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RESEARCH ARTICLE

CONTRIBUTION OF PRINCIPALS TO INFRASTRUCTURE REQUIREMENTS COMPLIANCE IN DISASTER MANAGEMENT PREPAREDNESS IN SCHOOLS IN KENYA: A STUDY ACROSS PUBLIC SECONDARY SCHOOLS IN KAKAMEGA COUNTY

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ABSTRACT

Safety of students in schools is a matter of concern globally. In Kenya, students have lost their lives in the past decades due to arson, accidents, and food poisoning in spite of existence of Safety Standards Manual for schools of 2008. In Kakamega County Secondary Schools, there were 65 deaths, 205 cases of food poisoning; 112 cases of injury occasioned by gang rape, 103 floods, 107 landslides, 50 fire outbreaks, 102 lightening, 15 cyclones and 10 accidents in school buses from the year 2008 to 2018. Principals have a responsibility of ensuring safety of students in schools. The objective of the study was to examine contribution of principals to infrastructure requirements compliance in disaster management preparedness in public secondary schools in Kakamega County. A conceptual framework showing relationship between the independent variable, (contribution of principals) and the dependent variable, (disaster management preparedness) were used to guide the study. The findings of the study revealed that principals' contribution to disaster management preparedness with regard to compliance in infrastructure requirements was 72.1%. It involved creation of appropriate class size, ensuring inspection and ventilation of buildings, provision of fire exists and extinguishers, construction of buildings in consultation and approval by public works department. The study concluded that principals' contribution to disaster management preparedness in schools was high and significant. The findings are of help to educational planners and managers as they inform formulation of policy and strategies for preparedness in management of disasters in schools.

INTRODUCTION

Safety of students in schools is very important. The threats to student safety include disasters such as landslides, earth tremors, floods, fires, accidents and drought. According to United Nations Disaster Programme (2008) all over the world, there has been an upward trend in the number of schoolchildren dying or getting injured in school violence, disasters and emergencies that would be avoided if safety policies were strictly adhered to (Simatwa, 2007). Disaster is a serious disruption of the functioning of the society causing widespread human, material or environmental damage and losses which exceed the ability of the affected community to cope with using their own resources (International Strategy for Disaster Reduction, 2002). School safety is an effective structure and organization free from potential and physical harm, absence of violence and presence of nurturing, caring and protective staff (Chukwu, 2008). During the last two decades, there has been a worldwide move towards enhancing school safety; this is because the issue of school safety is a global concern. In the UK, for instance, reports from Teachernet, Fire Safety Area (2007), indicates that, each year more than 1,300 schools in the UK suffer from fire outbreaks.

Cases of school shootings have been reported in the U.S, the Columbine High school incident being the worst reported case (Calefati, 2009). In a Survey by the National League of cities, 41% of America's large cities stated that students were seriously injured or killed because of school violence, while 38% of the 700 cities surveyed said there had been a noticeable increase in school violence in the past. The closure of schools, damage to school properties, death, injuries and trauma are very common depending on the magnitude and severity of the disaster itself besides this it influences active participation of students in schools (Blackaby, 2007; Onyango, 2008). United Nations International Strategy for Disaster Reduction (2007) in Geneva, Switzerland, reported that more than three quarter of the world's populations were affected by natural disasters at least once between 1980 and 2000. In America, United States Department of Education had to enforce strict safety policy in view of the threats posed by terrorism, drug related violence and natural disasters (United States Department of Education, 2004). Rising frequency, amplitude and number of natural disasters and attendant problems coupled with loss of human lives like the Mexico earthquake of 1985, prompted the general Assembly of the United Nation to proclaim 1990s as the

