Levels of First Aid Knowlege amongst Secondary Pupils at Three Selected Schools in Ndola, Zambia

Bwalya Mutale[*]

Department of Civil and Environmental Engineering, University of Zambia, Lusaka, Zambia

Abstract

Introduction: First Aid is immediate care given for the purpose of preserving life and minimizing the consequences of injury and illness until help, from trained medical workers is obtained. The likelihood of an injury or accident victim living or dying depends on the timeliness of the aid given. On a global scale, someone dies every 5 seconds as a result of an injury, over 15000 people's lives are cut short every day and about 5.8 million people die in a year. Survival is greatly increased if bystanders quickly begin applying first aid. Therefore, this study aims to assess the levels of first aid knowledge in secondary pupils at three selected schools in Ndola, Zambia.

Methods: An analytical cross sectional study was carried out among pupils at three selected schools in Ndola, Zambia. The data collection tool that was used is a self-administered questionnaire. A two stage sampling method was used. Firstly, a non-probability sampling method was used to select schools. Thereafter, classes and their respective pupils were sampled randomly. A sample size of 376 was used. The study was carried out at Chiluba Secondary School, Lubuto Secondary School and Ndola Skill School. Data was entered and analysed using SPSS version 20, and categorical variables were analysed using chi Square.

Results: In this study, majority of the participants had poor knowledge (87.8%), followed by those with average knowledge (6.4%), then those with no knowledge (5.3%) and finally those with good knowledge (0.5%). The mean score was 3.70, the median was 4.00, the mode was 3, the standard deviation was 2.008 and the sum was 1393. It was found that there is an association between levels of first aid knowledge and exposure to first aid information from the media, receiving first aid knowledge from guardians and religion. However, there was no association between levels of first aid knowledge and age, economic status, opinion, being taught first aid at school and being a member of a first aid club. It was found that the factors that influence levels of first aid knowledge include exposure to first aid information from the media and receiving first aid information from guardians.

Conclusion: Overall, first aid knowledge amongst secondary school pupils at the three selected school in Ndola Zambia was poor. The mean score was 3.70 which is poor knowledge. It is recommended that first aid training be added to the school curriculum as this will allow a good number of students to be reached over a period of time Furthermore, awareness of first aid should be raised through the media, campaigns and brochures. Finally, it is recommended that like studies be conducted in the future.

Keywords: First aid • Zambia • Chiluba • Economic status • Injury

Introduction

First Aid is immediate care given for the purpose of preserving life and minimizing the consequences of injury and illness until help, from trained medical workers is obtained. It is never known when an injury or accident may happen. It is therefore important to have some level of first aid knowledge because it makes a difference for saving lives, it preserves life, prevents a condition from getting worse, reduces severity of injuries and it allows lay people to provide treatment until professional medical staff arrive at the scene. Intentional and unintentional injuries claim more than 5.8 million lives or 10% of global fatalities annually. This makes them one of the leading causes of death and morbidity. Groups at risk of injuries include road users, people attending schools, people in various work environments and people in homes. First aid cannot be used if people lack first aid knowledge. To help impart first aid knowledge, the Zambian government works hand in hand with some non-governmental

***Address to correspondence:** Bwalya Mutale, Department of Civil and Environmental Engineering, University of Zambia, Lusaka, Zambia, Tel: 979883908; E-mail: bwalyamutale2211@gmail.com*

organisations. One of these organisations is St. John Zambia whose mission is to excel as a health service organisation providing service in areas of first aid and primary health care. Another organisation is the Zambia Red Cross Society, whose mission is to address human suffering and crisis with respect to dignity and concern for equity [1].

