

Adolescent Mental Health and Psychosocial Correlates at Primary Care in a Tertiary Hospital and it's Community in a Developing Country: A Silent Cry for Help.

Dr Vivien O. Abah.

Dept of Family Medicine, University of Benin Teaching Hospital. Benin City, Edo State, Nigeria.

Abstract:

Background: *there is a dearth of adolescent health care services in our country. Poor mental health literacy and stigma further deepens the mental health gap in patient reporting, diagnosis and treatment for this large, critically important and vulnerable demographic subset. Data to drive advocacy and provision of care necessary to bridge this gap is urgently needed.*

Aim: *to determine the pattern of clinical presentation of mental health disorders among adolescent primary care attendees, the associated psychosocial factors and compare with the pattern in the community.*

Methodology: *Cross sectional design using simple random sampling to recruit 251 respondents in the hospital and 679 in the community. The GAD2, PHQ2, PHQ-9(Q9) and CRAFFT-II were used with a customized questionnaire. P-value was set at 0.05.*

Results: *negative mental health status by screening instruments was high in the hospital 24.7% (GAD+ 9.2% PHQ+ 16.7% suicide ideation 8.0% CRAFFT+ alcohol:4.8%, marihuana 2.0%) and in the community,50.4% (GAD+ 20.3% PHQ+ 33.0% suicide ideation 21.9% CRAFFT+ alcohol: 5.3% marihuana 1.6%). Prevalence was more among higher SES (54.6%) without expected protective effect. MHDswere significantly more prevalent in females of high SES, late adolescents in low SES and abuse victims. Adolescent abuse was 14.3% in the hospital and 32.3% in the community. There was a 97% gap in patient reporting and diagnosis of mental ill health and abuse without any red flag symptoms.*

Conclusion: *A high prevalence and heavy silence attends adolescent MHD and abuse in our environment demanding urgent intervention in the schools and primary care.*

Key Words: *Adolescent, mental health disorder, abuse, silent presentation.*

Date of Submission: 18-11-2020

Date of Acceptance: 04-12-2020

I. Background.

The impact of mental disorders on adolescent development and risk behaviour is not getting the attention it deserves especially in most Low and Middle Income Countries (LMICs) like Nigeria. Most adolescents are healthy and negotiate the adolescent transition successfully but mental disorders where they exist constitute a major barrier to the achievement of adolescent developmental and educational goals, increase risk behaviours and burden of parenting stress.^{1,2,3}

Adolescent transition involves rapid changes in the physical, emotional, psychological, cognitive and social domains for the child requiring rapid adjustments to shifting concepts of self, capabilities, roles, achievements, and goals.^{4,5} The developmental challenges and tasks of adolescent transition impact enough pressures on the subject to predispose them to anxiety and depression which may be transient depending on the confluence of the other factors in their environment.⁵ Existing mental disorders may also hinder their capacity to cope with the transition tasks and challenges, failure in which precipitates and sustains the progression of these conditions.^{4,5}

The mental wellbeing and behaviour of adolescents is determined by innate personality factors and environmental factors which have been classified as proximal or structural factors and operate as risk or protective factors.^{4,8} Personal resiliency resources are most protective followed by familial and then social resources.²

Attention to adolescent mental health is particularly important because the symptoms are often attributed to normal challenges of adolescent transition with the result that they go undetected and untreated.^{4,8} Unfortunately, beyond the negative impact on the child's development, the effect on family and peers is that of withdrawal, stigma and isolation which increase the progression of most conditions and stress on family and other support networks.^{9,10}

Mental health care in most LMIC is sub optimal. For adolescents and children, it is even worse.^{11,12} Adolescent health care is a written policy in our country with very little implementation.¹³ Pre-admission school health screening is very common in the urban areas in private schools, but generally does not include mental health parameters and associated factors. Such screening is non-existent in the public schools and rural areas.

The population of adolescents world wide has reached an all-time high estimated at 1.2 billion. In Sub Saharan Africa, there are 220 million adolescents representing 23% of the total population in this sub region.¹⁴ The WHO has proclaimed that there is no health without mental health. About 20% of the world's children and adolescents suffer a mental health condition.¹⁵ World wide, poor mental health has been rated as the greatest contributor to non-fatal burden of disease in young people.^{12,16} Depression rates peak in adolescence especially among girls. Self harm has been rated among the first two leading causes of death among older adolescent girls (15-19 years).¹²

In sub Saharan countries, prevalence of psycho emotional morbidities among adolescents has been estimated at about 14.3% with about 9.5% having a specific psychiatric condition.¹⁷ Mental morbidities in children and adolescents include anxiety disorders; depression, suicide, substance use, conduct disorders and delinquency; learning disabilities and mental retardation. In the developed countries, problems like attention deficit hyper activity disorder (ADHD) and autistic spectrum disorders are common but are not as commonly reported in low income countries.³

Depression occurs in 8-10% of adolescents globally and is associated with suicide.^{4,8} It is more common in girls and remains so throughout the reproductive phase of life and attributed to gender related issues.¹² Prevalence of adolescent depression in Nigeria ranges from 6.2% to 29.5% depending on the study methodology and instrument.^{18,19,20,21} Anxiety disorders among in-school adolescents was prevalent in 34.1% of subjects surveyed with a female preponderance in Enugu, SE Nigeria.²²

Globally, suicide is the third leading cause of death among adolescents and together with accidental death from self-harm accounts for about 67,000 deaths annually among adolescents.¹⁶ Previously it was thought to be rare in our environment but a study in Enugu found a suicide ideation rate of 11-30.8% among in school adolescents with the higher rate among the older adolescents.^{23*} The impact of social media and the internet on the rising prevalence of suicide and self-harm among adolescents has been established and is of great concern to the WHO.^{24,25}

Concern about physical appearance and its impact on the psychosocial adjustment is common and important among adolescents.²⁶ Body image is important in adolescent development, determines self-esteem and peer acceptance and can result in school avoidance/dropout, depression/anxiety, suicide and poor school performance. The effect of social media is important and has been termed "snap chat dysmorphia." School programs on developing self acceptance and confidence and routine screening in hospitals has been advocated to curb the rising prevalence and adverse outcomes.²⁷

Substance use is often co morbid with most other mental conditions and could confound the diagnosis and management of these conditions.^{4,5} As much as 45% of all drug addiction cases (in the US) have a co morbid mental disorder or dual diagnosis. The theory of negative urgency further links depression, drug use and risk behaviour.^{28,29} Appropriate screening, detection and treatment of both conditions constitute major priorities of adolescent mental health care.^{5,30}

Screening for alcohol and substance use in the setting of adolescent health care requires delineating the levels of use as it has implications for intervention for individual adolescents. This has been established with the use of CRAFFT questionnaire. Low risk use is considered a risk behaviour requiring education and risk behaviour interventions but high risk use is of mental health concern indicating need for treatment and rehabilitation.³¹

A multifactorial theory of development of mental disorders looks at a confluence of multiple factors including personal, social, and environmental factors. The concurrence of increasing number of risk factors raises the risk of mental disorders in an individual while protective factors reduce risk.^{1,2,30} Several risk factors have been identified and could serve as clinical decision factors to screen for mental health disorders among adolescents. These include: chronic physical illness, frequent hospital attendance, not schooling, poor academic performance, physical and sexual abuse, gender, large family size, socioeconomic deprivations, adverse life events and chronic life difficulties and parental loss.^{1,2,3,8}

The social risk factors for mental disorders include adverse socio economic conditions resulting in poverty, hunger, high crime rates and unsafe neighbourhoods, poor governmental provision of social welfare structures and benefits.¹¹ All these culminate in families with limited abilities to provide conditions conducive for positive development for their children, offer decent education and recreation to occupy and empower them and offer hope for the future. These factors have been noted to be highly prevalent in most LMIC as in our country and so it is expected that we have a high burden of mental health disorders.¹¹

Many mental health conditions have been shown to have their onset in adolescence about age 14 years but unfortunately, they are not recognised and go untreated with severe negative consequences on cost and

success of treatment and rehabilitation, family and social support network stress and stigma.^{9,30} The time of presentation of these conditions for clinical care, support for treatment and rehabilitation all depend on the family. Most patients and their parents present for physical symptoms and may find it difficult to accept a psychological basis for their illness.⁸ There is therefore need for a high index of suspicion and screening in primary care to facilitate appropriate and early diagnosis. In our environment there is very little mental health awareness and psychological mindedness. Patients do not consider their psychological distress a medical symptom or a reason for encounter with their physician. There is a dearth of psychological health care facilities and stigma against psychiatric conditions further worsening the outlook. Screening for mental health conditions therefore needs to be urgently stepped up especially given our socioeconomic and political realities, increasing burden of risk factors for these disorders and as a means to improve the mental health awareness of the society.

The impact of mental health disorders on adolescents in all facets of their development and outcome is therefore so critical that it's assessment must be made routine as early detection has major positive impact on prognosis, outcome and impact on family and society. This is possible only in a well-articulated health care structure for Children and Adolescent Mental Health Services as exists in developed countries.^{10,30} It has been advocated that primary care physicians and the school health teams take an active role in this regard to increase early detection and improve outcome.^{3,30,32}

Justification: Evidence has clearly demonstrated that the risk factors for mental ill health are endemic in our country.¹¹ Mental health and adolescent health care are also grievously underserved as in most LMIC.¹² The pattern of adolescent mental health conditions and related psychosocial factors in our locale is not known and so the evidence base for advocacy, policy and practice interventions is lacking. This gap has been noted to require urgent attention by the UNICEF.^{12,16} This study is an effort to demonstrate the burden of the common mental health conditions among adolescents, the associated psychosocial factors, the silence in clinical presentation and the urgent need for routine screening in schools and primary care.³²

Aim and Objectives.

Aim: to determine the pattern of mental health disorders among adolescent primary care attendees and compare with the pattern in the community, with a view to demonstrate the burden and silence in presentation and raise awareness for adolescent mental health screening and care.

Objectives: To determine:

1. The pattern of mental health disorders, the relationship with associated factors in the hospital and school cohorts and the difference between them.
2. The pattern of presentation of mental health disorders among the respondents in the hospital cohort.

Definition of Terms:

1. Mental disorders: for the purpose of this study included conditions detectable by the short screening instruments derived from the Patient Health Questionnaire (PHQ): anxiety, depression and suicide. Alcohol, drug and substance misuse as detected by the CRAFFT questionnaire.
2. Psychosocial factors included adolescent physical, emotional and sexual abuse. Dysmorphic Concern. Disclosure factors: Respondents' capacity to confide their psychoemotional problems in their parents and friends.

II. Materials and Method

STUDY AREA:

Benin City is the capital of Edo state, a metropolitan town rich in culture and inhabited by civil servants, artisans, farmers, business owners and the academia etc. There are both private and public schools in the city. Public schools are funded by the government at no tuition cost to the students. Private schools are run for profit and the school fees vary widely depending on the facilities they provide. The low to middle socioeconomic status citizens generally attend the public schools while the private ones are attended by children from the middle to upper socioeconomic status homes. The secondary schools are divided into junior and senior schools of three years each.

The hospital arm of the study was carried out in the Family Medicine Clinic of University of Benin Teaching Hospital Benin City. The hospital is a 910 bedded tertiary care hospital offering health services, undergraduate and post graduate medical training in a wide range of medical and para medical specialties. The Family Medicine Clinic is the primary care center of the hospital and the gateway for all non-emergency cases coming into the hospital. It is run by the Family Medicine Specialty with a full complement of consultants, residents, nursing, pharmacy and laboratory personnel and facilities. It receives about 200 patients daily, among which is about 10-20 adolescents.

