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RESEARCH ARTICLE

CONTRIBUTION OF TEACHER KNOWLEDGE TO MANAGEMENT OF STUDENT SAFETY IN EMERGENCY INCIDENTS IN PUBLIC SECONDARY SCHOOLS IN KENYA: A CASE STUDY OF KISUMU COUNTY

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ABSTRACT

Parents expect a safe learning environment for their children while in teachers' custody, yet threats to student safety are increasing globally, and Kenya is no exception. In Kisumu County, incidents of floods, criminal activity, community conflicts, fires and strikes continue to be recorded in schools. Due to legal responsibility and their position as first responders in school emergency, teachers have a crucial role in ensuring student safety, yet little has been done to explore teacher knowledge on management of student safety in emergency incidents in public secondary schools. The purpose of this study was to determine contribution of teacher knowledge on management of student safety in emergency incidents in public secondary schools in Kisumu County. The objective of the study was to examine the contribution of teacher knowledge to management of student safety in emergency incidents in public secondary schools in Kisumu County. The study established that; teacher knowledge and practices moderately contributed to student safety with overall mean ratings of 3.22 and 2.96 respectively. Findings of this study are important to educational administrators, policy makers and planners in understanding how teacher knowledge in emergency incidents contribute to student safety in emergency incidents in public secondary schools.

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INTRODUCTION

An emergency incident is an unplanned event that can cause death or significant injuries to people, or that can destroy property and cause physical or environmental damage, and often starts with the onset of the disaster or hazard (Jimerson, Brock, and Fletcher, 2005). The aim of emergency preparedness for response is to maintain life, improve health and support morale of affected population by evacuation, relocation, isolation and expansion (Nova Scotia Education Department, 2008). Emergency response activities involve, search-and-rescue efforts to find those who may be trapped; distribution and provision of basic commodities such as water to affected populations; provision of temporary power and shelters; and control of fires and spills or leaks of hazardous materials (National Research Council, 2007).

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While emergency response begins when a disaster strikes, it could overlap with the preceding preparedness phase where disaster onset is slow. This may include proactive steps such as warning and evacuation. Generally emergency response has been defined as lasting for 72 hours, but this is not definite, it could stretch for a longer period of time. Planning and preparedness, especially with effective leadership for an emergency are the most significant components of dealing with disasters (McBryde, Pennington and Montgomery, *2013;* Najafi, Ardalan, Akbarisari, Noorbala and Jabbari, 2015). The concept of emergency preparedness is described as the capacity of individuals and organizations prepared and ready to respond efficiently to emergencies (National Center for Education Statistics, 2009). With the rising challenges of safety, the government of Kenya noted the importance of developing a policy to address safety of students while in school. Republic of Kenya (2008) reiterates; "In recognition of the critical importance of school safety, in the provision of quality education, the Government, through the Ministry of Education, is committed to institutionalizing and mainstreaming school safety.

However, it is critical to appreciate that school safety is not provided by fences and walls but by the community as a whole." p. 5. Therefore, Government in collaboration with Church World Service developed Safety Standards Manual. The manual outlines action areas for schools to ensure safety as concern for disaster response preparedness gets into sharper focus in within the school environment. Some of the areas identified by the manual as natural disaster hence needing emergency response are; floods, landslides, thunderstorms and lightening, earthquake, strong winds, fire, and chemical emissions/ severe pollution. It further takes note that the community should use administrative structure and authority to resolve school-community conflicts because if a poor relationship with community, then the school safety is also at risk because possibility of criminal activity. However, immediate safety of learners rests with teachers to create a safe environment in school (Republic of Kenya, 2013). Therefore the guidelines underscore two specific areas with regard to Disaster Risk Response, including; empower members of the school community to handle disasters and thus minimize risks, and provide first line emergency services to learners and staff who become victims of injury or are taken ill. This means that effective implementation of such policies and guidelines, depend on the degree of preparedness of the school and its staff (Mburu, 2012; Migiro, 2012; Ng'ang'a, 2013). Other study findings, for example; Mangoa (2012) and Shibutse, Omuterema and China, (2014), confirm that while some schools are yet to implement the school safety manual at all, a number of schools have made some progress to implement the policy despite various challenges.

Globally, preparedness for emergency in schools is a greater concern now than ever before. In the past, schools were considered safe places however, recent experiences all over the world indicate that this is not always true (National Center for Disaster Preparedness, 2018). The emergence and increase of natural disasters, in-school violence, acts of terrorism, and the threat of pandemic flu show the need for schools to be prepared to respond for all-hazard crisis incidents (Council on School Health, 2008). Natural disasters and emergencies can occur at any time, and when they happen at school, everyone should be prepared to handle them safely and effectively, to regularize the learning and teaching environment. Khorram-Manesh, Yttermyr, Sörensson, and Carlström (2017) note that crises and disasters cannot be avoided, but their consequences can be mitigated by planning, exercises and preparedness. Although major events affect whole society, their impact on vulnerable groups is more evident. Children and youth belong to this category and need to be considered for special planning and education. While some incidents of natural disasters can be predicted, giving schools enough warning to evacuate or take other safety precaution while others occur suddenly or go through rapid changes that suddenly put a school in danger (Community for Accredited online Schools, 2008; World Health Organization, 2013). Such is the situation that makes preparedness in emergency a key issue to survival in schools. Administrators, teachers, staff, parents and students should work together to promote and maintain school-wide safety and minimize the effects of emergencies and other dangerous situations *(Zenere, 2007)*. Disasters create emergency situations with specific threats, especially to poor developing nations because of low capacity of preparedness to respond to, such situations (Seyle, Widyatmoko, and Silver, 2011), this in turn affects the safety of learners, especially during emergency. In the United States of America, Federal Emergency Management Agency failed to respond adequately to effects of hurricane Katrina creating devastating effects. This revealed that Federal Emergency Management Agency was not prepared to respond effectively to any disasters (Sharman, Rao, Jin, and Upadhyaya, 2008). For instance, Federal Emergency Management Agency was slow and inconsistent and created a delay in removal of debris all over Florida. Also, National Center for Educational Statistics of USA also records that from July 1, 2013 through June 30, 2014, there were a total of 48 students, staff, and other nonstudent school-associated violent deaths in the United States showing that there is need to improve emergency response in schools. In Asia, schools are faced by emergencies arising from disasters like; incidents of floods, hurricanes, cyclones, heavy rains, tsunami, earthquakes, disease outbreaks that have been recorded in countries like Myanmar, Pakistan, Haiti, Nepal, Japan, and China (Emergency Appeal Hurricane Sandy, 2012). When such disasters strike, they cause loss of children's lives and families' relocation, and huge damages hence need for emergency response to reduce their impact on communities, and educational process (America Red Cross, 2012). Additionally in Turkey, Ersoy and Korcak (2015) note that school students, are the most at risk to earthquakes, and other natural disaster-related issues are so serious because of the 23 million students in Turkey 4 million students in Istanbul, and go to schools in environments that frequently experience repeated disaster events.