International Decade for Natural Disaster Reduction (Alexander, 2002). The Columbine High school Massacre of 1999 where two senior students killed twelve students and one teacher and then committed suicide was one of the deadliest disasters in the United States of America (Brown, 1999). According to the International Strategy for Disaster Reduction (2010), in many earthquakes around the world, school buildings which were not built as per hazard resistant standards collapsed, causing severe setback to primary education. Examples of earthquakes around the world include: Skopje, Yugoslavia in 1963, where 44 schools were destroyed (57% of school building stock); El Asnam, Algeria in 1989 where 80 schools collapsed or were severely damaged; Pereira, Colombia in 1999, whereby 74 percent of schools were damaged; Xinjiang, China in 2003, where dozens of schools collapsed; and Algeria in 2003, where 130 schools suffered extensive to complete damage (ISDR, 2010). The earthquake and subsequent tsunami on 26th December 2004 devastated communities and schools in coastal regions, primarily in Indonesia, the Maldives, Sri Lanka, India and Thailand (UNESCO, 2007). Following the October 2005 earthquake in Northern Pakistan, between 17,000 and 20,000 students were reportedly killed in the collapse of some 10,000 school buildings (Asian Disaster Preparedness Center, 2008). Children comprised half of more than 75,000 deaths. Over 1,000 health care facilities were also destroyed, with high casualties among patients and health care workers. In the Gujarat 2001 earthquake, 11,600 schools were destroyed or severely damaged. The main shock occurred during a national holiday where tragic incidents involving students in schools for celebrations comprised half of more than 20,000 dead (ADPC, 2008). Nyakundi (2014), in his study on implementation on safety standards and guidelines in public secondary schools in Marani District, Kisii County used a descriptive survey design and a total population of 28 public secondary schools where 49 teachers were involved. He used questionnaires and interviews. He analyzed data using qualitative and quantitative techniques. The study focused on causes of disasters, constraints in implementation and major strategies put in place. The weakness in the study, he used a small population which may not be a representative. Qualitative and quantitative data was analyzed using appropriate techniques. Nyakundi's study did not address contribution of principals to school disaster preparedness in public secondary school in Kakamega County. Schools in Kakamega County require renovation, electricity, better water and sanitation facilities. According to Makabila et al (2006), guidelines on safety have been ignored by most schools, in Kakamega County. A Girls secondary school in Kakamega County, buildings which have been condemned are still in use. Mabonga (2002), states Kakamega Primary School was closed due to unhygienic conditions in the school. A study in Kakamega schools by Mabonga (2002) continues to state that, guidelines on safety policies fell short of the requirements stated in the policy circular on school safety, the safety standard Manual for Kenyan schools issued in 2008. Despite the guidelines, it has not stopped incidents of accidents, injury, death and loss of property in public secondary schools in Kakamega County. For instance, more than 100 students of a secondary school had to study under trees after floods and strong winds destroyed their classrooms and property valued at two million Kenyan Shillings (Anyuor & Weru, 2010).

Principals have great opportunities to implement health and hygiene, transport safety, fire safety, buildings safety and food safety guidelines in schools in Kakamega County. On 4th February, 2020 there was a stampede in a school in Kakamega County as the pupils were leaving their classroom on a storey building resulting to lose of 15 of them, according to the engineers at Kakamega County department of Public Roads and Infrastructure the stair cases were not constructed according to the laid down guidelines in the manual for safety standards.. This Safety Standards Manual is a document that the school should use to maintain a Safe, Secure and Caring environment that fosters teaching and learning. This manual therefore sets out the Standards and Guidelines that a school should put in place to enhance student Safety. It incorporates the following key components: Safety on School Grounds, Safety in Physical Infrastructure, Health and Hygiene Safety, Safety in School

Environment, Food Safety, Safety against Drug and Substance Abuse, Safe Teaching and Learning Environment, Socio-cultural Environment of the School, Safety of Children with Special Needs/Disabilities, Safety against Child Abuse, Transportation Safety, Disaster Risk Reduction, School Community Relations. Each of the 13 areas of School Safety covered in this manual begins with a statement followed by the necessary guidelines which when implemented should facilitate the realization of the Safety Standards. Principals are encouraged to treat these guidelines as critical inputs to their students' protection efforts. Kakamega County is chosen as a site for the study on the basis of the number of disasters experienced as compared to the neighboring counties. Kakamega County has had the highest number of cases in total it has had 406 cases of disasters, Vihiga County has had 183 cases of disaster, Bungoma County 205 disaster cases and Kisumu County has had 302 disaster cases, this is according to data from the Ministry of Education. (2011). Kakamega County secondary schools have experienced safety policy problems. The cases have been very many and on the increase despite existence of Safety Standard Manual for Kenyan Schools. Arson, school bus accidents, food poisoning, sexual harassment, lightening, floods, landslides and physical molestation of students have been reported in various schools as from 2008 to 2018 as indicated in Table 1.

Table 1. Disasters experienced in Kakamega County (2008 – 2018)

Forms of Disasters	Cases experienced in Schools	Gravity
Food Poisoning	25	Physical injuries, Death
Rape	112	Physical injuries, Death
Floods	103	Classrooms destroyed
Accidents in School Buses	5	Physical injuries, Death
Land slides	107	Classrooms destroyed
Fires	13	Destruction of Classrooms and dormitories
Lightening	29	Death, property destroyed
Cyclones	15	Physical injury, Death
Stampede	15	Classrooms destroyed, Injury, death

Source: County Education Office, Kakamega – 2016

Research Objective: The objective of the study was to examine the contribution of principals to school disaster management preparedness to infrastructure requirements compliance in public secondary schools in Kakamega County.