The adolescent population in Edo state is estimated at 344, 024.³³ The prevalence of mental health disorder among adolescents in sub Saharan Africa is about 14.3 %.¹⁷ but in Nigeria it is not known.

Study Design:

The study was of a cross sectional descriptive design with 2 arms. A community based (school) arm and a hospital arm.

Duration: Data collection was done over about 8 weeks for the hospital study and 4 weeks for the school study.

Study population: the adolescents in selected secondary schools aged between 10-19 years for the school arm of the study. For the hospital arm of the study, the population was the adolescents presenting to the clinic within the study period. An average of about 15 adolescents attend the clinic everyday giving about 300 adolescents in a month and 600 in the proposed study duration.

Selection criteria:

All secondary school students within age 10-19 in the selected schools and in the Family Medicine Clinic of UBTH who gave assent to participate were included. Those who were too ill in the hospital arm of the study were excluded.

Sample Size calculation:

Sampling size was calculated with the Leslie and Kish formula: $n = \frac{Z^2 pq}{d^2}$. The prevalence of mental health disorders among adolescents in our environment is not known so prevalence was assumed at 50%. Calculated sample size was 384. Over 800 questionnaires were distributed in the two schools but 679 respondents returned questionnaires valid for analysis. For the hospital arm of the study, calculated sample size was 234. About 280 questionnaires were distributed and 251 returned valid for analysis.

Sampling method:

School arm: Simple random sampling by balloting of secondary school students in two mixed schools was used. One private and one public school in Egor Local Government Area (LGA) were chosen by balloting among known private and public schools in the LGA. The choice of one public and one private school was expected to capture the variations in socio economic circumstances in the school and home environments among the students. Using only two schools reduced the contextual variations and allowed for adequate comparison and interpretation of the results obtained. Non boarding mixed schools were chosen because there was expected to be some important contextual differences between these schools and single sex schools, boarding schools (mixed or single sex), faith-based schools and secular schools. Non boarding schools also had the additional advantage of having children who were in constant contact with their parents, the school and the society. They offered the highest likelihood of adolescents in their natural milieu.

Hospital arm: In the hospital, simple random sampling by balloting was used to select participants over a period of 8 weeks.

Method of Data collection:

Study instrument: The study instrument was a semi customized, semi structured, self- administered instrument consisting of 8 sections, four of which are relevant to the subject of discussion in this paper.

Section A: A customized questionnaire covering sociodemographic variables and psychosocial factors.

Section B: screening for mental health disorders consisted of three instruments: PHQ-2 A validated instrument for screening for depression among adults and adolescents.³⁴ It has a sensitivity of 79% and specificity of 86%³⁵ A total score of 3 or more is positive for depression.

The GAD -2: a validated instrument for screening for anxiety among adults and adolescents with a sensitivity of 86% and specificity of 83%.³⁵ A total score of 3 or more is positive for anxiety disorder. Suicide ideation was screened using the 9th item on suicide in the Patient Health Questionnaire (PHQ-9) which has a specificity of 88% and sensitivity of 88%.³⁶

Section C: The CRAFFT Questionnaire: A validated screening instrument to assess the risk of drug and alcohol use among adolescents with a sensitivity of 76% -92% a specificity of 76%-94%.^{36,37} Those who had a “yes” response to any section A question but score of zero in section B were assessed as having low risk alcohol or drug use. Those who had a score of 2 or more in section B were assessed as positive for high risk alcohol or drug use. Those who scored zero in A and B had no involvement with alcohol or drug use.

Section D: Reason for encounter. (for the hospital arm of the study only): The doctor treating the respondent was requested to list his complaints and diagnosis.

Procedure for data collection:

In the schools, the questionnaires were distributed to participants who gave assent after having the study explained to them and permission and consent had been duly obtained from the school authorities. The filled questionnaires were retrieved same day at break time.

In the hospital, participants were recruited at the registration unit. They had the study explained, consent obtained from their care givers or assent from the respondents if unaccompanied and then the study instrument administered. Thereafter they received care from their clinicians who filled in the reason for encounter and diagnosis.

Ethical consideration: Ethical approval was obtained from the Ethics and Research Committee of the University of Benin Teaching Hospital with Protocol No. ADM/E 22/A/VOL.VII/14710. In the schools, approval was from the Principals in writing and assent obtained from the students.

Data Management:

Data was collated and analysed using the SPSS version 21. Categorical data were analysed in frequencies and percentages. The relationship between categorical variables was analysed using the chi square test. P value will be set at 0.05.

III. Results

Distribution of Sociodemographic Characteristics among the Respondents in the Cohorts (Table 1)

A total of 251 respondents in the hospital cohort and 679 respondents in the schools participated in the study. The distribution of gender was almost equal with a slight female preponderance (H= 54.2%, S=57.4%) in both hospital and school cohorts. The age range was 10-19 in both cohorts. Mean age of respondents in the school was insignificantly lower than in the hospital cohort (H= 14.59yrs, S=14.28yrs). The distribution of age and adolescent phase in both cohorts showed that the middle adolescent phase was the least represented in both cohorts (H= 29.5%, S=20.0%). Majority of the respondents in both cohorts were Christians. The distribution of respondents' fathers' educational status in both cohorts showed that most of them had tertiary education (H=49.8%, S= 53.9%) and only few had no education. The distribution of respondents' mothers' educational status in both cohorts showed that most of them had tertiary education (H=41.4%, S=50.1%) and only few had no education. The distribution of co-parent educational status derived from composite scores of educational statuses of respondent's father and mother was similar in both cohorts. Majority in both cohorts had high co-parent educational status (H= 53.0%, S=58.5%), medium:(H= 34.9%, S=37.5%).

Distribution of Co-Parent Educational Status and Relationship with Cohort Category among the Respondents (Table 2).

The distribution of Co-parent educational status was not significantly different between hospital and school cohorts. However, among respondents in the schools, it was highly significantly different between public and private school cohorts. ($X^2=124.605$, $p=.000$).

Distribution of Mental Health Disorder and Relationship with Cohort Category among the Respondents (Table 3).

The prevalence of negative mental health status in the hospital cohort was 24.7% and 50.4% in the total school cohort. The distribution of mental health disorder among the respondents was significantly higher in the school cohort than the hospital cohort ($X^2=49.137$, $df=1$, $p=.000$). However, the difference in the prevalence of mental health status between private and public school was not significant.

Relationship between Mental Health Status and Socio demographic variables among the Respondents in the Cohorts (Table 4).

The relationship between gender and negative mental health status was not significant in the hospital cohort but was significant in the total school cohort ($X^2=7.434$ $p=.006$) and in the private school attendees ($X^2=9.891$ $p=.002$). The relationship between adolescent phase and positive mental health status screening was significant in the hospital cohort ($X^2=33.822$, $p=.000$) and public school cohort ($X^2=23.735$ $p=.000$) but was not significant in the total school cohort and in the private school attendees.

Distribution of Mental Health Disorders among the Respondents in the Cohorts (Table 5).

The prevalence of anxiety disorder in the hospital cohort was 9.2% and in the total school cohort was 20.3%. The difference was statistically significant ($X^2=15.946$, $p=.000$). The prevalence of anxiety was not significantly different between public and private school attendees.

The prevalence of depression in the hospital cohort was 16.7% and in the total school cohort was 33.0%. The difference was statistically significant ($X^2=23.716$, $p=.000$). The prevalence of depression was significantly higher in private school attendees ($X^2=9.433$, $p=.002$).

The prevalence of suicide ideation in the hospital cohort was 8.0% and was significantly lower than in the total school cohort at 21.9% ($X^2=23.677$, $p=.000$). The prevalence of depression was not significantly different between private and public school attendees.

The prevalence of dysmorphic concern in the hospital cohort was 11.6% and was significantly lower than in the total school cohort at 28.6% ($X^2=29.114$, $p=.000$). The prevalence of dysmorphic concern was not significantly different in private and public school attendees.

The prevalence of high-risk alcohol use in the hospital was 4.8% and in the total school cohort was 5.3% without a statistically significant difference. The prevalence was significantly higher in the public school than private school ($X^2=7.818$ $p=.005$)

The prevalence of marijuana use in the hospital cohort was 2.0% and in the total school cohort was 1.6% without a significant difference. The prevalence of marijuana use was not significantly different between the private and public schools.

Distribution of Mental Health Multimorbidity among the Respondents in the Cohorts (Table 6).

Among respondents who screened positive for mental health disorders in the hospital, depression was the most prevalent single morbidity, then high risk alcohol use, then anxiety and suicide ideation. In the total school cohort, depression was highest followed by suicide ideation.

For multiple morbidities, depression, anxiety and suicide combination was highest in both cohorts ($H=7.2\%$, $S=17.8\%$) with a significant relationship with female gender. Substance use co-morbid with other disorders was next in both cohorts ($H=2.0\%$, $S=3.2$).

The Relationship Between Adolescent Phase and Mental Health Disorders among Respondents in the Cohorts (Table 7).

The prevalence of suicide ideation was significantly higher among late adolescents in the hospital cohort ($X^2=9.003$, $p=.011$) and public school attendees only ($X^2=7.763$, $p=.021$).

The prevalence of positive screening for anxiety disorder is significantly higher among late adolescents in the hospital ($X^2=20.076$, $p=.000$), total school ($X^2=9.242$, $p=.010$) and public school attendees ($X^2=24.112$, $p=.000$). This relationship was not significant among private school attendees.

The prevalence of positive screening for depression was significantly higher among the late adolescents in the hospital cohort ($X^2=15.754$, $p=.000$) and in the public ($X^2=10.835$, $p=.004$), and private school attendees ($X^2=6.265$, $p=.044$).

The prevalence of positive screening for dysmorphic concern was significantly higher among the late adolescents in the hospital cohort ($X^2=23.036$, $p=.000$), and in the public ($X^2=6.957$, $p=.031$) and private school attendees ($X^2=7.005$, $p=.030$).

The Relationship between Gender and Mental Health Disorders among Respondents in the Cohorts (Table 8).

The prevalence of positive screening for suicide ideation was significantly higher among the female respondents in the hospital cohort ($X^2=5.835$, $p=.016$), in the total school ($X^2=10.205$, $p=.001$), and private school attendees ($X^2=8.331$ $p=.004$).

The prevalence of positive screening for anxiety disorder was significantly higher among the female respondents in the total school cohort ($X^2=10.421$, $p=.001$) and private school attendees ($X^2=9.268$, $p=.002$) but not in the hospital cohort and public school attendees.

The prevalence of positive screening for depression was significantly higher among the female respondents in the total school cohort ($X^2=6.413$, $p=.011$) and private school attendees ($X^2=8.473$, $p=.004$), but not in the hospital cohort and public school attendees.

The prevalence of positive screening for dysmorphic concern was significantly higher among the female respondents in the total school cohort ($X^2=6.268$, $p=.012$) and private school attendees ($X^2=10.180$, $p=.001$), but not in the hospital cohort and public school attendees.

Relationship between Substance Use and Socio demographic Variables among the Respondents in the Cohorts (Table 9).

The relationship between high risk alcohol use and gender was statistically significant in the hospital ($X^2=4.324$, $p=.034$) but not in the total school cohort. There is a statistically significant relationship between marijuana use and gender in both hospital ($X^2=6.033$, $p=.019$), and total school cohort. ($X^2=4.162$, $p=.042$). The relationship between adolescent phase and alcohol use is statistically significant in both hospital ($X^2=12.881$, $p=.002$) and total school cohorts ($X^2=9.997$ $p=.007$). The relationship between adolescent phase and marijuana use is statistically significant in the hospital cohort ($X^2=11.315$, $p=.003$), but not in total school.

