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Original Research Article

Morbidity pattern at the National Youth Service Corp camps in Nigeria

Airenakho Emorinken[1]*, Onosegbe Aikhuomogbe[2], Bezaleel Eigbe[3], Sarah Usman[4], Cynthia Isuekebhor[5]

[1]Department of Internal Medicine, Irrua Specialist Teaching Hospital, Irrua, Edo State, Nigeria
[2]Department of Public Health, Faculty of Health Studies/School of Nursing and Healthcare Leadership, University of Bradford, Bradford, United Kingdom
[3]Vicar Hope Foundation, Umuahia, Abia State, Nigeria
[4]Baptist Cottage Hospital, Ibadan, Oyo State, Nigeria
[5]3 Battalion Medical Reception Services, Effurun Army Barracks, Warri, Delta State, Nigeria

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***Correspondence:**
Dr. Airenakho Emorinken,
E-mail: airenakhoemorinken@isth.com.ng

ABSTRACT

Background: The National Youth Service Corps (NYSC) was designed to foster shared bonds among Nigerian youths and promote national unity. The orientation course is one of the program's key initiatives. Even though camping promotes socialization and self-confidence, campers may be exposed to a variety of diseases and injuries. This study aimed to evaluate the pattern of diseases seen in the NYSC orientation camps.
Methods: This was a descriptive cross-sectional study conducted in NYSC orientation camps in Delta, Abia, and Katsina States. The demographic information and diagnoses were extracted from the camp clinics' registers. The data was analysed with SPSS, and the level of significance was set at $p<0.05$.
Results: A total of 2231 cases were seen. There were 299 cases (13.4%) seen in Delta state camp, 1076 (48.2%) from Abia, and 856 (38.4%) from Katsina state. There were more males (51.7%) than females (48.3%). The mean age was 25.10±2.67 years. The most common diagnoses were upper respiratory tract infection (23.4%), malaria (22.5%), acid-peptic disorders (12.1%), gastroenteritis (6.9%), musculoskeletal disorders (4.7%), and allergic diseases (4.7%). Fatigue/myalgia, headache disorders, and malingering accounted for 4.3%, 3.8%, and 1% of cases, respectively. Bronchial asthma and sexually transmitted infections were significantly more common in females than males ($p<0.001$).
Conclusions: This study indicated that orientation camps are home to a variety of diseases, with upper respiratory tract infections and malaria being the most prevalent. This information is essential for resource allocation, planning, and policy formulation.

Keywords: Morbidity, National Youth Service Corps, Nigeria, Orientation camps, Pattern

INTRODUCTION

The National Youth Service Corps (NYSC) scheme was established to "reconstruct, reconcile and rebuild" the country after the Nigerian civil war. The negative historical precedents in the nation led to its creation. The scheme was set up by the NYSC decree number 24 of May 22, 1973, to properly stimulate and foster shared bonds among Nigerian youths and the advancement of national unity.[1] It is a one-year mandatory programme for all Nigerian graduates under the age of 30 who studied full-time at their respective institutions.[1]

The orientation course is among the scheme's key initiatives. At the moment, it is held three to six times a year at various locations across the federation. The

national service programme starts with a three-week orientation training at designated orientation camps in all states of the federation and the Federal Capital Territory (FCT)-Abuja.[2] Every service year, the programme mobilises no fewer than 300,000 graduates.[3,4] The orientation session includes intensive physical exercises, drills, lectures, skill development training, and social events.[2] The orientation camps are populated by NYSC corps members and camp administrators (NYSC staff; personnel of the Nigerian security apparatus; Nigerian red cross; national drug law enforcement agency).

Although camping helps participants to socialise, acquire confidence, and engage in a variety of new activities, campers may be exposed to a wide range of illnesses and injuries.[5] The campers' overall health is of utmost concern. During the camp session, it is without a doubt one of the most significant obligations.[6]

According to the World Health Organisation, a mass gathering is a planned or spontaneous event that attracts a sizeable number of attendees that may burden the response capability and health planning of the host community, city, or country.[7] Significant public health challenges and the spread of infectious diseases are associated with these gatherings.[7] The NYSC orientation camp perfectly fits into this scenario.

Although the NYSC scheme has been in place for more than 40 years, there is still a dearth of research on the range of illnesses that arise at the orientation camps. This study aimed to assess the prevalence and pattern of diseases in the NYSC orientation camps in Nigeria.

