.57*			
Position in the family	0.14	0.10	0.10	3.71*			
Emotional symptom	-0.13	-0.18	-0.27	6.97*			
Conduct problem	0.06	0.15	0.24	1.57			
Hyperactivity	0.97	0.92	0.77	25.07*			
Peer problem	0.73	0.70	0.72	4.93*			
Prosocial Behaviour	1.24	1.44	1.64	59.98*			
	C	59.8%	21.2%	64.7%			
	f ₁				0.91	166.46	<.001
	f ₂				0.99	7.59	0.37

M₁-Low Psychological health model; M₂-Moderate Psychological health model; M₃-Excellent Psychological health model ; W- Wilks' lambda; f₁-Function 1; f₂-function 2; C-% of correct prediction.

* Significant at 5% level of significance

4.10 Predicting Adolescents Social Relationship using the Domains of (SDQ)

Table 4.10 shows the assessment of the discriminators of the adolescents' levels of social relationship. Prosocial symptom was found to be the strongest of the three significant discriminator variables of the adolescents' level of social relationship ($F=24.07$, $p<0.001$). The discriminant function that distinguished low social relationship from moderate and excellent social relationship (function 1), was found to significantly have very high discriminating ability ($W=0.96$, $\chi^2=71.70$, $p<0.001$). But the discriminant function that distinguished between moderate and excellent social relationship (function 2), was found not to have significant discriminating ability. The three predictive models (low, moderate and excellent) for classifying new cases were also shown. Using the existing data on the adolescents' level of social relationship as a testing tool on the predictive models, it was observed that 47.5% of the adolescents who actually had low social relationship were correctly predicted to have low social relationship, 24.3% of the adolescents who had moderate social relationship were correctly predicted and 57.1% of those with excellent social relationship were correctly predicted to have excellent social relationship.

Table 4.10 Assessing Discriminators of Adolescents' Social Relationship

Respondent's characteristics	M ₁	M ₂	M ₃	F	W	χ^2	$\chi^2(p)$
Constant	-33.115	-34.589	-36.002				
Age	3.364	3.425	3.428	2.91*			
Number of father's children	0.190	0.215	0.181	0.40			
Position in the family	0.142	0.106	0.173	1.23			
Emotional symptom	-0.137	-0.181	-0.169	0.50			
Conduct problem	0.048	0.163	0.223	2.93*			
Hyperactivity	0.926	0.933	0.908	0.73			
Peer problem	0.728	0.703	0.696	0.09			
Prosocial Behaviour	1.337	1.406	1.583	24.07*			
	C	47.50%	24.30%	57.10%			
	f ₁				0.96	71.70	<.001
	f ₂				0.99	11.71	0.11

M₁-Low Social Relationship model; M₂-Moderate Social Relationship model; M₃-Excellent Social Relationship model; W- Wilks' lambda; f₁-Function 1; f₂-function 2; C-% of correct prediction.

* Significant at 5% level of significance

4.11 Predicting Adolescents' Environmental Health using the Domains of (SDQ)

Table 4.11 shows the assessment of the discriminators of the adolescents' levels of environmental health. Prosocial symptom was found to be the strongest significant discriminator variable of the adolescents' level of environmental health ($F=67.56$, $p<0.001$) while position in the family was not a significant discriminator. The discriminant function that distinguished low environmental health from moderate and excellent environmental health (function 1), was found to significantly have very high discriminating ability ($W=0.88$, $\chi^2=242.30$, $p<0.001$). Also, the discriminant function that distinguished between moderate and excellent environmental health (function 2), was found to significantly have very high discriminating ability ($W=0.98$, $\chi^2=38.98$, $p<0.001$). The three predictive models (low, moderate and excellent) for classifying new cases were also shown. Using the existing data on the adolescents' level of environmental health as a testing tool on the predictive models, it was observed that 60.4% of the adolescents who actually had low environmental health were correctly predicted to have low environmental health, 31% of the adolescents who had moderate environmental health were correctly predicted and 63.3% of those with excellent environmental health were correctly predicted to have excellent environmental health.

