



First-aid Resources Availability and Attitudes of Senior High School Students in Tamale Metropolis, Ghana

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Aims: This study aims to explore the availability of first-aid resources in Senior High Schools and the attitudes of students towards giving first-aid in Tamale Metropolis, Ghana.

Methods: A cross-sectional study design was performed. This study was conducted in three different senior high schools, namely, Ghana Senior High School, Business Senior High School and Vitting Senior High School during April - July 2020.

The study recruited 381 students across the three schools. Students were categorized per their course of study and randomly sampled to attain the sample size. The median was used to determine the likeliest response of the 'average' respondent and Inter-Quartile Range (IQR) was used to measure dispersion in Likert scale questions.

Results: About 57.2% of participants stated that equipped first-aid kits were not provided in dormitories. All three schools lacked fire extinguishers in the dormitories. The schools also lacked equipped sick bays. A significant relationship was found between students' perception of school safety and their attitude towards giving first aid (p -value = 0.005).

Conclusion: All schools had implemented the Ministry of Education safety standards and

guidelines to a lesser extent. It is recommended that the Ministry of Education must play its supervisory role by ensuring the implementation of safety standards and guidelines on health and safety in the schools.

Keywords: Attitudes; first aid; resources; safet; students.

1. INTRODUCTION

Students spend the majority of their time at school and are susceptible to injuries and minor illnesses, necessitating first-aid treatment. Abraham Maslow's hierarchy of needs theory has safety as the second most important basic need [1]. When individuals are provided with the basic right to education, their health and safety take priority next. School safety is an integral and indispensable component of education [2]. All over the world, governments and institutions make efforts to implement safety and health policies to prevent disasters, injuries and in many cases, provide primary health care (first aid). First aid facilities include the presence of first aid rooms (sick bays), first aid kits and school nurses or first aid coordinators. In some cases, student first aid groups form part of the first aid facility structure. Adolescence usually signifies an age range where individuals are known to engage in risky behaviours [3–5]. Due to these risky behaviours, the implementation of safety measures is necessary to prevent diseases and injuries. The school setting presents a key area for adolescent health promotion especially primary intervention (first aid) and prevention [6].

Educational institutions in Ghana have a long-standing history of disasters. Fire incidents have been recorded in different schools in Tamale alone [7,8]. Punguyire et al., [9] showed that many victims of snakebite in their study were students. Ganfure [10], noted that the most common injuries in school requiring hospitalization result from falls and sports activities. Emergency cases present victims that need immediate help before professional medical care is sought. An implementation plan was developed by the Ministry of Education, Ghana with support from the United Nations Children's Fund (UNICEF). Standard two (2) outlined guidelines for providing health and safety in schools [11]. The implementation of these guidelines would ensure safety in the schools which promotes a healthy teaching and learning environment. Unfortunately, research on the implementation of the safety standards and guidelines in Ghanaian Senior High Schools is not readily available. Research studies in other

jurisdictions [2,12] showed that the Ministry of Education safety standards and guidelines in these countries had not been fully implemented.

Students' attitudes towards practising first aid are essential when safety measures put in place fails and injury cases arise. An individual must have the right attitude to learn first aid first, then be willing to help a victim when the need arises. The presence of first aid kits, sick bays and necessary safety measures implemented could inform students attitudes toward first aid. Goniewicz et al. [13] reported in a study in Lublin that 80% of high school students knew the importance of first aid. Another research conducted at Kuwait University showed that students had a positive attitude toward first aid [14]. This current study was therefore undertaken to explore the availability of first-aid resources and their impact on attitudes of students towards giving first-aid in Senior High Schools in Tamale Metropolis, Northern Region, Ghana.

2. METHODS

This study adopted a cross-sectional descriptive study design. The study was conducted in three different Senior High Schools in Tamale Metropolis in the Northern Region of Ghana during April-June 2020. A random sampling technique was applied and selected of 381 students. These schools were Ghana Senior High Schools, Business Senior High school and Vitting Senior High School. Tamale Metropolis is the capital of the Northern Region of Ghana and hosts eighteen Senior High Schools (SHS); Seven public schools and 11 private schools. The majority of the students are enrolled in public senior high schools. A cluster of classrooms was selected based on the different courses and year groups in the school and students were randomly sampled per class selected depending on the sample size for each school. Based on the review of related literature [2,10,12], a structured self-administered questionnaire prepared in English was designed based on the study aim. The questionnaire was pre-tested on 30 Senior High students before data collection in similar but different schools. Cronbach's alpha of 0.74 proved the level of reliability of the questionnaire

[15,16]. The filling of the questionnaires was done in the classrooms and lasted for 15 minutes. The entire data collection lasted for 4 weeks. With the Likert scale question in the survey instrument, the median was used to determine the likeliest response of the 'average' respondent and IQR was used to measure dispersion. A median of 1 indicates the likeliest response for the variable is Strongly Disagree, 2 for Disagreed, 3 for Uncertain, 4 for Agree and 5 for Strongly Agree. A small IQR indicates consensus and a large IQR means opinion is split or polarised. Essentially, an IQR of 0 indicates strong consensus, 1 for consensus, 2 for mild consensus, 3 for polarised opinion and 4 for strongly polarised opinion.

