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Magnitude and Pattern of Disease Presentation among Students in Federal University of Technology Owerri Nigeria

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Abstract: Students' wellbeing is paramount to their effective participation in academic and extracurricular activities. This study described the prevalence and pattern of disease presentation among students attending Federal University of Technology Medical Centre, Owerri, Nigeria. A descriptive cross-sectional hospital based study of consecutive 552 students who gave their informed consent. Data were extracted through clerking, examination and laboratory investigations and they included socio-demographic information and diagnoses. These data were entered into Microsoft Excel 2016 and transported to Xlstat 2015 for analysis. The age distribution of the students revealed that majority of the students (46.4%) were within the age bracket of 17-23years. The mean age of the students was 24 years. The majority of the students (22.6%) were drawn from the School of Engineering and Engineering Technology. The disease pattern of students showed that typhomalaria fever was most prevalent (33.5%), malaria (28.9%), upper respiratory tract infection (21.3%), hypertension (7.3%), peptic ulcer disease (5.7%) and typhoid (3.6%). Malaria was most prevalent during the rainy season in the months of June and July, 36.5% and 35.1% respectively. Strengthening of the primary health care system, application of the principles of integrated vector management and investing substantially in specialist care model will lessen the burden of diseases in the University community.

Keywords: Prevalence, Disease Presentation, Pattern, Owerri.

I. Introduction

Disease is what results when a particular abnormal condition or a disorder in the structure or function of the systems incapacitates part or all of the body. More broadly, disease is often used to refer to any condition that causes pain, dysfunction, distress, social problems, or death to the person afflicted, or similar problems for those in contact with the person. In this broader sense, it sometimes includes injuries, disabilities, disorders, syndromes, infections, isolated symptoms, deviant behaviours, and atypical variations of structure and function. Diseases can affect people not only physically, but also emotionally, as contracting and living with a disease can alter the affected person's perspective on life (Rettner, 2016). Thus, diseases may be acquired, chronic, acute, congenital, genetic, psychological, hereditary, idiopathic, incurable, primary or secondary (Johnson, 2002).

The magnitude of certain diseases in Federal University of Technology, Owerri (FUTO) calls for empirical enquiry into disease phenomenon in this area, as well as a study to determine the pattern of presentation of these diseases. Students engaged in academic activities are to be in good health condition in order to maintain mental alertness required for the rigorous mental exercise of academic pursuit. However, more often than not what obtains in most tertiary institutions, and specifically FUTO, is a situation where the students are constantly weighed down with malaria, typhoid, typhomalaria (a co-infection of both *Salmonella typhi* and *Plasmodium*), psychological illness, cardiovascular diseases, domestic accident, drug abuse, among other forms of diseases. This incapacitation of the students prevents them from attaining excellence in their studies. In a study carried out in FUTO among female students, it was shown that infective vaginitis was very prevalent. Bacteria vaginosis and vulvovaginal candidiasis topped the list with prevalent rates of 22% and 36% respectively (Onoh *et al*; 2016). Many international observers and opinion holders have attributed the high prevalence of these diseases to several risk factors such as external factors like unhygienic environment that breeds communicable disease pathogens, or to risk factors to internal dysfunctions including metabolic diseases and those pertaining to the immune system (Johnson, 2002). However, these popularly held views and assumptions are rather speculative, and none is based on empirical studies of these diseases. Not much information on the foregoing problems has been obtained in the case of FUTO students, through analysis of diagnostic data (Onoh *et al*; 2016). Existing views have been formed from personal intuitions, wide guesses, speculations, personal convictions and other means that are not empirical.
The paucity of information on the magnitude, pattern of morbidity and mortality of these prevalent diseases hinders intervention actions of individuals, governments and private agencies towards administering treatment and

control of these diseases and perpetuates the problem. Empirical findings will help in the formulation of health policies that will impact on the community by improving quality of health care, maintaining equity and containing costs.

II. Methodology

2.1 Study Area

This study was carried out in Owerri, the capital of Imo State of Nigeria. It is situated at 5.48° north latitude, 7.03° east longitude and 159 meters above sea level land. The population is about 400,000 as at 2006 and covers over 100km^2 in area (NBS, 2015). Owerri is bordered by the Otamiri River to the east and the Nworie River to the South (Acholonu et al; 2003). Its environment has witnessed an upsurge in the number of banks, hotels, markets, industries, food restaurants, night and social lifestyles (Onoh, 2014). Important educational institutions in Owerri include Imo State University, Federal University of Technology, African Institute of Science and Technology, Federal Polytechnic Nekede, Alvan Ikoku Federal College of Education and so many Secondary schools.

