

Health Status of Students attending a Secondary School in Ibadan, Nigeria: Implication for School Health Program

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Abstract

The reasons to enforce the implementation of School Health Programme (SHP) in secondary schools are essential to ensure the overall success. This study assessed the health status of school students as indices to enforce SHP in Nigeria. A descriptive, convenient and cross-sectional study was carried out using pretested semi-structured questionnaires and clinical examination on 1,026 volunteered secondary school students in Ibadan metropolis between June, 2022 and July, 2022. The average Body Mass Index for students in junior classes was 16.24±2.48 while that of the senior class students was 17.80±1.66. In junior classes, 39% of the students had adequate nutrition while the majority 47% were malnourished, 14% of the students in junior classes were severely malnourished. Thirty-Five percent (35%) of students in senior classes had mild to moderate malnutrition while the majority (65%) was adequately nourished. Most (91.2%) of 135 consented students had at least one dental issue, 84% of the students had generalized chronic marginal gingivitis, 1.6% students had chronic periodontitis, 0.8% students had dentoalveolar abscess carries, pulpal necrosis, molar hypomineralisation and chronic periodontitis. Based on substance abuse questionnaire analysis, few students (6.3% and 1.1%) needed intensive counselling and severe counselling respectively. Malnutrition and poor dental hygiene were prevalent among the students. Concerted effort is required to establish counselling centres and implement SHP.

Keywords: Health state, Public secondary schools, School health policy, School Health Programme

Introduction

School Health Programme (SHP) refers to all health activities directed to meet, mobilise and strengthen the health needs of students at the present time and laying a good foundation for their future with the support of the home, community, and government (1). SHP is also defined as the entirety of initiatives and programs implemented in educational settings with the aim of enhancing, safeguarding, and fostering the health development of students, teachers, parents, and other community members. (2). The components of a typical SHP are school health policy, healthy school environment (child friendly school), school health services, school health instruction including skills-based education and intersectoral participation (3). The objectives of the SHP are to obtain a rapid and sustained improvement in the health of school children, to ensure that children from preschool age to adolescence are in optimum health to attain their physical and intellectual potential, as well as to receive maximal moral and emotional benefits from health providers, teachers, and the school environment (4).

Although parents are in the ideal position to note any physical, emotional, or psychological problem with a child, most parents have little or no time for their children as they spend most of their time out of the home, believing the school has all it takes to contribute to the all-round development of a child (3). However, many of the schools in Nigeria, particularly public schools, are in disrepair, missing basic and vital equipment and services required to provide a conducive and secure learning environment. Furthermore, there was a lack of guiding standards for SHP in Nigeria, establishing the necessity for the National School Health Policy (NSHP) (5). In addition, teachers' knowledge on SHP which is critical in determining the success of the program is low (6). Also, interested and enthusiastic (7) teachers are not readily available (8).

Studies that establish a framework for the mandatory implementation of SHP in public secondary schools in Southwestern Nigeria have been severely lacking (9). As a result, the purpose of this study was to document the health status of students attending a secondary school in Ibadan, Oyo State, Nigeria, as an indication for the obligatory School Health Program. This is a way to re-awaken the importance of medical knowledge in educational practices and to confirm the need for continuous application of medical laboratory techniques in education development.

Materials and Methods

Approval to carry out the study was obtained from the Oyo State Ministries of Education and Health. Assents and consents were also obtained from the students, parents and teachers. With the assistance of class-teachers and school Principal, 1,026 (73.2%) students were screened out of 1,400 students in a secondary school located in Ibadan, Nigeria between June, 2022 and July, 2022. Medical history, height, weight and general physical examination findings, including dental and ophthalmic examination, were recorded by qualified medical practitioners. The heights of the students were measured using standardized steel anthropometric rod with a parallel bar (accuracy ± 0.1 cm). Weight was measured with the electronic weighing scale (accuracy ± 10 g). Body mass index (BMI) was calculated as body weight (in kilograms)/height (in meters) squared. Questionnaire of Drug Abuse Screening Test (DAST) 20 was applied on the students. With a score of Yes as 1 and No as 0, the students were categorized as Brief counseling group for the score of 1-5, Intermediate intensive group for score of 6-10 Outpatient, Substantial intensive group for the score of 11-15 and Severe group for score of 16-20 (11). Presumptive pulmonary tuberculosis evaluation was based on the presence of any of the symptoms suggestive of tuberculosis. Students were considered to have presumptive pulmonary tuberculosis if any of the following symptoms, regardless of duration, were present: cough, fever, night sweats, unintentional weight loss, chest pain or loss of appetite (12).