Distribution of Psychosocial Factors among the Respondents in the Cohorts (Table 10)

The prevalence of any abuse status was 14.3% in the hospital and significantly lower than 31.2% in the total school cohort. The difference in the public and private school attendees is not significant.

The prevalence of sexual abuse among the hospital cohort is 4.4% and 6.0% among the total school cohort without a statistically significant difference. Also, there was no significant difference in the prevalence in sexual abuse between public and private school attendees.

The prevalence of physical abuse was 7.6% in the hospital cohort and 20.6% in the total school cohort. This difference was statistically significant ($X^2=22.015$, $p=.000$). The difference in the prevalence of physical abuse between public and private school attendees was not significant.

The prevalence of emotional abuse was 6.0% in the hospital cohort and 18.9% in the total school cohort. This difference was statistically significant ($X^2=23.346$, $p=.000$). The prevalence of emotional abuse was significantly higher in private school attendees ($X^2=23.346$, $p=.000$) than in the public schools.

The respondents who could confide in their parents was significantly lower among the total school cohort than the hospital cohort ($X^2=27.895$, $p=.000$) Also it was significantly lower among the private school attendees ($X^2=5.833$, $p=.016$) than public schools.

Majority of the respondents in both cohorts had friends they could confide in. There was no significant difference between hospital and school cohorts in this parameter. The respondents in public school significantly had fewer confidants among their friends.

The Relationship Between Gender and Adolescent Abuse among Respondents in the Cohorts (Table 11).

There is no significant relationship between gender and any abuse status in all the cohorts.

There is no significant relationship between gender and emotional abuse in all the cohorts.

The prevalence of sexual abuse is significantly higher among females in the total school cohort ($X^2=5.894$, $p=.015$) but not in the other cohorts. There is no significant relationship between gender and physical abuse in any of the cohorts.

The Relationship Between Adolescent Phase and Adolescent Abuse among Respondents in the Cohorts (Table 12).

The relationship between any abuse status and adolescent phase is statistically significant in all the cohorts. The prevalence of emotional abuse is significantly higher in late adolescents in the hospital cohort ($X^2=15.503$, $p=.000$) and public school attendees ($X^2=10.220$, $p=.006$) but not in the total school cohort and private school attendees.

The prevalence of sexual abuse is significantly higher in late adolescents in the total school cohort ($X^2=11.246$, $p=.004$) and private school attendees ($X^2=12.279$, $p=.002$) but not in the hospital cohort and public school attendees.

The prevalence of physical abuse is significantly higher in late adolescents in the hospital cohort ($X^2=15.384$, $p=.000$) and private school attendees ($X^2=6.265$, $p=.044$) but not in the total school cohort and public school attendees.

The Relationship Between Adolescent Abuse and Mental Health conditions among Respondents in the Cohorts (Table 13).

There is a significant relationship between sexual abuse ($X^2=18.240$, $p=.000$), physical abuse ($X^2=28.247$, $p=.000$) and emotional abuse ($X^2=28.737$, $p=.000$) and positive screening for anxiety disorder among the total school cohort. In the hospital cohort, there is a significant relationship between emotional abuse ($X^2=5.872$, $p=.037$) and positive screening for anxiety disorder but the not with physical and sexual abuse

There is a significant relationship between sexual abuse ($X^2=10.540$, $p=.000$), physical abuse ($X^2=12.917$, $p=.000$) and emotional abuse ($X^2=24.613$, $p=.000$) and positive screening for depression in the total school cohort. In the hospital cohort there was a significant relationship between emotional abuse ($X^2=6.198$, $p=.024$), sex abuse ($X^2=11.805$, $p=.004$) and positive screening for depression but not for physical abuse.

There is a significant relationship between sexual abuse ($X^2=25.987$, $p=.000$), physical abuse ($X^2=39.876$, $p=.000$) and emotional abuse ($X^2=35.583$, $p=.000$) and positive screening for suicide ideation in the total school cohort. Only sexual abuse ($X^2=5.846$, $p=.047$) had a significant relationship with positive screening for suicide among the respondents in the hospital cohort. The relationship between physical abuse and emotional abuse and suicide ideation were not significant.

In the hospital cohort, the relationship between emotional abuse ($X^2=12.633$, $p=.003$) and positive screening for dysmorphic concern was significant. There was no significant relationship between sex abuse and physical abuse and dysmorphic concern. There is a significant relationship between sexual abuse ($X^2=19.198$, $p=.000$), physical abuse ($X^2=21.340$, $p=.000$) and emotional abuse ($X^2=32.950$, $p=.000$) and positive screening for dysmorphic concern among the total school cohort.

The Relationship Between High Risk Alcohol Use and Adolescent Abuse among Respondents in the Cohorts. (Table 14)

There was a statistically significant relationship between high risk alcohol use and abuse status ($X^2=13.043$, $p=.003$), emotional ($X^2=8.117$, $p=.028$) and sexual abuse ($X^2=12.784$, $p=.011$). in the hospital cohort. In the total school cohort, only sexual abuse had a significant relationship with high risk alcohol use ($X^2=12.042$, $p=.004$)

The Relationship Between Disclosure Factors and Mental Health Conditions among Respondents in the Cohorts (Table 15).

Respondents' inability to confide in their parents is significantly associated with only depression ($X^2=13.553$, $p=.002$) and suicide ideation ($X^2=17.384$, $p=.002$) in the hospital cohort. In the school cohort there was a significant relationship between respondents' inability to confide in their parents and positive screening for

anxiety ($X^2=19.722$ $p=.000$), depression($X^2=15.096$ $p=.000$), suicide ideation($X^2=35.929$ $p=.000$), and dysmorphic concern ($X^2=11.238$ $p=.001$) but not for HR alcohol use.

Respondents' ability to confide in their friends is not significantly related to any mental health disorder in any of the cohorts.

Distribution of Reason for Encounter in Diagnostic Categories among the Hospital Respondents (Table 16).

The table below on the distribution of diagnostic categories for the hospital respondents shows dermatological conditions were most common (16.7%) followed by eye complaints (mostly Visual Acuity: 15.1%) and malaria (14.3%), then respiratory tract and musculoskeletal conditions. Only 2 subjects had a mental health diagnosis (drug use) and only one presented on account of sexual abuse.

Distribution of Psychological Symptoms among the Respondents in the Hospital Cohort (Table 17).

The table below shows the distribution of symptoms related to psychological illness.

Only one respondent presented with irrational behavior and one with substance abuse. There was no respondent presenting with any of the other core psychological symptoms. Thirty-one respondents presented with abdominal pain, 11 MHD positive respondents (17.5%) and 20 MHD negative respondents (10.6%) without a statistically significant difference ($X^2=2.029$ $p=.154$)

IV. Discussion:

A total of 930 respondents were surveyed, 251 in the hospital and 679 in the schools. The distribution of sociodemographic characteristics among the respondents was similar in both cohorts. Age range was 10-19 years in both cohorts, mean age was 14.59(+/-2.882) in the hospital cohort similar to 14.28(+/-1.919) in the community cohort. Sex distribution was almost equal. Distribution of phase of adolescence showed a greater preponderance of early and middle phase adolescents in the hospital cohort than the school cohort suggesting that late adolescents don't come to the hospital frequently.

The distribution of parents' educational status was also similar in the two cohorts. Their occupational distribution was difficult to analyse as a lot of the respondents gave occupational categories like "civil servants" business man/woman" which were difficult to break down into socioeconomic strata. The composite scoring of fathers' and mothers' educational status was used to generate co- parental educational status as a proxy for socioeconomic status. The distribution of this variable was not statistically significant between the hospital and school cohorts but was highly significant ($X^2=124.605$, $p=.000$) between the public and private school attendees in keeping with the expected difference in socioeconomic status of attendees in the two types of schools and confirming this variable as an appropriate proxy for socioeconomic status.²⁰Majority of the respondents in both cohorts were Christians. Despite the similarities in the sociodemographic variables in the two cohorts, the pattern of morbidity in the hospital was different from the community as expected. The exact factors responsible for this include determinants of health seeking behaviour in our locale which were not determined in this study.

Prevalence of mental health disorder (MHD), defined in this study as having a positive screening for any of the conditions studied was very high at 24.7% in the hospital and 50.4 % in the community cohort. The community prevalence is much higher than 30.9% found in a similar study on psychological distress using the GHQ in Benin City in 2016.³⁸The prevalence is also higher than the 14.3% for sub Saharan Africa, 35% for psychological distress in US and Canada, and 33% in Asia.^{17,39,40,41} It is however projected that diagnostic confirmation in this sample population may bring the prevalence closer to the global report of 10-20% for confirmed mental health disorder.²⁵ The results here demonstrated the very high burden of psychoemotional morbidity among adolescents in our locale and the fact that this burden is significantly much higher in the community than in the hospital as expected. The prevalence among private school attendees was 54.6% and higher than in the public schools (46.9%) suggesting that adolescents of higher socioeconomic status (SES) are more affected but the difference was not statistically significant. This is similar to the findings by Otakpor.³⁸This suggests SES that did not determine mental health disorder among adolescents similar to findings in Asia but contrary to global trends that attribute significantly higher mental health burden to lower SES.⁴¹Negative mental health status was not significantly related to gender among the hospital cohort and public school attendees. This is similar to findings in the cited Asian LMICs study where a possible cultural effect was attributed for this.⁴¹ However, in the total school cohort, driven by the effect among the private school attendees, females had significantly higher prevalence (63.1%) than males (45.1%), similar to studies in developed countries.^{25,42}In the hospital and public school, adverse mental health status was significantly more prevalent among late adolescents but in private schools it was evenly spread across the phases of adolescence. The peculiar trends in the private school is attributed to higher SES suggesting that in this study population higher SES was not protective against mental health disorder contrary to studies across the world showing that high SES is protective against mental health disorders.^{25,42}In our culture, there is a general belief that children from higher SES are over protected and pampered and so are less able to cope with adversity than their peers from lower SES. This may explain this finding but needs to be subjected to further studies to confirm the association.

Screening instruments were used in this study to demonstrate the high burden of psychoemotional distress among our adolescents and the utility of screening instruments in the setting of primary care and the schools as advocated for adolescent health care. It provides for the detection of mental health morbidity which may not meet diagnostic criteria but offers opportunity for early detection and define those who will benefit from intervention to prevent deterioration to more severe disorders.

Pattern of MHDs:

The prevalence of positive screening for anxiety disorder was 9.2% in the hospital and 20.3% in the school demonstrating a significantly higher community burden than in the hospital in keeping with expectation. The school prevalence is similar to findings in rural India (16.6%), lower than diagnostic prevalence found in SE Nigeria (34.1%) and in the United States where life time prevalence was found to be 39.1%.^{22,24,43} The prevalence in the private and public schools were similar suggesting no significant relationship with SES contrary to global trends showing low SES to be associated with anxiety disorders.^{25,43} Female gender was significantly more affected by anxiety than males in the private school attendees attributed to the effect of socioeconomic status. This is in keeping with global trends which show females are more prone to anxiety than males and has been attributed to the effect of sex hormone receptors in the brain areas regulating anxiety and depression.²⁴ This effect was not seen in the public school and may suggest decreased vulnerability among females of lower SES. Anxiety was significantly more prevalent among late phase adolescents in the hospital and public school contrary to known trends globally where anxiety is more prevalent among early adolescents.²⁵ In the private school attendees, anxiety affected respondents across all phases of adolescence without a significant relationship with age, a possible impact of SES.