2.2 Study Site

The Federal University of Technology, Owerri is located in Ihiagwa in Owerri West Local Government Area of Imo State. It is bordered in the South by Obinze community and to the East by Eziobodo community. Ihiagwa community is the border town in the North and West. The University comprises of 8 Schools and 49 Departments. This research was carried out at the Medical Centre of the Federal University of Technology, Owerri. FUTO health care provides health services to students, staff and host communities. The Medical Centre was established to carter for students, staff, the neighboring community and maintenance of health surveillance. It is a 20-bedded hospital with highly qualified medical professionals. It has female and male wards with maternity and isolation sections. It also has family planning, public health and health counseling units, pharmacy and a functional medical laboratory.

2.3 Study Design

This was a hospital based descriptive study.

2.4 Population of the Study

The study population comprised of all students who attended FUTO Medical Centre from June, 2015 to February, 2016. A total of 552 consecutive students who gave their informed consent were recruited for the study.

2.5 Methods of Data Collection

Data on the socio-demographic information and diagnosis were collected simultaneously during the clerking, clinical examination and laboratory investigations of the students. Microbiological investigations were carried out using standard clinical methods (Cheesebrough, 2006).

2.6 Method of Data Analysis

Data were entered into Microsoft Excel 2016 and transported to Xlstat 2015 for analysis. Xlstat is an instinctive statistical software that interprets seamlessly into Microsoft Excel. Prevalence rates were calculated in ratios and reported in percentages.

III. Results And Discussion

3.1 Results

3.1.1 Socio-demographic Characteristics of the Respondents

The distribution of the respondents according to their socio-demographic properties is shown in Table 1. Majority (57.1%) of the 552 students respondents were males while 42.9% percent were females. The age distribution of the students reveals that majority of the students (46.4%) were within the ages of 17 – 23, 44.3 percent were within the ages of 24 – 30, and 5.7 percent were 31 years and above, while 3.6 percent fell within the age group of those less than 16 years. The mean age of the students who attended FUTO Medical Centre is 24 years.

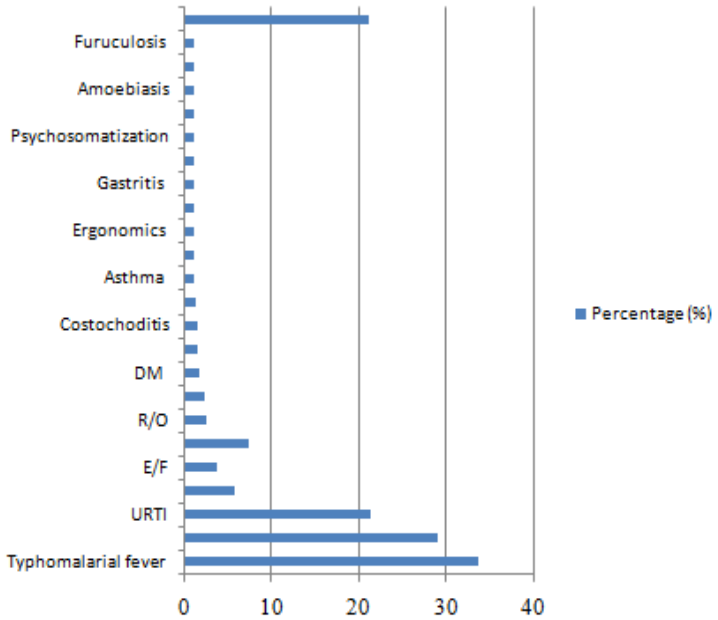
The result also revealed that majority of the students (22.6%) were drawn from the School of Engineering and Engineering Technology (SEET), while 19.2%, 14.5%, 14%, 11.7%, 10.5%, 7.5% were of the School of Physical Sciences (SOPS), School of Biological Sciences (SOBS), School of Management Technology (SMAT), School of Health Technology (SOHT), School of Agriculture and Agricultural Technology (SAAT), and School of Environmental Sciences (SOES) respectively.

Table 1: Socio-Demographic Distribution of Students Attending FUTO Medical Centre

Gender	**Frequency**	**Percentage (%)**	Mean
Male	298	57.1	
Female	224	42.9	
Total	**522**	**100**	
Age			
10 – 16	19	3.6	
17 – 23	242	46.4	24 years
24 – 30	231	44.3	
31 and above	30	5.7	
Total	**522**	**100**	
School			
SAAT	55	10.5	
SEET	118	22.6	
SOHT	61	11.7	
SMAT	73	14.0	
SOET	39	7.5	
SOBS	76	14.5	
SOPS	100	19.2	
Total	**522**	**100**	