Results

As shown in Table 1, out of 936 students that participated in the nutritional status assessment, 582 (62%) students were in junior classes and 354 (38%) were in senior classes. Using Student *t*-test, the mean BMI for the students in junior classes was statistically significantly lower than students in senior classes. Table 1 also indicates that 39% of students in junior secondary classes had adequate nutrition while the majority (61%) were malnourished; 14% of the malnourished group belonged to the severe group. The senior class had 35% of the students in mild to moderate malnutrition group while the majority (65%) were adequately nourished. Based on consents, 137 students went through a special dental examination and 91.2% were diagnosed with at least one dental issue, generalized chronic marginal gingivitis (GCMG) was detected in 84% of the

students and were given scaling & polishing treatment, 1.6% students with chronic periodontitis were counseled and referred, 0.8% had dentoalveolar abscess carries pulpal necrosis, molar hypomineralisation, intrinsic stain and chronic periodontitis (Table 2). Based on substance abuse screening, 79% of students needed brief counseling, 6.3% of students needed intensive counseling and 1.1% of students needed severe counseling (Table 3).

Table 1: Nutritional status classification and mean (\pm S.D) of BMI of participants in different secondary school levels

	Good Nutrition (BMI: 17 to 24)	Mild to Moderate Malnutrition (BMI: 13 to 16)	Severe Malnutrition (BMI: 12 and below)	BMI	Total
Junior Secondary School	228 (39%)	276 (47%)	78 (14%)	16.24 \pm 2.48	582 (62%)
Senior Secondary School	231 (65%)	122 (35%)	1 (0.003%)	17.80 \pm 1.66*	354 (38%)
Total	459 (49%)	398 (43%)	79 (8%)	p < 0.05	936

Table 2: Frequencies of students having different dental defects with recommended management strategy

Diagnosis	% of students	Treatment
Chronic apical periodontitis, dental caries	1.6%	Extraction of teeth
Dentoalveolar abscess, caries	0.8%	Extraction of teeth
Fair oral health	2.4%	Counseled
GCMG	84%	Scaling and polishing of teeth
Intrinsic stain, chronic periodontitis	0.8%	Counseled and referred to a dentist
MIA	0.8%	Counseled
Molar hypomineralisation	0.8%	Counseled
Pulpal necrosis	0.8%	Counseled and referred to dentist

GCMG= Generalized Chronic Marginal Gingivitis

Table 3: Frequencies of students with different levels of counseling using drug abuse screening test (DAST)

Percentages of students	Types of counseling
79%	Mild/Brief
6.3%	Intensive
1.1%	Severe

Discussion

Among reasons for establishing secondary school education are preparing young people for productive employment, selecting candidates for higher education, preparing students to become healthy parents and leaders of tomorrow, helping youth to develop socially, helping youth becoming successful (in the academic world) and formative place to learn more new (positive and negative) concepts with greater details or develop an inclination or interest towards particular area. However, not all the students achieve all these because of poor nutrition, drug abuse, un-conducive environment of learning, socioeconomic factors, poor financial status, low/no parents' education, bad way of teaching/academic/motivation, etc (13).

Importance of School Health Services are to provide emergency care for illness or injury while still in school, to ensure that all students get appropriate referrals to health care providers, to monitor for and control the spread of communicable disease, to provide education and counselling in a variety of health and wellness topics, to serve as a medical resource in the development of policies and procedures in the school, to improve the health of learners and teaching staff (4). In order to achieve all these, these strategies were proposed, viz: building health skills of students and teaching staff in the school community, promoting collaboration between schools and health-related organizations, ensuring maximum use of various health-related facilities in the school environment, develop a health consciousness of the school pupil, ensure the household of pupils are involved in the health care of pupils (13). Other recommendations including locating the of school in a safe area, away from business, pollution and noise, having a gate and fencing the school, having functioning drainage facility and a well-developed wastewater management system and putting measures in place to ensure student safety (13). However, in Nigeria factors influencing the implementation of school health services in public schools are reportedly lacking in infrastructures, funds and adequate health personnel. The state of school health education in Nigeria is depressing and schools are still expected to implement these health programmes themselves (6-8). None of the above studies were direct investigation of the intrinsic health status of the students who are one of the end users of SHP, hence the present study.