The prevalence of positive screening for depression was significantly higher (33.0%) in the community than the hospital (16.7%) as expected. The use of a screening instrument in this study suggests that confirmed diagnostic rate may be less and within the range of the prevalence found in other school based studies in Nigeria: SW Nigeria at 6-12%,^{19,21} 6.2 % in the SE Nigeria²⁰ and 29.5% in Ibadan.¹⁸ The estimated diagnostic prevalence is higher than that found in the United States (11.7%) and South Africa (14.6%) and global rate of 8-10% confirming the literature that depression is more common in LMIC probably due to Socioeconomic problems.^{4,24,44} The high prevalence of positive screening for depression in this study is important as mentioned earlier providing opportunities for early intervention. A study in Nigeria has shown that school- based CBT was effective, accessible, less stigmatised and resource efficient and therefore confirming the utility of this approach.²¹ The prevalence of depression was significantly higher among the private school attendees than the public school suggesting the impact of higher socioeconomic status similar to findings in South Africa but contrary to global trends showing that depression is more common among the lower social economic class in all age groups.^{5,25,44} The reason for this is attributable to peculiarities of child nurturing in higher SES in our culture as earlier mentioned. Globally, it is attributed that adolescents from higher SES have greater resiliency resources and have less exposure to adverse life circumstances and so have reduced prevalence of depression.⁴² In the private school, female gender was significantly more affected by depression than males similar to other studies.^{18,19,21} This effect was not found in the public school and is attributed to the impact of SES in this sample population. In hospital and public school, depression was significantly more common among the late phase adolescents similar to findings across the world but in the private school it was significantly more prevalent in the early to mid adolescents similar to the study in Enugu that showed depression rates peaked in the early adolescence.^{20,25}

Suicide ideation was significantly higher in the community (21.9%) than in the hospital (8.0%) without any significant difference between public and private school attendees. This is similar to findings in SE Nigeria and across the African continent^{23,45} Female gender was significantly associated with suicide ideation among the hospital, total school and private school cohorts similar to other studies.^{25,45} Suicide was significantly more common among late adolescents in the hospital and public schools in keeping with global trends.²⁵ In the private school suicide ideation was evenly spread across all the phases of adolescents suggesting that the factors driving development of suicide ideation among adolescents in the higher SES may be different. This may be due to the reasons discussed above but needs to be further explored in future studies.

The prevalence of co morbid anxiety, depression and suicide disorders was 7.2% in the hospital lower than 17.8% in the school with a significant female preponderance in both cohorts in keeping with literature.²⁴

Dysmorphic Concern was elicited by screening with a single question on worries about physical appearance. Respondents that confirmed worries about their appearance were significantly higher in the community (28.6%) than in the hospital (11.6%) as expected and without any significant difference between private and public school attendees. The community prevalence here is lower than was found in a study in India where about 72.6% reported some degree of dysmorphic concern.²⁷ The degree of concern and associated behavioural features of DSM-5 definition of body dysmorphic disorder (BDD) were not elicited. However this finding is important as a pointer to the need for screening among adolescent in our environment as done in developed countries.⁴⁶ This is particularly more so as the association between dysmorphic concern and

psychomorbidities in this study population were significant in keeping with literature.⁴⁷ This suggests that even in subsyndromal cases of dysmorphic concern, the adverse impact on social and psychoemotional wellbeing makes it imperative to screen and address the problem. BDD is known to have more impact on psychosocial adjustment in adolescents than in adults and is amenable to school based interventions.^{26,48} Female gender was significantly more affected by dysmorphic concern than males in the community among the private school attendees similar to findings in UK, USA and India suggesting the impact of SES in this study.^{26,48} Dysmorphic concern was significantly associated with late adolescence in the public school and hospital in keeping with other studies and expectation that late adolescents awaiting emergence as adults and anticipating romantic involvement will have more concern about their appearance.²⁶ However, among the private school attendees, dysmorphic concern was associated with middle adolescent phase suggesting that among those in the high SES, younger adolescents are significantly affected by worries about their appearance. This brings to question possibility of earlier romantic involvement in this group than among those of lower SES in this study population.

The prevalence of alcohol use in the hospital was significantly lower at 13.9% than 30.8% in the schools. However, high risk alcohol use (positive Crafft score) was found in 4.8 % of the hospital respondents and 5.3% in the school without any significant difference between the cohorts. This is lower than findings in Ibadan where 21% were involved in alcohol and substance use but 10% had a positive Crafft screening for high risk use.⁴⁹ It is also lower than 22% positive Crafft screening found in Norway.⁵⁰ The proportion of Crafft positive respondents among the users in the hospital at 34.3% (17.2% in the schools) was lower than findings in America study where 51% were high risk users including 18% dependent users.⁵¹ The prevalence of high risk use was significantly higher in public school attendees suggesting that lower SES was a determinant factor contrary to an earlier study in Benin and similar to findings in Enugu.^{23,52} There was a significant relationship with male gender in the hospital cohort only, similar to findings by Akanni in Benin, Ibadan and Norway.^{49,50,52,53} Late adolescents were significantly more involved in alcohol use in both hospital and school cohorts similar to the Ibadan and Norway studies.^{49,50} The prevalence of marijuana use was very low at 2.0 % (5 respondents) in the hospital and 1.6% (11 respondents) in the school comparable to findings in previous studies in Benin (2.1%) and Korea (0.4%) but is lower than findings in Lagos (7.7%) and the USA (19.8%).^{53,53,54,55,56} There were more males involved but the relationship with gender and age could not be validly analysed due to the very low numbers of respondents involved. The existence of comorbid substance use and mental health disorder or dual diagnosis in this study was correspondingly very low at 2.0% in the hospital and 3.2% in the school. This is very important as substance use could confound the diagnosis and management of the other mental health conditions.⁴ The importance of screening for alcohol and substance use among adolescents is underscored by the fact that early detection and treatment can prevent development of drug use disorder and reduce the negative impact of substance use on academic development and adolescent outcome.⁵⁷ Studies have established the strong link between substance use and mental disorders among adolescents as they tend to use drugs to “self-medicate” against the adverse psychoemotional impact of MHD.^{50,54} Screening in primary care and schools provides opportunity to detect the existence of these problems which otherwise may remain silent as found among the hospital cohort in this study.^{31,57}

Adolescent Abuse

The prevalence of any abuse status among the hospital cohort of about 14.3%, was significantly less than in the schools (32.3%) and without any significant difference between the private and public schools suggesting that high SES was not protective. Gender was not significantly related to abuse status in both hospital and school cohorts but late adolescence was significantly associated with being abused in both cohorts.⁵⁸ Being a victim of any type of abuse was significantly associated with high risk alcohol use in all cohorts.

The prevalence of sexual abuse (SA) in the hospital cohort was 4.4 % and was not significantly different in the community at 6.0%. This prevalence was lower than 18.5% found in the Violence Against Children Study (VACS) in Nigeria, 38.9% in Port Harcourt, 40% in SE Nigeria, and 9% in South Africa.^{58,59,60,61} SES was not a determinant as there was no significant difference between the public and private school attendees similar to findings in SE Nigeria but contrary to the VACS study. Both males and females reported sexual abuse without any significant difference among the hospital cohort but a significant female predominance in the community similar to findings in SE Nigeria but contrary to the Port Harcourt findings.⁵⁹ Sexual abuse was significantly more common among late adolescents in the community driven by SES as this effect was maintained in the private schools but not in the public schools. This interaction between sexual abuse, SES, gender and age was also demonstrated in the Nigeria VAC study. The explanation for this needs further studies. The predominance among late adolescents contradicts findings in the SE Nigeria study showing that SA occurred more among early adolescents and reduced in later stages.⁶²

Sexual abuse was significantly related to anxiety, depression, suicide, dysmorphic concern and high risk (HR) alcohol use in the hospital. In the community a significant relationship was seen only with depression,

suicide and HR alcohol use. This finding is in keeping with literature confirming the extensive psychological consequence of sexual abuse among adolescents.^{58,59,60,61} The resulting psychomorbidities unfortunately worsen the negative long term consequences of sexual abuse on adolescent development and outcome.

The prevalence of physical abuse (PA) was significantly more in the community (S=20.6% H=7.6%). This was lower than found in Enugu (44.8%) Nigeria VAC Study (50%) similar to South Africa (18.2%), but higher than in Malaysia (11.8 %).^{58,61,62,63} There was no significant difference between the public and private school attendees suggesting that adolescents from higher SES suffered as much physical abuse as those from lower classes contrary to expectation and literature. This finding is close to the finding in the Nigeria VACS study showing that adolescents of higher SES were 4.9 times more likely to suffer physical abuse than those from lower SES. Gender was not a determinant of physical abuse in all cohorts contrary to expectation but similar to findings in Enugu.⁶² Physical abuse was significantly more among late adolescents in the hospital cohort while in the private school it was associated more with early and middle adolescence similar to South Africa.⁶² These findings are difficult to explain especially as the acts regarded as PA and circumstances of the abuse were not explored in this study in order to keep the scope feasible. PA was significantly related to anxiety, depression, suicide, dysmorphic concern in the community but not in the hospital. These results are meant to provoke further studies and other actions to identify and intervene for victims in the sample population. It also emphasises the need for routine screening for psychosocial factors among all adolescents.

Emotional Abuse (EA) was significantly more in the community (S=18.9%, H=6.0%) but was not determined by SES as there was no significant difference between public and private school attendees. This prevalence is similar to the finding of 17.6% in the Nigeria VAC Study and in Enugu(16.8%) but higher than found in South Africa (12.1%).^{58,61,62} Again, as previously mentioned the exact definition of what the respondents perceive as abuse and the locations of occurrence were not explored in this study.

The finding that emotional and physical abuse were as common in the high SES respondents without the expected protective effect of high SES, suggests the need for further exploration. Gender was not a determinant of emotional abuse in any of the cohorts. Emotional abuse was significantly more prevalent among late adolescents in the hospital and public school but among the private school attendees this relationship was insignificant suggesting that among those of higher SES, perceived emotional abuse affects adolescents of all ages. Again, this finding is validated by the finding in the Nigeria VAC Study where higher SES conferred a 1.78 times increased risk of emotional abuse on the respondents. The possible explanations may include a lower threshold for perceived emotional abuse consequent upon increased expectation of emotional support, reduced resilience in these respondents from higher SES homes as earlier mentioned or actual less availability of emotional support in high SES homes. This calls for further exploration as studies in developed world indicates the contrary. The children of well educated parents were found to cope better with adversity.⁴² In the hospital cohort, EA was significantly related to anxiety, depression HR alcohol use and dysmorphic concern but not suicide while in the community, it was significantly related to all the psychomorbidities similar to findings in literature.^{58,61,62,63} HR alcohol use was not related to EA in the community.