Some of the factors affecting levels of first aid knowledge include gender, taking a first aid course during school, having previous first aid experience and having a driving license. In addition, public enlightenment campaign on first aid and training in first aid also affect levels of first aid knowledge. Based on the results of a 2012 study carried out at Ahmadu Bello University in Nigeria by Joshua et al, it was found that over 50% of the respondents were faced with an emergency situation but only 10% could help the victims. According to Semwal et al, many experts believe that even a limited understanding of first aid would be an invaluable service to individuals who find themselves in emergency situations. First aid can make the difference between life and death. This study is therefore aimed at assessing levels of first aid knowledge in secondary pupils at three selected schools in Ndola, Zambia. On a global scale, someone dies every 5 seconds as a result of an injury, over 15000 people's lives are cut short every day and about 5.8 million people die in a year. The likelihood of an injury or accident victim living or dying depends on the timeliness of the aid given. Survival would be greatly increased if bystanders have first aid knowledge. Thus assessment of levels of first aid knowledge is of great importance.

More than 90% of deaths that result from injury occur in low and middle income countries, of which Zambia is not an exception. According to a study done by Trusty Mudenda in 2014, it was projected that by 2020, road traffic accidents and injury-related deaths would be higher than deaths caused by Malaria and HIV/AIDS in Zambia, which were the highest causes of death and suffering then. If injuries are attended to as soon as possible by someone with first aid knowledge before trained personel arrive on site, some fatalities could be avoided and the death toll reduced. In light of this, assessment of levels of first aid knowledge is therefore very essential. Furthermore, injury was recorded to be the leading cause of death in 1-14 year olds in a number of countries and 1 in 5 of these injuries happened in school. In addition, 11,000 people are estimated to die each year from preventable unintentional injuries in the home (CDC, 2014). As earlier alluded to, if aid is given in good time, the odds of victims surviving would increase. The current study will therefore evaluate the levels of first aid knowledge in secondary pupils at three selected schools in Ndola, Zambia [2].

Literature Review

First Aid is immediate care given for the purpose of preserving life and minimizing the consequences of injury and illness until help, from trained medical workers is obtained. With regard to the evaluation of the level of knowledge about first aid process, a study was done at the University of Jordan, by Moawiah Khatatbeh in 2016. The study design used in the aforementioned study was cross-sectional and for collection of data, questionnaires were used. This study concluded that students had insufficient first aid knowledge. According to this study, some of the factors influencing first aid knowledge included gender, taking a first aid course during school, having previous first aid experience and having a driving license. Better knowledge was observed in females, people who took a first aid course, people with

previous first aid experience and people with driving licenses. The study recommended that to decrease the early mortality and morbidity of accidents and emergencies, first aid should be a standard component and separate course of educational programs introduced at secondary school and college level. The knowledge deficit of first aid measures among University students showed that only a handful of people had adequate emergency treatment preparing.

In contrast to the study done by Moawaiah Khatatbeh in 2016, the current study is going to evaluate levels of first aid knowledge in secondary pupils and not university students. This will therefore, add to the existing body of knowledge. A study was done in Nigeria, by Joshua et al at Ahmadu Bello University, Zaria in 2012. The study design used was a cross-sectional study design. Assessment of first aid knowledge, attitude and practices were assessed using 420 semi-structured, open-ended self-administered questionnaires and focus group discussions. According to the results of this study, the mean knowledge score for the definition of first aid was found to be 1.18 (93%), while that of aims of first aid, who a first aider is, the qualities of a good first aider and the ABC of first aid were 0.5 (25%), 0.27 (13.7%), 1.2 (60%) and 0.21 (10.5%) respectively. After calculating for an average, the overall score for knowledge was found to be 4.0 (40%) [3].

The overall score for knowledge (40%) was an average of the mean knowledge scores for the definition of first aid, aims of first aid, who a first aider is, the qualities of a good first aider and the ABC of first aid. However, the term "first aid" is now an accepted part of everyday language. As a result of its use in our everyday language, people are able to define what first aid is but are completely unaware of its contents. Therefore, the 93% from the definition of first aid distorted the overall score gotten from the study and gave a false picture. Furthermore, according to the study by Joshua et al, some of the factors influencing levels of first aid knowledge included public enlightenment campaign on first aid and training in first aid. Better knowledge was observed in people exposed to public enlightenment campaigns and people trained in first aid. Just like the study by Moawiah Khatatbeh, Joshua et al recommended that there is a need to introduce first aid into the school curriculum. Thus, evaluation of first aid knowledge in secondary school pupils is a great necessity. Another study was done in India by Semwal et al in 2017. It was a study on knowledge and attitudes to first aid among school children of Doiwalablock, Dehradun. Out of a total number of 441 students, majority (91%) had heard about first aid. Of which the proportion of girls and boys were almost similar i.e 92.2: 92. Only 17% of the students had complete knowledge of first aid and 33.3% of students had partial knowledge. On an average, partial knowledge and complete knowledge was present only in 0.06 and 0.04 respectively.

