

POTENTIAL VICTIMS' ABILITY TO USE FIRE PREVENTIVE MEASURES: THE COMMUNICATION IMPERATIVE

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Abstract

This study examined the forms of media content packaged for the dissemination of information on fire hazards among office staff members and their impact on these workers' ability to use the preventive measure (fire extinguisher) during fire outbreaks in the offices. Survey research design was adopted as the research design with the questionnaire as the instrument for data collection. Analyses reveal that the staff are aware of the media messages on fire outbreak and ways to avoid fire outbreak, but considers the medium of use inadequate to influence a positive change of attitude among them. They thus prefer a more enhanced campaign of the messages through interpersonal, group communication and more sensitization campaigns in offices to improve their efficiency in the use of the fire extinguisher

Keywords: Fire extinguisher, fire outbreak, media messages, interpersonal communication and group communication.

1. INTRODUCTION

While fire outbreaks are disasters caused by human actions directly or indirectly, fire safety entails all the activities geared towards fire prevention, detection and control. These activities and processes are done to safeguard human life and to preserve property. Fire safety preparedness is one of the four phases of fire emergency management which is aimed at fire disaster risk reduction. In fact, it is a continuous cycle of planning, organizing, training, equipping, exercising, evaluating and improving strategies to ensure effective coordination and enhancement of capabilities to respond to fire disasters (FEMA, 2007).

Fire safety preparedness is an essential aspect in both environmental and occupational safety and health. Fires being an example of physical hazards have affected many workplaces and most of them are mainly caused by inadequate strategies in fire prevention, detection and/ or fire control. The potential for loss of life or injury from a fire-related incident is one of the most serious risks an institution can face (Florida Atlantic University, 2002). Therefore, institutions such as Ministries in Awka should have a comprehensive fire-safety preparedness programme to enhance fire safety. Careful planning, implementation, and maintenance are all essential ingredients of a successful fire safety programme. Due to the danger of injury or death from fire-related emergencies, departments, staff and visitors to the institutions must comply with fire safety preparedness requirements

Fire safety preparedness includes availability and effective use of procedures, infrastructure, equipment as well as knowledge and positive attitude of occupiers and workers towards implementation of fire safety preparedness guidelines. For instance, smoke alarms have saved thousands of lives in the United States following their introduction and wide use over the past two decades.

1.1 The Problem

Fire outbreak is a potential hazard which should receive particular attention in terms of preparing for its eventuality. How much people know about how to use fire preventive measures in offices, especially how to operate the fire extinguisher, appears to be unsatisfactory. How true is this in the case of civil servants working in Anambra State ministries in the Capital city of Awka?

1.2 Purpose of the Study

The purpose of the study was to assess the fire safety measures in place in state ministries in Awka, Anambra state Nigeria and the level of satisfaction of the staffs towards it. In line with the purpose of the study, the following are the specific objectives.

- (i) To determine the fire safety measures put in place in ministries located within Awka, Anambra State Capital City.
- (ii) To ascertain the level of satisfaction of the staff on the available number of functional fire-fighting equipment.
- (iii) To determine the mitigation measures available against fire hazards in the ministries.
- (iv) To determine workers' perception on the level of awareness of the use of fire safety measures among members of staff.

1.3 Research Questions

- (I) What are the fire safety measures in place in ministries located within Awka, the capital city of Anambra State?
- (II) What is the level of satisfaction, among workers in these ministries, on the available number of functional fire-fighting equipment in their offices?
- (III) What is the mitigation measure available against fire hazards in these ministries?
- (IV) What is the workers' perception on the level of awareness of the use of fire safety measures by members of staff?

2. REVIEW OF RELATED LITERATURE

Fire is a dominant hazard in the workplace; human factors such as carelessness, negligence and lack of fire safety awareness are some of the leading causes of fire outbreaks. Despite the technological advancement in fire safety, fire remains the leading cause of lives and property losses at commercial and industrial facilities worldwide (Blank, 2004). Fire could lead to the premature winding up of an organization no matter how big it is. Management commitment to fire safety is reinforced by having the right people, procedures and systems in place but most times an investigation into a workplace incident reveals a gap between the mainstream business and safety management (Scott, 2010).