Disclosure Factors

The availability of a confidant with whom the respondent can share their psychoemotional distress is known to have a protective effect and may impact help seeking behaviour.^{64,65} The distribution of availability of a parent as confidant was very high among the cohorts with a significant difference between the hospital and school cohorts suggesting that family related factors distinguish hospital respondents from the community cohort. Private school attendees reported significantly less parent confidants than public school attendees suggesting that adolescents from higher SES may have less supportive relationships with their parents in keeping with literature that demonstrates that SES impacts the dynamics of parent -adolescent relationships.⁶⁶ This suggests that family factors may explain the peculiar trends in the psychomorbidities and correlates among higher SES observed in this study. The full exploration of the family factors in this study will be done in another paper. Deficiency in having a parent confidant was significantly related to only depression and suicide in the hospital cohort but in the community, it was related to all the psychomorbidities except HR alcohol use. The distribution of having a friend confidant was significantly more in private schools but was not significantly related to any of the psychomorbidities in any of the cohorts showing that it has no protective effect contrary to findings in Sri Lanka.⁴¹

Clinical presentation: among the hospital cohort, only 2 respondents presented with mental health symptoms. One was irrational talk linked to marihuana use and the other was direct request for treatment for marihuana use. Both respondents were male. Symptoms of psychological distress were completely not mentioned by any of the respondents or their caregivers despite the significant prevalence of positive screening for mental health disorders among them. This silence occurs as a global phenomenon driven by a host of factors which are more prevalent in our locale: adolescents are unable to express themselves properly and are unwilling to disclose their psychoemotional state for fear of being poorly understood or “judged ” and stigma.^{5,67,68,69} There is also lack of parental awareness of the children’s psychological ill health and attribution of symptoms

and behaviour to “normal” changes of adolescent transition.⁷⁰ The low level of psychological mindedness and mental health literacy in a given culture also plays a major role as found in our environment and evidenced among these respondents.⁷¹ This also influences their search for help as evidenced by a study in Nigeria that demonstrated that only 4.8% of adolescents recognized a case vignette for depression, majority considered friends and family the appropriate source of help and only 1.5% considered professional help appropriate.⁷² However a study in the developed world demonstrated that having friends or parents that the adolescent can confide in may not be protective if these confidants are unable to provide adequate understanding and the right type of support underscoring the need for public mental health education.⁷³ Adolescents are known to present more with physical symptoms including abdominal pain, weakness and irritability, poor school adjustment etc than psychological symptoms especially where mental health literacy is very poor and mental health is highly stigmatized.⁶⁸ The distribution of symptoms of physical diseases presented was not different between those with positive MHD screening and those without. The only symptom with high frequency (12.4%) and known to be associated with psychological distress found among the respondents was abdominal pain but its distribution was not significantly different between those with positive screening for MHD and those without. This shows that among these hospital respondents, there were no symptoms to serve as red flags to prompt screening supporting findings in an Indian study where most of the respondents that screened positive did not show signs of functional impairment.⁴³ A finding that demonstrates the need for a deliberate search for psychoemotional disorders among these adolescents through routine periodic screening.^{64,68}

The distribution of diagnostic categories deduced by the doctors for the respondents also shows that their psychoemotional status was completely unexplored. This is attributed to work load and time constraints, the lengthy and demanding nature of psychiatric interviews and lack of routine screening.⁶⁸ Also Primary care physicians have been shown to lack adequate knowledge of adolescent and child mental health and communications skills required to effectively engage adolescents.^{67,68} The need for health care providers to specifically study the verbal communication and language style of adolescents to facilitate increased index of suspicion and diagnostic rates of MHD especially suicide has been advocated.⁶⁷ All these contribute to an alarming mental health gap among our adolescents in keeping with WHO position, concern and call for action.⁷⁴ In the developed world only 25-35% of adolescent with diagnosed mental health conditions accessed treatment resulting in a 65-75% treatment gap but the positive report and diagnostic rate in this study was 3.1% with a gap of 96.9%.⁶⁸ This calls for urgent intervention. The picture was equally grievous for detection of adolescent abuse as there was a 97% gap in abuse reporting and diagnosis. None of the respondents volunteered the complaint on physical or emotional abuse and none of them were evaluated by the doctors for it as evidenced by their absence from the distribution of diagnostic categories. Only one female respondent presented request for a medical report to the police on sexual assault that occurred over a week prior with negative clinical evidence of rape. There was a 97.3% gap in adolescent abuse report and diagnosis. These findings demonstrate the crying need to implement adolescent health care policies and facilities to provide psychosocial screening in schools and hospitals and family-based interventions for cases and those at risk.

V. Conclusion

A high prevalence and heavy silence attends adolescent MHD and abuse in our environment demanding urgent intervention in the schools and primary care.

Recommendations: Family Physicians should commence routine annual screening of all adolescents in their practice.

School based screening should be implemented and linked to family physicians for definitive diagnosis and care of those with positive screen results.

Adolescent health care services and mental health care provisions need to be scaled up urgently by the Government of Nigeria.

Public education to increase the Mental Health Literacy of the Nigerian population should be urgently deployed by Government and non-Governmental agencies and in the hospitals.

Limitations: the MHDs were assessed using screening instruments and so results do not reflect definitive diagnostic prevalence.

References

- [1]. Wille N, Bettge S., Ravens-Sieberer U. and the BELLA Study group. Risk and protective factors for children's and adolescents' mental health: results of the BELLA study. *Eur Child Adolesc Psychiatry (Suppl 1)* 17:133-147 (2008) DOI 10.1007/s00787-008-1015-y
- [2]. Holling H., Schlack R. Psychosocial risk and protective factors for mental health in childhood and adolescence – results from The German Health Interview and Examination Survey for Children and Adolescents (KIGGS). 2008 Mar; 07(3):154-63, doi: 10.1055/s-2008-1062741
- [3]. Tunde-Ayinmode M., Adegunloye O., Ayinmode B., Abiodun O. Psychiatric disorders in children attending a Nigerian primary care unit: functional impairment and risk factors. *Child and Adolescent Psychiatry and Mental Health* 2012, 6:28 <http://222.capmh.com/content/6/1/28>.

- [4]. Michaud PA., Fombonne E. ABC of Adolescence: Common mental health problems. *BMJ: British Medical Journal.* 2005;330(7495):835-838.
- [5]. Paruk S., Karim E., Update on Adolescent Mental Health. *S Afr Med J* 2016;106(6):548-550.FOI:10.7196/SAMJ2016.v106i6.10943.
- [6]. World Health Organisation and Calouste Gubenkian Foundation. *Social Determinants of Mental Health.* Geneva. World Health Organisation. 2014.
- [7]. Alaska Division of Behavioural Health; risk and Protective Factors for Adolescents Substance Use (and other Problem Behaviour). Available at dhss.alaska.gov/programs/pdfs Accessed 5/3/18.
- [8]. Henderson R. Depression in Children and adolescents. September 2016. Available at: <https://patient.doctor.depression>.
- [9]. Hafen C.A. Laursen B. More Problems and Less Support: Early Adolescent Adjustment Forecasts Changes in Perceived Support from Parents. *Journal of Family Psychology* 23(2):193-202. May 2009 DOI: 10.1037/a0015077.
- [10]. Murphy M., Fonagy P., Mental Health Problems in Children and Young people. Available at <https://assets.publishing.service.gov.uk>
- [11]. Atilola O., Ayinde O.O., Emedoh C.T., Oladimeji O. State of the Nigerian Child – neglect of child and adolescent mental health: a review. *Paediatric and International child health* 2014. DOI 10.1179/2046905514Y.0000000137
- [12]. Kapungu C., Petroni S., Allen N.B., Brumana L., Collins P.Y., De Silva M., Gendered influences on adolescent mental Health in Low and Middle income countries: recommendations from an expert convening. *Lancet* 2017. Available at www.the.lancet.com/child-adolescent. [http://dx.doi.org/10.1016/S2352-4642\(17\)130152-9](http://dx.doi.org/10.1016/S2352-4642(17)130152-9)
- [13]. Federal Ministry of Health. Nigerian National Policy on the health and development of adolescents & young people in Nigeria. 2007. Available at www.health.gov.ng/doc/policy.
- [14]. UNICEF. Demographics UNICEF Data. Updated Feb. 2018. Available at <https://data.unicef.org/topic/adolescents>
- [15]. NoorAni A., Fadhli M., Selva R., Fauziah M., Nazrila H.N., Syafinaz M., et al. Trends and factors associated with mental health problems among children and adolescents in Malaysia, *International Journal of Culture and Mental Health*, 2015.1 Vol.8 No. 2, 125-136.
- [16]. UNICEF. Measurement of Mental Health among adolescents (MMHA). Roadmap 2018-2019 available at <https://data.unicef.org/topic/adolescents>.
- [17]. Cortina MAQ., Sodha A., Fazel M., Ramchandani, P.G. Prevalence of Child Mental Health Problems in Sub-Saharan Africa: A Systematic Review. *Arch Pediatr Adolesc Med.* 2012;166(3):276-281.
- [18]. Adeniyi AF., Okafor NC., Adeniyi CY. Depression and physical activity in a sample of Nigerian adolescents: levels, relationships and predictors. *Child and Adolescent Psychiatry and Mental Health* vol. 5, Article number: 16 (2011).
- [19]. Bella-Awusah T., Ani C., Ajuwon A., Omigbodun O. Effectiveness of brief school-based, group cognitive behavioural therapy. *Child and Adolescent Mental Health* 21, No. 1, 2016, pp. 44–50.
- [20]. Chinawa JM., Manyike PC., Obu HA., Aronu AE., Odutola O., Chinawa AT. Depression among adolescents attending secondary schools in South East Nigeria. *Annals of African Medicine*, Vol. 14, No. 1, January-March 2015, pp. 46-51.
- [21]. Adewuya AO., Ologun YO. Factors associated with depressive symptoms in Nigerian adolescents. *J Adolesc Health* 2006 Jul;39(1):105-10. doi: 10.1016/j.jadohealth.2005.08.016. PMID: 16781968 DOI: 10.1016/j.jadohealth.2005.08.016
- [22]. Chinawa AT., Onukwuli VO., Chinawa JM, Mayike PC, Nduagubam OC, Odinka PC, Aniwada EC, Ndukuba AC, Ukoh UC: Anxiety disorders among adolescents attending secondary schools in Enugu South East Nigeria. *Current Pediatric Research* (2018) Volume 22, Issue 3.
- [23]. Chinawa M., Manyike PC., Obu HA., Odetunde OL., Aniwada EC., Ndu IK., Chinawa AT. Behavioral Disorder amongst Adolescents Attending Secondary School in Southeast Nigeria. *Behavioral Neurology*. Volume 2014, Article ID 705835. 10.1155/2014/705835
- [24]. 2017 Children’s Mental Health Report. Child Mind Institute Available at adaa.org/2017-CMHR-PDF Accessed 10/09/20
- [25]. Adolescent Mental Health: WHO Health Organisation. October 2019. Available @ www.who.int Accessed 5/02/20
- [26]. Phillips KA., Didie ER., Weisberg RB. Clinical features of body dysmorphic disorder in adolescents and adults. *Psychiatry Res.* 2006 Mar 30; 141(3): 305–314. doi: 10.1016/j.psychres.2005.09.014
- [27]. Himanshu, Kaur A, Kaur A, Singla G. Rising dysmorphia among adolescents: A cause for concern. *J Family Med Prim Care* 2020;9:567-70.
- [28]. The Teen Treatment Center. The link between Depression and substance abuse. April 10 2017. Available at www.teentreatmentcenter.com
- [29]. Pang R.D., Farrahi L., Glazier S., Sussman S., Leventhal A.M., Depressive symptoms, Negative Urgency, and Substance Use Initiation in Adolescents. *Drug, Alcohol Depend* 2014.
- [30]. Mental Health America. Position Statement 41: Early identification of Mental Health Issues in Young People. Available at www.mentalhealthamerica.net/position accessed 5th July 2018.
- [31]. D’Amico EJ., Parast L., Meredith LS., Ewing BA., Shadel WG., Stein BD. Screening in Primary Care: What Is the Best Way to Identify At-Risk Youth for Substance Use? *Pediatrics* Dec. 2016, 138 (6) e20161717; DOI: <https://doi.org/10.1542/peds.2016-1717>.
- [32]. Robles C.C., Bronstein J. Easing the path for improving help seeking behaviour in youth. *Clinical Medicine* Vol 18,100256, Jan 2020.
- [33]. UNICEF. Nigeria at a glance: Nigeria Statistics 2012 (updated 27 December 2013). Available at www.unicef.org. Accessed 2/2/16
- [34]. Richardson LP, Rockhill C, Russo JE, et al. Evaluation of PHQ-2 as a brief screen for detecting major depression among adolescents. *pediatrics* 2010;125(5):e1097-103
- [35]. Ian P. Dumont, BA, and Ardis L. Olson, MD Primary Care, Depression, and Anxiety: Exploring Somatic and Emotional Predictors of Mental Health Status in Adolescents doi:10.3122/jabfm.2012.03.1100546 *J Am Board Fam Med* May-June 2012 Vol. 25 No. 3 291-299
- [36]. American Academy of Pediatrics. MENTAL HEALTH SCREENING AND ASSESSMENT TOOLS FOR PRIMARY CARE. In *Addressing Mental Health Concerns in Primary Care; A Clinician’s toolkit.* January 2012.
- [37]. Massachusetts Department of Public Health. Bureau of Substance Abuse Services. Provider guide: Adolescent Screening, Brief Intervention and Referral to treatment using the CRAFFT Screening Tool. March 2009. Available at [ww.ceasar.org](http://www.ceasar.org)
- [38]. Akanni OO. Otakpor AN. Psychological distress and Resilience: A Study of Prevalence and Association among School Attending Adolescents in Benin City. *Sri Lankan J Psych* June 2016. DOI:10.4038/sljpsych.v7i1.8099
- [39]. Arbour-Nicitopoulos KP, Faulkner GE, Irving HM. Multiple health-risk behavior and psychological distress in adolescence. *J Can Acad Child Adolesc Psychiatry* 2012; 21(3):171e8.
- [40]. Brooks TL, Harris SK, Thrall JS, Woods ER. Association of adolescent risk behaviors with mental health symptoms in high school students. *J Adolesc Health*. 2002;31(3):240e6. [https://doi.org/10.1016/S1054-139X\(02\)00385-3](https://doi.org/10.1016/S1054-139X(02)00385-3)