METHODS

Study setting and population

This was a descriptive cross-sectional study conducted in three NYSC orientation camps in Nigeria. The study took place over three weeks, from 18th of March to 7th of April, 2022, during the orientation course. The three orientation camps were located in Issele-Uku, Aniocha North Local Government area (LGA), Delta state in South-South Nigeria, Umunna, Bende LGA, Abia state in South-East, Nigeria and Katsina town, Katsina LGA, Katsina state in North-West Nigeria. These locations were chosen by a multistage sampling technique. Administrative oversight functions in the orientation camps are handled by the NYSC state coordinators. In the orientation camp, there are camp clinics that cater to the health needs of the entire camp. An NYSC official serves as the clinic's administrative head. The Corps medical doctors oversee the activities of all Corps medical personnel in the camp clinics. Other Corps medical personnel included nurses, pharmacists, laboratory scientists, dentists, and optometrists, amongst others. Senior doctors and consultants from nearby health institutions supervised the clinics at the NYSC camps. The camps provided potable water to the entire camp community as well as a central kitchen from which camp officials and corps members received their meals. The study population comprised course participants (corps members and officials) who assessed care at the camp clinics during the orientation exercise. Permission was obtained from the respective state coordinators of the NYSC and the administrative head of the camp clinics before the commencement of the study. Institutional ethics committee approval was also obtained.

Selection criteria

All course participants who presented to the NYSC camp clinic and were reviewed by a camp doctor during the three-week study.

Sample size estimation

The sample size was obtained using Fisher's statistical formula ($n=Z^2pq/d^2$). The sample size was calculated using a confidence interval (Z) of 1.96, which corresponds to a 95% confidence level, a tolerable sampling error (d) of 0.05, and a prevalence (p) of 17.8% obtained in a previous study that assessed the prevalence of malaria in an NYSC camp was used.[8] The proportion of the sample population that was not included in this study was expressed as q (1 – p) and n is the minimum sample size. A sample size of 225 was obtained. Given an attrition risk of 10%, the minimum sample size obtained was 248.

Sampling technique

The study's locations were selected using a multistage sampling technique. Simple random sampling was used to recruit the participants consecutively.

Data collection and analysis

All patients that presented to the camp clinic were reviewed by the Corps medical team, which is led by Corps doctors. The date of visit, age, sex and diagnosis of the patients were extracted from the clinics' registers. The data were entered and analysed using the IBM SPSS software version 25.0. Data for categorical variables were summarized in frequency and percentages, whereas data for continuous variables were summarized in measures of central tendencies. A p value less than 0.05 was considered significant.

RESULTS

During the study period, 2231 patients in total were evaluated. There were 299 cases (13.4%) from the camp in Delta state, 1076 cases (48.2%) from the camp in Abia state, and 856 cases (38.4%) from the camp in Katsina state. There were more males (51.7%) than females (48.3%). The mean age was 25.10±2.67 years, ranging from 18 to 36 years. The majority (56.2%) of patients

seen were aged 21 to 25 years old. The sociodemographic characteristics are shown in Table 1.

Table 1: Sociodemographic characteristics of study population.

Characteristics	Frequency	%
Age groups (years)		
16-20	66	3.0
21-25	1174	52.6
26-30	978	43.8
31-35	11	0.5
36-40	2	0.1
Mean±SD	25.10±2.67	
Gender		
Male	1154	51.7
Female	1077	48.3
Camp location		
South-South (Delta)	299	13.4
South-East (Abia)	1076	48.2
North-West (Katsina)	856	38.4

The most common causes of presentation to the camp clinic were upper respiratory tract infections (URTI) (23.4%), malaria (22.5%), acid-peptic disorders (12.1%), acute gastroenteritis (6.9%), musculoskeletal disorders (4.7%), and allergic diseases (4.7%). Fatigue/myalgia, headache disorders, and malingering accounted for 4.3%, 3.8%, and 1%, respectively. Except for pneumonia, which was not found in the Delta state camp, all of the described diagnoses were found in all three camp clinics. Malaria (21.4%), gastroenteritis (13.7%), acid-peptic disorders (10.4%), musculoskeletal disorders (8.7%) and URTI (7.7%) were the most common cases that were seen in the Delta state camp. The most common cases seen in the Abia state camp included URTI (25.9%), malaria (23.3%), acid-peptic disorders (10.8%), myalgia/fatigue (6.0%), and headache disorders (5.4%). In Katsina state camp, URTI (25.6%), malaria (23.2%), acid-peptic disorder (14.5%), acute gastroenteritis (7.0%), and allergic disorders (4.9%) were the cases commonly seen. Table 2 depicts the distribution of diagnoses in the camp clinics.