Theron (2007) also notes that countries in Africa continue to be affected by floods in several countries including; Niger, Mozambique, Namibia and South Africa leading to loss of lives, destruction of property and schools as well as disruption of teaching and learning programmes. Okayo, Odera, and Omuterema (2015) further underscores the fact that most parts of the Sub-Saharan Africa are prone to flooding with East, South and Central regions having the most prevalent flood disaster, after West Africa. Burkina Faso, Chad, Ethiopia, Ghana, Senegal, Sudan, Togo, Kenya, Liberia, Mali, Niger, Rwanda, Malawi, Mozambique, Nigeria and Uganda are the worst hit by floods in SSA. Kenya has a flood hazard risk of 6.2*%.* (*Ngoran, Dogah, and Xue, 2015),* further confirming that emergency incidents arising from floods in schools in Kenya is a constant reality pausing danger to children in school, hence the need for effective preparedness in emergency response. According to Fire Administration National Fire Data Center (2014), Africa, Asia and South America have also recorded high death tolls related to school fires. Records of school violence have also been noted in South Africa, Botswana and Namibia among others. Furthermore, cases of vandalism, bullying, school accidents are on the increase, especially in boarding schools (Nakitto and Lett, 2010). Additionally, Nyangawa (2018), researched to explore the immediate causes of fire disasters in Boarding Secondary Schools in Tanzania using qualitative approach, and a descriptive case study design so as to enable the researcher collect in-depth information. The study sample was selected through convenience sampling, and data was collected through documentary review and face to face interviews. The study noted that in Tanzania, indiscipline and riots among students, the use of kerosene lamps and candles for studying during night and electric faults result into fire disasters in boarding secondary schools. Like in most parts of the world, Kenya experiences of natural and human hazards have increased in number, frequency and complexity including; fires, terrorism,

poisoning, pollution, collapsed buildings, road accidents, diseases, floods, droughts, landslides mudslides, lightning/thunderstorms, wild fires, and strong winds (UNISDR, 2008; Wachira and Smith, 2013). The result is more deaths of people and animals, loss of livelihoods, destruction of infrastructure among other effects resulting in losses of varying magnitude. All these incidents have an impact on schools make learning inaccessible for learners and teachers, schools are closed as infrastructure is destroyed, families are displaced and disease outbreaks emerge, and schools are also used as shelter for displaced families (Wachira and Smith, 2013). While schools with the high capacity to respond to disaster re-emerge faster, those that are not prepared, with low response capacity, sink deeper into impoverishment (Kamunde, 2010; Okuom, Simatwa, Olel, and Wichenje, 2012), hence the need for teachers' preparedness for efficient and timely emergency response. Each year, schools all over the world suffer from disasters, ranging from small to large damaging disasters that affect children's safety and health. Mersal and Aly (2016) recognize that teachers play significant roles in child protection, because as Mutugi and Maingi (2011) note, disasters have devastating results, and when it strikes, brings huge losses of human life and property. Therefore, teachers' preparedness is very important for effective school disaster response. *Zenere (2007),* notes that they should have adequate competency, and positive mindset to be able to handle or participate in emergency situations as well as expected (Rolfsness and Idsoe, 2011; Seyle, Widyatmoko, and Silver, 2011). National Center for Disaster Preparedness at Columbia University further notes that preparedness is not only about stockpiles of water and batteries and survival, but it is about what people know, what they think, what they believe and who they trust, hence need for holistic improvement of peoples' capacity to respond in emergencies. Therefore, knowledge creation, attitude and safety practices are critical to preparedness in emergency response.

United Nations International Children's Education Fund (2009) stresses the need for training by noting that countries should commit to teacher training and curriculum development to support large scale teaching of disaster risk reduction. Such training approaches include: Pre-service formal teacher training through institutes, training colleges and face-to-face lectures and activities. During in-service courses: where teachers are taught for a short period of time or on weekends, after school or in vacation time; and process repeated for a series of workshops or face -to- face training. As indicated by Khorram-Manesh (2017) and World Development Report (2014), crises and disasters are major events affect whole society, their impact on vulnerable groups, such as children and youth is more evident. There is a need for new educational initiative in the field of emergency and disaster management for children and youth. Such education aims to increase emergency preparedness in schools, enhance individual skills, increase the understanding about the involved authorities' actions and responsibilities, provide support and opportunities for teachers and young people to take responsibility in emergency situations, increase the opportunities for the recruitment to these professionals, increase equality and reduce exclusion in some areas and increase understanding of the psychological effects of an event and the need for follow-up.A study by Cole and Zhuang (2011) showed that a successful response and recovery is dependent on knowledgeable, properly trained and located personnel. They also noted knowledge on effective communication between response elements is a crucial component in a stable operation. Cole and Zhuang (2011) note that locally trained personnel are instrumental in a successful response and recovery effort. Their findings show that successful recovery is because the local responders are more familiar with the geography of the area and location of equipment, than external partners. The findings of Merchant, Leigh, and Lurie (2010) also confirm that training programs for emergency responders are critical in preparing them in terms of knowledge and skills required during an emergency response. They note that it is easier for trained responders to quickly identify and allocate appropriate resources in the overall response effort, than those without such training. Results from the study, which they carried out among health care professionals suggests that training enhances greater effectiveness of emergency response efforts, because the knowledge of responders is improved. Their findings also showed that training of health personnel is positively associated with development of a positive attitude and willingness to volunteer and deploy in the event of a disaster. These findings underscore the importance of knowledge aspect in preparedness as it closely linked to acquisition of skills and enhances positive attitude, improving safety during a response effort.

Research Objective: The research objective was to examine the contribution of teacher knowledge to management of student safety in emergency incidents in public secondary schools in Kisumu County.

Synthesis of literature on contribution of teacher knowledge to management of student safety in emergency incidents: Long-term and sustainable capacity-building for disaster- resilient education and safe schools relies upon embedding these skills in higher education programmes for teacher training (Ozmen, 2006). He further notes that by increasing responders' knowledge through training people, the rate of losses and damages caused by disasters may be lessened, and even in some cases may be totally prevented. He also asserts that basis of in disaster risk communication and reduction is key improving knowledge for all those training for different professions. UNISDR (2008) also recognizes that partnerships with training institutes is vital to the success of these efforts. Findings of a study carried out by Chen and Peria-Mora (2011) also suggested that first responders should have relevant knowledge and appropriate equipment to respond to a disaster, to reduce losses that occur during emergency.

Knowledge on evacuation in the provision of safety in emergency incidents: Evacuation is defined as the removal of lives and/or property from the disaster zone to the safety zone as quickly as possible. It is one of the most important, initial activities in the emergency response. In planning for it, effective transportation mode or exit needs to be identified which can evacuate within the shortest time possible (Khadka, 2015). Evacuation planning includes the estimation of the evacuation time, propagation time of the disaster, the potential risk, and location of the safety zone and the reorganization of the traffic routes from the disaster zone to the safety zone. Evacuation process depends on source of disaster such as; flood, explosion, fire or land slide, the disaster zone, for example building, or vehicle, distribution; that is age, gender, disability, and behavior of evacuees, safety zone and emergency facilities. Chunmiao, LiChang, LiGang, ZhangPeihong (2013), carried out a study to determine safety

evacuation under the condition of combustion of dust layer in a certain laboratory building by using Building Exodus tool. The study focused on the effect of number of exits and people within the building on the time of evacuation. Their findings of the study showed that; time of evacuation decreased with the increase of number of exits, while the maximum flow rate increased, and the duration of this flow rate decreased with it. Secondly, they noted that the number of people within the building contributes to evacuation time. Thirdly, that in design of a building, it is important to have the design shared with all considered in the evacuation process. The study shows that evacuation in emergency is determined by number of exits, the number of people within a building and the building design. It is therefore possible to conclude that knowledge on evacuation may contribute only as much to safety of casualties and victims unless they know number of exits, people within a building that they need to save, and building design for the safest access, hence reducing evacuation time. However, the present study goes a step further to establish the contribution of the responder's knowledge on evacuation exits which influences the response of evacuees that need to be assisted out of a hazard area.