- [41]. Lee H., Young Lee E., Greene B., Shin Y. Psychological Distress among Adolescents in Laos, Mongolia, Nepal, and Sri Lanka ScienceDirect. Asian Nursing Research 13 (2019) 147-153
- [42]. Reiss F., Meyrose A., Otto C., Lampert T., Klasen F., Ravens-Sieberer U., Socioeconomic status, stressful life situations and mental health problems in children and adolescents: Results of the German BELLA Cohort-study. PLoS ONE 14(3): e0213700 DOI 10.1371/Journal.pone.0213700:31.
- [43]. Madasu S., Malhotra S., Kant S., Sagar R., Mishra AK., Misra P. et al. Prevalence and determinants of anxiety disorders among adolescents in a rural community from northern India. Asian Journal of Psychiatry Vol 43, June 2019, Pages 137-142
- [44]. Ajaero CK., Nzeadibe CT., Igboeli EE. Rural Urban Differences in the Prevalence and predictors of Depression among Adolescents in South Africa. S Afr J Child Health 2018;12(2 Suppl 1):S71-S74. DOI: 10.7196/SAJCH.2018.V12I2.1509
- [45]. McKinnon B., Gariépy G., Sentenac M., Elgar FJ. Adolescent suicidal behaviours in 32 low- and middle-income countries. Bulletin of the World Health Organization 2016;94:340-350F. doi:10.2471/BLT.15.163295.
- [46]. Guidelines for Adolescent Preventive Services. American Medical Association. Available @www. Ahrq.gov>nccpr>tools>he Accessed 6/05/19.
- [47]. Thungana Y., Moxley K., Lachman A. Body dysmorphic disorder: A Diagnostic Challenge in Adolescence. Afr. J Psychiat. 18:24(0),a1114.https://doi.org/10.4102/sajpsychiatry. v24i0.1114
- [48]. Leventhal KS., Gillham J., De Maria L., Andrew G., Peabody J., Leventhal S. Building psychosocial assets and wellbeing among adolescent girls: A randomized controlled trial. Journal of Adolescence. 45(2015)284e295.
- [49]. Atilola O., Ayinde O., Adeitan O. Beyond prevalence and pattern: problematic extent of alcohol and substance use among adolescents in Ibadan South-west Nigeria. Afr Health Sci .2013 Sep;13(3):777-784. DOI: 10.4314/ahs.y13i3.37
- [50]. Skogen JC., Sivertsen B., Lundervold AJ., Stormark KM., Jakobsen R., Hysing M. Alcohol and drug use among adolescents and the co-occurrence of mental health problems. Ung@hordaland, a population based study BMJ Open 2014;4:e005357. Doi:10.1136/bmjopen-2014-005357
- [51]. Agle J., Gassman RA., Jun M., Nowicke C., Samuel S. Statewide Administration of the CRAFFT Screening Tool: Highlighting the Spectrum of Substance Use. Substance Use & Misuse vol 50, 2015 –Issue 13doi:10.3109/10826084.2015.1027930.
- [52]. Abah V.O. The Relationship between Adolescent Risk Behaviors and Family Structural and Process Factors: The Impact of Gender. IOSR JDMS Vol 18 Issue 2. February 2019. DOI:10.9790/0853-1802170113.
- [53]. Akanni O.O., Adayonfo E.O. Correlates of psychoactive substance use among Nigerian adolescents. Sahel Med J 2015;18:192-9.
- [54]. Park S., Kim Y. Prevalence, correlates and associated psychological problems of substance use in Korean adolescents. BMC Public Health (2016) 16:79. DOI 10.1186/s12889-016-2731-8
- [55]. Ani G.N. Prevalence of Substance Abuse among Senior Secondary Students in Mainland Local Government, Lagos. GJMEDPH 2015; Vol.4, No.5 ISSN2277-9604
- [56]. Centers for disease control and Prevention. Youth Risk Behaviour Surveillance System. YRBS 2017. Available at www.cdc.gov>data>yrebs. Accessed 12/01/19
- [57]. Morojele NK., Ramsoomar L. Addressing adolescent alcohol use in South Africa. S Afr Med J 2016;106(6):551-553. DOI:10.7196/SAMJ.2016.v106i6.10944
- [58]. Miller G., Chiang L., Hollis N. Economics and Violence against Children, findings from Violence against Children Survey in Nigeria. Child Abuse Negl. 2018 Nov;85:9-16. DOI: 10.1016/j.chiabu. 2018.08.021. Epub2018Sep 7.PMID:30201521:PMCID:PMC6257999
- [59]. Okagua J., Alex-Hart BA. Sexual Abuse among Secondary School Students in Port Harcourt South-South Nigeria: A Rising Public Health Menace, Factors and Implications. Acta Scientific Paediatrics(2581-883X) Vol 3, Issue 3, March 2020.DOI: 10: 31080/ASPE 2020.03.0224
- [60]. Mayinke PC., Chinawa JM., Chinawa TA. Child sexual abuse among adolescents in South East Nigeria: A concealed public health behavioural issue. Pak J Med Sci 2015;31(4):827-832. Doi:http://dx.org/10.12669/pjms.314.7115.
- [61]. Meinfck F., Cluwer LD., Loening-Voysey H. Physical Emotional and sexual adolescent abuse in South Africa: prevalence, incidence, perpetrators and locations. J Epidemiol Community Health. 2016 Sep 70(9) 910-916.
- [62]. Chinawa J., Aronu A., Chukwu B., Obu H., Prevalence and Pattern of Child Abuse and associated factors in four Secondary Institutions in Enugu South East Nigeria. European Journal of Pediatrics 2013. Vol 173. Doi:10.1007/s00431-013-2191-4
- [63]. Saminathan TA., Ganapathy SS., Sooryanarayana R. Prevalence and factors associated with physical abuse at Home among school going adolescents in Malasia: A population based nationwide Study. Asia J Pub Health. Vol311ss.8pp88S-96S Nov.2019.
- [64]. Dopmeijer J. M., De Konge J. M., Fischer T.L.S., Bovens R. H.L., Wiers R. Predicting disclosure and help seeking in university students with psychosocial problems based on stigma and attitudes towards disclosure and help-seeking. OAT DOI:10.1576/MHAR.1000193
- [65]. Umubeyi A., Mogren I., Krantz G. Help seeking Behaviors, barriers to care and self efficacy for seeking mental health care: A population Based Study in Rwanda. Soc.Psychiatry Psychiatry Epidemiol. 201; 51:81-92. DOI: 10.1007/s00127-015-1130-2
- [66]. Chen E., Berman L.E. Socioeconomic Status and Patterns of Parent Adolescent Interactions. J. Res on Adolescence. 2006. 16(01), 19-27
- [67]. Harvey K., Brown B. Health Communication and Psychological Distress: Exploring the Language of Self-harm. 2012 CMLR/RCLV, 68, 3, 316–340 doi:10.3138/cmlr.1103
- [68]. O'Brien D., Harvey K., Howse J., Reardon T., Creswell C. Barriers to managing child and adolescent mental health problems: a systematic review of primary care practitioners. British J Gen Practice, October2016 e693-707
- [69]. Bradley KL., Robinson LM., Brannen CL. Adolescent help-seeking for psychological distress, depression and anxiety using an Internet program https://www.researchgate.net/publication/254300375DOI: 10.1080/14623730.2012.665337.
- [70]. Agrawal V., Apte AV., Budhwani C. Common Psychological Problems Amongst Adolescents and their Mothers Awareness: A School Based Study. Evolution of Med and Dent Sci/ eISSN- 2278-4802, pISSN- 2278-4748/ Vol. 3/ Issue 22/June 02, 2014 Page 6031. DOI: 10.14260/jemds/2014/2700
- [71]. Akhtar N. Doctoral Portfolio in Counselling Psychology. 2016. Available @wlv.openrepository.com>ha. Accessed 21/10/20
- [72]. Aluh DO., Anyachebelu OC., Anizoba LE. Mental Health Literacy: what do Nigerian Adolescents Know about Depression. Int J Ment Health Syst. 2018;12:8 doi: 10.1186/s13033-018-0186-2
- [73]. Kennya R., Dooley B., Fitzgerald A. Interpersonal Relationships and Emotional Distress in Adolescence. Available @researchrepository.ucd.ie>rest. Accessed 7/06/20
- [74]. Mental Health Gap Action Program: Scaling Up Care for Mental, Neurological and Substance Use Disorders. Geneva. World Health Organization;2008. The challenge and the need. Available at www.ncbi.nlm.nih.gov>NBK310854. Accessed 6/08 2019.

Results

Table 1: Distribution of Sociodemographic Characteristics among the Respondents in the Cohorts.

COHORT/ VARIABLE	HOSPITAL		TOTAL SCHOOL	
	Frequency	Percent	Frequency	Percent
Age				
Range	10-19	-	10-19	-
Mean (SD)	14.59(2.882)	-	14.28 (1.919)	-
Median	14.00	-	14.00	-
Mode	11.00	-	14.00	-
Gender				
Female	136	54.2	390	57.4
Male	115	45.8	289	42.6
Adolescent Phase				
Early	99	39.4	264	38.9
Middle	74	29.5	136	20.0
Late	78	31.1	279	41.1
Religion				
Christianity	250	99.6	670	98.7
African Traditional Religion	1	0.4	2	0.3
Islam	0	0	7	1.0
Father Educational Status				
None	5	2.0	19	2.8
Primary	27	10.8	37	5.4
Secondary	94	37.5	257	37.8
Tertiary	125	49.8	366	53.9
Mother Educational Status				
None	4	1.6	32	4.7
Primary	30	12.0	49	7.2
Secondary	113	45.0	258	38.0
Tertiary	104	41.4	340	50.1
Co- Parental Educational Status				
Low	24	9.6	45	6.6
Medium	94	37.5	237	34.9
High	133	53.0	397	58.5

Table 2: Distribution of Co- Parent Educational Status and Relationship with Cohort Category among the Respondents.