For instance, there was a fire outbreak in a plastic factory in Ikorodu, Lagos, Nigeria in 2002 where many workers were roasted to death at night because the owners of the factory locked the workers in. This high disregard for human life stems from the reality that management of some organizations focus primarily on financial gain and tends to view any investment management as a distraction.

2.1 Fire Safety Preparedness Globally

There has been a global outcry from fires. For instance, between 1.5 and 2 million fires occur each year in the United States with many other fires going unreported. Between 3,500 and 4,000 Americans lose their lives each year, and another 20,000 to 30,000 are injured as a result of fires (DEH/S, 2001). Data from United Kingdom reveals that in 2006, there were about 2000 fires in the hotels, boarding houses and other similar facilities (Klemola, 2008). In the US, a study Ahrens (2008) found that hotels with sprinklers did not incur fire induced deaths between the years 2003-2007; and material losses were 73% lower than in hotels which were not equipped with sprinklers. This emphasized the importance of installing sprinklers in any building to manage and control fires.

According to a study on the status of facilities for fire safety in hotels in Spain, it was found that some of the defects detected were on documentary issue such as absence of a technical installation project certificate or certificates of compulsory maintenance contracts for the fire safety equipments. Other defects included absence of smoke detectors and alarm devices, defective signage as well as difficult access to firefighting equipment (Francisco, Juan & Rubio, 2004). The study in Spain hotels revealed a high level of fire safety preparedness in terms of compliance to fire safety preparedness equipment which was 90.4% compliance in the number and availability of fire extinguishers. In addition, there was alarm

push buttons correctly located in corridor areas and an alarm centre with permanent monitoring in most of the hotels.

However, there was non-compliance to fire detection systems since some hotels had no smoke detectors in rooms and corridors (Francisco et al.2004).

Institutions or residential dwellings with fire escape/ evacuation plans may not know how to use them in the event of a fire outbreak. A study conducted on adults living in private households in the United States found that majority of Americans who were interviewed had an escape plan for use in case of a fire, and among them, the larger percentage had not implemented the plans. On the contrary, 75% of the respondents believed it took 10 minutes or less for a fire to turn deadly, meaning that they were aware that practicing an escape plan would shorten the time of escape of people to safe environment. In this case, knowledge did not correspond to the people's practices (Harris, 2004). This study further revealed that only 8% of Americans whose smoke alarms went off thought it was a fire and so they needed to get out of the house. Less than half of the respondents felt that they could install a home fire sprinkler if they were building a new home. Those who had a different opinion said that the fire sprinklers were expensive and led to destruction which was worse than fire damage. These findings give a picture of people's poor attitude on fire safety preparedness which consequently leads to failure to practice fire safety preparedness measures.

An on-site survey of homes on smoke alarms and prevention of house-fire-related deaths and injuries highlighted that although most (90%) of the houses in the United States have at least one smoke alarm, 25-30% were not functional (Douglas, Mallonee & Istre, 1999).

The level of fire safety preparedness is higher following fire outbreaks in institutions. For instance, following 6 fire outbreaks which occurred at the Cleveland Clinic operating suites in 2010 (Suchetka, 2010), all the operating room employees underwent training on surgical fire prevention and fire safety preparedness procedures. These strategies were geared towards improving the workers' fire safety preparedness.

Some institutions of higher learning have not yet complied with the fire safety preparedness standards, and are putting many people to fire risks. This is evidenced by a study conducted by the Ministry of Education in Malaysia which found that fire safety preparedness condition in the institutions was at 76% in compliance level. Poor staff attitude on the importance of fire safety preparedness and knowledge on the same were some of the fire safety preparedness elements identified (Chandrakankan, 2004).

2.2 Fire Safety Preparedness in Africa

Africa as well has been affected by fire disasters. For instance, in 2011 Ghana recorded 53 institutional fire outbreaks (Ghana National Fire Services, 2011).