Other than that, Tuladhar, Yatabe, Dahal, and Bhandary (2018) carried out a research with an aim of exploring existing knowledge of school teachers in Nepal about disaster risk reduction. A total of 109 school principals, vice/ assistant principals were interviewed from 19 districts of Nepal. They responded to various questions with regard to disaster information, disaster knowledge, readiness, awareness, adaptation. Their responses help to construct perception on DRR issues to help to accumulate realistic scenarios of DRR among education leaders of Nepal. Statistical analysis, such as histogram analysis, distribution analysis, bivariate correlations and independent sample t-tests were conducted to examine the relationship between teachers and their knowledge on key DRR issues related dependent variables. Findings of the study confirmed that initiatives taken for DRR in education sectors of Nepal is not enough and still teachers are not fully aware of DRR issues. The research also found that teachers are not well informed of elements in disaster risk and related knowledge of DRR. They concluded that improved awareness on disaster risk was one way one way of improving safety in school in Nepal. The study by Tuladhar, Yatabe, Dahal, and Bhandary, had a lot in common with the present study in terms of data collection methods, and application of inferential statistics such as t-test and correlation, however there is variation in the population. It was carried out among principals and their deputy but excluded teachers, a gap that was addressed in the present study.

Knowledge on response procedures in the provision of safety in emergency incidents: Emergency response activities involve, search-and-rescue efforts to find those who may be trapped; distribution provision of basic commodities such as water to affected populations; provision of temporary power and shelters; and fires and spills or leaks of hazardous materials are controlled (National Research Council, 2007). While response activities and safety outcomes are closely related, there is general concern that the quality of the responses, which requires a mix of skills and knowledge, to these disasters is decreasing causing increase in damages and loss of lives (Whybark, 2015). According to the findings of a study carried out by Baser, Coban, Tasci, and Sungur (2007) knowledge of first aid procedure, which constitutes life-saving response and should be compulsory in all schools. In a study to determine the knowledge and attitudes of a sample of Turkish teachers regarding the administration of first aid, Baser *et al*. concluded that most of the teachers do not have correct knowledge and attitudes about first aid, thereby contributing to poor support of health needs of their learners during emergency. They also noted that as the age of the teachers increase, appropriate first-aid practice becomes more and more unlikely. Alharbi *et al*. (2016) on their part carried out a study to explore the extent of knowledge of the procedure called Cardio-Pulmonary Resuscitation skills among school teachers in Riyadh, in Saudi Arabia. This is a life-saving procedure that is useful in combating different types of emergencies like suffocation, near-drowning, electrocution injuries, heart attacks, or any other situation in which a person's breathing or heart beat have stopped. This cross-sectional study was conducted using a questionnaire administered to teachers of general educational schools in Riyadh. Results of the study showed that 57% of school teachers did not know about Cardio-Pulmonary Resuscitation, and 53% agreed that Cardio-Pulmonary Resuscitation training courses should be included in their training or courses. The study also indicated that only 63% of teachers were able to contact, and communicate for help from emergency services. One important conclusion in the study was that a majority of school teachers did not have adequate knowledge about Cardio-Pulmonary Resuscitation. However, the study recognizes that the procedure is life saving and therefore can improve safety outcomes in various emergencies.

Other than that, Devi and Sharma (2015) carried out a study whose purpose was to assess the knowledge and attitude of school teachers with regard to procedures emergency management of traumatic dental injuries and to evaluate the association between school environmental factors with teacher's knowledge and attitude towards management of dental trauma. Data was collected using a questionnaire. This study revealed a big knowledge gap in procedures and awareness among school teachers regarding emergency management of dental injuries, leading to poor response. They suggested that educational programs should be developed for the school teachers to improve their knowledge so that proper dental first-aid procedures can be achieved. Baser *et al*. (2007), Alharbi *et al*. (2016) and Devi and Sharma, confirmed that emergency procedures are life-saving during emergencies, focusing on Cardio-Pulmonary Resuscitation and First Aid in dental emergencies. In all the three studies, only questionnaires were used. The present study focused on multiple areas in the provision of safety, and employed the use of questionnaires and interview schedules. On the other hand, the work by Mersal and Aly (2016) aimed at evaluating the effectiveness of educational guidelines on school teachers' knowledge and skills regarding disasters and first aid management of school children by employing Quasi-experimental design, however, the findings were similar to those of Alharbi *et al*. (2016). They purposively selected a sample of 59 school teachers from 2 schools in Cairo Egypt, for administration of questionnaires, whose items were on teachers' first aid and disaster management knowledge. The study noted that a disaster management and first-aid training program for school teachers improved their knowledge and practice, improving the safety of their learners and themselves. The study concluded that implementation of disaster management and first-aid training program is highly recommended for all school teachers to enhance their knowledge and practice regarding disaster and

first aid management. Ganpatrao (2014) also carried out an investigative study carried out a non-experimental, exploratory study to assess knowledge and self-expressed practices regarding disaster management among secondary school teachers at selected schools of Pune city. Five hundred and forty secondary school teachers were selected by purposive sampling technique. Survey was conducted using a structured interview questionnaire. Findings revealed that there was moderate positive correlation between knowledge score and practice score (r = .54) among teachers. Conclusion of the study was that teachers' knowledge and self-expressed practices were not at satisfactory level due to poor capacity building among teachers. Of the 540 responses from teachers, 399 (74%) of them had not been exposed to any type of first aid or disaster management programmer while nearly 141 (26%) had participated in some of the first aid training programmes which was organized by school authority, and had poor knowledge regarding disaster management. It clearly indicates that there gross deficiency in knowledge of disaster management among school teachers, led to poor outcomes in safety during emergency. Furthermore, knowledge score showed that young teachers are more knowledgeable, and that that females are comparatively more knowledgeable than males. The mean scores of females were 16.42 and mean score of male was 14.82. Both studies by Mersal and Aly (2016) and Ganpatrao (2014) employed purposive sampling to get their respondents like was done in the present study, however, there is a departure in the study design in each of the cases, where the former used quasi-experimental design and the latter, exploratory design. It also notable that the study sample used by Mersal and Aly (2016) was only 2 schools, which was small for quantitative analysis. The present study sought to have the study involved a larger sample of 41 schools.