Table 4.11 Assessing Discriminators of Adolescents' Environmental Health

Respondent's characteristics	M ₁	M ₂	M ₃	F	W	χ^2	$\chi^2(p)$
Constant	-31.96	-35.88	-36.39				
Age	3.35	3.50	3.48	14.32*			
Number of father's children	0.22	0.19	0.17	6.23*			
Position in the family	0.12	0.11	0.09	2.71			
Emotional symptom	-0.11	-0.25	-0.38	11.08*			
Conduct problem	0.02	0.28	0.33	12.99*			
Hyperactivity	0.95	0.92	0.80	21.58*			
Peer problem	0.70	0.74	0.75	5.24*			
Prosocial Behaviour	1.27	1.53	1.75	67.56*			
	<i>C</i>	60.4%	31%	63.3%			
	<i>f</i> ₁				0.88	242.30	<.001
	<i>f</i> ₂				0.98	38.98	<.001

M₁-Low Environmental Health model; M₂-Moderate Environmental Health model; M₃-Excellent Environmental Health model ; W- Wilks' lambda; f₁-Function 1; f₂-function 2; C-% of correct prediction.

* Significant at 5% level of significance

4.12 Predicting Adolescents Quality of Life using the Domains of (SDQ)

Table 4.12 shows the assessment of the discriminators of the adolescents' levels of Quality of Life. Prosocial symptom was found to be the strongest significant discriminator variable of the adolescents' level of Quality of Life ($F=82.41$, $p<0.001$). The discriminant function that distinguished low Quality of Life from moderate and excellent Quality of Life (function 1), was found to significantly have very high discriminating ability ($W=0.86$, $\chi^2=284.84$, $p<0.001$). Also, the discriminant function that distinguished between moderate and excellent Quality of Life (function 2), was found to significantly have very high discriminating ability ($W=0.98$, $\chi^2=45.75$, $p<0.001$). The three predictive models (low, moderate and excellent) for classifying new cases were also shown. Using the existing data on the adolescents' level of Quality of Life as a testing tool on the predictive models, it was observed that 57.2% of the adolescents who actually had low Quality of Life were correctly predicted to have low Quality of Life, 30.8% of the adolescents who had moderate Quality of Life were correctly predicted and 66.2% of those with excellent Quality of Life were correctly predicted to have excellent Quality of Life.

Table 4.12 Assessing Discriminators of Adolescents' Quality of Life

Respondent's characteristics	M ₁	M ₂	M ₃	F	W	χ^2	$\chi^2(p)$
Constant	-32.35	-35.29	-36.39				
Age	3.35	3.47	3.49	9.68*			
Number of father's children	0.22	0.20	0.16	9.03*			
Position in the family	0.14	0.09	0.11	5.12*			
Emotional symptom	-0.11	-0.23	-0.34	15.82*			
Conduct problem	-0.01	0.26	0.28	16.51*			
Hyperactivity	0.94	0.92	0.75	39.40*			
Peer problem	0.74	0.69	0.72	8.26*			
Prosocial Behaviour	1.26	1.50	1.74	82.41*			
	<i>C</i>	57.2%	30.8%	66.2%			
	<i>f</i> ₁				0.86	284.84	<.001
	<i>f</i> ₂				0.98	45.75	<.001

*M*₁-Low Quality of Life model; *M*₂-Moderate Quality of Life model; *M*₃-Excellent Quality of Life model; *W*- Wilks' lambda; *f*₁-Function 1; *f*₂-function 2; *C*-% of correct prediction.

* Significant at 5% level of significance

Table 4.12 Assessing Discriminators of Adolescents' Quality of Life

Respondent's characteristics	M ₁	M ₂	M ₃	F	W	χ^2	$\chi^2(p)$
Constant	-32.35	-35.29	-36.39				
Age	3.35	3.47	3.49	9.68*			
Number of father's children	0.22	0.20	0.16	9.03*			
Position in the family	0.14	0.09	0.11	5.12*			
Emotional symptom	-0.11	-0.23	-0.34	15.82*			
Conduct problem	-0.01	0.26	0.28	16.51*			
Hyperactivity	0.94	0.92	0.75	39.40*			
Peer problem	0.74	0.69	0.72	8.26*			
Prosocial Behaviour	1.26	1.50	1.74	82.41*			
	<i>C</i>	57.2%	30.8%	66.2%			
	<i>f</i> ₁				0.86	284.84	<.001
	<i>f</i> ₂				0.98	45.75	<.001

*M*₁-Low Quality of Life model; *M*₂-Moderate Quality of Life model; *M*₃-Excellent Quality of Life model ;
W- Wilks' lambda; *f*₁-Function 1; *f*₂-function 2; *C*-% of correct prediction.