SYNTHESIS OF LITERATURE ON PRINCIPALS' CONTRIBUTION TO COMPLIANCE IN INFRASTRUCTURE REQUIREMENTS IN DISASTER MANAGEMENT PREPAREDNESS IN PUBLIC SECONDARY SCHOOLS:

Following the October 2005 earthquake in Northern Pakistan, between 17,000 and 20,000 students were reportedly killed in the collapse of some 10,000 school buildings (Asian Disaster Preparedness Center, 2008). Children comprised half of more than 75,000 deaths. Over 1,000 health care facilities were also destroyed, with high casualties among patients and health care workers. In the Gujarat 2001 earthquake, 11,600 schools were destroyed or severely damaged. The main shock occurred during a national holiday where tragic incidents involving students in schools for celebrations comprised half of more than 20,000 dead (Asian Disaster Preparedness Center, 2008). Schools in China are not safe for learners due to fires, according Ramzy (2010) asserted that, a man entered a kindergarten in Eastern Jiangsu province and stabbed 28 children, 2 teachers and a security officer. This was due to lack of enough security in the school. This study agrees with the above findings since there should be enough security personnel in schools to beef up security. The security personnel should patrol the school night and day to ensure there are no intruders and security is not compromised. Lulua (2004) states that government partners have tried to respond to infrastructural aspects of educational quality but safety of the learning environment has not been adequately addressed.

Baltas (2004) gives the example of safety of school buildings in Greece where he states that the School Building Organization in Greece is responsible for the design, construction, planning and management of property and equipment of all schools. Safety of educational facilities and disaster management in educational institutions in Greece is the responsibility of the School Building Organization together with other public bodies such as the Ministry of National Education and Religious Affairs, the Secretariat of Civil Protection, the Earthquake Planning and Protection Organization, and local and prefectural authorities (Houndoumadi, Pateraki & Doanidou, 2003). School safety and security issues in Greece are classified according to how school communities perceive safety (Houndoumadi et al., 2003). This study disagrees with the above study; this is because construction of structures in schools should be in consultation with Ministry of Public Works, Ministry of Health and Ministry of Education. Ugwalashi (2017) study on educational facilities: appropriate strategy for school safety management in River State, Nigeria and recommended provision and maintenance of existing facilities, adequate funding, school inspections and audits, training of school administrators, managers and personnel among others. This study made it clear that there was indeed a problem in implementation of physical facilities but did not tell the extent of principals' contribution to school disaster management preparedness which the current study sought to fill. Musyoka (2013) also carried out another study on, how school physical infrastructure influence students' performance in Kenya Certificate of Secondary Education in Mwingi Central District, and established that schools have inadequate physical facilities which was found to negatively impact on the academic performance of the students. The study proposed the need to sensitize parents and to be engaged in programs that improve the physical facilities of schools in order to improve the environment in which learning can take place for academic excellence of their children. In another study, Mokaya (2013) sought to establish the influence of the school infrastructure on the performance of the students in Public Secondary Schools in Kajiado County, Kenya and found out that adequate and well-spaced classrooms, adequate water and sanitation facilities, adequate science laboratories, adequate libraries with adequate spacing, and adequate participation in co-curricular activities results in improved academic performance of the students. The above findings were in agreement with those of Musyoka (2013) above. However, the two studies of Mokaya (2013) and Musyoka (2013) majorly focused on a relationship that existed between physical infrastructure and performance which was found to be positive. It was not clear from the studies on the contribution of principals to status of physical infrastructure safety guidelines on disaster management preparedness in Secondary Schools in Kakamega County, Kenya, which the current study sought to establish. A study conducted in Kenya by Omolo and Simatwa (2010) investigated the implementation of safety policies in public secondary schools in Kisumu East and West Districts. The findings of the study showed that the implementation of some safety policies was to a large extent implemented as evidenced by the following: Dormitories in 70% of the schools had emergency doors, 17 out of 30 schools had dormitories with doors opening outwards, and 28 out of 30 schools had secure fences and gates while 96.67% of the schools had first aid kits. However, the study did not put in consideration of other safety measures that need to be put in place through contribution of principals which this study sought to fill.