A study on disaster risk assessment at the University of Ghana in Balme library found that the library annex had no balconies and had one exit for a three-storey building. The presence of balconies as a vital component in disaster

response by acting as landing pads for trapped victims awaiting rescue, was therefore overlooked (Adinku, 1999). In the same study, library staff had not been trained on disaster management. The library annex did not have fire extinguishers and most of the fire extinguishers available in the main library were not working (Adinku, 1999).

Another study on disaster readiness in academic libraries in Ghana revealed that none of the academic libraries had a plan in place to prevent or mitigate the impact of fire (Akussah and Fosu, 2001).

2.3 Tackling Incessant Fire Outbreaks in Nigeria

Nigeria is rated 21.6% in the world index of country affected by fire. Fire fighting units only exist in urban city centers to control fires. Fire suppression and prevention facilities are non-existent, not functioning or obsolete. Fire fighting is done on a spontaneous and ad-hoc basis, as there are no proper routine and methodological preparations and guidelines for fire fighting. Local community mobilization and participation in fire fighting is non-existent.

Nigeria, presently, does not have national regulation (laws) and policy (guidelines) to regulate fire safety practices of organizations in the country. Since no functional regulations and policies are in place, government policies are based on persuasion in the electronic media rather than enforcement. Television and radio campaigns, warning on the risks and danger of fire are mostly done during the dry season by most states. At present, the lack of database on the occurrence and impact of fires is the major obstacle to the development of an effective national policy. The current initiative to develop an inventory scheme to document the occurrence of fires is an important step in this direction.

2.4 Workplace Fire Safety Requirement

The National building code of Nigeria classifies buildings into groups according to use or number of occupants; the code prescribes the minimum post construction requirements as regards fire installations for each group. No two groups have the same fire protection requirements because of the differences in the hazards that exist in them, what the building is used for, the height of the building and the number of occupants (NBC, 2006).

3. METHOD

We designed our study as a survey. The area of study Awka, Anambra State, South-East Nigeria. The study population was the government workers in various ministries in Awka, capital city of South LGA of Anambra State, South-East Nigeria.

The ministries are:

Ministry of Justice

Ministry of Finance

Ministry of Works

Ministry of Education

Ministry of lands, physical & rural development

Ministry of Agric mechanization, procurement & Export

Ministry of health

Ministry of industry, trade & commerce

Ministry of information & communication strategy
 Ministry of youth Entrepreneurship & sport development
 Ministry of social welfare, children and women affairs
 Ministry of environment, beautification and Ecology
 Ministry of local government, chieftaincy & community affairs
 Ministry of power, domestic water development
 Ministry of Industry, Trade and Commerce
 Ministry of Mineral Resources, Science and Technology

The estimated population of workers is 197, 853, according to the data supplied by the management in the State Secretariat, Awka.

A sample size of 399 was determined using Taro Yamane's (1967) formula for sample size determination: $n = N / (1 + N [e]^2)$. This sample size was considered appropriate at 5 percent error margin which was rounded off to 400. Out of the ministries mentioned above, five were randomly selected, viz: Ministry of industry, trade & commerce, Ministry of Works, Ministry of information & communication strategy, Ministry of youth Entrepreneurship & sport development and Ministry of mineral resources, science & technology. Each of the ministries was allotted 80 copies of the questionnaire each. The data collection instrument was a questionnaire. The questionnaire comprised entirely close-ended questions. The questions were framed in such a way that they supplied answers to the research questions. A set of questions were designed to relate to particular research questions. The questions were divided into sections; Section I had questions relating to the respondents' personal data, while subsequent sections asked questions relating to respondents' perception on fire safety and on the ability to use fire extinguisher in case of fire outbreak.

4. RESULTS

Data elicited from the respondents through the use of questionnaire were presented, analyzed and interpreted.

Table 1: *Response Rate*

	Frequency	Percentage
No. Returned	399	100%
No. Not Returned	0	0%
TOTAL	399	100%

Data in Table 1 showed that out of the 399 copies of the questionnaire distributed, all representing 100% were returned to the researcher. Thus, the questionnaire distribution and collection recorded 100% return rate.

4.1 Research Question One: What are the Fire Safety Measures in Place in Ministries Located within Awka?

The respondents' response regarding safety measures in place in the ministries located within Awka is as presented in Table 2 below.