* Significant at 5% level of significance

4.13 Predicting Adolescents' Physical Health using the Domains of (CDI)

Table 4.13 shows the assessment of the discriminators of the adolescents' levels of physical health. Ineffectiveness was found to be the strongest significant discriminator variable of the adolescents' level of physical health ($F=44.2$, $p<0.001$) while age and position in the family were not significant discriminators. The discriminant function that distinguished low physical health from moderate and excellent physical health (function 1), was found to significantly have very high discriminating ability ($W=0.94$, $\chi^2=122.07$, $p<0.001$). But the discriminant function that distinguished between moderate and excellent physical health (function 2), was found not to have significant discriminating ability. The three predictive models (low, moderate and excellent) for classifying new cases were also shown. Using the existing data on the adolescents' level of physical health as a testing tool on the predictive models, it was observed that 44.4% of the adolescents who actually had low physical health were correctly predicted to have low physical health, 28.3% of the adolescents who had moderate physical health were correctly predicted and 64% of those with excellent physical health were correctly predicted to have excellent physical health.

Table 4.13 Assessing Discriminators of Adolescents' Physical Health

Respondent's characteristics	M ₁	M ₂	M ₃	F	W	χ^2	$\chi^2(p)$
Constant	-32.10	-31.80	-31.27				
Age	3.52	3.52	3.59	1.72			
Number of father's children	0.11	0.10	0.09	3.53*			
Position in the family	0.25	0.23	0.22	2.02			
Negative mood symptom	0.50	0.54	0.45	34.54*			
Negative self esteem	-0.54	-0.65	-0.66	33.34*			
Ineffectiveness	0.59	0.54	0.43	44.20*			
Interpersonal problem	1.08	1.11	1.00	15.91*			
C	44.4%	28.3%	64%				
f ₁					0.94	122.07	<.001
f ₂					0.99	10.26	0.11

M₁-Low physical health model; M₂-Moderate physical health model; M₃-Excellent physical health model ;
W- Wilks' lambda; f₁-Function 1; f₂-function 2; C-% of correct prediction.

* Significant at 5% level of significance

4.14 Predicting adolescents' Psychological Health using the domains of (CDI)

Table 4.14 shows the assessment of the discriminators of the adolescents' levels of psychological health. Negative mood symptom was found to be the strongest significant discriminator variable of the adolescents' level of psychological health ($F=21.86$, $p<0.001$). The discriminant function that distinguished low psychological health from moderate and excellent psychological health (function 1), was found to significantly have very high discriminating ability ($W=0.96$, $\chi^2=68.19$, $p<0.001$). Also, the discriminant function that distinguished between moderate and excellent psychological health (function 2), was found to significantly have very high discriminating ability ($W=0.99$, $\chi^2=13.97$, $p=0.03$). The three predictive models (low, moderate and excellent) for classifying new cases were also shown. Using the existing data on the adolescents' level of psychological health as a testing tool on the predictive models, it was observed that 47.6% of the adolescents who actually had low psychological health were correctly predicted to have low psychological health, 29.3% of the adolescents who had moderate psychological health were correctly predicted and 59.3% of those with excellent psychological health were correctly predicted to have excellent psychological health.

Table 4.14 Assessing Discriminators of Adolescents' Psychological Health

Respondent's characteristics	M ₁	M ₂	M ₃	F	W	χ^2	$\chi^2(p)$
Constant	-31.39	-31.96	-31.22				
Age	3.47	3.55	3.57	2.93*			
Number of father's children	0.12	0.10	0.08	4.57*			
Position in the family	0.26	0.22	0.22	3.71*			
Negative mood symptom	0.54	0.56	0.40	21.86*			
Negative self esteem	-0.63	-0.67	-0.59	6.29*			
Ineffectiveness	0.56	0.52	0.48	13.59*			
Interpersonal problem	1.12	1.08	1.05	4.14*			
C	47.6%	29.3%	59.3%				
f ₁					0.96	68.19	<.001
f ₂					0.99	13.97	0.03

M₁-Low Psychological health model; M₂-Moderate Psychological health model; M₃-Excellent Psychological health model ; W- Wilks' lambda; f₁-Function 1; f₂-function 2; C-% of correct prediction.