Table 3 depicts the gender distribution of cases seen in camp clinics. The most common cases among males were URTI (25.1%), malaria (24.4%), acid peptic disease (12.9%), gastroenteritis (6.5%), and myalgia (4.4%). Most of the diagnoses in females were URTI (21.4%), malaria (20.6%), acid peptic disease (11.3%), acute gastroenteritis (7.3%), and musculoskeletal disorders (5.5%). Bronchial asthma and sexually transmitted infections (STIs) were significantly more associated with females ($p<0.001$).

Table 2: Distribution of diagnoses based on orientation camp location.

Diagnosis	Total N (%)	Camp location		
		South-south (Delta) N (%)	Southeast (Abia) N (%)	Northwest (Katsina) N (%)
Asthma	33 (1.5)	13 (4.3)	7 (0.7)	13 (1.5)
Gastroenteritis	154 (6.9)	41 (13.7)	53 (4.9)	60 (7.0)
Acid peptic disorders£	271 (12.1)	31 (10.4)	116 (10.8)	124 (14.5)
Allergic diseasesβ	104 (4.7)	7 (2.3)	55 (5.1)	42 (4.9)
Dysmenorrhea	43 (1.9)	9 (3.0)	22 (2.0)	12 (1.4)
Malaria	503 (22.5)	64 (21.4)	240 (22.3)	199 (23.2)
Myalgia/Fatigue	96 (4.3)	18 (6.0)	65 (6.0)	13 (1.5)
Malingering	23 (1.0)	13 (4.3)	9 (0.8)	1 (0.1)
Haemorrhoids	17 (0.8)	3 (1.0)	4 (0.4)	10 (1.2)
Headacheπ	84 (3.8)	10 (3.3)	58 (5.4)	16 (1.9)
Pneumonia	30 (1.3)	0 (0.0)	25 (2.3)	5 (0.6)
STI	43 (1.9)	2 (0.7)	25 (2.3)	16 (1.9)
URTI	521 (23.4)	23 (7.7)	279 (25.9)	219 (25.6)
Urinary tract infections	51 (2.3)	3 (1.0)	11 (1.0)	37 (4.3)
Musculoskeletal disorder#	105 (4.7)	26 (8.7)	43 (4.0)	36 (4.2)
Hypertension	28 (1.3)	8 (2.7)	10 (0.9)	10 (1.2)
Diabetes mellitus	5 (0.2)	2 (0.7)	1 (0.1)	2 (0.2)
Dental caries	14 (0.6)	0 (0.0)	2 (0.2)	12 (1.4)
Others	106 (4.8)	26 (8.7)	51 (4.7)	29 (3.4)
Total	2231 (100)	299 (100)	1076 (100)	856 (100)

£, peptic ulcer disease, gastritis, gastroesophageal reflux disease; β, conjunctivitis, rhinitis, urticaria, dermatitis; #, sprain, dislocation, arthritis/arthralgia; π, migraine, cluster, tension; STI, sexually transmitted disease; URTI, upper respiratory tract infection; Others, tinea infection, non-specific chest pain, paronychia, breast tumour, anaemia, non-specific abdominal pain, cyesis; n, frequency of each variable; All values are stated in number (percentages) unless otherwise stated.

Table 3: Distribution of diagnosis seen in camp clinics based on gender.