The results gotten from this study are not necessary to this particular study because of the education and training regarding first aid that was given to the participants. It was a cross-sectional study conducted in randomly selected public schools of Doiwala, Dehradun. For knowledge assessment, a pretested oral questionnaire was used. Following which, education and training regarding first aid was given to them. As earlier mentioned, the study by Semwal et al provided education and training regarding first aid. In contrast, this study will not provide any form of education or training to the participants. The final results of this study were not an average of various scores, thus

the final results produced are more reliable than the overall result produced by the study done by Joshua et al in Nigeria. According to a study done by Trusty Mudenda in 2014, it was projected that by 2020, road traffic accidents and injury-related deaths would be higher than deaths caused by Malaria and HIV/AIDS in Zambia, which were the highest causes of death and suffering then. Statistics from the Zambia Police indicate that road deaths in Zambia have increased by 85% between 2012 and 2014 from 1,000 to 1,858 respectively. In light of this, it is clear that if not managed early enough, accidents and injuries will continue causing serious consequences like death. Thus evaluation of levels of first aid knowledge should not be given a blind eye [4].

Apart from the road, accidents are seen in homes as well. Many unintentional injuries and deaths are related to the home and its environment. Within the home, more than 11,000 people are estimated to die each year from preventable unintentional injuries, including falls, fires, drownings, and poisonings. In addition to the home and the road are schools and work places. According to the International Federation of Red Cross (IFRC) 2015 findings, injury was recorded to be the leading cause of death in 1-14 year olds in a number of countries and 1 in 5 injuries happened in school (IFRC, 2015). First aid can make the difference for saving lives. Therefore, evaluation of first aid knowledge in secondary school pupils should not be taken lightly. From the studies mentioned above, it can be observed that most studies have been done at the tertiary level of education and not at the secondary level. Apart from that, no study has been done in Zambia to assess levels of first aid knowledge in secondary school pupils. To help add to the existing body of knowledge, the present study seeks to evaluate the levels of first aid knowledge in secondary pupils at three selected schools in Ndola, Zambia.

Methodology

Study site

The study was done at Chiluba Secondary School, Lubuto Secondary School and Ndola Skill School in Ndola, Zambia. These were chosen as study sites because they will capture people from multiple communities in Ndola town. These were chosen as study sites because the schools were conveniently located and would demand less with regard to transport costs. In addition, the schools were chosen because pupils from diverse backgrounds and places would be captured because of the different locations of the schools.

Target population

The target population of the present study was secondary school pupils from grade 8 to 12 at the three selected schools. This study population was chosen because they are readily available and easy to recruit.

Study design

The present study used an analytical cross sectional study design. It was used because it's relatively easy, quick, and inexpensive.

Sampling procedure

A two stage sampling method was used in this study. Firstly, a non-probability sampling method was used. This is a technique where participants are enrolled because of their availability and accessibility to the researcher, it is quick, inexpensive and convenient (Elfil et al, 2017). Thereafter, classes and their respective pupils were sampled using a probability sampling technique.

Inclusion and exclusion criteria

All pupils from grade 8 to 12 at the three selected schools, regardless of age were included in this study. Every individual not belonging to this group was excluded from this study.

Data collection

The data collection tool used in the present study was a self-administered questionnaire. It refers to a questionnaire that has been designed specifically to be completed by a respondent without intervention of the researcher. They are a cost effective method to quickly collect massive amounts of information from a large number of people in a relatively short period of time.

Data analysis

The data was entered and analyzed using SPSS version 20. The descriptive statistics were summarised using means, modes, medians, percentages and standard deviations. To summarise and display data simply, pie charts and frequency tables were used.