Knowledge on communication in the provision of safety in emergency incidents: Communication is a complex system which is crucial to management of critical situations, risk, and development of abilities to detect threats (Vieira, dos Santos, and de Morais, 2014). Federal Emergency Management Agency (n.d), notes that an incident, communication with the community becomes especially important in an emergency. Children have been identified as particularly vulnerable to psychological and behavioral difficulties in disaster, and communication is one public health tool that can be utilized to promote coping and child reactions following an event (Houston, First, Spialek, Sorenson, and Koch, 2016). They identified three areas in which disaster communication played a crucial role: fostering preparedness, providing psycho-education, and conducting outreach. Their findings also indicated that schools are a promising system for child and family disaster communication. Emergency communications may take different forms such as; alerts and warnings; direction on evacuation, lockdowns, and self-preserving actions; and also give details about response status, family members, guidelines on available assistance, and all other issues that can influence response and recovery (Bradley, McFarland and Clarke, 2014). Well-constructed and effectively delivered emergency messages can help improve public safety, protect property, facilitate response efforts, elicit cooperation, instill public confidence, and help families re-unite. This is because the extent to which people respond to a warning message is influenced by many factors, they noted that other than personal factors, the role of communication in emergency will depend on three main elements of communication, namely; credibility of source, its delivery, and the content. Findings of Sugerman *et al*. (2012) also agree with Federal Emergency Management Agency (n.d) by observing that purposes of disaster communication include preventing panic, promoting appropriate health behaviors, coordinating response among stakeholders, advocating for affected populations, and mobilizing resources. This opinion is further supported by Diedrichs, Phelps, and Isihara (2016). They assert that efficient communication, information sharing, and informed decision making play a crucial yet often underestimated role in reducing wasted material resources and loss of human life in disaster response. They carried out a study to provide a method of quantifying these effects, using a model called mathematical discrete dynamical system. The physical network is overlaid with the communication network to model information delays and communication breakdowns between agents. This study like the present one set to quantify the effects of communication during an emergency. However, the use of mathematical model did not allow Diedrichs *et al*. to get in-depth data that the present study was able to explore by use of interviews. Furthermore, the focus of the study was on communication between professional responder agents, unlike in the present study which focuses on teachers.

Bradley *et al*. (2014) carried out a systematic review to identify, appraise and synthesize the findings of studies of the effects of risk communication interventions during four stages of the disaster cycle. The findings show that risk communication in disasters plays a big role to prevent and reduce the effects of harm from disasters, prepare the population before a disaster, disseminate information during disasters and aid subsequent recovery. The findings of the review shows that those who had trained and participated in communication in risk preparedness programme were much more likely to take the recommended preparedness steps during response than people who had not. They concluded that possible outcomes in a disaster is an indicator of effectiveness of risk communication interventions, and is also a valuable way of avoiding and reducing harm caused by disasters because provides the information about an event, and how response actions may affect the outcome of the event. Similarly, study findings by Taylor-Clark, Viswanath, and Blendon (2010) agree that gaps in a disaster communication plan such as technical or complex instructions can leave groups vulnerable to misunderstanding the message, leading to losses in an emergency. At the same time, methods of dissemination and demographics can result in the message never reaching certain target populations, leading devastating outcomes in an emergency. This finding is also supported by Dilmaghani and Rao (2009) whose presentation underscored the importance of systematic communication in risk. However, both studies did not employ quantitative analysis to establish the contribution of knowledge in communication in an emergency incidents in schools. Additionally, a study by Medford-Davis and Kapur (2014) showed that many communication actions can, and should be undertaken before a disaster strikes to improve preparedness. Some of these actions represent common sense, while others may be more novel. Investing time and manpower now to improve an organization's communications capacity can save time in disseminating key messages to minimize chaos and coordinate stakeholders once disaster strikes. This study confirmed that the number of casualties, or damage is reduced or avoided altogether. However this study did not highlight key areas that communications could be focused on like was done in the present study.

Azmani, Juliana, Idrose, Amin, and Saudi (2017) while examining challenges of communication system during emergency disaster response in Malaysia noted that in such kinds of situations, systematic communication system is essentially needed to ensure appropriate actions and proper managements can be carried out efficiently among the search and rescue teams. Further to that, they recognized that during disaster, arrangement of emergency communications should focus on accurate information transfer between disaster sites to the responding base or hospitals. They also indicated that efficient emergency communication system during disaster will speed up relief and recovery operations, thus lessen the loss of life and properties, thus enhancing safety. They conclude that while disasters such as flood are inevitable, the sufferings, loss of lives and destruction of property can be minimized with use of timely, precise and comprehensible warnings. While the study by Azmani *et al*. (2017) focused on communication systems, data was not collected among a population similar to those in the present study. A study by Cole and Zhuang (2011) also showed that a successful response and recovery is dependent upon knowledge on effective communication between response elements to be a crucial component in a stable emergency operation in safety. Similarly, a study by Midtbust, Dyregrov, and Djup (2018) further observed that disaster communication interventions are argued to be effective, yet often overlooked, tools in achieving mental and behavioural outcomes.

Houston (2012) as cited by Midtbust, Dyregrov, and Djup (2018) noted that a variety of strategies can be used to achieve these outcomes, and which strategy to choose depends on which phase of a disaster one finds oneself in. The survey findings by Midtbust *et al*. (2018) indicated that, in risk communication, a one-way communication from an authority towards a particular group may not be the most beneficial. They postulated that campaigns stimulating interpersonal and two-way communication about the campaign topic are more effective when it comes to learning, and results in more individual attitude and behaviour changes compared to a one-way campaign message alone. The present study, while agreeing with both Houston (2012) and Midtbust *et al*. (2018), with regard to their recommendation that two–way communication is more effective than one-way one in an organizational setting, set to establish the contribution of the aspect of risk communication between teachers and students in an emergency. In another study, Vieira, dos Santos and de Morais (2014) analyzed different types of communication in the aviation operational environment by employing qualitative approach. They gathered data from national reports; and analyzed it through documentary analysis. According to the results, the lack of communication skills among individuals involved in air operations contribute for the bulk of accidents and incidents in aviation. Conclusions show that aviation activities require people high skilled in communication as such as technical proficiency. Conclusions also stress the emergency of implementing Communication Skills Training to aviation professionals, in order to develop abilities to detect threats and communicate clearly the need for support to manage risks. They concluded that effective and efficient communication is one the most important pillars to maintain safety in an airline operation, and that aviation professionals have a great responsibility and they ought to be concerned in providing a fully understandable communication process, otherwise the consequences can be catastrophic. This study confirms that the communication process is important, and further stresses on its timeliness and accuracy to avert a disaster. The study focus was on aviation workers, however the present study was done among teachers to find out the contribution of communication during emergency. Additionally, relying on document analysis as the only source of data may have led to hidden information which may have not been covered in the reports used in the process of content analysis. From the analysis it was evident that reliable and continuous communication between the people, rescue workers, and everyone at the site was extremely important during the time of the disaster and also afterwards in disaster recovery and reconstruction processes. So it is necessary to provide a technique for reliable and continuous communication between the rescue officers and various people involved during the disaster recovery process to ensure minimum damage to life and property. A study by Kuppuswamy (2014) also reported that timely warning and communication of mitigation measures are considered to play a vital role in disaster risk reduction coastal disasters such as cyclone and tsunami. The aim of Kuppuswamy's study was to find the effectiveness of electronic media in communicating disaster warning and preparedness information and to study the community response to such media using survey method. The findings of the study confirms that both broadcast and narrowcast media were used for disaster communications. One of the findings show that media access and media effectiveness has a positive effect on community response during coastal disasters. The study concluded that communication support of response partners play a role in controlling behaviuor of victims in a disaster. The present study sought to quantify the extent of communication in the provision of safety, an aspect that was not covered in the former study. Further to that, the study was carried out in a community rather than a school environment.