Diagnosis	Total N (%)	Gender		P value
		Male N (%)	Female N (%)	
Asthma	33 (1.5)	11 (1.0)	22 (2.0)	0.033*
Gastroenteritis	154 (6.9)	75 (6.5)	79 (7.3)	0.436
Acid peptic disorders£	271 (12.1)	149 (12.9)	122 (11.3)	0.160
Allergic diseasesβ	104 (4.7)	50 (4.3)	54 (5.0)	0.446
Dysmenorrhea	43 (1.9)	0 (0.0)	43 (1.9)	<0.001*
Malaria	503 (22.5)	281 (24.4)	222 (20.6)	0.035*
Myalgia/Fatigue	96 (4.3)	51 (4.4)	45 (4.2)	0.779
Malingering	23 (1.0)	13 (1.1)	10 (0.9)	0.032*
Haemorrhoids	17 (0.8)	12 (1.0)	5 (0.5)	0.118
Headacheπ	84 (3.8)	42 (3.6)	42 (3.9)	0.902
Pneumonia	30 (1.3)	15 (1.3)	15 (1.4)	0.849
STI	43 (1.9)	10 (0.9)	33 (3.1)	<0.001*
URTI	521 (23.4)	290 (25.1)	231 (21.4)	0.031*
Urinary tract infections	51 (2.3)	29 (2.5)	22 (2.0)	0.764
Musculoskeletal disorder#	105 (4.7)	46 (4.0)	59 (5.5)	0.096
Hypertension	28 (1.3)	18 (1.6)	10 (0.9)	0.181
Diabetes mellitus	5 (0.2)	2 (0.2)	3 (0.3)	0.155
Dental caries	14 (0.6)	10 (0.9)	4 (0.4)	0.139
Others	106 (4.8)	47 (4.1)	59 (5.5)	0.119
Total	2231 (100)	1154 (100)	1077 (100)	

£, peptic ulcer disease, gastritis, gastroesophageal reflux disease; β, conjunctivitis, rhinitis, urticaria, dermatitis; #, sprain, dislocation, arthritis/arthralgia; π, migraine, cluster, tension; STI, sexually transmitted disease; URTI, upper respiratory tract infection; Others, tinea infection, non-specific chest pain, paronychia, breast tumour, anaemia, non-specific abdominal pain, cyesis; n, frequency of each variable; *statistically significant. All values are stated in number (percentages) unless otherwise stated.

DISCUSSION

This study investigated the spectrum of diseases at three orientation camps in three geographical regions in Nigeria during a three-week NYSC orientation camp. A total of 2,231 patients with various diagnoses were evaluated at the camp clinics. The vast majority (96%) of those seen at the camp clinics were corps members. This is because there are usually more corps members than officials at any orientation camp during orientation exercises. This is consistent with the findings of Maori et al and Odega et al.[3,8]

The mean age of the study population was 25.10 years (range: 18-36 years). Similar studies with the same study population have shown comparable results.[3,9] This age range is among the most active in society, and any health issues could lead to lost man-hours and negative economic impacts. For a productive economy, it is essential to keep these age groups healthy throughout and even after the service year.

In this study, more males than females were attended to in the camp clinics. This is consistent with the findings of a previous study.[3] In contrast, more female participants were noted by Maori et al in a study to evaluate the prevalence of malaria in a similar study population.[8] There are no easily apparent explanations for the gender disparity. The causes may simply be attributable to the proportion of male and female Corps members assigned to the separate orientation camps. Studies that evaluated the causes of medical admissions in Nigerian hospitals also showed variable gender distribution.[10,11] It has been asserted that females exhibit superior health-seeking behavior compared to males. In contrast, men are viewed as more empowered than women, granting them better access to health care.[12]

Despite the overall male preponderance, females were significantly more likely to develop asthma and STIs in this study. Also, conditions like dysmenorrhea are exclusive to the female gender. Although asthma is more prevalent in boys in childhood, it is more prevalent in females as adults. This reversal around puberty shows that sex hormones may have played a role.[13] In general, the frequency of STIs is higher among unmarried individuals, young people, and urban dwellers. STDs tend to affect females at a younger age than males, which is connected to patterns of sexual activity and the relative transmission rates between sexes.[14] In some series, the infection rate was comparable between men and women. However, women and children are disproportionately affected by complications and catastrophic consequences.[15]

Our data reveals that URTI (23.4%) was the most prevalent in the clinics. This was closely followed by malaria (22.5%). It is essential to note that most malaria cases are associated with URTI. Odega et al reported similar findings.[3] Acute respiratory infections, especially URTI, have been identified as a leading cause of hospitalization in Nigerian children.[16] It has been found that URTIs are the most prevalent acute disease among elite athletes.[17]

Research on the immunology of exercise suggests that intensive exercise, such as that available in NYSC orientation camps, may increase susceptibility to respiratory infections.[17]

