

Introduction: The goal of every academic institution is to produce the best students and to be recognized for academic excellence. However, this has become farfetched because of the tragic loss of students to school fires.

Objective: The main objective of this study was to assess the organization safety culture in terms of fire safety preparedness in boarding secondary schools in Wakiso district and the specific objectives were to assess staff knowledge in relation to fire safety preparedness, to assess the adequacy of fire fighting facilities within Wakiso Boarding Secondary Schools, to assess the fire safety plans for these Boarding Schools as a measure of fire disaster preparedness in Wakiso district and to identify factors leading to fire safety adherence in Wakiso Boarding Secondary Schools.

This study adopted the cross sectional design. Wakiso district was purposively sampled and Stratified sampling technique was used to select the schools to be included in the sample.

The level of knowledge of the school staff is fairly high, that is most staff know about fire safety. The secondary schools in Wakiso district are inadequately equipped with firefighting equipment, the equipment available at the school are very basic and cannot match the school populations.

The schools have in place evacuation plans, but no evacuation plans for vulnerable people, no fire alert procedures and few assembly points. Fire safety adherence at the secondary schools in Wakiso district is influenced by knowledge about fire safety, having fire alarm systems, and having more than 8 dormitories in a school.

Background of the study

The goal of every academic institution is to produce the best students and be recognized for academic excellence,. However, this has become farfetched because of the tragic loss of students to school fires. When fires occur, they can lead to loss of property, the detriment of the school image, and the demise of many people including students.

The threat of fire disasters is always present, and it is important that people are aware of how to properly respond in order to lessen loss of property, injuries, deaths and psychological trauma. This is especially true for learners in schools (Marion & Maingi, 2010). Schools ought to have emergency preparedness plans to guide students to safety. Like any other disaster, whenever it occurs, it causes a serious disruption of the functioning of the institutions since it results into widespread human, material, economic or even environmental losses which exceed the ability of the affected institutions to cope using their own resources.

Preparedness planning is to ensure a rapid and efficient action when disaster occurs, taking into consideration the local disaster management system and adjusting it according to the local condition. The school ought to prepare human resource, facility, infrastructure and financial support for disaster management to ensure the school's disaster preparedness (Kukali, 2009). Disasters are worldwide phenomena that range from being highly localized to global in scope.

Regardless of their origin and classification, all disasters have a public health importance due to their potential to cause loss of lives and livelihoods (Marion & Maingi, 2010)

In July 2006, thirteen children were killed and several injured when fire gutted an Islamic Secondary School in Western Uganda (New Vision, July 2009). The increasing frequency of fire disasters in educational institutions is causing loss of lives, enormous destruction of property, disrupting education programmes and causing a lot of concern to the public. These incidences of fires in educational institutions are an indication of poor disaster preparedness (Kirui, et al, 2007). According to Artim (1999), the most worrying aspect is that society has adopted a reactive rather than proactive perspective to the problem of fires in schools; many a times, preventive measures are not put in place, but rather its only after the disaster strikes that funds are mobilized for reconstruction of the destroyed facilities and little psychosocial support (if any) offered to the survivors. Despite the many cases of fire disasters in Ugandan schools, most do not seem to be well prepared in case of fire disasters. It is therefore imperative to carry out a study on the secondary schools' preparedness as far as fire disasters are concerned.

Study objectives

General objective

To assess the organization safety culture in terms of fire safety preparedness in Wakiso boarding secondary schools

Specific objectives

- i. To assess staff knowledge on fire safety preparedness in Wakiso Boarding Secondary Schools.
- ii. To assess the adequacy of fire fighting facilities within Wakiso Boarding Secondary Schools.
- iii. To determine the fire safety plans for these Boarding Schools as a measure of fire disaster preparedness in Wakiso district.
- iv. To determine factors influencing fire safety adherence in Wakiso Boarding Secondary Schools.

Methodology:

Introduction

This chapter sets out the methodology and design of the investigation and data collecting methods the researcher used. The researcher also included the criteria for the selection of participants and describes the procedures for conducting the research, sampling procedure and sample size, research instruments, validity and reliability of research instruments, data collection techniques and data analysis.

Study design

This study adopted the cross sectional design. A cross-sectional study examines the relationship between one variable and other variables of interest as they exist in a defined population at a single point in time or over a short period of time. This design was adequate in collecting data that

addressed the intended research questions for this study as it was able to measure all factors under investigation at once. However, this study design has weakness in establishing temporal relationship between exposure and outcome, the determinants identified may therefore not be causal De Vos et al (2007).

