



Assessment of fire safety management in some selected Nigerian tertiary institutions

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Abstract

This research was conducted to study the fire safety used in the Nigerian tertiary institutions with a view to minimize the rate of fire incidence in the Nigerian tertiary institutions, the research employed the use of both qualitative and quantitative (mixed method) research approaches. Fire safety management of the eight 8 randomly selected tertiary institutions in the states whereby two universities, two polytechnics, two colleges of education and two monotechnic were selected to represent the entire tertiary institutions. the study has found through field work that, most institutions has no fire safety management plan that can be used as a quid to minimize.

Keywords: Fire safety management, justification, concept of fire

Introduction

1. Background of The Study

Fire is one of the ultimate risks faced by tertiary institutions in Nigeria. It may happen at any time, and the effects can be fatal and shocking. There are several cases of fires incidents in our tertiary institutions causing great damages and even total collapse of the affected buildings. Fire incidents normally happened due to natural deserter, unpredictable events but also through carelessness, criminal intent, neglect, or a lack of awareness and vigilance. Fire safety can easily be compromised by poor management (andrew and martin, 2007) ^[15].

2. Statement of The Problem/ Justification

Fire outbreak is a perennial problem in Nigeria. Yearly cases of fire outbreaks are reported in the country. (Tom, 2015), stated that, many fire incident cases in the Nigerian tertiary institutions were reported causing both severe and non-severe damages. Premium times newspaper (2018) reported that three (3) fire outbreaks have been recorded in Obafemi Awolowo University (OAU), Ile-Ife, between January and October 2018, which were worsened by the failure of the university authorities to provide functional fire extinguishers in the hostels. However, another fire incident was reported by the punch online news (2016) saying that a fire accident occurred in the accident and emergency ward of the university college Ibadan, destroying multi-billion-naira buildings and equipment. Also in another event, African independent television (2015) reported that, fire gutted the male hostel of the Ahmadu Bello University (ABU) School of Basic and Remedial Studies in Funtua Local Government Area of Katsina State. The inferno, which lasted for about 3-hours, destroyed the 315 bed-space male Block 'A' Hostel and all students' mattresses, clothes and other valuables. It's also reported by vanguard newspaper (2017) that; fire razes female hostel of Plateau State Polytechnic Jos campus. According to the reporter, the hostel was completely burnt down by fire which made the entire school into confusion.

3. Aim and Objectives of The Study

3.1 Aim

This research aimed to assess the fire safety management systems used in the Nigerian tertiary institutions with a view to minimize fire incident in our tertiary institutions.

3.2 Objectives of the study

1. To study the fire safety management plans used in the public tertiary institutions
2. To evaluate the level of compliance with Nigerian fire safety code by the selected institutions.
3. To develop a fire safety management plan that will best be used to manage fire incidences in Hassan Usman Katsina Polytechnic

Literature review

1. Concept of Fire

Fire is a phenomenon of combustion resulting from a rapid persistent chemical change that manifests as heat and light which is accompanied by flame, especially the exothermic oxidation of a combustible substance (SPDC, 2002). Fire occurs as a result of chemical chain reaction which involves the combination of oxygen, fuel and heat. Fire has its own enormous benefit to mankind if controlled effectively, as it serves as a source of heat and lighting but it's one of man's greatest enemies, when it is allowed to go out of control, it could lead to inferno which may result to loss of precious lives and properties. Fire outbreak occurrence in the tertiary institutions is very dangerous because it is a public area used by large number of people.

1.1 Classification of Fire

According to the British Standards Institution (BSI) – BS EN3 fire is basically classified in the following classes;

1. **Class A fires** – are fires involving organic solids like paper, wood, etc
2. **Class B fires:** Are fires involving flammable Liquids (petrol, kerosene, diesel, etc.)
3. **Class C fires:** Are fires involving flammable Gasses (LPG, LNG, etc.)

4. **Class D fires:** Are fires involving Metals (potassium, sodium, calcium, etc.)
5. **Class F fires:** Are fires involving cooking oil and fat fires

1.3 Fire Safety Management

It is generally agreed that fire is beneficial to humanity because of its usage in many aspects of human life, it also becomes an enemy of humanity when it is not requested or not utilized appropriately. It is one of the greatest threats not only to the occupants of the buildings but also to the entire populace and the environs. The fire has been identified as an enemy of man. Therefore, all buildings whether residential, industrial or institutional need to have proper fire safety management put in place so that an acceptable level of fire safety can be attained in the building or property.