Le Roux (2013) in an exploratory research approach explored and explain the uncommon and fairly recent aspect of in-crisis communication. The exploratory method of reflective or interpretive action research of a hazardous material emergency desk-top simulation exercise was used communication can make a great contribution during the in-crisis stage by assisting the decision-makers during the response stage, empowering them to get the best possible result for the crisis. The findings of the study showed that appropriate in-crisis communication could help to reduce the crisis and support the process of crisis recovery. The study's conclusion was that the contribution of corporate communication to the in-crisis situation will greatly add to the successful clearing up of an emergency situation. While the study was focusing on in-crisis communication as used for decision making by organizational leaders, the present study will focus on teachers. Furthermore, the methodology of the study involved simulation in an office environment only unlike the present study. Cowan and Rossen (2013) on their part, carried out a study whose purpose was to examine frontline educators and their perspectives and perceptions regarding their preparedness to handle a school violent confrontation and the impact of law enforcement. Purposive sampling was used to select educator-participants, teachers and school counselors whose age ranged from 40-64. Although, most of the educator-participants believed they were essentially prepared, they expressed the need for more guidance from law enforcement while still believing that law enforcement was important and successfully contributed in helping school staff to prepare for incidence of violence on school grounds. This shows that when certain emergencies occur, other than communication to medical support teams,

timely communication could also help in saving lives of victims if the law enforcers are available to maintain order. Moreover, Menon, Pathrose and Priya (2016) carried out a survey study in India and Thailand, to determine the importance of communication in disaster among rescue workers, and collected their data through questionnaires. Out of the responses received, 82.33% people from Thailand and (86.36%), and indicated that reliable and continuous communication was "very important" during the disaster and in disaster management services while none of the rescue workers selected the "of little importance" and "unimportant" options. From the study it was very evident that reliable and continuous communication between the people, rescue workers, and everyone at the site was extremely important during the time of the disaster and also afterwards in disaster recovery and reconstruction processes. So it is necessary to provide reliable and continuous communication between the rescue officers and various people involved during the disaster recovery process to ensure minimum damage to life and property. It is notable that the studies reviewed were carried out in a setting outside the school, among workers of different background and cadre, as was done in the present study. It was therefore important to find out if similar findings could be noted in a school environment. In Kanner's (2015), there was age limit of the respondents that ranged between 40-64 years, while the present study considered up to 20 years as the lowest age. This gives a broader view of responses that pointed the element of age as being important precursor to communication preparedness. On the other hand, the study by Azmani *et al*. (2016) was carried out among other professional participants other than teachers.

Conceptual Framework

This study was guided by a conceptual framework (Figure 1) which helps to give a clearer understanding of relationships of the variables indicated. Leeds and Ormrod (2005) note that in the absence of a theory that can precisely explain the basis of a given study, then available literature can be used to formulate a conceptual framework. This presupposition is based on Grounded Theory developed in the early 1960s by Barney Glaser and Anselm Strauss, whose aim is to understand reality from the conception or meaning people hold about a certain context or object, so as to generate knowledge, improve understanding and provide a meaningful guide for action (Creswell, 2014). It allows investigation extraction meaningful aspects from social actors' experiences, which permits researchers to link theoretical constructs and intensify the expansion of knowledge. Grounded Theory helps in the development of a conceptual model that explains the phenomenon under study and which will enable the researcher to develop and relate concepts with one another (Dantas, Leite, Lima and Stipp, 2009).

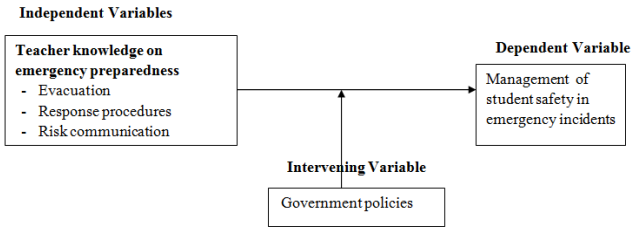

Figure 1. Conceptual Framework showing contribution of teacher knowledge to management of Student Safety in emergency incidents

This approach was considered relevant to the study because it allows a researcher to develop concepts about the world of peoples' lives by it permitting one to reach a conclusion that can be generalized. Furthermore, allows a researcher to construct theoretical concept based on collected data on a given reality, and employs a sampling technique, which allows the researcher to search for data in places or through the testimony of people who have knowledge about the object of study. Two types of variables were used in the conceptual framework; independent variables and dependent variable. Independent variables are; teacher knowledge. Studies by Devi and Sharma (2015), Alharbi *et al*. (2016), and Menon, Pathrose and Priya (2016), showed that unless a responder had the requisite and relevant knowledge, correct attitude, and experience of certain safety practices, to be able to provide safety during an emergency. In demographic factors aspects such as age, sex and family status, level of income, previous exposure, years of job experience, race, level of education or educational attainment were important as background factors in emergency preparedness and response (Ganpatrao, 2014; Reese *et al*., 2012; Negradas-Varona, Man, Bolla, Bolinget and Illab, 2017). The studies showed that the demographic factors will influence the extent to which one can comprehend, appreciate, internalize information and skills related to; and react in a situation where there is a threat to safety. On the basis of relevance to this study; age, sex, level of education, years of experience and marital status will be interrogated to understand how they relate to preparedness in provision of safety.

The independent variable is emergency response to student safety as indicated in Figure 1. It is influenced by level of teachers' preparedness. In a case where teachers are not well prepared, then students' safety is at risk. Aspects of knowledge considered in this study are; evacuation, response procedures and risk communication in emergency. Aspects of teacher attitude are; management of risk, evacuation, communication, and rescue activities. On the other hand, emergency practices considered include; development and updating of plans, training and drills, resource allocation, and evaluation. Intervening variable is government intervention. In this study, the school safety manual is the key government policy document because it spells out guidelines in disaster response preparedness. It identifies the areas of concern in preparedness, the expected levels of competency and skills preparation, as well as planning and evaluation in order to attain student safety. While the government is responsible giving guidance, challenges arise especially because allocation and late remittance funds which compromises timely training of teachers, exercises and drills, as well as acquisition of safety equipment. It is against the background of school safety manual that the contribution of teacher preparedness of knowledge, attitude and practices is interrogated in the study.

MATERIALS AND METHODS

The study adopted descriptive and correlational research designs. The study population was 42 principals, 324 teachers, and 6 Sub County Quality Assurance and Standards Officers. Saturated sampling was used to select 37 principals, 299 teachers and 4 Sub County Quality Assurance and Standards Officers after the pilot sample was set aside. Questionnaire and interview schedule for Sub County Quality Assurance and Standards Officers were used to collect data. Piloting was used to establish reliability of instruments; 5 principals, 25 teachers

and 2 Sub County Quality Assurance and Standards Officers were included in piloting. Test-retest was used to determine reliability of the questionnaires, and Pearson's r was used at p-value of 0.05. Reliability co-efficient of 0.86 and 0.81 were attained for teachers' and principals' questionnaires respectively. Validity was determined by experts in Educational Administration and Policy studies. Quantitative data was analyzed using means and t-test while qualitative data was coded, transcribed and organized thematically.