* Significant at 5% level of significance

4.15 Predicting Adolescents' Social Relationship using the Domains of (CDI)

Table 4.15 shows the assessment of the discriminators of the adolescents' levels of social relationship. Interpersonal problem was found to be the strongest of the three significant discriminator variables of the adolescents' level of social relationship ($F=6.76$, $p<0.001$). The discriminant function that distinguished low social relationship from moderate and excellent social relationship (function 1), was found to significantly have very high discriminating ability ($W=0.98$, $\chi^2=46.54$, $p<0.001$). Also, the discriminant function that distinguished between moderate and excellent social relationship (function 2), was found to significantly have very high discriminating ability ($W=0.99$, $\chi^2=14.27$, $p=0.03$). The three predictive models (low, moderate and excellent) for classifying new cases were also shown. Using the existing data on the adolescents' level of social relationship as a testing tool on the predictive models, it was observed that 48.3% of the adolescents who actually had low social relationship were correctly predicted to have low social relationship, 27.9% of the adolescents who had moderate social relationship were correctly predicted and 48.7% of those with excellent social relationship were correctly predicted to have excellent social relationship.

Table 4.15 Assessing Discriminators of Adolescents' Social Relationship

Respondent's characteristics	M ₁	M ₂	M ₃	F	W	χ^2	$\chi^2(p)$
Constant	-31.06	-31.91	-31.64				
Age	3.48	3.55	3.57	2.91*			
Number of father's children	0.09	0.11	0.07	0.40			
Position in the family	0.24	0.21	0.27	1.23			
Negative mood symptom	0.52	0.50	0.54	0.10			
Negative self esteem	-0.74	-0.62	-0.57	1.86			
Ineffectiveness	0.59	0.51	0.43	4.82*			
Interpersonal problem	1.09	1.11	0.97	6.76*			
C	48.3%	27.9%	48.7%				
f ₁					0.98	46.54	<.001
f ₂					0.99	14.27	0.03

M₁-Low Social Relationship model; M₂-Moderate Social Relationship model; M₃-Excellent Social Relationship model ;
W- Wilks' lambda f₁-Function 1; f₂-function 2; C-% of correct prediction.

* Significant at 5% level of significance

Table 4.15 Assessing Discriminators of Adolescents' Social Relationship

Respondent's characteristics	M ₁	M ₂	M ₃	F	W	χ^2	$\chi^2(p)$
Constant	-31.06	-31.91	-31.64				
Age	3.48	3.55	3.57	2.91*			
Number of father's children	0.09	0.11	0.07	0.40			
Position in the family	0.24	0.21	0.27	1.23			
Negative mood symptom	0.52	0.50	0.54	0.10			
Negative self esteem	-0.74	-0.62	-0.57	1.86			
Ineffectiveness	0.59	0.51	0.43	4.82*			
Interpersonal problem	1.09	1.11	0.97	6.76*			
C	48.3%	27.9%	48.7%				
f ₁					0.98	46.54	<.001
f ₂					0.99	14.27	0.03

M₁-Low Social Relationship model; M₂-Moderate Social Relationship model; M₃-Excellent Social Relationship model ;
W- Wilks' lambda f₁-Function 1; f₂-function 2; C-% of correct prediction.

* Significant at 5% level of significance

Table 4.15 Assessing Discriminators of Adolescents' Social Relationship

Respondent's characteristics	M ₁	M ₂	M ₃	F	W	χ^2	$\chi^2(p)$
Constant	-31.06	-31.91	-31.64				
Age	3.48	3.55	3.57	2.91*			
Number of father's children	0.09	0.11	0.07	0.40			
Position in the family	0.24	0.21	0.27	1.23			
Negative mood symptom	0.52	0.50	0.54	0.10			
Negative self esteem	-0.74	-0.62	-0.57	1.86			
Ineffectiveness	0.59	0.51	0.43	4.82*			
Interpersonal problem	1.09	1.11	0.97	6.76*			
C	48.3%	27.9%	48.7%				
f ₁					0.98	46.54	<.001
f ₂					0.99	14.27	0.03

M₁-Low Social Relationship model; M₂-Moderate Social Relationship model; M₃-Excellent Social Relationship model ;
W- Wilks' lambda f₁-Function 1; f₂-function 2; C-% of correct prediction.