Nderitu (2009) carried out a study in Githunguri Division, Kiambu District, on investigation of disaster preparedness in public secondary schools. The study established that safety guidelines was inadequately implemented in schools. It was also established that a major constraint in implementation was lack of funds. The study recommended that school inspection should be enhanced, funds be provided by the government and that disaster management needs to be integrated in the school curriculum. Whereas the study was based on the Wangai policy circular, the current study was based on Safety Standards Manual (Republic of Kenya, 2008). On the other hand, the geographical area of the study, Githunguri Division, was a very small region and cannot be generalized unlike the current study which covered a larger region, Kakamega County. According to Redican,

Olsen and Baffi, (1993) in cases where pit toilets are used these structures should be built at least 10 metres away from tuition and boarding facilities and on the downwind side. This is contrary to the safety required. Safety standards as according to Redican, Olsen and Baffi, (1993) where ablution block is attached to the dormitory, a high degree of cleanliness must be maintained. Pit latrines should also not be less than 6 meters (20ft) deep, and should be regularly well disinfected and should be at least 15 meters (50 ft) away from a borehole or well or water supply point. Where there are boreholes or shallow wells in places with difficult soil types or landforms, the school management should seek the advice of the water department before the digging of a pit latrine. In a study by Ongori (2014) on school - based factors that influence the implementation of safety standards on fire in Public Secondary Schools in Kenyena District, Kisii County, it was established that school financial resources, training of school stakeholders, and school fire safety planning influence the implementation of fire safety standards. The study focused on fire safety standards which is just but a section of physical infrastructure safety policy and left other aspects which the current study focused on. Kimathi (2011) carried out a study to investigate disaster preparedness in public secondary schools in Githunguri District, with a view to make recommendations on how schools can be equipped with skills for emergency preparedness and response to prevent and deal with disasters when they occur. The study established that most schools in Githunguri District had experienced disasters and therefore awareness levels of disasters in the region were high. Muigai (2011) conducted a study in Kenya to establish the level of implementation of safety standards guidelines in public secondary schools in Ngong Division, Kajiado District. The study established that knowledge of the most safety guidelines among the institutional head teachers, teachers and students was poor. However, the study did not address contribution of principals to disaster management preparedness which this study sought to fill.

Okumu (2014) in her study on perceptions on opportunities and challenges in the implementation of selected safety policy guidelines in Kisumu West District, she used a population of 33 principals, 280 teachers, 2166 form three students and 1 County Quality Assurance and Standards Officer with a sample size of 30 principals, 162 teachers, 327 form three students and 1 County Quality Assurance and Standards Officer. Her study adopted a descriptive survey design only, which was not suitable for the study without any correlation since she had more than one variable. Data was analyzed qualitatively and quantitatively. Her findings were principals had great opportunities to implement school community relations and health and bigger challenges to in implementation of transport and food safety. The study did not address contributions of principals to compliance in infrastructure requirements in disaster management preparedness in public secondary schools in Kakamega County.

CONCEPTUAL FRAMEWORK

The conceptual framework (Figure 1) postulates that disaster management in schools depends largely on principals' contribution.

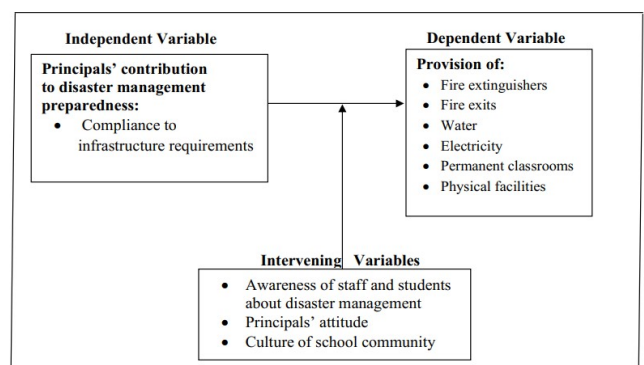


Figure 1. A Conceptual Framework showing Contribution of Principals to infrastructure requirements compliance in Disaster Management in Schools

The Conceptual framework shows relationship between the independent variable, (principals' contribution), intervening variables, (teachers and students attitudes, location of the school, school rules) and dependent variable, (disaster management). Intervening variables play a mediating role on the influence of independent variable on the dependent variable (Mugenda & Mugenda, 2003) and they moderate their influences and are controlled through assumptions. The intervening variables are not measured and they were used to enhance through assumptions. The principals need to ensure that the staff and students are made aware of how to manage disasters in schools through workshops, seminars and drills. Information needs to be availed to them. This study was guided by conceptual framework which helped to give a clearer understanding of relationship of the variables. In the absence of a theory that can precisely explain the basis of a given study, then available literature could be used to formulate a conceptual framework (Leeds & Ormrod, 2005). Creswell (2014), states that the presupposition is based on Grounded Theory of 1960s by Barney Glaser and Anselm Strauss, whose aim is to understand reality from the conception or meaningful guide for action. Grounded Theory helps in development of a conceptual model that explains idea under study which enables researcher to develop and relate concepts with one another (Dantas, Leite, Lima & Stipp, 2009). Since there was no clear theory to be used, the available literature assisted researcher in generating a conceptual framework based on grounded theory. Principals are the heads of secondary schools charged with the responsibility of ensuring safety of students in schools. Their contributions to compliance in infrastructure requirements (size of classrooms, doorways, storeyed buildings, clean dormitories, fire extinguishers, regular inspection of buildings and approval of infrastructure by ministry of public works) are very important to help in preparedness to disaster management. The principals need to ensure that the staff and students are made aware of how to manage disasters in schools through workshops, seminars and drills. Information needs to be availed to them. Principals need a supportive community to be able to implement safety policies in schools.