3. RESULTS

From Table (1), the majority of the participants 200 (52.5%) were males and 181 (47.5%) were females. This reflects the current gender gap in senior high school students. The minimum age of the participants recorded was 14 years and the maximum 22 years with mean \pm SD being 17.25 ± 1.28 .

Out of the total participants (156) at Ghana Senior High School, 104(66.7%) agreed there was a trained person in the school to give first aid, 74.4% agreed the health prefect was the main source of emergency health service and 66.35% said the house prefect was the source of first aid care in the dormitory. Cumulatively, 58.5% were undecided or disagreed that equipped first aid kits are provided in the dormitories. Also, 132 (84.6%) disagreed that there were fire extinguishers in dormitories. The electrical sockets in the school are well protected and insulated and there are regular checks on illegal connections with 72.4% and 67.3% respectively agreeing.

At Vitting Senior High School, out of the total participants (96) there, 80 (80.2%) agreed there was a trained person in the school to give first aid and 87.5% agreed the health prefect was the main source of emergency health service. Also, 60 (62.5%) disagreed that there are fire extinguishers in dormitories. The electrical sockets in the school are well protected and insulated and there are regular checks on illegal connections with 78.1% and 76.0% respectively agreeing.

At Business Senior High School, out of the total participants (129), 103 (79.8%) agreed there was a trained person in the school to give first aid,

65.1% agreed the health prefect was the main source of emergency health service. A percentage of the participants 63.2% were undecided or disagreed that equipped first aid kits are provided in the dormitories. Also, 108 (83.7%) disagreed that there are fire extinguishers in dormitories. The electrical sockets in the school are well protected and insulated and there are regular checks on illegal connections with 65.9% and 83.7% respectively agreeing.

Results from all three schools were combined by their median and IQR and analysed as shown in Table (2). The median measures central tendency and shows the likeliest response of the average respondent. A Median of 1 indicates the likeliest response for the variable is Strongly Disagree, 2 for Disagreed, 3 for Uncertain, 4 for Agree and 5 for Strongly Agree. A small IQR indicates consensus and a large IQR means opinion is split or polarised. Essentially, an IQR of 0 indicates strong consensus, 1 for consensus, 2 for mild consensus, 3 for polarised opinion and 4 for strongly polarised opinion.

Most of the students agreed that they had received first-aid training in school and there were medical services was available in the schools albeit the presence of sick bays with qualified health personnel was not confirmed. There was consensus among the students that first aid kits are provided in the dormitories in the cubicles of the house prefects though not fully equipped and the health prefect was seen as the main source of emergency health service. There was strong consensus that all schools had red-cross clubs.

Though the compounds were well maintained in terms of sanitation, tree trunks and open gutters were evident in a certain portion of the schools, especially at the dormitories. All three schools had no major issues with water supply through soap at the washrooms were none existent. Students used the soaps they mostly purchased themselves. Observations in all three schools revealed that some dormitories had electrical wires and switches not covered appropriately with insulators. On safety, the students generally agreed that there were no easily accessible fire exits in laboratories and dormitories and there were no fire extinguishers in the dormitories. Other school buildings such as the laboratories have fire extinguishers. There was no evidence of training of these students on procedures during fires.

Table 1. Socio-Demographic Characteristics (N =381)

Variable	Demographic Characteristics	Number	Percentage
Sex	Male	200	52.5
	Female	181	47.5
Age	14	2	0.5
	15	18	4.7
	16	87	22.8
	17	134	35.2
	18	85	22.3
	19	38	10.0
	20	7	1.8
	21	9	2.4
	22	1	0.3
Schools	Ghana Senior High	156	40.9
	Business Senior High	129	33.9
	Vitting Senior High	96	25.2
Courses	General Science	115	30.2
	Home Economics	84	22.0
	General Arts	127	33.3
	Business	55	14.4
Religion	Christians	91	23.9
	Muslims	290	76.1