RESULTS

Research Question: The research question responded to was: What is the extent to which teacher knowledge contributes to management of student safety in emergency incidents in public secondary schools? The responses to sub-themes to this research question by teachers in public secondary schools is presented in Tables 1-4 which give the mean ratings and t-test results. From Table 1 it can be noted that teacher knowledge on identification of safe evacuation points moderately contributed to provision of students' safety in emergency incidents as signified by teachers and principals mean rating of 3.23 and 3.25 respectively, with an overall mean rating of 3.24. Hence, there was no significant difference [t (300) = -0.210, p>.05] between the mean rating of teachers' knowledge on evacuation in the provision of students safety in an emergency incident and that of principals. With regard to teacher knowledge on evacuation of victims via alternative and safe evacuation exits, Table 1 also indicates that teachers rated its contribution at 3.16 and principals at 3.13, with an overall mean rating of 3.15. This shows that there was no significant difference [t (300) = -0.156, p>.05].

Table 1 further establishes that contribution of teacher knowledge on guidance of student to assembly points was rated at 3.42 and 3.47 by teachers and principals respectively, with an overall mean rating of 3.45. There was no significant difference of ratings [t (300) = - 0.404, p>0.05] between the teachers' and principals' mean ratings. In overall, teacher knowledge on evacuation in the provision of students' safety was rated by teachers and principals at 3.26 and 3.28 respectively, and the overall mean rating was 3.27. The mean rating of teachers and principals was not significantly different [t (300) =-0.273, p≥ 0.05]. Hence, signifying that teacher knowledge on evacuation moderately contributed to management of student safety in emergency incidents. Table 2 shows that overall mean rating of teachers and principals on contribution of teacher knowledge on assessment of hazard or emergency situation is moderate (3.26) in the provision of student safety in emergency incidents. The teachers' and principals' had mean ratings of 3.26 and 3.25 with no statistically significant difference [t (300) =0.081, p>.05]. This means that both teachers and principals were in agreement on the level of contribution of teacher knowledge on assessment of hazard or emergency situation. Further to that, Table 2 also shows that teacher knowledge on identification and rescue of those in immediate danger moderately (3.36) contributes in the provision of student safety in emergency incidents. The mean ratings for teachers (3.33) and principals (3.38) had no significant difference [t (300) =-0.252, p>.05]. Similarly, Table 2 indicates that teacher knowledge on administration of First Aid to casualties moderately contributes in the provision of students' safety in emergency incidents with an overall mean rating of 3.44. The mean ratings for teachers and principals were 3.35 and 3.53 with no statistically significant difference [t (300) =-0.944, p>.05]. Moreover, Table 7 also shows that teacher knowledge on accessibility to protective equipment and other resources moderately (2.96) contributed in the provision of student safety in emergency incidents. The teachers mean rating at 2.94 and principals at 2.97 mean rating, showing there was no significant difference (t (300) = -0.146, p>.05] in their mean ratings. This means that the contribution of knowledge on accessibility to protective equipment and other resources for both teachers and principals were the same. It was also noted that teacher knowledge on availability of protective equipment and other resources moderately (2.94) contributes to provision of student safety in emergency incidents. The mean ratings for the teachers (3.10) and principals (2.78) had no significant difference [t (300) =1.581, p>.05]. Overally, Table 2 shows that mean ratings for teachers and principals on teacher knowledge on response procedures is 3.20 and 3.18 respectively, with an overall mean rating of 3.19. This means that response procedures moderately contributes in the provision of students safety in emergency incidents because there was no significant difference between teachers and principals ratings [t (300) =0.241, p>.05].

Table 3 indicates that the mean ratings on the management of irrational behavior for teachers was (3.41) and (3.25) for principals, with an overall mean rating of 3.33. This showed that there was no statistically significant difference (t (300) =0.938, p>0.05) between their ratings. With regard to reporting incidences to the emergency service providers and institutional administrators, Table 3 shows that mean ratings for teachers and principals at 3.35 and 3.22 respectively, with an overall rating of 3.29; showed no significant difference [t (300) =0.686, p>.05] between teachers and principals' ratings. Table 8 shows mean ratings of teachers 3.00 and 3.09 for principals on rolling out emergency actions, with overall mean rating of (3.05). This indicated that there was no statistically significant difference [t (300) =-0.475, p>.05] between teachers and principals ratings, thus both teachers and principals agreed that teacher knowledge on rolling out emergency actions moderately contributed in the provision of student safety in emergency incidents. Fourthly, on triggering alarm signals, teachers and principals mean ratings were 3.10 and 3.09, with an overall mean rating of 3.10 respectively. These mean ratings on triggering alarm signals showed no significant difference [t (300) =0.030, p>.05]; indicating that teacher knowledge on triggering alarm signal moderately contributed in the provision of student safety in emergency incidents. All in all, Table 3 indicates that the mean ratings for teachers (3.21) and principals (3.16), with an overall mean rating of 3.19, on incidental communication were not significantly differently [t (300) =0.515, p>.05]. Finally, all in all data was rigorously analyzed to establish the contribution of teacher knowledge in its totality to management of student safety in emergency incidents and the results were as shown in Table 4. From Table 4 it can be noted that teacher and principal ratings were 3.22 and 3.20 respectively. The t –test output indicated that these means were not significantly different [t (300) =0.375, p> 0.05]. This means that teacher knowledge contributed moderately to management of student safety in emergent incidents.

DISCUSSION

The study had both gender represented and would also help in understanding teacher preparedness since gender defines roles, behaviors, activities and attributes that a society considers

Table 1. Contribution of Teacher knowledge on evacuation in the provision of student safety in emergency incidents (Teachers, n=270 and Principals, n=32)

Aspects of teacher knowledge on evacuation	Respondent	Mean Rating	Overall Mean Rating	t- test
Identification of safe evacuation points	Teachers	3.23	3.24	t(300)=-0.210, p=.835
	Principals	3.25		
Evacuation of victims via alternate exits or safe routes	Teachers	3.16	3.15	t(300)=0.156, p=.876
	Principals	3.13		
Guidance of student victims to the assembly point	Teachers	3.42	3.45	t(300)=-0.404, p=.687
	Principals	3.47		
Overall Mean on contribution of Teacher knowledge on evacuation	Teachers	3.26	3.27	t(300)=-0.273, =0.785
	Principals	3.28		

Interpretation of Mean Rating:
1.00-1.44=Very Low
1.45-2.44= Low
2.45-3.44=Moderate
3.45-4.44=High
4.45-5.00=Very High

Table 2. Contribution of teacher knowledge on response procedures in the provision of student safety in emergency incidents (Teachers, n=270 and Principals, n=32)

Aspects of teacher knowledge on response procedures	Respondent	Mean Rating	Overall Mean Rating	t- test
Assessment of hazard or emergency situation	Teachers	3.26	3.26	t(300)=0.081, p=.936
	Principals	3.25		
Identification and rescue of those in immediate danger	Teachers	3.33	3.36	t(300)=-0.252, p=.801
	Principals	3.38		
Administration of First Aid to casualties	Teachers	3.35	3.44	t(300)=-0.944, p=.346
	Principals	3.53		
Accessibility to protective equipment and other resources	Teachers	2.94	2.96	t(300)=-0.146, p=.884
	Principals	2.97		
Availability of protective equipment and other resources	Teachers	3.10	2.94	t(300)=1.581, p=.115
	Principals	2.78		
Overall Mean on contribution of Teacher knowledge on response procedures	Teachers	3.20	3.19	t(300)=0.241, p=0.810
	Principals	3.18		