Ethical consideration

Ethical approval was gotten from the ethical committee at the Tropical Disease And Research Center (TDRC). Permission was gotten from the Provincial Education Office (PEO). Thereafter, was gotten from the District Education Board Secretary (DEBS) and the headmasters of all schools, who then communicate to the respective parent teacher association chairpersons. Participants were then required to assent to participating in this study after full explanation about the study was given. An information sheet was used to explain to the participants what the study is about, what is required of them, the risks and benefits. They were free to withdraw from the study at any point, and for confidentiality, names were not used [5].

Study limitations

The literature in this study was limited only to the research and literature published in English. Other studies that have been conducted on this topic and recorded in a language other than English could not be made use of. Not so many studies assessing levels of first aid knowledge among secondary pupils have been done, thus the pool from which to access literature was limited. This study only assessed the knowledge of first aid skills among secondary school pupils and not the practical skills. In addition, the study population was made of students from Ndola Zambia only, thus the findings could not be generalised to all secondary school pupils in Zambia. Apart from Christians, other religions were in very low numbers because Zambia is a Christian nation. Finally, the study was carried out amidst the corona virus pandemic and the study was delayed due to closure of schools.

Results

Sample characteristics

The calculated sample size was 376, and all 376 questionnaires were retrieved. The response rate thus came to 100.0% (Table 1).

Age: Majority of the respondents were aged 16 to 20 years old (72.1%) and the rest were aged 11 to 15 (27.9%) (Figure 1).

Age group	Frequency	Percent	Valid percent	Cumulative percent
11-15	105	27.90%	27.90%	27.90%
16-20	271	72.10%	72.10%	100%
Total	376	100.00%	100.00%	

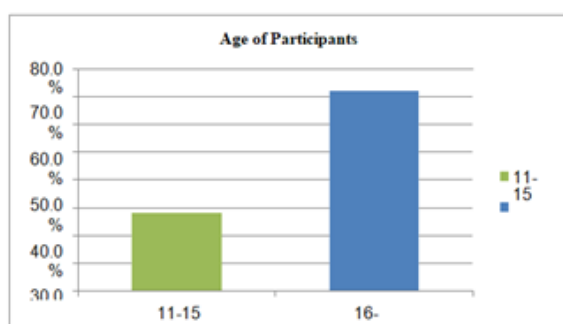**Table1:** Frequency and commulative percentage on age.

Figure1: Age of participants.

Level of education: Furthermore, majority of the participants were in grades 10 to 12 (69.4%), and the remaining were in junior secondary school (30.6%) (Table 2).

Level of education	Frequency	Percent	Valid percent	Cumulative percent
8-9	115	30.60%	30.60%	30.60%
10-12	261	69.40%	69.40%	100.00%
Total	376	100.00%	100.00%	

Table2: Level of education.

Economic status: In relation to economic status, majority of the participants were of average economic status (44.4%), followed by below average (38.8%), and the rest were above average (16.8%) (Table 3).

Economic status	Frequency	Percent	Valid percent	Cumulative percent
Above average	63	16.80%	16.80%	16.80%
Average	167	44.40%	44.40%	61.20%
Below average	146	38.80%	38.80%	100.00%
Total	376	100.00%	100.00%	

Table3: Percentage on economic status.

Media: 77.1% of the participants had heard about first aid from the media and 22.9% had never (Table 4).

Heard of first aid information from the media	Frequency	Percent	Valid percent	Cumulative percent
Yes	290	77.10%	77.10%	77.10%
No	86	22.90%	22.90%	100.00%
Total	376	100.00%	100.00%	

Table4: Percentage on media.

First aid information from parents or guardians: In addition, 64.6% of the respondents had received first aid information from their guardians, whilst 35.4% had not (Table 5).

First aid information from guardians	Frequency	Percent	Valid percent	Cumulative percent
Yes	243	64.60%	64.60%	64.60%
No	133	35.40%	35.40%	100.00%
Total	376	100.00%	100.00%	

Table5: Received First aid information from parents or guardians.