RESEARCH METHODOLOGY

The study adopted a descriptive survey and correlational research design. Study population was 419 principals and 1 County Quality Assurance and Standards Officer. The sample size of 200 principals and 1 County Quality Assurance and Standards Officer was used in the study. Questionnaires and interview schedule were used to collect data. Face and content validity of questionnaire was determined by expert judgment from experts in the area of research methodology from the faculty of education. Reliability of questionnaires was determined through pilot study in 20(4.7%) of the schools using test-retest technique. Pearson's r coefficients for principals contribution questionnaire was 0.81 at a set $P < 0.05$ meaning that the instrument was reliable. Quantitative data from closed ended items in questionnaires was coded, analyzed, interpreted and presented using regression analysis. Qualitative data from interviews and open-ended items of questionnaires were analyzed for content, organized and reported in emergent themes and sub themes.

RESULTS

Demographic Data of Respondents: The principals' gender, age category and teaching experience were sought, through the questionnaire. The findings were presented in Table 2. From Table 2, the number of Female principals was found to be higher, 110 (61.0%), than the number of male principals, 70 (39%) in public secondary schools in Kakamega County. On age category, 120(66%) principals, were above 50 years of age and were found to be more than 57(32%) principals, who were aged between 36 to 50 years, and 3(2%) principals who were less than 36 years of age. 105 (58.3%) principals had taught for more than 20 years, 60(33.3%) principals had taught for between 11 and 20 years while 15(8.3%) principals had taught for at most 10 years.

Table 2. Demographic Data of Principals

Principals	Frequency (F)	Percentage (%)
Principals' Gender		
Male	70	39
Female	110	61
Total	180	100
Age		
20 – 35	3	2
36-50	57	32
Above 50	120	66
Total	180	100
Teaching Experience		
5-10	15	8.3
11-20	60	33.3
Above 20	105	58.3
Total	180	100

Source: Field Data, 2018 - 2019

Research Question: The research question responded to was; what are contributions of principals to disaster management preparedness to compliance in infrastructure requirements in public secondary schools?. Data was collected on the principals contributions to: size of classroom in terms of length and width, doorways in case of emergency, storeyed buildings, the stairways in consideration of learners with special needs and disabilities, keeping dormitories clean and well ventilated, fire exists and fire extinguishers in all areas of the compound and construction of physical infrastructure with consultation and approval of public works. The responses to this research question by principals were as shown in Tables 3 and 4.

Table 3. Principals Ratings on their Contributions to School Disaster Management Preparedness to Infrastructure requirements compliance

Mean Ratings	Frequency (f)	Percentage (%)
1.00 – 1.44	0	0
1.45 - 2.44	9	5
2.45 – 3.44	37	20.55
3.45 – 4.44	126	70
4.45 – 5.00	4	2.22
Total	180	100

Source: Field Data, 2018 -2019; Interpretation: 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 indicates the largest number of schools 126 (70.0%) had a high contribution on ensuring compliance to infrastructure requirements followed by 37(20.6%) who had moderately contributed while 9 (5.0%) had a low contribution to disaster management preparedness to ensuring compliance is in place, 4(2.2%) had put a very high contribution in that they had everything required in place to ensure safety in infrastructure requirements compliance in the aspect of size of classroom in terms of length and width, doorways in case of emergency, storeyed buildings, the stairways in consideration of learners with special needs and disabilities, keeping dormitories clean and well ventilated, fire exists and fire extinguishers in all areas of the compound and construction of physical infrastructure with consultation and approval of public works.