3.12 Pattern and Prevalence of Disease Presentation

Figure 1 revealed the distribution of disease pattern of students attending FUTO Medical Centre. The majority of the students (33.5%) suffered from Typhomalaria fever. This was followed by 28.9 percent suffering from malaria, 21.3 percent suffering from Upper Respiratory Tract Infection (URTI), hypertension was found in 7.3% of patients while 5.7 percent suffer from Peptic Ulcer Disease (PUD). Typhoid fever and urinary tract infection (UTI) were found in 3.6%, 2.3% and 1.7% of the respondents respectively. Diseases with prevalence of less than 1.0% accounted for 21.1% of the respondents and were recorded as 'Others' (Table 2). They include fever, tonsilitis, vulvovaginal candidiasis, red eye, $NaHCO_3$ poisoning, food poisoning, bee sting, gonorrhoea, lymphoedema, mycosis, eczema, and HIV infection, nephritis, fungal infection.



Note: Dental C = Dental Caries, STI=Sexual Transmitted Infection, DM= Diabetes Mellitus, UTI=Urinary Tract Infection, R/O= Queried Aetiology, PUD= Peptic Ulcer Disease , URTI= Upper Respiratory Tract Infection, E/F= Enteric Fever (Typhoid)

Fig. 1: Distribution of Disease Pattern of Students Attending FUTO Medical Centre

3.1.3 Prevalence of malaria

The distribution of students according to the prevalence of malaria was shown in Figure 2. It revealed that malaria was most prevalent in the months of June (36.5%) and July (35.1%) while between November and February malaria w `east prevalent with 1.3%. The malaria percentage prevalence for other months were as follows; August - 16.6%, October - 5.9% and September3.3%.

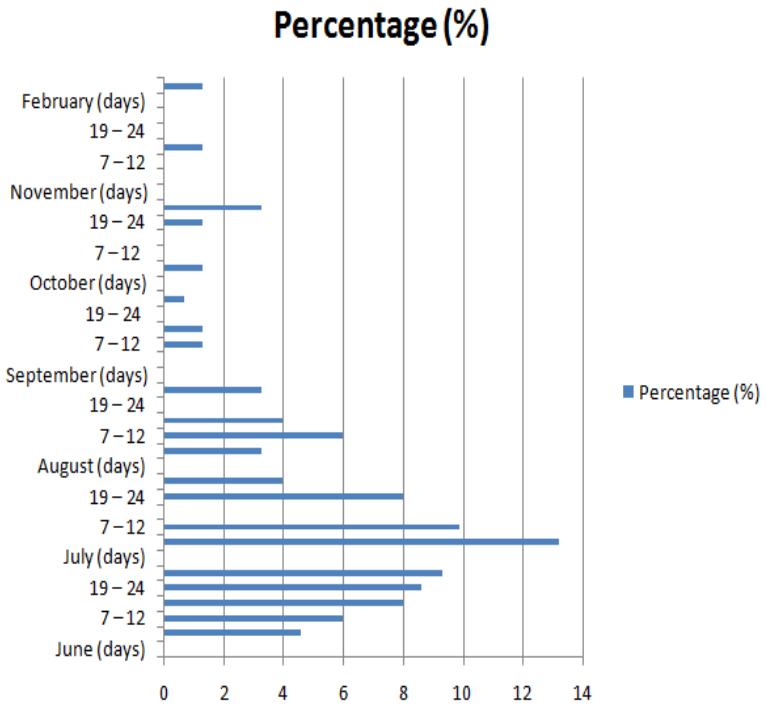


Fig. 2: Distribution of Students According to the Prevalence of Malaria

IV. Discussion

The results showed that majority of the students were males suggesting higher consciousness of healthcare among the male gender in the area. The mean age of students (24 years) indicate that most of the students had attained adulthood and therefore have great consciousness to take responsibility of their health. The result also revealed that majority of the students (22.6%) were drawn from the School of Engineering and Engineering Technology (SEET), 19.2%, 14.5%, 14%, 11.7%, 10.5%, 7.5% belonged to the School of Physical Sciences (SOPS), School of Biological Sciences (SOBS), School of Management Technology (SMAT), School of Health Technology (SOHT), School of Agriculture and Agricultural Technology (SAAT), School of Environmental Technology (SOET) respectively. This result corroborated the assertion that SEET is the most populous school in FUTO and therefore calls for greater attention in terms of academic planning, development and diseases control programme for the University community.

Communicable diseases were the predominant diseases presented in this study with typhomalaria, malaria and upper respiratory tract infection (URTI) topping the list. The percentage prevalence of typhomalaria in this study (33.5%) is similar to the 37.5% prevalence reported by Okorie *et al* (2015) in a study carried out at Obuda, Aba, Nigeria. Typhomalaria fever is known to cause significant morbidity, mortality and economic loss (Keong and Sulaiman, 2006; Bynum, 2012). Malaria was more prevalent during the rainy season, highest occurrence in the month of June (FMOH, 2010; Samdi et al; 2012). Both typhoid fever and malaria share social circumstances which are imperative for their transmission, therefore, a person living in such an environment is at risk of contracting an acute infection superimposed on a chronic one (Edet et al; 2016). A high index of suspicion is necessary to diagnose a co-infection as most clinicians are used to linking every symptom and sign to a single pathology. It has been demonstrated that malaria predisposes to salmonella bacteraemia (Akinyemi et al., 2005).