1.4 Fire Safety Practices

Fire safety is one of the many safety issues that must be addressed in order to prevent the potential risk of injury, loss of precious lives, and valuables to fire in case of an outbreak. Unlike most of other safety issues, fire has large potential to injure and kill large number of people without notice quickly; it has no respect for status of any person or value of a place when it is set to occur. It is rather unfortunate that many building owners today have failed to make provision for adequate fire safety, the users and managers of such properties do not strictly observe safety rules and precautions as evident because of their negative attitude towards safety thereby exposing the occupants of the building and other innocent persons to risk of fire outbreak (Bot & Dalyop, 2000)^[8].

3. Fire Prevention in Tertiary Institution

Fire accident may occur due to several factors as discussed earlier, such as carelessness of occupant, arson or erratic power supply from the public power supply company. There are standard to be complied with and equipment to be provided, that will help to alert the occupants, to ease evacuation of occupants so as to avoid injuries and death as much as possible and to provide access for the fire men to evacuate the occupants and save the building from burning complete in case fire occurs accidentally and put off the fire early.

4. Classification of Fire and the Extinguishers

The main sources of fire in the laboratory are generally classified according to their nature (TLC 2005) into six thus; Class A fires involve organic solids such as paper and wood; Class B fires involve flammable or combustible liquids, Gasoline, grease and oil fires; Class C fires involve flammable gases; Class D fires involve combustible metals; Class E fires involving electrical appliances that has additional risk of electric shock (however, when the power supply is turned off an electrical fire falls into another category), Class F fires involve cooking fat and oil (Shield and Silcock, 1987; firesafe.org.uk).

5. Ignition sources

Ignition Sources are substances or equipment or devices which create heat and cause another substance to start burning. Ignition temperature is the lowest temperature at which a substance will ignite spontaneously. GL Captain Briggs (2012).

6. Chemical Chain Reaction: Chemical process of combustion involves the rapid oxidation of fuel source at an elevated temperature, which releases energy, produce heat, light and by products.

7. Characteristics of Fire

According to Technology Learning College (2015), has seen fire as dangerous element in most buildings including institutional once, they further described the characteristics of fire as follows:

1. Fire is Fast: Fire naturally spreads very fast because a little flame if allow will grow and turn into a major fire which might be completely out of control. This is what usually makes it difficult or sometimes impossible to evacuate valuables during its outbreak in building

2. Fire is Hot: During fire outbreak in buildings the room temperature can be up to 100°C at floor level and 600°C at eye level, which can cause scotching of the lungs of human being when inhaled. In five minutes, times, a room may get so hot that everything in it ignites at once. This is called flashover.

3. Fire is Deadly: Fire in its nature is deadly because during fire outbreak there are some toxic gases that are produced, and the oxygen present is been used up to enhance combustion and the toxic gases such as carbon monoxide etc can kill human being so easily.

4. Fire is Dark: Fire starts bright, but after a while it produces a black smoke and complete darkness, if one wakes up to a fire, one may loss his vision, disoriented and unable to find his/her way around the home he/she has live for years. Thus, it is dark and dangerous

Causes of Fire in Tertiary Institutions

Fire disaster is a very unpleasant incident that when occur leads to loss of innocent precious lives and unquantifiable properties, it could be caused by several factors, which could be attributed to human actions and the characteristics nature of the building. Therefore, the recently increased fire disasters in buildings in Nigeria are alarming and worrisome (Service 2018).

Methodology

1. Introduction

The research employed the use of both qualitative and quantitative (mixed method) research approaches. Fire safety management of the eight 8 randomly selected tertiary institutions in the states whereby two universities, two polytechnics, two colleges of education and two monotechnic were selected to represent the entire tertiary institutions. However, the safety officers available in the selected institutions were consulted as well as the state fire safety board office and the authority responsible for to provide and implement fire safety management in the selected institutions. However, the result obtained was interpreted and analysed using the comparative analysis method. the data obtained and gathered was presented, analysed and interpreted frequency distribution tables, the result which was coded and analysed using SPSS and was presented under headings and sub-headings

2. Area of the Study

The study was conducted in Katsina state of Nigeria. The state is located on the northwestern part of Nigeria. It the state was also divided into three geopolitical zones (i.e Katsina Senatorial zone, Daura Zone and Funtua Zone). The selected institutions were drawn from these three zones and a structured questionnaire was designed to solicit the research data.

Population of the Study

The population of this study comprised two (2) government owned universities, (2) government owned polytechnics, (2) government owned monotechnic, and (2) government owned colleges of education making a total of eight (8) tertiary institutions from the state. In addition to these state and federal fire service offices boards and Fire safety managers /officers were used as the research respondents.