Table 4. Status of Infrastructure requirements compliance

Mean Ratings	Frequency (f)	Percentage (%)
1.00 – 1.44	0	0
1.45 - 2.44	5	2.77
2.45 – 3.44	40	22.22
3.45 – 4.44	129	71.66
4.45 – 5.00	6	3.33
Total	180	100

Source: Field Data, 2018 -2019; Interpretation: 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 shows that, 129(71.66%) schools had a high contribution on ensuring compliance to infrastructure requirements, 40 (22.22%) schools had a moderate contribution to disaster management preparedness while 5(2.77%) had a low contribution to disaster management preparedness. Nothing that is required to ensure compliance is in place, 6 (3.33%) schools had a very high contribution to disaster management preparedness in compliance to infrastructure requirements in the aspect of size of classroom in terms of length and width, doorways in case of emergency, storeyed buildings, the stairways in consideration of learners with special needs and disabilities, keeping dormitories clean and well ventilated, fire exists and fire extinguishers in all areas of the compound and construction of physical infrastructure with consultation and approval of public works. To determine the contribution of principals to disaster management preparedness on infrastructure requirements compliance regression analysis was computed and the results were as shown in Table 5.

Table 5. Contribution of Principals to Disaster Management Preparedness in Infrastructure Requirements Compliance in Public Schools: Model Summary

Aspects of Contribution	Adjusted R Square	Sig. F
Size of permanent classroom	.407	.000
Doorways	.285	.000
Storeyed Building	.448	.000
Clean and Well Ventilated Dormitory	.498	.000
Fire Exists and Fire Extinguishers	.451	.000
Regular Inspection of Buildings	.476	.000
Construction of Physical Infrastructure in compliance with Ministry of Public Works requirements	.225	.000

From Table 5, it can be observed that principals' contribution to disaster management preparedness in terms of size of classroom was 40.7% as signified by the adjusted R square coefficient .407. It can be noted that the contribution was a significant predictor of disaster management preparedness in Kakamega County. The contribution of principals to disaster management preparedness in terms of doorways in case of emergency was 28.5% as signified by the adjusted R square coefficient .285 and that the contribution is significant. The contribution of principals on disaster management preparedness in terms of storeyed buildings stairways in consideration of learners with special needs and disabilities was 44.8% as signified by the adjusted R square coefficient .448. The principals' contribution was found to be a significant indicator to disaster management preparedness since $p < 0.05$. This low percentage of 44.8% meant that the principals had not complied with this aspect to its fullest. With regards to disaster management preparedness in terms of keeping dormitories clean and well ventilated, the principals' contribution was 49.8% as signified by the adjusted R square coefficient .498. Principals' contribution to disaster management preparedness in terms of provision of fire exits and fire extinguishers was 45.1% as signified by the adjusted R square coefficient .451. Principals' contribution to disaster management preparedness in terms of regular inspection of buildings in the school compound was 47.6% as signified by the adjusted R square coefficient .476, and the contribution was significant since $p < 0.05$. This meant that the principals had moderately contributed to disaster management preparedness in public secondary schools in Kakamega County. On construction of physical infrastructure in consultation and approval of ministry of public works, the principals had contributed to disaster management preparedness up to about 25.5% as signified by the adjusted R square coefficient .255. This contribution to disaster management in terms of construction of physical infrastructure in consultation and approval of ministry of public works was a significant indicator to disaster management preparedness. A regression analysis was computed for all the seven variables to determine the actual influence as shown in Table 6. For every one unit increase in principals contribution to size of classroom in terms of length and width disaster preparedness increases by .202 units. In terms of doorways in case of emergency one unit increase in the principals contribution enhances disaster preparedness in schools by .040 units.

As regards storeyed buildings and stairways in consideration of learners with special needs and disabilities one unit increase in principals contribution enhances disaster preparedness in schools by .198 units. For every one unit increase in principals contribution to keeping dormitories clean and well ventilated disaster preparedness is enhanced by .146 units. As regards fire exists and fire extinguishers in the compound one unit increase in principal contribution it enhances disaster preparedness in schools by .163 units. Regular inspection of buildings in the school compound as a principals contribution, for every one unit increase in it, disaster preparedness in schools increases by .145 units. It ensures there's minimal damage to facilities and casualties in case of collapsing. With regards to construction of infrastructure with consultation one unit increase in principal contribution enhances disaster preparedness in schools by .052 units. From Table 7, it can be observed that principals in public secondary schools in Kakamega County, contributed up to 72.1% of the variation in disaster management preparedness, in relation to infrastructure requirement as signified by adjusted R square of .721, and is significant since $p < 0.05$.