Table 2. First-aid resource availability in schools by Median and IQR

Variable	Median	Inter-Quartile Range (IQR)
From my admission to date, I have received a first aid lesson or training	4	3
There is a trained person to give first aid in the school	4	2
There is the availability of medical services.	4	2
There is a vehicle for emergency transport.	3	3
The health prefect is the main source of emergency health service.	4	2
There is training for dormitory monitors and health prefects on first aid care.	4	2
In the dormitory, the landlord/ house prefect is the source of first aid care.	4	2
Equipped first aid kits are provided in dormitories.	2	3
There is a red cross club in the school	5	1
The school is well equipped in emergency cases	4	2
The school has prepared you for emergencies.	3	2
There are instructions on the use of equipment in laboratories or practices areas.	4	1
A regular risk assessment by school authorities.	3	2
There are warning signs in dangerous areas.	4	3
The surroundings and bushes are regularly cleaned.	4	2
There are easily accessible fire exits in laboratories and dormitories.	2	3
There are extinguishers in dormitories.	2	1
The electrical sockets are well protected and insulated.	4	2
There are regular checks on illegal connections.	4	1

Table 3. Safety of the Schools

Response	Frequency	Percentage
Very Poor	36	9.4%
Poor	32	8.4%
Average	171	44.9%
Good	66	17.3%
Very Good	76	19.9%

Table 4. Students Attitudes towards First Aid (N = 381)

Variable	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
Attitudes towards giving first aid					
Giving first aid at school is fair	239 (62.7%)	113 (29.7%)	3 (0.8%)	13 (3.4%)	13 (3.4%)
Giving first aid at school is unpleasant	15 (3.9%)	19 (4.9%)	17 (4.5%)	121 (31.8%)	209 (54.9%)
Giving first aid is very good	246 (64.6%)	131 (34.4%)	0 (0.0%)	1 (0.2%)	3 (0.8%)
Attitudes towards learning first aid					
It is good for me to learn first aid	267 (70.1%)	106 (27.8%)	5 (1.3%)	2 (0.5%)	1 (0.3%)
It is useful for me to learn first aid	239 (62.7%)	111 (29.2%)	5 (1.3%)	10 (2.6%)	16 (4.2%)
It is important for me to learn first aid	271 (71.1%)	94 (24.7%)	9 (2.4%)	3 (0.8%)	4 (1.0%)

Table 5. Chi-square Test for Respondent's perception of school safety against Attitude towards giving first aid

(Over-all safety)	GIVING FIRST AID IS FAIR and GOOD					X ²
	Strongly Disagreed	Disagreed	Uncertain	Agreed	Strongly Agreed	
Very Poor	0	0	1	4	31	X ² =
Poor	1	0	0	5	26	45.252
Average	1	2	6	45	117	df = 24
Good	0	0	0	15	51	p-value =
Very Good	1	2	8	21	44	0.005

Students were tasked to rate the safety of the schools. Majority 171 (44.9%) opted for average. The likeliest response was average as evidenced by a median of 3 and there was consensus on that as evidenced by an IQR of 1 (Table 3).

Regarding the attitudes of students towards first aid (Table 4), results showed that the majority of the participants strongly agreed that giving first aid is both fair and good as shown in the table. Another variable set out to gauge students' attitude was "Giving first aid is unpleasant". The majority of the students responded against this variable with 209 (54.9%) selecting strongly

disagree and 121 (31.8%) opting to disagree. Dispersion statistics showed, (Median = 1 IQR = 1). Implying that the average response of any student at random was strongly disagreed and there was consensus too. On students' attitudes towards learning first aid, the majority of the students responded it was good, useful and important for them to learn first aid. All three variables showed dispersion results of (Median = 5 IQR 1).

In Table (5), the overall safety of the schools as indicated by the participants was also tested against attitudes of the students towards giving

and learning first aid. On students' perception of the safety against "Giving first aid is good and Giving first aid is fair". Results showed an association ($\chi^2(24, N = 381) = 45.252, p = 0.005$). The majority of the participants rated the safety levels of their schools as average. However, this did not affect their attitude towards giving first negatively.

4. DISCUSSION

This study aims to explore the availability of first-aid resources in Senior High Schools and their impact on attitudes of students towards giving first-aid in Tamale Metropolis, Ghana. The study population were a group of secondary school students in Tamale, Northern part of Ghana, with a majority of them being males. This reflects the current gender gap in senior high education in Ghana [17]. The minimum age of participants is similar to the average age of some senior secondary students in Saudi Arabia as indicated by Mobarak et al., [3]. These similar findings could be as a result of the study being conducted among similar secondary school year groups despite a different research setting.

Compared with the safety standards set out by the Government of Ghana - Ministry of Education, supported by UNICEF [11]. All three schools indicated there was the availability of medical services albeit the presence of sick bays with qualified health personnel was not confirmed. There was consensus among the students that first aid kits are provided in the dormitories though not fully equipped. This current finding is similar to other research findings in a survey carried out among 11 sampled schools in Karachi, which shows that almost all of the schools had some form of first aid pack or box, although none were fully supplied [18]. Students spend most of their days in school and are more likely to be involved in sports and other extracurricular activities, which puts them at risk for accidents and injuries and hence the need for schools to have first aid kits, a sickbay and a qualified professional to handle the sick or the injured students.