Sources of data

Both primary and secondary sources of data were visited by the researcher. The primary data was collected from the staff members using self-administered questionnaires. Observation technique was also applied by the researcher, observation checklists were used. Secondary data sources visited by the researcher included journals, text books, internet and news papers.

Study population

The population for this study was all staff attached to the sampled schools in Wakiso district.

Inclusion criteria

The study included teachers at either Gayaza or Budo secondary schools; Support staff at either Gayaza or Budo secondary schools; Teaching and non teaching staff that consented to take part in the study

Exclusion criteria The study excluded teachers from either Gayaza or Budo secondary schools; teachers who did not consent to take part in the study; students attending either Gayaza or Budo secondary schools

Sample size calculation

According to the statistical data obtained from the ministry of education and sports, both Gayaza High School and Budo Senior Secondary School combined have about 154 teaching staff.

Basing on Krejcie and Morgans table for determining sample Size for Research Activities using the formula below;

$$s = \frac{X^2 NP (1 - P)}{d^2 (N - 1) + X^2 P (1 - P)}$$

s = required sample size.

X² = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841).

N = the population size.

P = the population proportion (assumed to be 50 since this would provide the maximum sample size).

d = the degree of accuracy expressed as a proportion (.05).

The sampling frame of 121 according to the table (Appendix 5) can be represented by 108 respondents. Thus 108 were considered in the study.

Sampling procedures

District

Wakiso district was purposively sampled because it is one of the districts which has had a very high

incidence of school fire outbreaks both at primary and secondary level Schools Stratified sampling technique was used to select the schools to be included in the study. Stratified sampling technique is a technique that identifies sub groups in the population and their proportions and select from each sub group to form a sample. It aims at a proportionate representation with a view of accounting for the differences in sub-group characteristics (Oso & Onen, 2005).

Stratified random sampling technique ensured that each sub group in the target population was represented in a sample in a proportion equivalent to its size in the accessible population.

According to Orodho (2005) good representative sample should constitute at least 20% of the entire population where population is small. With this therefore one government funded school and one private school were sampled.

Purposeful sampling based on the potential of the participant to give needed information was used to select qualitative study sample. Qualitative interviews which involved 6 in-depth interviews with teachers and head teachers and other administrators in the school.

Study variables

Independent variables

Knowledge of fire disaster management; Adequacy of fire safety and fighting equipment; Fire safety plan; Factors leading to fire emergencies

Dependent variable

Fire safety preparedness

Data collection techniques

Individual interviews These were the major data collection techniques in this study. According to Bless and Higson-

Smith (2000:104), an interview involves direct personal contact with participants who are asked to respond to the questions relating to the research problem. The wealth and quality of data collection depends on the skills of the researcher and the confidence inspired in participants.

According to Leedy and Ormrod (1985:200), interviewing involves much more than asking questions. The questions are well planned and carefully worded to yield the kind of data the researcher needs to answer the research questions. Bogdan and Biklin (1982:135) state that interviewing both individuals and focus groups involves a purposeful dialogue between two or more people directed by the research in order to get information. Furthermore, Bogdan and Biklin (1982:135) state that in research, interviews may be used in two ways, as the main technique for data collection and in addition to observation of the participants.

In all these situations, interviewing is used to gather data in the form of the participants' own words, so that the researcher can gain insight in the way in which the participants interpret their current world.

For this study, interviews were carried out with teachers, support staff and the key informants

Observations

Observations were done to confirm presence of tangible firefighting equipment and other amenities Key informant interviews. These were done to collect qualitative data from the focal persons and opinion leaders in each respective school.

Data collection tools

Questionnaires

Data was collected by means of questionnaires administered to the staff of the sampled schools and an observation schedule. The questionnaire consisted of open ended and closed ended questions designed in line with research objectives and questions. Questionnaires were preferred for collecting data because their wordings and sequence are fixed and identical to all respondents. This had the advantage of obtaining standard responses to items in the questionnaire, making it possible to compare between sets of data. Questionnaires were more convenient to respondents who had no time for face to face interviews as they would fill them during their free time.

According to Orodho (2010), this method can reach a large number of subjects who are able to read and write independently. On the other hand, observation checklists were appropriate for this study because they effectively complemented the questionnaires and thus enhanced the quality of evidence available to the researcher. The data gathered can be highly reliable as the researcher can be able to see the elements being studied like the number of fire fighting equipments.

Observation checklists

Checklists were used to verify the facilities and equipments in place for fire protection at schools according to the national disaster management plan requirements for a school.

Data analysis plan

Quantitative Data: - All responses to the survey questionnaires were coded into Epi Info 2002

Version 6.04D software. The entered data was validated for consistency and inspected for outliers to identify any erroneous values. Data cleaning was done manually by removing missing/conflicting ideas and responses to questions about relevant information.