DISCUSSION

There was gender disparity in the county in favor of women. This finding concurs with the findings of Suda (2002), who established that there is disparity of gender in the labour market. This means that if female principals in Kakamega County appreciate disaster preparedness than male principals, then the impact will be felt. The fact that most of the principals (105) were aged above 50 and that 105 principals had taught for more than 20 years meant that they have gained sufficient experience to enable them respond to questions on disaster management preparedness in their schools. Nthenya (2012) cited that older workers have stronger values and more favorable job attitude than their counterparts. The contribution in preparedness to disaster management was found to be below average and this can be explained by the sudden rise in enrolment of students in large numbers. These higher numbers out- do the available classrooms and therefore, the number of students sitting in classrooms must also be high. This leads to congestion which may even allow for the spread of contagious diseases among the students. This finding was also corroborated by the County Quality Assurance and Standards Officer who had to say this: "Students enrollment in our schools has doubled due to the education system in place where all children have to transit to secondary school, this means the sizes of classrooms have to be adhered to enable them be accommodated without any hitch. The principal has to enroll students depending on the classrooms available. Construction of the classrooms and the doorways has to follow the laid down rules in the safety manual for secondary schools. Doors opening to the inside have very serious implications whenever there is an emergency. All doors need to open outwards to enable easy evacuation in case of any emergency. Though many schools had constructed permanent structures before safety manual policy was put in place, the principals are encouraged to demolish part of the buildings that are not compliant and ensure they consult Ministry of Health, Public Works and Education on what they need to do."

Principals are therefore expected to ensure that the number of classrooms are increased to assure students of their safety, this can be done by enrolling the required number in every classroom. County Quality Assurance and Standards Officer asserts the importance for principals to ensure construction of facilities in school is done in consultation with the Ministry of Public Works and Ministry of Education. The specifications given should be adhered to avoid damage and injury in school. Those who are managing schools that have buildings which were constructed before safety manual came into use in the 2008 are encouraged to demolish and put into practice the safety manual by constructing buildings in consultation of the Ministry of Public Works. From questionnaire data contribution of principals was less and safety measures had not been put in place. Most principals had challenges due to lack of funds to either demolish or construct new buildings.

Table 6. Multiple Regression Analysis of Principals' Contribution to Requirements Compliance in Disaster Management Preparedness in Public Secondary Schools

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	-.002	.201		-.011	.991
Size of classrooms	.202	.043	.233	4.665	.000
Doorways	-.040	.049	-.040	-.799	.425
Storeyed buildings	.198	.044	.242	4.548	.000
Keeping dormitories clean and well ventilated	.146	.043	.198	3.427	.001
Fire exits and extinguishers	.163	.044	.208	3.674	.000
Regular inspection of buildings	.145	.036	.237	4.006	.000
Construction of infrastructure in compliance with public works requirements	.052	.039	.060	1.352	.178

Dependable Variable Disaster Management Preparedness Regression Equation $Y = \beta + \beta X_1 + \beta X_2 + \beta X_3 + \beta X_4 + \beta X_5 + \beta X_6 + \epsilon$

Table 7. Regression Analysis of contribution of Principals' to disaster management preparedness in Public Secondary Schools

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.856 ^a	.732	.721	.33403	.732	67.097	7	172	.000

a. predictors: (constant), Infrastructure; Source: Field Data

From observation guide contribution of principals was very high in some schools and high in others. Not all schools had safety measures put in place. Indeed, it is true that in some schools, there exist emergency doors which are, unfortunately locked most of the time. This means that in case of fire outbreak, students cannot be helped by the availability of such emergency door except through the two doors at the extreme ends of the dormitory. It is necessary that emergency doors need not be locked; doors should be double and must open outwards to ease movement in case of emergency. Ensuring doorways are made according to the policy will lead to safety of all students in case there is a fire outbreak in classrooms or dormitories or in case of any emergency. The contribution of principals on this aspect of doorways was lower than the finding of Omolo and Simatwa (2010) who investigated the implementation of safety policies in public secondary schools in Kisumu East and West Districts. The findings of the study showed that the implementation of some safety policies was to a large extent implemented as evidenced by; dormitories in 70% of the schools had emergency doors, and 17 out of 30 schools had dormitories with doors opening outwards. In some cases, the stairs existed but lacked the rails to protect learners from falling in case of a slip. It was also noted that in a two storeyed building there was only one entry point which was also the exit and that it was narrow. This was considered to be very dangerous especially in the event of an emergency in the dormitories. This could actually explain the low contributions of principals on disaster management preparedness due to storeyed buildings stairways in consideration of learners with special needs and disabilities. It can be noted that principals contribution to disaster management in terms of keeping dormitories clean and well ventilated in school are significant indicators to disaster management preparedness. It was noted that the dormitory masters and class masters had the responsibility of ensuring hygiene standards both in the dormitory and classrooms. Students in some schools mopped their dormitories daily and the beds were well spread. It was common in girls' school than in boys' school. It was thus concluded that principals in public secondary schools in Kakamega contributed up to 49.8% of the variation of disaster management preparedness with respect to keeping dormitories clean and well ventilated. Principals' contribution to disaster management in terms of provision of fire exits and fire extinguishers in school are significant indicators to disaster management preparedness. The findings of this study were supported by the findings of the studies conducted by Nakitto and Lett (2012), Ndiang'ui (2006) in a study on vulnerability of Kenyan Schools to fire disaster and observed that to some extent, the degree of exposure to fire disasters in schools is influenced by administrative framework of the schools. High cost of firefighting equipment has made it impossible for North Rift schools to install those (Lucheli & Masese, 2009).