* Significant at 5% level of significance

Table 4.15 Assessing Discriminators of Adolescents' Social Relationship

Respondent's characteristics	M ₁	M ₂	M ₃	F	W	χ^2	$\chi^2(p)$
Constant	-31.06	-31.91	-31.64				
Age	3.48	3.55	3.57	2.91*			
Number of father's children	0.09	0.11	0.07	0.40			
Position in the family	0.24	0.21	0.27	1.23			
Negative mood symptom	0.52	0.50	0.54	0.10			
Negative self esteem	-0.74	-0.62	-0.57	1.86			
Ineffectiveness	0.59	0.51	0.43	4.82*			
Interpersonal problem	1.09	1.11	0.97	6.76*			
C	48.3%	27.9%	48.7%				
f ₁					0.98	46.54	<.001
f ₂					0.99	14.27	0.03

M₁-Low Social Relationship model; M₂-Moderate Social Relationship model; M₃-Excellent Social Relationship model ; W- Wilks' lambda f₁-Function 1; f₂-function 2; C-% of correct prediction.

* Significant at 5% level of significance

4.16 Predicting adolescents' Environmental Health using the domains of (CDI)

Table 4.16 shows the assessment of the discriminators of the adolescents' levels of environmental health. Negative mood symptom was found to be the strongest significant discriminator variable of the adolescents' level of environmental health ($F=21.36$, $p<0.001$) while position in the family was not a significant discriminator. The discriminant function that distinguished low environmental health from moderate and excellent environmental health (function 1), was found to significantly have very high discriminating ability ($W=0.95$, $\chi^2=104.64$, $p<0.001$). Also, the discriminant function that distinguished between moderate and excellent environmental health (function 2), was found to significantly have very high discriminating ability ($W=0.98$, $\chi^2=45.43$ $p<0.001$). The three predictive models (low, moderate and excellent) for classifying new cases were also shown. Using the existing data on the adolescents' level of environmental health as a testing tool on the predictive models, it was observed that 41.9% of the adolescents who actually had low environmental health were correctly predicted to have low environmental health, 34.2% of the adolescents who had moderate environmental health were correctly predicted and 60.6% of those with excellent environmental health were correctly predicted to have excellent environmental health.

Table 4.16 Assessing Discriminators of Adolescents' Environmental Health

Respondent's characteristics	M ₁	M ₂	M ₃	F	W	χ^2	$\chi^2(p)$
Constant	-30.47	-32.51	-31.26				
Age	3.43	3.61	3.60	14.32*			
Number of father's children	.13	.08	.07	6.23*			
Position in the family	.23	.23	.22	2.71			
Negative mood symptom	.56	.52	.44	21.36*			
Negative self esteem	-.71	-.57	-.63	18.48*			
Ineffectiveness	.54	.53	.47	18.44*			
Interpersonal problem	1.14	1.06	1.02	6.88*			
C	41.9%	34.2%	60.6%				
f ₁					0.95	104.64	<.001
f ₂					0.98	45.43	<.001

M₁-Low Environmental Health model; M₂-Moderate Environmental Health model; M₃-Excellent Environmental Health model; W- Wilks' lambda; f₁-Function 1; f₂-function 2; C-% of correct prediction.

* Significant at 5% level of significance

Table 4.16 Assessing Discriminators of Adolescents' Environmental Health

Respondent's characteristics	M ₁	M ₂	M ₃	F	W	χ^2	$\chi^2(p)$
Constant	-30.47	-32.51	-31.26				
Age	3.43	3.61	3.60	14.32*			
Number of father's children	.13	.08	.07	6.23*			
Position in the family	.23	.23	.22	2.71			
Negative mood symptom	.56	.52	.44	21.36*			
Negative self esteem	-.71	-.57	-.63	18.48*			
Ineffectiveness	.54	.53	.47	18.44*			
Interpersonal problem	1.14	1.06	1.02	6.88*			
C	41.9%	34.2%	60.6%				
f ₁					0.95	104.64	<.001
f ₂					0.98	45.43	<.001

M₁-Low Environmental Health model; M₂-Moderate Environmental Health model; M₃-Excellent Environmental Health model; W- Wilks' lambda; f₁-Function 1; f₂-function 2; C-% of correct prediction.