Co-Parent Educational Status Category	Hospital N=251	Total School N=679	Total	X ² p value	Public School N=375	Private School N=304	Total	X ² p value
Low	24	45	69	X ² 3.426 df=2 p=.180	37	8	45	X ² 124.605 df=2 p=.000*
Medium	94	237	331		190	47	237	
High	133	397	530		148	249	397	
Total	251	679	930		375	304	679	

Table 3: Distribution of Mental Health Disorder and Relationship with Cohort Category among the Respondents.

Mental Health Status	Hospital N=251	Total School N=679	Total	X ² P value	Public School N=375	Private School N=304	Total	X ² P value
Positive	62 (24.7%)	342(50.4%)	405	X ² 49.137 p=.000*	176(46.9%)	166(54.6%)	342	X ² 3.953 p=.051
Negative	189(75.3%)	337(49.6%)	525		199(53.1%)	138(45.4%)	337	
Total	251	679	930		375	304	679	

Table 4: Relationship between Mental Health Status and Socio demographic variables among the Respondents in the Cohorts.

SD variable	Hospital N=251		X ² p-value	Total School N=679		X ² p-value	Public School N=375		X ² p-value	Private School N=304		X ² p-value
	MH Status			MH Status			MH Status			MH Status		
Sex	Pos.	Neg	X ² .500 df=1 p=.480	Pos.	Neg	X ² 7.434 df=1 p=.006*	Pos.	Neg	X ² 1.153 df=1 p=.283	Pos.	Neg	X ² 9.891 Df=1 p=.002*
Female	36	100		214	176		113	117		101	59	
Male	26	89		128	161		63	82		65	79	
Adoles. Phase	Pos.	Neg	X ² 33.822 df=2 p=.000	Pos.	Neg	X ² 4.066 df=2 p=.131	Pos.	Neg	X ² 23.735 df=2 p=.000	Pos.	Neg	X ² 3.726 df=2 p=.155
Early	7	92		121	143		29	70		92	73	
Middle	20	54		69	67		22	36		47	31	
Late	35	43		152	127		125	93		27	34	

Table 5: Distribution of Mental Health Disorders among the Respondents in the Cohorts.

Mental Health Disorder	Screen Status	Hospital		Total School		Rlship Btw cohort /MHD	Public School		Private School		Rlship Btw cohort /MHD
		N=251		N=679			N=375		N=304		
		Freq	%	Freq	%		Freq	%	Freq	%	
Anxiety	Pos	23	9.2	138	20.3	X²15.946 p=.000	68	18.1	70	23	X²2.482 P=.115
	Neg	238	91.8	541	79.7		307	81.9	234	77	
Depression	Pos	42	16.7	224	33.0	X²23.716 p=.000*	105	28.0	119	39.1	X² 9.433 P=.002
	Neg	209	83.3	455	67.0		270	72.0	185	60.9	
Suicide Ideation	Pos	20	8.0	149	21.9	X²23.677 p=.000*	78	20.8	70	23.4	X² .488 P=.485
	Neg	231	92.0	530	78.1		297	79.2	234	76.6	
Dysmorphic Concern	Pos	29	11.6	194	28.6	X²29.114 p=.000*	97	25.9	97	31.9	X² 3.002 P=.083
	Neg	222	88.4	485	71.4		278	74.1	207	68.1	
High risk Alcohol Use	Pos	12	4.8	36	5.3	X² .102 p=.750	28	7.4	8	2.6	X²7.818 p=.005*
	Neg	239	95.2	643	94.7		347	92.6	296	97.4	
Marihuana Use	Pos	5	2.0	11	1.6	X² .150 p=.442	7	1.9	4	1.3	X² .320 p=.402
	Neg	246	98.0	668	98.4		368	98.1	300	98.7	

*Sig p<.005

Table 6: Distribution of Mental Health Multimorbidity among the Respondents in the Cohorts.

Mental Health Multimorbidity	Hospital N=251		Sex/Freq. Sig X ² P value	Total School N=679		Sex/Freq. Sig X ² P value
	Freq	%		Freq	%	
None	189	75.3	Female 98 Male 88	339	49.9	Female 177 Male 162
Depression only	19	7.6	Female 11 Male 8	102	15.0	Female 59 Male 43
Anxiety only	5	2.0	Female 4 Male 1	29	4.3	Female 15 Male 14
Suicide ideation only	5	2.0	Female 4 Male 1	52	7.7	Female 34 Male 18
Alcohol only	7	2.8	Female 2 Male 5	10	1.5	Female 6 Male 4
Marihuana only	2	0.8	Female 0 Male 2	2	0.3	Female 1 Male 1
Marihuana +alcohol only	1	0.4	Female 1 Male 2	3	0.4	Female 1 Male 2
Anxiety/depression/suicide	18	7.2	Female 14 Male 4 X ² = 4.048 p=.044	121	17.8	Female 86 Male 35 X ² =5.701 p=.017
Alcohol+ Marihuana comorbid	5	2.0	Female 1 Male 4	22	3.2	Female 12 Male 10

Table 7: The Relationship Between Adolescent Phase and Mental Health Disorders among Respondents in the Cohorts.

Cohort/ Adolescent Phase	Suicide	X ² P value	GAD		X ² P value	Depression	X ² P value	Dysmorphic Concern	X ² P value
Hospital	Yes No	X ²	Yes	No	X ²	YesNo	X ²	YesNo	X ²
Early			1	98		7 92		3 96	23.036
Middle	2 97	9.003	6	68	20.076	12 62	15.754	6 68	df=2
Late	7 67	Df=2	16	62	df=2	23 55	df=1	20 58	P=.000*
	11 67	P=.011*			P=.000*		P=.000*		
Total School		X ²	Yes		X ²	YesNo	X ²	YesNo	X ²
Early	Yes	2.513	No		9.242	80 184	3.080	65 199	4.499
Middle	No	Df=2	41	233	df=2	53 83	df=2	47 89	df=2
Late	56	P=.285	25	111	P=.010*	91 188	P=.214	82 197	P=.105
	208		72	207					
	24								
	112								
Pub. School	68	X ²	Yes	No	X ²	YesNo	X ²	YesNo	X ²
Early	211	7.763	16	83	24.112	16 83	10.835	17 82	6.957
Middle		Df=2	4	95	df=2	15 43	Df=2	13 45	df=2
Late		P=.021*	7	51	P=.000*	74 144	P=.004*	67 151	P=.031*
			57	161					
Private School	Yes No	X ²	Yes	No	X ²	YesNo	X ²	YesNo	X ²
Early	15	.763	37	128	.118	64 101	6.265	48 117	7.005
Middle	84	Df=2	18	60	df=2	38 40	Df=2	34 44	df=2
Late	7	P=.683	15	46	P=.943	17 44	P=.044*	15 46	P=.030*
	51								
	56								
	162								
	Yes No								
	41								
	124								

17	61						
12	49						

Table 8: The Relationship between Gender and Mental Health Disorders among Respondents in the Cohorts.

Cohort/ Gender	Suicide		X ² P value	Anxiety		X ² P value	Depression		X ² P value	Dysmorphic Concern		X ² P value
	Yes	No		Yes	No		Yes	No		Yes	No	
Hospital	Yes		X ² 5.835 Df=1 P= .016*	Yes	No	X ² 1.242 df=1 P= .265	Yes	No	X ² 1.211 df=1 P=.271	Yes	No	X ² .260 df=1 P=.610
Female	No			15			26	110		17	119	
Male	16			121		16	99	12	103			
Total	120			8								
	4			107								
School	111		X ² 10.205 Df=1 P= .001*	Yes	No	X ² 10.421 df=1 P=.001*	Yes	No	X ² 6.413 df=1 P=.011*	Yes	No	X ² 6.268 df=1 P=.012*
Female	Yes			96			144	246		126	264	
Male	No		294		80	209	68	221				
Pub. School	102	288	X ² 2.590 Df=1 P=.108	Yes	No	X ² 3.000 df=2 P=.083	Yes	No	X ² 1.180 Df=1 P=.277	Yes	No	X ² .368 df=1 P=.544
Female	46	243		42			69	161		62	168	
Male	54	176		247		36	109	35	110			
Private School	24	121	X ² 8.331 Df=1 P=.004*	Yes	No	X ² 9.268 df=1 P=.002*	Yes	No	X ² 8.473 Df=1 P=.004*	Yes	No	X ² 10.180 df=1 P=.001*
Female	Yes			48	182		74	85		64	96	
Male	No		20	125	44	100	33	111				
	48			Yes	No							
	112			48	112							
	23			22	122							
	121											

Table 9: Relationship between Substance Use and Socio-demographic Variables among the Respondents in the Cohorts.

SD variable	Hospital N=251		X ² p-value	Total School N=679		X ² p-value	Hospital N=251		X ² p-value	Total School N=679		X ² p-value
	HR Alcohol Use Status			HR Alcohol Use Status			Marihuana Use Status			Marihuana Use Status		
Sex	Pos.	Neg	X ² 4.324 df=1 P=.034	Pos.	Neg	X ² .055 df=1 P=.814	Pos.	Neg	X ² 6.033 df=1 P=.019 Fishers	Pos.	Neg	X ² 4.162 df=1 P=.042 Fishers'
Female	3	133		20	370		0	136		3	387	
Male	9	106		16	273		5	110		8	281	
Adoles. Phase	Pos.	Neg	X ² 12.881 df=2 p=.002	Pos.	Neg	X ² 9.997 df=2 P=.007	Pos.	Neg	X ² 11.315 df=2 P=.003	Pos.	Neg	X ² .204 df=2 P=.903
Early	0	99		5	259		0	99		5	259	
Middle	3	71		10	126		0	74		2	134	
Late	9	69		21	258		5	73		4	279	

Table 10: Distribution of Psychosocial Factors among the Respondents in the Cohorts

Psychosocial Factors	Hospital N=251			Total School Population N=679		Rlship Btw cohort /MHD X ² P value	Public School N=375		Private School N=304		Rlship Btw cohort /MHD X ² P value
	Res.	Freq.	%	Freq.	%		Freq	%	Freq	%	
	Abuse status	Yes	36	14.3	219	32.3	X ² 29.540 df=1 P=.000	117	31.2	102	33.6
	No	215	85.7	460	67.7		258	68.8	202	66.4	
Sexual Abuse	Yes	11	4.4	41	6.0	X ² .952	24	6.4	17	5.6	X ² .193
	No	240	95.6	638	94.0			351	93.6	287	

Physical Abuse	Yes	19	7.6	140	20.6	df=1 P=.329	78	20.8	62	20.4	df=1 P=.660
	No	232	92.4	539	79.4		297	79.2	242	79.6	
Emotional Abuse	Yes	15	6.0	128	18.9	X ² 22.015 df=1 p=.000*	60	16.0	68	22.4	X ² .017 df=1 P=.897
	No	236	94.0	551	81.1		315	84.0	236	77.6	
Parent Confidant	Yes	238	94.8	548	80.7	X ² 23.346 df=1 p=.000*	315	84.0	233	76.6	X ² 4.451 Df=1 P=.035*
	No	13	5.2	131	19.3		60	16.0	71	23.4	
Friend Confidant	Yes	204	81.3	521	76.6	X ² 27.895 df=1 p=.000*	276	73.6	245	80.6	X ² 5.833 P=.016*
	No	47	18.7	158	23.3		99	26.4	59	19.4	
						X ² 2.202 df=1 p=.138					X ² 4.597 df=1 P=.032*

Table 11: The Relationship Between Gender and Adolescent Abuse among Respondents in the Cohorts.