Overall, our present study indicated that close to half of the 936 students who participated in the nutritional assessment had adequate nutrition and half were malnourished at various degrees. This is a significant and disturbing finding. Such trend is not surprising because this age group still dependent on parents with weak or low income for food, shelter and hygiene. Thus, the result reflects the prevailing social-economy and familial pattern. Access to healthy nutrition improves students' cognition, increases energy levels and improves students' thinking skills, behaviour and health (14). Poor nutrition makes students' susceptible to illness resulting in school absenteeism, reduces concentration in class and discourages school attendance. Though, obesity is now becoming a challenge in an affluent class worldwide (14), none of students considered for the present study was found obese. This reflects that in developing the country malnutrition is still a major concern despite several measures to overcome it. Biochemical nutritional indices such as blood levels of C-reactive protein, albumin, pre-albumin, transferrin and retinol binding protein can be determined to confirm the nutritional status of these students. Malnutrition remains a public health problem in developing countries, with Nigeria having the second highest burden of malnourished children worldwide and this might be due to non-availability of healthy food and inability to eat (15). One of the possible contributing factors that

can lead to the inability to eat is gingivitis. Dental caries and gingivitis are reported as major oral health problems and the prevalence of gingivitis among adult male population in Benin City, Nigeria was 75.4% (16) while 96% of the primary school children in Nkanu -West local Government Area of Enugu State had gingivitis (17). This was less than previous study in south-south Nigeria of 82.9% (18), though similar to 97.9% from a previous community based study in south-west Nigeria (19).

Dental examination showed that generalized chronic marginal gingivitis (GCMG) was detected in 84% of the students. All participants in this study were boys and previous studies showed that boys carry the biggest burden of gingivitis. In congruence with previous studies (20), the females had better oral cleanliness than males and boys have inadequate tooth-brushing habits. Apart from these, the effect of the puberty hormones especially oestrogen and progesterone might be responsible for gingivitis in males (21). These hormones are found in higher concentration in females. Female participants had better oral hygiene status than male participants which is similar to findings of previous studies among school children in South West Nigeria (22). This might be explained by the fact that females exhibit better health practices and attach more importance to their health as quantified by more frequent tooth cleaning in this study. Children of parents with lower socioeconomic status have fewer resources to meet oral health challenges as a result of reduced parents awareness, parents income, parents perceived or felt need for oral evaluation and treatment, and lack of access to quality dental care. The aetiology of gingivitis is multi-factorial. The main cause of gingival inflammation is dental plaque, other factors, such as systemic diseases, hormonal changes, sex, age, and economic conditions may also influence the response of gingival tissues to dental plaque (23).

Poor oral health status has a significant impact on a child's quality of life, including pain from the affected teeth, loss of sleep, and inability to eat leading to growth retardation and subsequent worsening of the overall quality of life. In addition, the inability to eat may alter salivary flow and composition, leading to the production of low pH saliva further increasing the risk of dental caries (24). The Nigerian population is largely characterized by poor oral health awareness as well as poor access to dental treatment (25), which might have resulted in the large number of students (91.2%) observed in this study as having at least one dental defect. Other factors that might explain high prevalence of dental diseases are increased availability and consumption of refined sugars and low exposure to dietary fluorides. A dramatic increase in the prevalence of caries is noted as the annual sugar intake per person increases from about 15-35kg even in the presence of adequate fluoride utilization (26). Cariogenic oral bacteria ferment refined carbohydrates (substrate) to produce acids which demineralise the teeth. Refined sugars on the other hand are easily available, cheap and are accessible even to the children of the poor; the cheapest snack a child can buy in Nigeria today is the sweet.