In Nigeria, malaria is an endemic disease. In this study, it was the second most prevalent reason for a clinic visit. In camps, the dormitory environments may not be well fitted to prevent mosquito breeding. It is possible that the majority of NYSC Corps members were not utilizing insecticide-treated nets, as these are typically not provided by the NYSC authorities. These factors contribute to malaria's comparatively high frequency when compared to other illnesses. In a comparable study, Odega et al found similar results.[3]

In this study, the prevalence of malaria was 22.5% overall, 21.4% in the Delta camp, 22.3% in the Abia camp, and 23.2% in the Katsina camp. Odega et al discovered a comparable incidence in the Delta camp.[3] In a study to determine the incidence of malaria among Corp members at an orientation camp in Gombe state, Maori et al. reported a prevalence of 17.8%.[8] The study conducted on patients attending the General Hospital in Makarfi, Kaduna state, revealed a frequency of 37.5%, which is greater than that recorded in this study.[18] Compared to our findings, Noland et al in Abia state, southeast Nigeria, documented a higher prevalence of 36.1%.[19] Differences in study settings and demography may be responsible for the variations in prevalence. This study included participants between the ages of 18 and 36, but the other studies included participants of all ages, including the most susceptible age group of children under five.[20] Additionally, seasonal variation is a factor, as malaria transmission is greatest during the rainy season.

While camps can promote healthy habits and social skills, they can also contribute to the spread of communicable diseases like acute gastroenteritis due to factors like shared activities and accommodations, remote locations with limited access to municipal drinking water and sewage systems, and a lack of health education among campers and staffs.[21]

In this study, acute gastroenteritis was the fourth most frequent diagnosis in the camp clinics. A few cases of acute gastroenteritis can be severe enough to necessitate hospitalization, even though it is often moderate and self-limiting. A number of factors, such as unhygienic food preparation, insufficient cleaning and disinfection, and shared quarters, can cause outbreaks of acute gastroenteritis.[21] These outbreaks could be contained or avoided by promoting health education that emphasizes cleanliness and minimizing disease transmission. Additionally, it is crucial to have access to an adequate supply of water, effective sewage disposal systems, comfortable accommodations, and sanitary food preparation methods.[21]

Malingering has been recognised to occur often in NYSC camps.[22] In this study, it was diagnosed in 23 (1.0%) of the total study participants. Nonetheless, there is no comparative prevalence study. Reported motives for malingering include avoiding military parades and a desire for redeployment.[22] The most cited consequences of malingering are the waste of scarce clinic resources and the exhaustion of limited human resources. Some recommendations for containing the problem included identifying and dealing with perpetrators, decreasing intense physical activities, and maintaining a high index of suspicion by the corps medical team.[22]

Intense physical training is a key component of the orientation course, and this could be a risk for musculoskeletal disorders such as sprains, strains, dislocations, and arthralgia, as noted in this study. Exercise has been known to trigger bronchial asthma. Physical activities can lead to fatigue and body pain in most people. An appreciable number of Corps members visited the clinic with complaints of muscle pain and fatigue. Reports from the study by Odega et al further buttressed these findings.[3] However, bronchial asthma was not reported in their study.

For many years, medical care was provided by NYSC Corps doctors at the orientation camps. The most seriously ill patients were referred to nearby healthcare institutions in the host state. The supervision of camp clinics by physicians demonstrates the importance the government places on the health of its Corps members.[9] In the past, Corps members were required to pay for their medical expenses out-of-pocket during the service year. It was, however, a welcome development when the government announced the implementation of the inclusion of Corps members into the NHIS program in 2022 through its group individual and family social health insurance program (GIFSHIP).[23]

The study is not without limitations. The diagnoses recorded were majorly based on the doctor's clinical observation as tests for confirmation of the ailments were not routinely carried out. The lack of similar studies in this population made comparison difficult. Despite these drawbacks, it is imperative to understand the frequency and distribution of diseases encountered in orientation camps.

CONCLUSION

The importance of studying the prevalence and distribution pattern of diseases in orientation camp clinics cannot be overemphasized. This data is vital for planning, resource allocation, advocacy, policy formulation, and research. Members of the NYSC are one of the most active groups in society. Prioritizing and investing in the health of this group of Nigerians would eventually result in a productive economy.

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