The final data file was compiled and imported into SPSS version 16.0-computer database for analysis. Recording and re-categorizing was made for relevant variables. Cross tabulations were made to calculate crude odds ratios, p-values and X² for descriptive (uni- and bi-variate) analysis.

Following this multi-variate analysis, using the logistic regression model was done by the specific objectives. Both adjusted and un-adjusted odds ratio were reported with their corresponding 95% confidence intervals. All the analyses were two tailed and significance level set at 5%.

Qualitative Data: The hand written notes were compiled together and later translated into English. Content analysis was used in this case.

To assess staff knowledge in relation to fire safety preparedness in Wakiso Boarding Secondary Schools

- About 32.3% (35) gave wrong responses while 67.7% (73) gave correct responses
- Only 68% of the staff was knowledgeable about fire safety, 32% of them were not knowledgeable about fire safety

To assess the adequacy of fire fighting facilities within Boarding Secondary School in Wakiso district

- Fire equipment that was reported to be adequate included fire extinguishers (97, 89.8%), fire exits (72, 66.7%), heat/smoke detectors (59, 54.6%), fire alarms (70, 64.8%) and reliable water supply (101, 93.5%).

To assess the fire safety plans for these Boarding Schools as a measure of fire disaster preparedness in Wakiso district About 79, 73.1% admitted their schools have an evacuation plan. More than half of the respondents 59, 54.6% admitted there were no specifically designed evacuation plans for vulnerable persons in case of a fire disaster. To identify factors leading to fire safety adherence at Boarding Secondary Schools in Wakiso district

Knowledge of staff about fire safety ($p=0.002$), having fire alarm systems ($p=0.000$), having teachers trained or equipped to fight a fire ($p=0.001$), and the number of dormitories ($p=0.018$) in school had a significant relationship with adherence to fire safety ($p<0.05$).

CONCLUSION AND RECOMMENDATIONS

Introduction

This chapter gives conclusive remarks basing on the findings of the study. The conclusions have been arranged according to the objectives of the study. The chapter also includes the recommendations on how to improve fire safety in the schools plus recommendations for future studies.

Conclusion:

It has come out that the schools in Wakiso district have not entirely put into practice fire safety standards as per guidelines by the ministry of education and other organizations like the World Health Organization. For a highly populated secondary school not to be capacitated enough to handle emergencies like fire and to even implement safety standards is a public health concern since a fire outbreak can occur at any time. Even if schools may encounter other problems like strikes and indiscipline cases, these rarely result into deaths and property loss like fire outbreaks. From the research findings, it is apparent that the schools seem not well prepared for fire outbreaks. Without fire safety and preparedness, schools will continue to lose lives of students, property and learning time.

Overall, the study concludes that;

The level of knowledge of the school staff is fairly high, that is most staff know about fire safety. The secondary schools in Wakiso district are inadequately equipped with firefighting equipment; the equipment available at the schools is very basic and cannot match the school populations. The schools have in place evacuation plans, but no evacuation plans for vulnerable people, no fire alert procedures and few assembly points.

Fire safety adherence at the secondary schools in Wakiso district is influenced by knowledge about fire safety, having fire alarm systems, and having more than 8 dormitories in a school

Recommendations:

As per the findings from the second objective, the school management should consider adding the firefighting equipment like fire exits, fire hydrants, smoke detectors, fire blankets, fire fighters outfits, fire protective clothing, self contained breathing apparatus, fire escape ladder and fire hose and nozzles so that they become adequate and comparative to the number of buildings and people in the schools.

Based on the findings from objective three of this study, it is recommended that head teachers, and teachers should be made aware of evacuation plans, and should be reminded of evacuation plan, assembly points should be identified and school inhabitants notified, schools ought to have fire alert procedures and schools ought to have many assembly points in case of a fire.

The Ministry of Education and other concerned agencies should develop an emergency preparedness manual for schools and other education institutions.

A fire safety programme should be mainstreamed in the education curricula to enable teachers to understand how to avoid and respond to fire incidents so that they can also pass this information on to students.

Fire outbreak management committees could be established in the schools involving teachers, students and parents from the surrounding communities. This will help identify the potential hazards in the area and inform the management.

The schools should develop an emergency plan, which among other things should include: Emergency assembly point; Evacuation/escape routes; Emergency alarm; Protection equipment; Emergency telephone numbers; Communication structure for emergency information; Disaster management committee; Schools should make sure there is clear escape route at all times in all buildings and accessible exits.