Observations in all three schools revealed that some dormitories had electrical wires and switches not covered appropriately with insulators. This suggests the need for better monitoring to resolve these problems and avoid the electrocution of students. Also, observations made indicates all three schools had the compounds well maintained in terms of sanitation. However, tree trunks and open gutters

were evident in a certain part of the schools, especially at the dormitories. Students require a safe learning environment to concentrate on the acquisition of many skills that are necessary for a successful education and career [19]. In schools, accidents occur on school grounds, including injuries caused by school building collapses, slips and trips, sports mishaps, tours and trips, and so on. As a result, students, teachers, office staff, and parents must all be aware of the importance of the safety of the need such as ensuring that the compound is well-kept and free of obstructions (misaligned hedges, tree stumps, and open gutters). Where stones or bits of rock are present, the area must be guarded with a safety fence, and all schools must have paths and pavements to minimise the frequent occurrence of accidents on the school compounds [19].

All three schools had no major issues with water supply though soap at the washrooms was none existent. Students used the soaps they mostly purchased themselves. The absence of soaps in these washroom defeats the purpose of adequate handwashing. Poor handwashing practices are noted to result in disease outbreaks. Anecdotal evidence has shown that in schools, increased access to sanitary toilets reduces gastrointestinal illnesses and diarrhoea diseases. Ulukanligil and Seyrek [20] investigated the health of Turkish suburban schools and discovered that limited water supply and soap resulted in incidence of parasitic infections among the students [20].

The response by the students indicated that easily accessible fire exits were non-existent in school buildings especially dormitories and there were no fire extinguishers in the dormitories. Other school buildings such as the laboratories have fire extinguishers. According to Akomah and Kotey, [21] in a study among public Senior High Schools within the Cape Coast Metropolis, Ghana, first-class schools are more compliant than second-and third-class schools. It was determined that none of the metropolis' third-class schools had a fire hydrant. The main reasons for non-compliance with fire safety regulations were identified as a lack of funding and the expensive cost of fire safety equipment [21]. It is critical to ensure that every student or individual in a school setting has a safe and healthy learning and working environment. There is the need to properly evaluate all schools in the Metropolis to ensure fire escapes and warning systems are installed. There was no evidence of training of these students on procedures during

fires. A school must follow all of the Ghanaian government's standards to ensure optimal fire safety. These standards establish the presence of a functional safety plan in the case of an emergency.

Some of the safety guidelines as shown are implemented to lesser extents. This could be due to inadequate funds or lack of supervision on the part of the Ministry of Education who set out these guidelines. The implementation of these guidelines would ensure safety in the schools which in turn promotes a healthy teaching and learning environment. It must be stated there is a firm belief among researchers that these safety standards and guidelines are not adhered to in almost all Senior High Schools in the Metropolis. This assertion is consistent with a study in Marani District, Kenya. The major findings of the study stated that the Ministry of Education safety standards and guidelines had not been fully implemented [2]. When the overall safety of the schools as indicated by the participants was tested against the attitudes of the students towards giving and learning first aid. The majority of the participants rated the safety levels of their schools as average. However, this did not affect their attitude towards giving first negatively. This is perhaps because regardless of how unsafe the environment might be, students have adapted accordingly and where there is a mishap leading to injury, students are willing to help one another by giving first aid. The student's perception of the safety of the school is primarily influenced by the safety measures put in place by the school authorities and the first aid capacity of the school.

5. CONCLUSION

The study revealed that first aid-kits are seldom provided in the dormitories and where present, not fully equipped. The attitudes of these students towards learning and giving first aid were commendable. Students' perception of the safety of the school affects students' attitude towards giving first aid. Based on the findings, it was concluded that all the schools had implemented the Ministry of Education safety standards and guidelines to a lesser extent with all three schools lacking fire extinguishers in the dormitories and also without equipped sick bays.

CONSENT

After receiving complete information about the study, participants verbally agreed to participate

and provided written informed consent for participation. The participants were also informed that they had the freedom to refuse to participate in the study or to withdraw at any time. Furthermore, questions were numeric coded to ensure confidentiality, and their names were not necessary in the form.

ETHICAL APPROVAL

The data collection process was started upon the approval of the study protocol by the school of nursing and midwifery research committee, university for development studies. In the same way, we strictly adhered to the Helsinki Declaration of Ethical Principles for Human Subjects Medical Research. The manuscript is therefore congruent with the ethical consideration for publication and conduct of research involving human subjects.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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