* Significant at 5% level of significance

4.17 Predicting Adolescents' Quality of Life Using the Domains of (CDI)

Table 4.12 shows the assessment of the discriminators of the adolescents' levels of Quality of Life. ineffectiveness was found to be the strongest significant discriminator variable of the adolescents' level of Quality of Life ($F=31.19$, $p<0.001$). The discriminant function that distinguished low Quality of Life from moderate and excellent Quality of Life (function 1), was found to significantly have very high discriminating ability ($W=0.93$, $\chi^2=134.30$, $p<0.001$). Also, the discriminant function that distinguished between moderate and excellent Quality of Life (function 2), was found to significantly have very high discriminating ability ($W=0.98$, $\chi^2=40.66$, $p<0.001$). The three predictive models (low, moderate and excellent) for classifying new cases were also shown. Using the existing data on the adolescents' level of Quality of Life as a testing tool on the predictive models, it was observed that 42.8% of the adolescents who actually had low Quality of Life were correctly predicted to have low Quality of Life, 34.5% of the adolescents who had moderate Quality of Life were correctly predicted and 60.5% of those with excellent Quality of Life were correctly predicted to have excellent Quality of Life.

Table 4.17 Assessing Discriminators of Adolescents' Quality of Life

Respondent's characteristics	M ₁	M ₂	M ₃	F	W	χ^2	$\chi^2(p)$
Constant	-30.82	-32.23	-31.43				
Age	3.43	3.57	3.61	9.68*			
Number of father's children	0.13	0.10	0.06	9.03*			
Position in the family	0.25	0.21	0.23	5.12*			
Negative mood symptom	0.54	0.54	0.45	30.97*			
Negative self esteem	-0.72	-0.58	-0.66	29.62*			
Ineffectiveness	0.58	0.52	0.45	31.19*			
Interpersonal problem	1.15	1.08	1.00	12.92*			
C	42.8%	34.5%	60.5%				
f ₁					0.93	134.30	<.001
f ₂					0.98	40.66	<.001

M₁-Low Quality of Life model; M₂-Moderate Quality of Life model; M₃-Excellent Quality of Life model ;
W- Wilks' lambda; f₁-Function 1; f₂-function 2; C-% of correct prediction.

* Significant at 5% level of significance

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 DISCUSSION

This study investigated the domains of psychosocial functioning and child depression that significantly distinguish between the categories of quality of life and also classify into these groups. The rural areas had more adolescents with low quality of life than the urban areas. These adolescents in the urban have the benefit of all the luxuries, education, technology and developments of urban life compared to the rural communities. This finding was consistent with the UNICEF, 2013 report of more adolescents having improved quality of life in the urban areas in Nigeria (UNICEF, 2013). Also WHOQOL-BREF reported worse conditions of quality of life in the rural areas than in the urban (Takashi et al 2006).

The case of a higher percentage of the adolescents who were from polygamous families having low quality of life was not a coincident. This can be well understood because these subjects would have to share the family income with every member of the polygamous family which would not be so in a monogamous family where there would be fewer members, thereby affecting their quality of life.

Also, the proportion of the adolescents with low quality of life whose fathers had no formal education was significantly higher than those whose fathers had tertiary education. This is also in collaboration with literature. Studies have shown that family income and educational attainment are measures that have been found to influence adolescents' life opportunities (Cassedy et al 1999).

In this investigation, it also appeared that higher levels of the domains of quality of life was correlated with lower levels of the domains of Children's Depression Inventory (CDI) with ineffectiveness significantly having the highest strength of correlation. In life, good quality of life is actually associated with low traces of negative mood, negative self esteem, ineffectiveness and interpersonal problems. This also agrees with what was found in literature that depressed adolescents exhibit significant psychosocial deficits in adulthood, including early childbearing, social difficulties, lowered life satisfaction, and reduced global functioning (Aronen and Soininen, 2000; Fergusson and Woodward, 2002).

The study also revealed that there is correlation between the domains of Quality of Life and the adolescents' psychosocial functioning with prosocial behaviour, being the domain of SDQ with the highest strength of relationship. This finding agrees with what was seen in literature that disadvantaged social statuses are generally associated with high levels of distress and high rates of disorder leading to low quality of life which means that advantaged social statuses will lead to high quality of life. (McLeod et al 2012 and Thoits, 2010).

Once the discriminating variables are identified, more interventions can be created to help increase the quality of life of adolescents. Among the (socio-economic) independent variables selected in this study as the discriminating variables that distinguish between categories of the domains of quality of life, position in the family does not seem to have much effect; concerning adolescents' physical health, it was found out that both hyperactivity and ineffectiveness are strong discriminating variables that predict the adolescents' levels of physical health while adolescents' position in the family does not determine their physical health. Active adolescents portray that they are healthy physically and can be very useful in the society unlike ineffective ones. This agrees with literature that active and effective adolescents who enter the work force can raise the economic productivity of a country (World Health Organization, 2009).