Table 2: *What are the fire safety measures in place in ministries located within Awka, the capital city of Anambra State?*

Fire Fighting Equipment	Exist	Dot Not Exist	Do Not Know	Total
Use of Dry chemical extinguishers	299(75%)	72(18%)	28 (7%)	399
Use of Halon extinguishers (vaporizing liquids)	20 (5%)	327 (82%)	52 (13%)	399
Use of Foam cylinders	343(86%)	16 (4%)	40 (10%)	399
Use of Carbon dioxide extinguishers	355 (89%)	8 (2%)	36 (9%)	399
Use of Sprinklers/Hose reels (pressurized water extinguishers)	72 (18%)	227 (57%)	100 (25%)	399
Use of wet chemical	12 (3%)	371 (93%)	16 (4%)	399
Use of Fire blankets	44 (11%)	299 (75%)	56(14%)	399
Any other (specify)	0	343 (86%)	56 (14%)	399

Table 2 show that 299 representing 75% of the respondents said that dry chemical extinguishers are used as safety measure, 72 representing 18% of the respondents said No while 28 representing 7% of the respondents were not sure. In addition, 20 representing 5% of the respondents said Yes that Halon extinguishers (vaporizing liquids) are used for safety; 327 representing 82% of the respondent said No while 52 representing 13% of the respondents were not sure; 343 representing 86% of respondents said that foam cylinders are used as safety measure; 16 representing 4% says it doesn't exist while 40 representing 10% do not know if foam cylinder really exists. Also, 355 respondents (89%) say that there is carbon dioxide extinguishers; 8 representing 2% of the respondents says it doesn't exist and 36 representing 9% do not know if it exists; 72 representing 18% says that sprinklers/hose reels (pressurized water extinguisher) exist; 227representing 57% said no while 100 25% of respondents says that they do not kno;12 representing 3% says that they do not know; 44 respondents, representing 11% say that there is fire blankets; 299 (75%) say it doesn't exist; 56 respondents, representing 14% say they do not exist. In summary 343 respondents which constitute 86% of the population affirm that it doesn't exist and 56 (14%) were totally not aware of any safety measure.

4.2 Research Question Two: What is the level of satisfaction, among workers in these ministries, on the available number of functional fire-fighting equipment in their offices?

Table 3: *Extent of Satisfaction on the Number of Available firefighting equipment*

Fire Fighting Equipment	Yes	No	Total
Dry chemical extinguishers	355(89%)	44 (11%)	399
Halon extinguishers (vaporizing liquids)	48 (12%)	351(88%)	399
Foam cylinders	363 (91%)	36 (9%)	399
Carbon dioxide extinguishers	375 (94%)	24 (6%)	399
Sprinklers/Hose reels (pressurized water extinguishers)	88 (22%)	311 (78%)	399
Wet chemical	56 (14%)	343 (86%)	399
Use of Fire blankets	72 (18%)	327 (82%)	399
Any other (specify)	0	399 (100%)	399

Table 3 show that 355 respondents, representing 89% of the respondents said they were satisfied with the dry chemical extinguishers available in their offices while 44 representing 11% said No. In addition, 48 representing 12% of the respondents said they were satisfied with the number of Halon extinguishers (vaporizing liquids) available in their offices while 351 respondents, representing 88% of the respondents said No; 363 respondents, representing 91% of the respondents were satisfied with the number of foam cylinders available in their offices while 36 respondents (9%) said they were satisfied that carbon dioxide fire extinguishers were available, while 24 respondents (6%) were not satisfied; 56 respondents, representing 14% said they were satisfied with the wet chemical available in their offices while 343 respondents of (86%) were not satisfied; 72 respondents, representing 18% were satisfied with fire blankets available in their offices, while 327 respondents, representing 82% said they were not satisfied. Overall, results show that the workers were not satisfied at the number and quality of fire fighting equipment that have been put in place, in their offices, in case of fire outbreak.