First aid information from school: 80.1% of the participants had been taught first aid in school, whilst 19.9% had not (Table 5).

Taught first aid in school	Frequency	Percent	Valid percent	Cumulative percent
Yes	301	80.10%	80.10%	80.10%
No	75	19.90%	19.90%	100.00%
Total	376	100.00%	100.00%	

Table6: Received first aid information from school.

Levels of first aid knowledge

To assess levels of first aid knowledge, a total of 14 questions were answered. Each question was valued at 1 point if the correct answer was given and zero if a wrong answer was given. Knowledge was categorized into four groups. No knowledge, poor knowledge, average knowledge and good knowledge. No knowledge referring to the participants who got a score of 0, poor knowledge refering to the participants who scored between 1 and 6, average knowledge referring to the paricipants who scored between 7 and 10, and good knowledge to those who scored between 11 and 14.

Majority of the participants had poor knowledge (87.8%), followed by those with average knowledge (6.4%), those with no knowledge (5.3%) and finally those with good knowledge (0.5%). Out of a possible 14 points, the highest score was 12 and the least was 0. Only one participant got a score of 12 and 20 got a score of 0. The

mean score was 3.70, the median was 4.00, the mode was 3, the standard deviation was 2.008 and the sum was 1393. The distribution of the levels of first aid knowledge amongst the pupils.

Grades	Frequency	Percent	Valid percent	Cumulative percent
No knowledge 20		5.30%	5.30%	5.30%
Poor knowledge	330	87.80%	87.80%	93.10%
Average knowledge	24	6.40%	6.40%	99.50%
Good knowledge	2	0.50%	0.50%	100.00%
Total	376	100.00%	100.00%	

Table7: Distribution of levels of knowledge.

Association between levels of first aid knowledge and sociodemographic factors

In order to determine whether there is an association between levels of first aid knowledge and socio-demographic factors, a chi-square test of association was carried out.

Age: Out of 105 participants in the age range 11 to 15, 6.7% (7) of the participants had no knowledge, 86.7% (91) had poor knowledge, 6.7% (7) had average knowledge and 0% (0) had good knowledge. In the age range 16 to 20, out of 271 participants, 4.8% (13) had no knowledge, 88.2% (239) had poor knowledge, 6.3% (17) had average knowledge and 0.7% (2) had good knowledge. 2 cells (25%) had expected count less than 5 and the minimum expected count was 0.56, thus the chi-square assumption was violated. Rather than the chi-square P-value, the fisher's exact test was used. The P-value was found to be 0.781 and is greater than 0.05. Therefore, we fail to reject the null hypothesis that "there is no association between age and levels of first aid knowledge" and we reject the alternative hypothesis that "there is an association between age and levels of first aid knowledge".

Level of education: Out of 376 participants, 115 were in junior secondary school (grade 8 to 9) and 261 were in senior secondary school (grade 10 to 12). Of the 115 participants in junior secondary school, 6.1% (7) had no knowledge, 88.7% (102) had poor knowledge, 5.2% (6) had average knowledge and 0% (0) had good knowledge. Amongst the 261 participants in senior secondary school, 5.0% (13) had no knowledge, 87.4% (228) had poor knowledge, 6.9% (18) had average knowledge, and 0.8% (2) had good knowledge. 2 cells (25.0%) had expected count less than 5. The minimum expected count was 0.61, thus the assumption was violated. Rather than the P value, the likelihood ratio was used and found to be 0.837 and is greater than 0.05. Therefore, we fail to reject the null hypothesis that "there is no association between level of education and levels of first aid knowledge", and we reject the alternative hypothesis that "there is an association between level of education and levels of first aid knowledge".