It is difficult implementing the same malaria control measures throughout the country. Prevalence studies are therefore essential for effective implementation of control programmes. In a community-based malaria survey carried out in Markarfi, Kaduna State, Nigeria, the prevalence of malaria was found to 35.7% (Umaru & Uyaiabasi, 2015). This study was also similar to those reported in Abia and Plateau States of Nigeria where the prevalence rates were 36.1% and 36.6% respectively (Noland *et al*; 2014). However, much lower prevalence (less than 20%) were reported in Calabar, Cross River State, Nigeria (Udoh *et al*; 2013) and in Ibeshe community in Ikorodu, Lagos State (Aina et al, 2013).

Hypertension, followed by peptic ulcer disease (PUD) was the most prevalent non-communicable diseases presented in this study area. The non-communicable diseases could be attributed to the unhealthy feeding habits and adoption of western diets/lifestyle and globalization. This is consistent with the ongoing nutritional and epidemiologic transition observed in developing countries (Onoh & Nwaogazie, 2015).

Study Implications

Malaria is one of the most severe global public health problems particularly in Africa where Nigeria has the highest number of cases. Typhoid fever is considered as one of the most serious infectious diseases that threatens public health on a global scale with particular concern over the rapid and widespread emergence of multiple antibiotic resistance (Akinyemi *et al*., 2005). Moreover, typhoid fever is associated with poor hygiene and low socio-economic status, situations typical for Nigerian students. The fact that humans are known natural reservoir of infection further makes control and prevention difficult. Typhomalaria fever causes significant morbidity and mortality with associated economic loss. The entities of the typhomalaria co-infection share a common symptomatology and epidemiology making diagnosis more complicated. The primary care physician must have a high index of suspicion in order to diagnose a co-infection as most physicians are used to linking every symptom and sign to a single pathology. Malaria predisposes to gram-negative organisms thus supporting a dual infection. One should consider drug resistance as well as concomitant gram negative infection of which typhoid fever is a common one.

Ethical Approval

Ethical clearance was granted by the Chairman of Research & Ethics Committee, Department of Health Services, Federal University of Technology, Owerri. All information shared during the research were strictly confidential and protected by the law of confidentiality. The identity, privacy, and confidentiality of all who consented to participate were protected. This Study was carried out in compliance with internationally accepted Legal and Ethical requirements in Human Research.

V. Conclusion

This study has demonstrated that:

i) The most prevalent disease presented in FUTO Medical Centre, Owerri was typhomalaria fever. This was subsequently followed by malaria, URTI, hypertension, PUD, Typhoid fever with prevalence rates of 33.5%, 28.9%, 21.3%, 7.3%, 5.7% and 3.6% respectively.

ii) This pattern of disease presentation is consistent with the epidemiologic transition now prevalent in developing countries like Nigeria.

iii) Malaria was most prevalent in the months of June and July, 36.5%, 35.1% respectively. This is consistent with the suspicion that malaria is more prevalent during the rainy season. This study showed a high prevalence of malaria in the peak of rainy season (June and July).

Recommendation

Based on this study the following recommendations are made:

i) Communicable diseases still remain clinical and public health challenge in our environment and this demands strengthening of our primary health care system by provision of basic and essential health care services. The provision of health care services should be comprehensive including promotive, preventive, curative and rehabilitative. Little or no attention has been given to promotive, preventive and rehabilitative health care services.

ii) The hospital management might consider investing substantially in maintaining and integrating the less costly, more widely accessible primary care based model and new reliant specialist care model as showcased by this study.

iii) It is pertinent that the Principles of Integrated Vector Management (IVM) be applied. The application of this principle will not only help in the control of malaria but will also act as a control point in checking epidemics like yellow fever, zika, chikungunya, dengue, and west Nile viruses that may emerge. This translates but not limited to adequate environmental hygiene by way of elimination of breeding places, with frequent fumigation of the surroundings. Strict personal hygiene should be encouraged with adequate supply of potable water and proper disposal of feaces and refuse.

iv) This study will assist the University Management and the Director of Health Services, Federal University of Technology, Owerri in health care financing, health reforms and policy formulation. This will result in effective utilization of resources and proper execution of interventional programmes.

Conflicting Interest: The authors have declared that no conflicting interest exists.

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