4.3 Research Question Three: What is the mitigation measure available against fire hazards in these ministries?

Table 4: *Mitigation measures available in ministries in Awka*

Mitigation Measures	Exist	Do Not Exist	Do Not Know	Total
Fire insurance policy	44 (11%)	355(89%)	0	399
Fire safety policy	28(7%)	347(87%)	24(6%)	399
Evacuation plans	72(18%)	283(71%)	44 (11%)	399
Sanctions against those who disobey fire regulations	12 (3%)	371 (93%)	16 (4%)	399

Result of analysis as presented in Table 4 reveal that 44 respondents (11%) said fire insurance policy existed in ministries where they work while 355 respondents, representing 89% said No. Furthermore, 28 representing 7% of the respondents said "Yes" that fire safety policy existed in the ministries; 347 representing 87% of the respondents said No; while 24 representing 6% of the respondents said they did not know. Similarly, 72 representing 18% of the respondents said evacuation plans existed in the ministries; 283 representing 71% of the respondents said no while 44 representing 11% said they did not know. In addition, 12 representing 3% of the respondents said there were sanctions for those who disobey fire safety regulations; 371 representing 93% of the respondents said no; while 16 representing 4% of the respondents said they did not know whether such measures existed.

4.4 Research Question Four: What is the workers' perception on the level of awareness of the use of fire safety measures by members of staff?

Table 5: *Awareness of the Use of Safety Measures by the Staff*

Safety Measures	Yes	No	Total
Do you know how to operate a portable fire extinguisher?	172 (43%)	227 (57%)	399
Have you received a particular training on the use of portable fire extinguisher?	68 (17%)	331 (83%)	399
Do you have a fire alarm in your ministry?	188 (47%)	211 (53%)	399
Are there any emergency precautions in your ministry in case of fire outbreak?	156 (39%)	243 (61%)	399

Results as presented in Table 5 show that 172 representing 43% of the respondents said "Yes" that they know how to operate a portable fire extinguisher while 227 representing 57% said "No". Furthermore, 68 representing 17% of the respondents said "Yes" that they have received a particular training on the use of portable fire extinguisher while 331 representing 83% said No; 188 representing 47% of the respondents said "Yes" that there was fire alarm in the ministries where they work; while 211 representing 53% said "No". In addition, 156 representing 39% of the respondents said "Yes" that there are emergency precautions in the ministries where they work, in case of fire outbreak, while 243 representing 61% said "No".

5. Discussion of Findings

We found from our study that awareness of the workers concerning the safety measures in place in ministries were poor; most of them said that they did not know they existed and the others did not know about any safety measures. Most of the staff haven't actually experienced fire outbreak before, but they realized that we are all potential victims of fire, that it doesn't actually give prior notice as to when it would occur, especially in the kind of premises where there are different kinds of people with different risk behavior that can cause fire outbreak.

Based on this observation, most of them responded that they were not satisfied at the number of available functional fighting equipment; that there was the need to put in place the infrastructure required on safety preparedness and maintenance of firefighting equipment such as hose reels and alarm bells was not regularly done thus rendering them non-functional.

Age of the institution might have been a contributing factor to the availability of functional fire alarm bells and fire fighting equipments particularly the hose reels because no maintenance of the equipment was done years after installation, and it also shows that installation of fire extinguishers in the workplaces was done to fulfill a policy requirement and lacked the required strategies to ensure their effective use in case of a fire outbreak such as organizing training of the staff on the use of the fire-fighting equipment.

5. Conclusion

In assessing fire safety measures, including fire equipment adopted by the ministries, the study established that it is important that other types of fire measure should be installed to boost preparedness. There is need for organizations, property owners or managers to be conscious to the need for regular inspection of the equipment and also provide fire education or skills to its staff on the use of the fire preventive measure in case of a fire outbreak. This is where the communication imperative in mitigating fire outbreak deserves to be emphasized.

6. Recommendations

Based on the outcome of the study, the following recommendations were made:

1. Management of organizations should give employees proper fire safety training to be able to identify types of extinguishers and the corresponding type of fire it is used for.
2. Management of organizations should show commitment to ensuring fire safety in the workplace by making policies and putting necessary resources in place to implement those policies;
3. The fire service authorities should improve on enforcing laws as regards fire safety in workplaces to ensure that organizations implement set rules and standards; and

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