Economic status: Out of 376 participants, 63 participants were of above average economic status, 167 were of average economic status and 146 were of below average economic status. Amongst the 63 participants of above average economic status, 4.8% (3) had poor

knowledge, 90.5% (57) had poor knowledge, 4.8% (3) had average knowledge and 0% (0) had good knowledge. Out of 167 participants of average economic status, 4.2% (7) had no knowledge, 86.8% (145) had poor knowledge, 7.8% (13) had average knowledge and 1.2% (2) had good knowledge. Of the 146 participants of below average economic status, 6.8% (10) had no knowledge, 87.7% (128) had poor knowledge, 5.5% (8) had average knowledge and 0% (0) had good knowledge. 5 cells (41.7%) had expected count less than 5 and the minimum expected count was 0.34, thus the chi-square assumption was violated. Rather than the chi-square P-value, the fisher's exact test was used. The P-value was found to be 0.746 and is greater than 0.05.

Media: Out of 376 participants, 290 had heard about first aid from the media and 86 had not. Of the 290 participants who had heard about first aid from the media, 4.5% (13) had no knowledge, 86.9% (252) had poor knowledge, 7.9% (23) had average knowledge and 0.7% (2) had good knowledge. Amongst the 86 participants who had never heard about first aid from the media, 8.1% (7) had no knowledge, 90.7% (78) had poor knowledge, 1.2% (1) had average knowledge, and 0% (0) had good knowledge. 3 cells (37.5%) had expected count less than 5 and the minimum expected count was 0.46, thus the chi-square assumption was violated. Rather than the chi-square P value, the fisher's exact test was used. The P-value was found to be 0.044 and is less than 0.05. Therefore, the null hypothesis that "there is no association between exposure to first aid information from the media and levels of first aid knowledge" is rejected and we fail to reject the alternative hypothesis that "there is an association between exposure to first aid information from the media and levels of first aid knowledge". Cramer's V was used to determine the strength of the association. It was found to be 0.068 and is less than 0.25, thus the association is weak.

First aid information from guardians: Out of 376 participants, 243 received first aid information from their guardians and 133 did not. Of the 243 who received first aid information from their parents, 2.9% (7) had no knowledge, 88.9% (216) had poor knowledge, 7.4%(18) had average knowledge and 0.8% (2) had good knowledge. Amongst the 133 participants who had never received first aid information from their parents, 9.8% (13) had no knowledge, 85.7%(114) had poor knowledge, 4.5% (6) had average knowledge, and 0%(0) had good knowledge. 2 cells (25.0%) had expected count less than 5. The minimum expected count was 0.71, thus the chi-square assumption was violated. Rather than the chi-square P value, the fisher's exact test was used and found to be 0.017 and is less than 0.05. Therefore, the null hypothesis that "there is no association between receiving first aid information from guardians and levels of first aid knowledge" is rejected and we fail to reject the alternative hypothesis that "there is an association between receiving first aid information from guardians and levels of first aid knowledge". In order to determine the strength of the association, Cramer's V was used. It was found to be 0.019 is less than 0.25, thus the association is weak.

First aid information from school: Out of 376 participants, 301 received first aid information from school and 75 did not. Of the 301 who received first aid information from school, 4.0% (12) had no knowledge, 88.7% (267) had poor knowledge, 6.6% (20) had average knowledge and 0.7% (2) had good knowledge. Amongst the 75 participants who had never received first aid information from school, 10.7% (8) had no knowledge, 84.0% (63) had poor knowledge, 5.3%

(4) had average knowledge, and 0% (0) had good knowledge. 4 cells (50.0%) had expected count less than 5. The minimum expected count was 0.40, thus the chi-square assumption was violated. Rather than the chi-square P value, the fisher's exact test was used and found to be 0.144 and is greater than 0.05. Therefore, we fail to reject the null hypothesis that "there is no association between receiving first aid information from school and levels of first aid knowledge" and we reject the alternative hypothesis that "there is an association between receiving first aid information from school and levels of first aid knowledge" [6].

Discussion

This study was aimed at evaluating the level of first aid knowledge among secondary pupils at three selected schools in Ndola, Zambia, establishing an association between factors and the level of first aid knowledge among secondary pupils at three selected schools in Ndola, Zambia and determining the factors that influence the levels of first aid knowledge in secondary pupils at three selected school in Ndola, Zambia. A total of 376 participants took part in this study.