Interpretation of Mean Rating:
1.00-1.44=Very Low
1.45-2.44= Low
2.45-3.44=Moderate
3.45-4.44=High
4.45-5.00=Very High

Table 3. Contribution of teacher knowledge on communication in the provision of student safety in emergency (Teachers, n=270 and Principals, n=32)

Aspects of teacher knowledge on communication	Respondent	Mean Rating	Overall Mean Rating	t- test
Management of irrational behavior	Teachers	3.41	3.33	t(300)=0.938, p=.349
	Principals	3.25		
Reporting incidences to the emergency service providers and institutional administrators	Teachers	3.35	3.29	t(300)=0.686, p=.493
	Principals	3.22		
Rolling out emergency actions	Teachers	3.00	3.05	t(300)=-0.475, p=.635
	Principals	3.09		
Triggering alarm signals	Teachers	3.10	3.10	t(300)=0.030, p=.976
	Principals	3.09		
Overall mean on contribution of Communication	Teachers	3.21	3.19	t(300)=0.515, p=.607
	Principals	3.16		

Interpretation of Mean Rating:
1.00-1.44=Very Low
1.45-2.44= Low
2.45-3.44=Moderate
3.45-4.44=High
4.45-5.00=Very High

Table 4. Contribution of Teacher knowledge to management of student safety in emergency incidents (Teachers, n=270 and Principals, n=32)

Aspects of teacher knowledge	Respondent	Mean Rating	Overall mean Rating	t- test
Overall mean on contribution of Teacher knowledge to management of student safety in emergency incidents	Teachers	3.22	3.21	t (300)=0.375, p=.708
	Principals	3.20		

Interpretation of Mean Rating:
1.00-1.44=Very Low
1.45-2.44= Low
2.45-3.44=Moderate
3.45-4.44=High
4.45-5.00=Very High

appropriate in an emergency situation. In other comparisons have shown that there are statistically significant only for the associations between gender and the score for response practices (Mahdaviazad, and Abdolahifar, 2014), making gender representation a vital one in this study Age was considered because it relates to how people respond to risk-related messages, and as a result determines responsiveness and emotional resilience. For instance, older people are considered more emotionally resilient than the younger people, due to their experience and understanding. On the other hand, younger people are more agile, more physically advantaged to respond faster in an emergency. Strang (2014) confirmed that age contributes to safety in emergency because it influenced decision making on response, and evacuation initiation time. It was thought that educational level could promote preparedness because education enhances individual cognitive skills, psychomotor and access to information. This is especially so when understanding of such competencies are required such as emergency training, development and updating of emergency plans, and evaluation to improve response. Studies have shown that there is a possible correlation between educational attainment and disaster response and preparedness (Negradas-Varona *et al*., 2017)**.**

Years of experience imply risk perception and challenges that may have been encountered during the period of service. It may also influence teacher to get more information and knowledge about emergency incidents and as a result; improve on weak areas and implement lessons learnt for better preparedness in the provision of student safety (Taghizadeh *et al*., 2012). Teachers and the principals were in agreement that the influence was moderate. Identification of safe evacuation points is important because it helps evacuees to identify where it is safe to go to. It is notable that safe point in a fire may not necessarily be a safe point during an attack by robbers; for example, in a fire, crawling or staying low to the ground is safe and yet hiding in a closet is not, while in an attack, hiding in a closet is safer than staying on open floor. Furthermore, identification of evacuation points ensures there is no further harm from secondary sources, for example, using a lift in a fire can lead to those running away from fire getting stuck in a lift, even when they could have safely run down by use of a staircase, hence, identification of safe points is critical in evacuation. Teachers and principals were in agreement that teacher knowledge on identification of safe evacuation of victims via alternate exits or safe routes moderately contributed to provision of students' safety in emergency incidents. Therefore, teacher knowledge on evacuation of victims via alternate exits or safe routes moderately contributes in the provision of student safety in emergency incidents. In any evacuation, safe exit routes are important for various reasons; first, it reduces overloading of one route, hence reducing stampede. Secondly, it ensures that initiation time, which is period from identification of danger to convergence at a safe assembly point, is reduced; finally, it reduces the number of causalities arising from secondary outcomes such as stampede or delayed response to evacuate from points of danger. Teacher knowledge on guidance of students to the assembly point moderately contributed in the provision of student safety in emergency incidents. The success of an evacuation can only be rated once evacuees reach an assembly point, and are accounted for. It is therefore not surprising that the respondents considered it to be an element of knowledge that has the highest contribution in provision of safety. An assembly point is crucial to help rescuers and victims in many ways. It is at this point where a roll call is taken to inform the rescuers whether there are victims that are unaccounted for, or if there is need to continue the search and rescue mission. It is also at the assembly point where survivors are classified according to need for psychosocial care, and the injured get medical attention or First Aid, and taken to hospital depending on their level of need for care. The assembly point is also the point at which further instructions on emergency response are given to the victims; for example, who, and how to communicate with relatives such as parents or next of kin. Responses from Sub County Quality Assurance and Standards Officers confirmed the findings of this study on contribution of assembly points by saying that during an emergency. They noted that one of the most important things in emergency is whether teachers are able to direct students safely to the school fields, away from the burning or flooding dormitories or classes, or to safe buildings, offices and locations like teachers quarters when there is community invasion. Khadka (2015), while noting that evacuation is important, agrees with the findings of this study that location of the safety zone and the reorganization of the traffic routes from the disaster zone to the safety zone, are of a crucial role in ensuring for safety of evacuees in an emergency. Similarly findings are recorded by Chunmiao, LiChang, LiGang, ZhangPeihong (2013), who carried out a study to determine safety evacuation focusing on the effect of number of safe exits and people within the building on the time of evacuation, also agrees with those of the present study. Their findings show that; time of evacuation decreased with the increase of number of exits, ensuring that victims are able to leave areas of threat in good time, safely. These findings on safe evacuation exits agree with those of this study that evacuation of victims via alternate exits or safe routes lead to better safety outcomes, but their study did not highlight the element of guidance to use of specific routes to provide safety during an emergency exit. Assessment of hazard and identification and rescue of those in immediate danger are closely linked in an emergency. This is because assessment of hazard helps rescuers to identify those in immediate danger of being casualties. It also helps locate relevant response resources effectively and efficiently, hence improving chances of survival by reducing injuries or even incidence of death. Identification of those in danger helps to prioritize the order of evacuation; for example from the young ones to the older, or from the nearest source of danger to those furthest from the source of danger.

The responses from Sub County Quality Assurance and Standards Officers indicated that the contribution of teachers' knowledge on First Aid is very crucial. Sub County Quality Assurance and Standard Officer 1 said; "Our sub-county is located very far away from major service providers such as Fire Brigade or St. John's Ambulance. The schools are situated in very challenging terrains with very poor access roads. Most schools are accessed by use of motorbikes. Teachers have played a key role in ensuring that safety of students, despite just fair knowledge of First Aid procedures. They have taken care of students' safety in challenging circumstances, for example, when we have conflicts affecting schools located at community borders". The findings of the present study agree with the sentiments expressed by the Sub County Quality Assurance and Standard Officers, however, the moderate findings of this study could be attributed to the element of generalization from all other counties. It is apparent that some schools in other sub-counties could be getting quicker response from external providers, which reduces the contribution by the

teachers in taking part in response procedures. The Sub County Quality Assurance and Standards Officers' sentiment explains the findings of this study, and concurs with Baser *et al*. (2007). In their study on knowledge of First Aid procedure, they concluded that most of the teachers do not have correct knowledge on emergency procedures like First Aid. This contributed to poor support of health needs of their learners during emergency. While the study by Baser *et al*. (2007) showed little contribution of First Aid to safety due to little knowledge and negative attitude, this study showed that it contributed moderately to provision of safety in schools. This is a point of departure from the findings of study by Sharma (2016) whose study revealed a big knowledge gap in procedures and awareness among school teachers regarding emergency management of dental injuries, leading to poor response. The gap could be explained by possible lack of training to improve competence among the respondents studied by Devi and Sharma (2015), which is a contrast of secondary schools in the study area that have been exposed to various trainings and drills.