Mubarak *et al* (27) reported that the prevalence of pulmonary tuberculosis among the children from Zaria, Nigeria was between 0% and 12% with highest occurrence of in children within the ages (15-18 years), among the male children, those with malnutrition, overcrowding and poor housing hygiene. These factors are common to the students considered for the present study, thus the detection of presumptive TB among 9.8% of the students considered for this study, though only one student was found to be positive for pulmonary TB following detailed laboratory and clinical examination. He was promptly referred for intensive treatment. Other predisposing

factors of TB include overcrowding, smoking, consumption of unpasteurized milk, HIV infection, and contact with infected animals (28). The malnourishment of the students could have arisen due to poor socioeconomic conditions of the parents and economic recession in the country thus leading to eating an unbalanced diet lacking in the required nutrients. This has a direct bearing on the immune status of the students thus making them susceptible to diseases. Poor housing hygiene and ventilation could greatly compromise the respiratory tract and allow pathogens of respiratory infections to thrive. Malnutrition had a much stronger association than poor housing hygiene inferring that the former plays a major role in making the children susceptible to tuberculosis.

Illicit drug users were reported to be at high risk for tuberculosis (TB) infection and other diseases. Drug users have driven TB epidemics in a number of countries (29), thus the successful identification and treatment of TB among drug users remains an important component of a comprehensive TB strategy. The physiological effects of drugs, depressive immune system effects of drug used, along with the environment and risk behaviors of drug users, may all contribute to the high prevalence of diseases among drug users (30). Taken together, drug users are more likely to be infectious (29), take longer to achieve negative culture, and be at increased risk for mortality as a result of poor adherence and limited access to care (31). Malnutrition as observed in 85% of the student may also contribute to the number of presumptive TB observed since essential metals and proteins are vital components of immune cells and humoral immune factors.

In this study, a total of 7.4% of the students were identified by DAST as abusers of one drug or another because they were classified as those that needed either intensive to severe counselling using Diagnostic and Statistical Manual of Mental Disorders criteria (11). However, this requires comprehensive study to identify the specific pattern and type of drug taken or abused by the students using urine drug substance screening device or gas chromatography/mass spectrometry (GC/MS). Substance abuse which is now a major public health challenge all over the world refers to the harmful or hazardous use of psychoactive substances, including alcohol and illicit drugs. Complications of substance abuse by young people are grave including: increased odds of engaging in risky sexual behaviour, personality disorders, sexual violence, criminal tendencies and drug dependence among others (32). Drug abuse is prevalent in Nigeria among students. Ogunsola and Fatusi reported that about two-thirds of in-school adolescents in Osun State Nigeria had used substances in both rural (65.7%) and urban areas (66.0%) respectively (33). Also, Lawoyin *et al* in 2005, revealed that 69.3% of secondary school students in Igboora, South-west Nigeria were current users of at least one of the illicit drugs (34). Alex-Hart in a study among secondary school students in Port Harcourt, Southern Nigeria also revealed that 30.6% of their respondents had ever taken alcoholic drinks before the survey (35) while Yisa *et al* showed that lifetime use of any substance among students in Ibadan, South West Nigeria was 15.3% (36). Eeguranti *et al* in a study among secondary school students in Oshogbo, South West Nigeria also reported 20.3% as the prevalence of substance abuse among the respondents (37). Igwe *et al* in 2009 revealed that 31.6% of secondary school students who were substance abusers in Enugu, Nigeria had consumed alcohol (38). Onoja in 2016, equally found out that 15.0% of students in public schools in Jos, North Central Nigeria engaged in substance abuse (39). Also, Idris and Sambo in 2009, reported that 56% of in-school adolescents in Zaria, North Western Nigeria had used at least one psycho-active substances before the survey (40).

Factors identified to be responsible for drug abuse among young people includes: experimental curiosity, peer pressure, poor socio-economic condition at homes and the need for extra energy for daily activities, personality theory which says that people with low self esteem and poor impulse control are at higher risk of drug abuse. However, the learning theory says that drug abuse occur as a result of conditioning, social or instrumental learnings (41). In addition, a study also confirmed that there is a significant relationship between family cohesiveness background, family cohesion and peer-group influence with drug abuse among secondary school students in Ekiti and Ondo States. In support of the study, Ogidefa (42) identified children from broken homes that are characterized by child abuse, intolerance, violence, insecurity, and hostility as possible members of secret cults and anti-social behaviour. Furthermore, the study also revealed that there is a significant relationship between drug abuse and students' academic performance in Ekiti and Ondo States. Nwakwo *et al* (43) agreed with the study that the inability of most adolescents to resolve emotional or psychological problems results in failure, which eventually leads to unhappiness, disapproval, non-recognition, frustration, stress, substance abuse, crime, truancy, delinquency, and many other bad lifestyles and behaviours. Available data shows that drug abuse among secondary school students has led to an increase in the poor performance of students in examination and consequent high dropout rate. At times drug-abusers are expelled from school and they turn up to be delinquents and join street life. There are behaviour disorders and social mal-adjustments (such as rape, murder, theft, thuggery, etc) among the youth who engage in acts of substance. To this end, crime rate, which is related to drug abuse will escalate to levels that are very disturbing. The incidence of drugs abuse affects the academic performance of secondary school students through a variety of ways like heart, eye and liver disease, among others, in addition to poor eating habits.