Cohort/ Gender	Abuse status		X ² P value	Emotional Abuse		X ² P value	Sexual Abuse		X ² P value	Physical Abuse		X ² P value
Hospital	Yes	No	X ² 1.296 df=1 P=.586	Yes	No	X ² 1.293 df=1 P=.256	Yes	No	X ² 3.539 df=1 P=.060	Yes	No	X ² .385 df=1 P=.535
	18	118		6	9		9	127		10	105	
	18	97		130	9		127	10		105		
Total School	Yes	No	X ² .284 df=1 P=.594	Yes	No	X ² .009 df=1 P=.924	Yes	No	X ² 5.894 df=1 P=.015*	Yes	No	X ² 1.149 df=1 P=.284
	129	261		74	316		31	359		86	304	
	90	199		54	235		10	279		54	235	
Pub. School	Yes	No	X ² .081 df=1 P=.777	Yes	No	X ² .857 df=1 P=.355	Yes	No	X ² 3.438 df=1 P=.064	Yes	No	X ² .318 df=1 P=.573
	73	157		40	190		19	211		50	180	
	44	101		20	125		5	140		28	117	
Private School	Yes	No	X ² .317 df=1 P=.573	Yes	No	X ² .234 df=1 P=.622	Yes	No	X ² 2.329 df=1 P=.127	Yes	No	X ² .337 df=1 P=.922
	56	102		34	126		12	148		36	124	
	46	98		34	110		5	139		26	118	

Table 12: The Relationship Between Adolescent Phase and Adolescent Abuse among Respondents in the Cohorts.

Cohort/ Adoles. Phase	Abuse Status		X ² P value	Emotional Abuse		X ² P value	Sexual Abuse		X ² P value	Physical Abuse		X ² P value
Hospital	Yes	No	X ² 23.401 df=2 p=.000*	Yes	No	X ² 15.503 df=2 p=.000*	Yes	No	X ² 3.377 df=2 p=.185	Yes	No	X ² 15.384 df=2 p=.000*
	4	95		0	99		2	97		5	69	
	9	9		4	70		3	71		13	65	
Total School	Yes	No	X ² 7.398 df=2 p=.025*	Yes	No	X ² 2.184 df=2 p=.336	Yes	No	X ² 11.246 df=2 p=.004*	Yes	No	X ² 3.673 df=2 p=.159
	23	55		11	67		6	72		45	219	
	55	55		67	67		72	72		29	107	
Early Middle Late	Yes	No		Yes	No		Yes	No		Yes	No	
	95	9		99	4		70	3		71	66	

Pub. School	69 195	X^2 8.667 df=2 p=.013*	43 221	X^2 10.220 Df=2 p=.006* Fishers	6 258	X^2 3.277 df=2 p=.194	YesNo 31 134 21 57 10		X^2 2.912 Df=2 p=.233		
Early	49		30		13						
Middle	87		106		123						
Late	101		55		22						
	178		224		257						
Private School		X^2 6.399 df=2 p=.041*	Yes	No	X^2 5.334 df=2 p=.069	Yes	No	X^2 12.279 df=2 p=.002 fishers	YesNo 64 101 38 17	X^2 6.265 df=2 p=.044*	
Early	Yes		8	3	3	3					
Middle	No		91	96	162	10					
Late	22		6	3	10	68					
	77		52	55	4	4					
	14		46	18	57	57					
	44		172	200							
	81				Yes	No					
	137				3	162					
	Yes			Yes	No	3	162				
	No		No	35	10	68					
	47		130	4	57						
	118		24	54							
	35		54	9							
	43		52								
	20										
	41										

Table 13: The Relationship Between Adolescent Abuse and Mental Health Disorders among Respondents in the Cohorts.

Cohort/ Gender	GAD +	X^2 P value	PHQ-2 +	X^2 P value	PHQ-9 +	X^2 P value	Dysmorphic Concern	X^2 P value
Hospital Sex Abuse	Yes No	X^2 1.124 Df=1 P=.289	Yes 6 No 5 204	X^2 11.805 df=1 P=.004* fishers	YesNo 3 8 17 223	X^2 5.846 df=1 P=.047* fishers	YesNo 3 8 26 214	X^2 2.782 df=1 P=.095
Total Sch. Sex Abuse	Yes No	X^2 18.240 Df=1 P=.000*	Yes 23 No 18 437	X^2 10.540 df=1 P=.002* fishers	YesNo 22 19 126 512	X^2 25.987 df=1 P=.000*	YesNo 24 17 170 468	X^2 19.198 df=1 P=.000*
Hospital Phy. Abuse	Yes No	X^2 .046 Df=1 P=.830	Yes 5 No 14	X^2 1.355 Df=1 P=.244	YesNo 3 16 17 215	X^2 1.715 Df=1 P=.190	YesNo 4 15 25 207	X^2 1.158 Df=1 P=.178
Total Sch Phy. Abuse	Yes No	X^2 28.247 Df=1 P=.000*	Yes 64 No 76 379	X^2 12.917 df=1 P=.000*	YesNo 58 82 90 449	X^2 39.876 Df=1 P=.000*	YesNo 62 78 132 407	X^2 21.340 Df=1 P=.000*
Hospital Emo.	Yes No	X^2 5.872 Df=1 P=.037*	Yes 6 No 9	X^2 6.198 Df=1 P=.024* fishers	Yes 1 No 14 217	X^2 .037 Df=1 P=.848	Yes 6 No 9 213	X^2 12.633 Df=1 P=.003* fishers

Adolescent Mental Health and Psychosocial Correlates at Primary Care in a Tertiary ..

Abuse				P=.000*			P=.000*	Yes	No	
Yes	Yes		Yes		Yes	No		63	65	
No	No	80	No		53	75		131	420	
	48		66	62	95	456				
	90	461	158	393						
Total Sch. Emo. Abuse										
Yes										
No										

Table 14: The Relationship Between High Risk Alcohol Use and Adolescent Abuse among Respondents in the Cohorts.

Cohort/ Gender	Abuse status		X ² P value	Emotio- nal Abuse	X ² P value	Sexual Abuse	X ² P value	Physical Abuse	X ² P value
Hospital									
HR Alcohol Use	Yes	No	X ² 13.043 Df=1 P= .003* Fishers'	Yes	X ² 8.117 Df=1 P= .028* Fishers'	Yes	X ² 12.784 df=1 P= .011* Fishers'	YesNo	X ² 1.491 df=1 P=.222
	6	30		No		3	8	2	
	6	209		3		9		17	
				12		231		10	
				9				222	
				227					
Total School									
HR Alcohol Use	Yes	No	X ² 1.542 Df=1 P= .214	Yes	X ² .119 Df=1 P= .731	Yes	X ² 12.042 df=1 P=.004* Fishers'	YesNo	X ² 2.293 df=1 P=.130
	15			No		7	34	11	
	204			6		29		129	
	21			122		609		25	
				30				514	
				521					

Table 15: The Relationship Between Disclosure Factors and Mental Health disorders among Respondents in the Cohorts.

Cohort/ SF	GAD	X ² P value	PHQ-2 +	X ² P value	PHQ-9 +	X ² P value
Hospital						
Parent confidant	Yes	X ² 3.189 Df=1 P= .074	Yes	X ² 13.553 df=1 P= .002* fishers	YesNo	X ² 17.384 df=1 P=.002* fishers
	No		No		5	8
	20		203		15	223
	218		7	6		
	3	10				
Total Sch.						
Parent confidant	Yes	X ² 19.722 Df=1 P= .000*	Yes	X ² 15.096 df=1 P= .000*	YesNo	X ² 35.929 df=1 P=.000*
	No		No		54	
	93		162		77	
	455		386		94	
	45	86	62		454	
			69			
Hospital						
Friend Confidant	Yes	X ² .151 Df=1 P=.779	Yes	X ² .140 Df=1 P=.708	Yes	X ² .023 df=1 P=.879
	No		No		4	43
	18		35		16	188
	5		169			
	42	186	7			
			40			
Total Sch.						
					Yes	No
					37	121

Friend Confidant		P=.802			111 410
Yes					
No	Yes No 107 31 127	414	Yes No 175 49 109	346	

Table 15: The Relationship Between Disclosure Factors and Mental Health Disorders among Respondents in the Cohorts. (contd).

Cohort/ SF	Dysmorphic Concern	X ² P value	HR alcohol Use	X ² P value
Hospital Parent confidant				
Yes	YesNo	X ² .200	Yes	No
No	28 210	df=1	1 12	X ² .255
	1 12	P=1.000	11 227	df=1 P= .613
Total Sch. Parent confidant				
Yes	YesNo	X ² 11.238	Yes	No
No	141 407	df=1	9 122	X ² .795
	53 78	P=.001*	27 521	df=1 P= .373
Hospital Friend Confidant				
Yes	Yes	X ²	Yes	No
No	No	.580	10 194	X ² .035
	2 45	df=1	2 45	df=1 P=.851
	15 189	P=.446		
Total Sch. Friend Confidant				
Yes	Yes	X ²	Yes	No
No	No	2.325	No	30 491
	9 149	df=1	6 152	X ² .928
	50 471	P=.127		df=1 P=.335

Table 16: Distribution of Reason for Encounter in Diagnostic Categories among the Hospital Respondents.

Diagnostic Category for RFE	Freq.	%	Diagnostic Category for RFE	Freq	%
Eye	38	15.1	Malaria	36	14.3
Ent	13	5.2	Sickle Cell Disease	2	.8
Med Cert	7	2.8	GIT	33	13.1
Seizure Disorder	6	2.4	Medical Report for Sex Assault	1	.4
Dermatology	42	16.7	Neurological	4	1.6
Pregnancy	2	.8	Male Genital	1*	.4
Breast	7	2.8	Vaccination	1	.4
Drug Use Disorder	2	.8	Renal	8	3.2
Asthma	2	.8	Gynecology	18	7.2
Trauma	6	2.4	Respiratory Tract	27	10.7
Musculoskeletal	27	10.7	?HIV	1	0.4
Dental	4	1.6	Cardiac	1	0.4

Table 17: Distribution of Psychological Symptoms among the Respondents in the Hospital Cohort.

Symptom	Frequency Hospital Cohort	Frequency MHD Positive N=63	Frequency MHD Negative N=188	X ² P value
Sadness	0	0	0	-
Weakness	0	0	0	-
Poor sleep	0	0	0	-
Poor Concentration	0	0	0	-
Loss of Interest	0	0	0	-
Irritability	0	0	0	-
Eating problems	0	0	0	-
Weight changes	0	0	0	-
Culture bound- Somatic symptoms	0	0	0	-
Irrational behaviour	1	1	0	-
Substance misuse	1	1	0	-
Physical Symptoms:				
Abdominal Pain	31	11	20	2.029 P =.154

Dr Vivien O. Abah. "Adolescent Mental Health and Psychosocial Correlates at Primary Care in a Tertiary Hospital and it's Community in a Developing Country: A Silent Cry for Help." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 19(11), 2020, pp. 27-49.