Principals had moderately contributed to disaster management preparedness in public secondary schools in Kakamega County. However, the inspections were not sufficient just like the County Quality Assurance and Standards Officer had said that lack of sufficient personnel hindered the frequency of inspection. "School facilities in school need regular inspection, principals are encouraged to do it to help in avoiding ore damage to them, it helps in minimizing the cost of repairs and disasters too. Storey buildings in schools need to be constructed in consultation with the Ministry of Public Works to cater for students with disabilities and also to ensure stairs are on either sides of the building for easy evacuation incase of fire. It also minimizes stampedes. Monitoring is done always to check on the cleanliness of the buildings and also to ensure enough ventilation for the safety of the students. The government is working on lack of enough personnel to do monitoring in our schools." The assertion of the County Quality Assurance and Standards Officer on lack of personnel is an indication of what the government is required to do to ensure they get more officers to carry out monitoring in schools, this will make principals who have not put measures of safety in place do it to minimize disasters in our in our schools. It is important for structures in schools to have enough ventilation and remain clean all the time.

Implementation of physical infrastructure safety guidelines secondary schools in Kakamega County has not been fully accomplished through principals contribution. The general status of implementation does not agree with the findings of Nyakundi (2012) that the Ministry of Education Safety Standards and Guidelines had not been fully implemented majorly due to inadequate funds and inadequate supervision. Principals in public secondary schools in Kakamega County, contributed highly by 72.1% may be attributed to the efforts made by the government who supported schools financially in putting up some structures in the schools. County Quality Assurance and Standards Officer in an interview said: "The facilities in schools such as classrooms, dormitories, sanitation facilities, libraries, and administration block should be appropriate adequate and properly located to devoid any risks to students. They have to comply with the provisions of the Education Act, Public Health Act and Ministry of Public Works building regulations. Principals are always reminded of safety of students when it comes to buildings in schools, school committees are to be involved for the blame not to go to an individual but to the committee and the ministry of public works." The County Quality Assurance and Standards Officer assertion concurs with the principals questionnaire that buildings in schools are all important to students safety while learning and they should be adequate and properly placed to avoid and minimize disasters. Principals who lack funds to initiate the safety measures are allowed to organize for fund raising with the parents committees to ensure they get funds to enable

implementation of the safety manual in their schools, especially with the double intake of students who are all transiting to high school. Contribution of principals in some schools was high while in others it was less. From observation guide contribution of principals in most schools size of classrooms had adhered to the safety manual and there was enough spacing in those classroom. The doors were opening towards outside in most schools but in a few the doors were still opening towards inside. Principals had also contributed towards ensuring adequate tuition and boarding facilities. From records availed for observation regular inspection of facilities in school was done in most schools and in a few schools records revealed construction was done in consultation with the Ministry of Public Works. The findings of this study however, are not in agreement with the findings of Njoki (2018), who established that physical infrastructure in schools had not been complied with, for instance, adjusting doors and windows of classrooms and other school facilities as per the requirement of the safety standards manual. The study also disagrees with the findings of Gatua (2015) whose study concluded that most of the schools' physical facilities posed security threat to the users and that it was evidenced by the presence of unsafe, ill equipped, poorly maintained and squeezed physical infrastructures. The study thus concluded that principals in public secondary schools in Kakamega County contributed up to 72.1% of the variation of disaster management preparedness in terms of infrastructure compliance.

CONCLUSION

Principals contribution to safety compliance in infrastructure requirements was significant. The classrooms, dormitories, offices, kitchens, toilets and all other forms of infrastructure in school were constructed or procured in consultation with and approval of the Ministry of Public Works, Ministry of Education and Ministry of Health (Public Health Department). There was a close and cordial working relationship between the school, personnel, parents, sponsors and the community with regard to construction, utilization and maintenance of the school infrastructure.

RECOMMENDATION

Principals should request government to allocate more funds for full implementation of safety guidelines in public secondary schools in terms of doorways, they should ensure that dormitories, offices, kitchens, toilets and other physical structures are well maintained, safe and properly utilized. Construction of infrastructure in schools should always be done in consultation and approval with Ministry of Public Works.

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