Ocular complications are encountered as a result of drug abuse (44) while eye diseases common amongst school children below 18 years of age in south-western Nigeria were conjunctival diseases, refractive error, lid disorders, squint, corneal scarring and cataract (45). In Nigeria, hospital-based and school surveys on the pattern of eye diseases carried out in the south-western and eastern parts of the country have indicated that refractive errors, conjunctivitis, corneal scarring and injuries were some of the most common eye conditions affecting Nigerian children (46). In the present study, refractive errors and conjunctivitis were detected in 33.3% and 23.6% of students examined, 23.6% students had mild conjunctivitis and 11.8% had suspicious optical disc, 3.3% students had cataract and 1.1% student had jaundice. This call for eye examination for all new intakes into both public and private primary and secondary schools is advocated. This will allow for early detection and prompt treatment of eye diseases in the young, which will go a long way in reducing ocular morbidity and unnecessary blindness. Some conditions like refractive errors and cataract are treat-able, others like trachoma and vitamin A deficiency are largely preventable. In a previous study among secondary school children, conjunctival diseases were the most prevalent ocular disorder occurring in 8% of the students (45).

The father's occupational status, which is an index of socio-economic status, showed an inverse relationship to the occurrence of ocular diseases amongst the students. The overall prevalence of ocular morbidity among students was found to depend on urbanised population ethnic differences. There was also an association between the occurrence of ocular disorders and the lower socio-economic class, which had higher prevalence of ocular disorders (44-46). Apart

from this ignorance, lack of parental interest and poverty were the most likely contributory factors because there are eye units in both the general and teaching hospitals, all located within the town and easily accessed by all. This was further buttressed by the fact that despite free consultations for examination, most of the parents refused to bring their children for follow up treatment. Most encouraging however, was the fact that these common ocular disorders among the students were not very expensive to manage. The high prevalence of conjunctivitis in this study could be due to the fact that the work was carried out during the rainy season. This has been attributed to high concentration of allergens indoors because of closed doors and windows by some authors. Poor vision and inability to read clearly materials written on the board can have a serious impact on the child's participation and learning in class. This can therefore adversely affect the child's education, occupation and socio-economic status for life. Poor economic status of parents had been identified as a main constraint and barrier preventing children from wearing glasses.

This therefore calls for a lot of effort and work to be done by professionals about public health education towards the use of spectacle correction among students. Visual outcome depends on the type and extent of injuries. The need for adult supervision of children at play and putting in place prevention or control measures cannot be over emphasised. In conclusion, ocular diseases are rampant amongst students in Nigeria. Prevention, early recognition and prompt treatment of these diseases by regular screening of students would definitely reduce ocular morbidity so that they can attain their full potential in the course of their education. Focus should be targeted on yearly school eye screening so as to identify treatable eye diseases and improve their knowledge of common eye diseases and their prevention; and correction of refractive errors. This will go a long way in the prevention of unnecessary blindness and visual impairment in the young. The socio-economic benefits of this cannot be over-emphasised. Information obtained from the study will assist government in planning; and facilitate the incorporation of primary eye care into the existing primary health care structure of the state. These health problems make learning difficult and may seriously hamper the education and child's intellectual growth. Moreover, this can also lead to low school enrolment, early drop out, high absenteeism and poor classroom performance.

Conclusion and recommendation: Concerned and co-ordinated health education measures should be included through different programs to improve the personal hygiene, nutritional practices and drug counselling of the school children. The high standard of the environment and staff of the school considered for the present study lead to the conclusion by the authors that the gap in the health status of the students is a result of family background, genetics and socio-economy status of the country. Improving academic performances and health status of the students should be a joint effort of the government, teachers, parents and Old students association as depicted by the present study.

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