Socio-demographic characteristics

A total of 376 participants took part in this study. Majority (72.1%) of the respondents were aged 16-20 years old and the rest were aged 11 to 15 (27.9%). With regard to most of the participants in this study were female (51.6%) and the minority were male (48.4%). This finding is similar to that of Khatatbeh who found that majority of the participants were female (65.9%) and the minority were male. Unlike the current study, in a similar study carried out by Priyangika and Hettiarachchi, it was found that majority of their participants were male (53.0%) and the minority were female (47.0%). 98.4% of the participants were Christian, 1.1% were Islam and 0.5% were not religious. Furthermore, majority (69.4%) of the participants were in senior secondary school (grades 10 to 12), and the remaining were in junior secondary school, grades 8 to 9 (30.6%). A similar study done by Joshua et al found that unlike the current study, majority (79.8%) of the participants were juniors and the minority were senior students (21.5%) (Joshua et al, 2014). In relation to economic status, majority of the participants were of average economic status (44.4%), followed by below average (38.8%), and the rest were above average (16.8%). Similar findings were found in a study in 2015. 77.1% of the participants had heard about first aid from the media and 22.9% had never heard of it from the media. Majority of the participants (92.3%) thought first aid knowledge is necessary and 7.7% felt that it is not. This is similar to the findings of Makhlef, who found that majority (96%) of their participants found first aid knowledge to be necessary, and the minority (4%) did not. 64.6% of the respondents had received first aid information from their guardians, whilst 35.4% had not. In addition, 80.1% of the participants had been taught first aid in school, whilst 19.9% had not. This finding is unlike that of Mobarak et al who found that majority (86.4%) of their participants had not received first aid training and 13.6% had recieved training. Finally, 35.6% of the participants were in a first-aid related club, whilst 64.4% were not.

Association between factors and the levels of first aid knowledge

According to the results of this study, it was found that there is an association between levels of first aid knowledge and religion exposure to first aid information from the media and receiving first aid knowledge from guardians. However, there was no association between levels of first aid knowledge and age, economic status, attitude, being taught first aid at school and being a member of a first aid club. Unlike the current study where there is no association between the levels of first aid knowledge, a study by Khatatbeh found that there was an association. Higher levels of first aid knowledge were noted amongst female participants. A similar study by Joseph et al, found that there was no association between gender or previously being taught first aid and levels of first aid knowledge, which is similar to the results of this study. A study by Gore et al, found that unlike the current study, there was an association between level of education and levels of first aid knowledge. Association between gender, year of study, first aid training experience and levels of first aid knowledge.

Determination of factors that influence levels of first aid knowledge

According to the results of this study, the factors that influence levels of first aid knowledge include exposure to first aid information from the media, religion and receiving first aid information from guardians. Christians, participants exposed to first aid information from the media and participants who recieved first aid information from parents or guardians were noted to have good knowledge. This is similar to the results of Mobarak et al, who found that televised material as well as parents, were the chief sources of information about first aid.

Conclusion

Overall, first aid knowledge amongst secondary school pupils at the three selected school in Ndola Zambia was poor, the mean score was 3.70 (poor knowledge). It was established that there is an association between levels of first aid knowledge and religion, exposure to first aid information from the media, and receiving first aid knowledge from guardians. However, there was no association between levels of first aid knowledge and age, economic status, opinion, being taught first aid at school and being a member of a first aid club. Furthermore, according to the results of this study, the factors that influence levels of first aid knowledge include religion exposure to first aid information from the media and receiving first aid information from guardians. With good knowledge noted amongst Christians, receiving first aid information from parents or guardians and media.

Recommendations

It is recommended that first aid training be added to the school curriculum as this will allow a good number of students to be reached over a period of time. This should be backed up with periodic refresher training as level of first aid knowledge did not differ significantly between pupils taught first aid in school and those who were not, and between pupils in a first aid related club and those who were not. In addition, practical training should complement the theory,

as it will increase the pupil's confidence and experience. Furthermore, awareness of first aid should be raised through the media, campaigns and brochures. Finally, it is recommended that like studies be conducted in the future, and that future research studies not only assess levels of first aid knowledge but practical skills also.

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