On the other hand, relating to adolescents' psychological health, it was found out that both prosocial behaviour and negative mood symptoms are strong discriminating variables that distinguish between the adolescents' levels of psychological health which was also in accordance to literature that disadvantaged social statuses are generally associated with high levels of distress and high rates of psychological disorder (McLeod et al 2012). An adolescent with positive mood will tend to relate healthily in the social environment thereby boosting such individual's psychological health.

Furthermore, it was found out that prosocial behaviour and Interpersonal problems are the strong discriminating variables that predict adolescents' level of social relationship. A prosocial adolescent will tend to relate more in the society, take part in different activities along with others around him/her, be outgoing and be concerned with outer affairs while an adolescent with interpersonal problem may end up being an introvert. This also relates with literature that a person's social and environmental health as well as quality of life is dependent on the exogenous

(objective) facts of his or her life and the endogenous (subjective) perception he or she has of these factors and of himself or herself (Dissart and Deller, 2000)

In addition, concerning the adolescents' environmental health, it was found that prosocial behaviour and negative mood symptoms are the strong discriminating variables that help discriminate between the adolescents' levels of environmental health. A prosocial adolescent with positive mood will tend to relate more actively and healthily in the environment thereby boosting such individual's environmental health. This was in agreement with what was in literature that adolescent experimentation and environmental exploration is integral to the development of a healthy and individuated sense of self (Hazen et al., 2008).

Lastly, concerning the adolescents' total quality of life; it was found out that prosocial behaviour and ineffectiveness are strong discriminating variables that help predict the adolescents' levels of total quality of life. Active or effective and prosocial adolescents could go extra miles achieving a lot in life and having life full of satisfaction. This agrees also with literature that active and effective adolescents who enter the work force can raise the economic productivity of a country (World Health Organization, 2009).

5.2 CONCLUSION

All the discriminating variables help predict adolescents' quality of life but prosocial behaviour, hyperactivity, ineffectiveness, negative and interpersonal problems are the basic and strong discriminating variables that distinguish the levels of the domains of the adolescents' quality of life. If these variables are assessed in adolescents earlier enough in life, their quality of life may be predicted and detected in their adolescent stage and proper intervention would be put in place for them to give them hope about their future and reduce their anxiety which at times make them stray away, becoming loathsome to the society and country at large. Adolescent's quality of life come from a combination of individual, family, peer, and community factors of risk and resiliency. Owing to the unique confluence of biological, psychological, environmental and social forces, adolescence is often a stressful period of life. Adolescents in the rural areas suffer more from low quality of life than those from the urban areas. Adolescents psychosocial functioning and children's depression inventory can be monitored in order to improve adolescents' quality of life. Illiterate parents are another challenge facing adolescents in the rural

areas, which would possibly reduce those adolescents' life opportunities since their motivators are not much enlightened educationally. It is obvious that an adolescent's psychosocial functioning and depression status relates with their physical health, psychological health, social relationship, environmental health and total quality of life in one way or the other. Having all these information about adolescents, discriminant analysis is a good technique in predicting adolescent's quality of life in that prompt intervention programme could be put in place to maintaining or improving adolescents' quality of life as the case may be.

5.3 RECOMMENDATION

Most rural areas are being faced with increase in the number adolescents who are deprived of basic services which they need to survive and grow up well, in particular, food, education and life skills, health care, clean water and sanitation, protection from situations of abuse, denial of their basic liberties, and poverty, all these have strained their capacity to respond to the psychological, social, emotional and environmental needs. Having all these information about adolescents, prompt intervention programme should be put in place to maintaining or improving adolescents' quality of life as the case may be.

An important consideration in intervention strategies for these adolescents is their psychosocial functioning. For instance, psychosocial domains found to be related to adolescents' health and quality of life include self-esteem and anxiety, negative mood, ineffectiveness and depression which may pose a serious threat to socio-economic development, peace and security of a region if not addressed comprehensively. Conceptual framework for psychosocial support which will provide common understanding of the psychosocial challenges facing adolescents and the interventions that are required to ensure psychosocial wellbeing should also be put in place.

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