Both availability and access to equipment are basic elements in response in emergency incidents. Adequate equipment provision enables responders to help more victims. However, the good outcomes associated availability of resources was hampered by whether responders were able to reach the equipment, thus moderating the safety outcomes, as observed in the study. In this study, it is evident that contribution of availability of protective and other resources was rated least among components of knowledge of response procedures. This is possibly the case because the equipment and resources are scarce, inaccessible, and unfamiliar or in forms that not all responders can understand, especially the digital formats; hence teachers are not able to use them optimally during an emergency. Furthermore, it is apparent that most school budgets give little priority to supply or availability of safety equipment and resources, but those that do only provide basic First Aid kits, and even then, they are rarely serviced, or components replaced, hence their comparably lower contribution. In an interview, 3 Sub County Quality Assurance and Standard Officers noted: "schools do not have sufficient funds to enable them to buy or maintain First Aid equipment. I feel that more government allocation should help them to enhance this". The current findings of the current study are consistent with those recorded study by Morris, *et al*. (2016), which affirms that one of the factors that contributed to the pace of response is responder's capacity to identify, access and deploy required and relevant equipment to the scene of emergency. They also noted that even a greater access component where equipment is available, yet the responders have challenges of use because they are not familiar or comfortable with the equipment, makes the response effects have little if any impact on safety. The findings of Morris *et al*. thus underscore the importance, of not just the availability of, and access to resources and equipment, but also adequate knowledge of how they are operated and used. While it is known that response procedures such as availing resources and first aid help to improve safety, this study has further shown that when teachers are not able to access and use them as effectively as they should, then it is as good as not having them at all. In other words, resources as good as they can be used during time of most need. Therefore moderate contribution of teacher response procedures in emergency may not exclusively be caused by teachers' level of knowledge per se, but also availability of equipment and facilities that aid the process.

Both teachers and principals were in agreement that teacher knowledge on management of irrational behavior moderately contributed in the provision of student safety in emergency incidents. In an emergency, irrational behavior can be observed in speech or action of victims. The way in which victims behave may create more panic to their colleagues, cause further confusion or lead to more injuries. Therefore, controlling of such behavior helps to calm down the victims, makes them to react in a manner that does not further jeopardize their own safety. More so, management of irrational behaviour enables rescuers to communicate in a calmer environment, and victims to take instructions that will ensure their safety more easily and quickly. Interview responses showed that controlling of hysterical behavior among victims in an emergency was a response "half won". They noted that a hysterical person is not only a distraction to others but one who cannot respond to or take instructions to flee from danger. They also noted that controlling mob response, and secondary false alarms were important ways that can be used reduce further casualties, and further damages and losses. Teacher knowledge on reporting incidences to the emergency service providers and institutional administrators moderately contributes in the provision of student safety in emergency incidents. Emergency service providers include Non-Governmental Organizations International Relief Agencies, as well as medical and security teams. Reporting cases of emergency are important because, for example like Red Cross gives medical support and shelter which are both important in securing safety of victims. Security agents are able to secure schools, during and even after incidents, and carry out investigations which is useful to mitigate acts of insecurity in future, hence teacher reports to them is important in an emergency. Sub County Quality Assurance and Standards Officers 3 observed that communication of emergency incident by teachers was relatively limited. He noted that two reasons accounted for this; one, there is the chain of command in school administration that hinders the speed of communication, and filtration of the messages. Secondly, he noted that due to this bureaucracy, in the event that the Principal is out of school at the time of an incident, then s/he has to be contacted first before information is relayed elsewhere. To him, this compromised the ability of teachers to provide safety. He noted that on a scale of 1 to 10, this aspect contributed 5, which is moderate and agrees with the findings of this study.

Teacher knowledge on incidental communication moderately contributed in the provision of student safety in emergency incidents. Upon being interviewed, Sub County Quality Assurance and Standards Officers 4 made an interesting gender related observed; "throughout my years of experience as an officer, it has come to my attention that female teachers are much more likely to trigger alarms than their male counter parts". Probed further why this is so he said that "female tend to panic and also extroverted in expressing stressing situations and are more likely to raise alarm, while male colleagues would rather act first and only raise alarm when they are overwhelmed. In a situation of emergency where immediate trigger of alarm means a question of life or death, then female teachers will be more helpful to get the information going, ensuring faster response, hence minimal injury". Emergency actions and triggering alarms are closely related in an emergency response. Emergency response require specific facilities and actions to actualize; for example, an activity like a lockdown may not be realized in a situation where, classrooms and gates cannot be properly locked or teachers do

not have access to enable them to secure those areas. So even if teachers have the theoretical knowledge on them, it does not translate in to an effective action, hence lower contribution compared to other elements of communication. Equally, triggering of alarms require systems that are functional, and informed community. Within the schools covered in the study teachers may not have adequate knowledge on how to respond to various alarms triggered due to response practice, being that the majority have served for a relatively shorter time. On the other hand, communicating to emergency service providers may be contributing less comparably because they operate on different command structures that prioritize their response activities, even when they are reached, delaying their response. They could also be incapable to respond due to decision making on logistical issues, hence the communication to emergency service providers may not yield expected results to provide safety, for example, media reports shows that fire brigade usually take long hours to reach a school where there is fire, and sometimes even run out of water before the fire is fully extinguished. This opinion is further supported by Diedrichs *et al*. (2016) whose findings show that efficient communication, information sharing, and informed decision making play a vital role in reducing loss of resources and loss of human life in disaster response, however, the communication line can be overloaded or be delayed due to bureaucracy leading to delays and communication breakdowns between security agents or those who are charged with responding to distress calls in emergency. Teacher knowledge on emergency preparedness moderately contributed in the provision of student safety in emergency incidents. Teachers' knowledge as an element of preparedness may be curtailed by practical challenges like, inadequate or nonfunctional systems, or different command systems, during an actual response, reducing the extent of their contribution in such circumstances. Therefore, the study established that contribution of teacher knowledge on evacuation, communication and response procedure was moderate in provision of safety.

Conclusion

Teacher knowledge on evacuation, response procedures and communication contributed moderately to management of student safety in emergency incidents. However, it was noted that teacher knowledge on availability and accessibility to equipment and resources, rolling out of emergency actions and triggering alarm signals, had the least overall mean contribution.

Recommendations

- Schools should work to improve teachers' awareness especially on available equipment and how such equipment are accessed and used.
- Teachers should be trained further on how to roll out emergency actions.
- More safety drills should be carried out to enhance teachers' familiarity with procedures involved in rolling out emergency response actions.

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