Results and Discussion

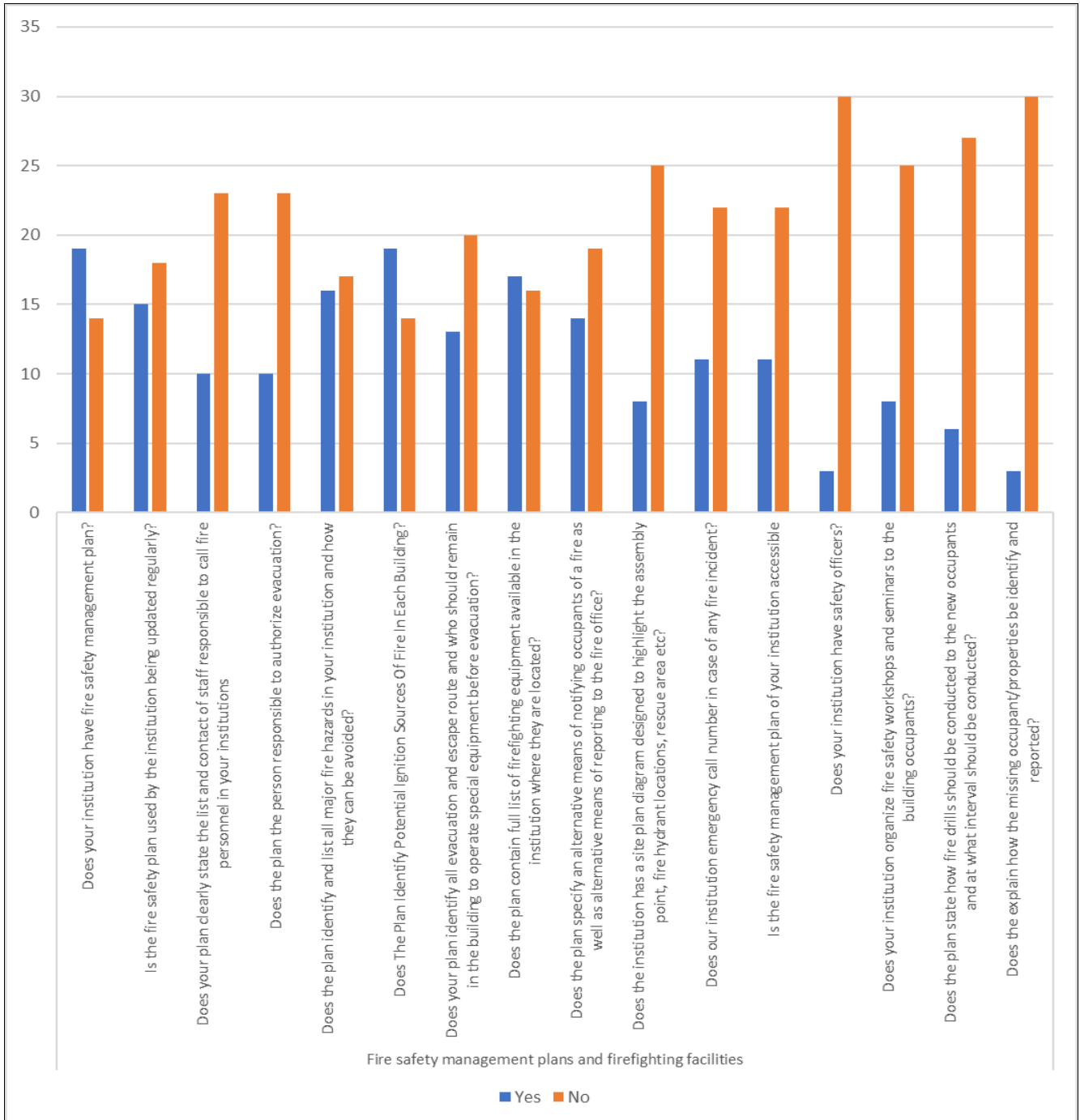


Fig 1: Show the Summary of the responses on fire safety management plans and firefighting facilities

The figure above shows that some of the respondents indicated that their institution has fire safety management plan while majority of revealed that they has no such plan, the plan identifies potential ignition sources of fire in each building and the plan contain full list of firefighting equipment available in the institution where they are

located. However, the fire safety plan used by the institution is partially being updated regularly, the institutions plan partially identify and list all major fire hazards in the institution and the plan partially specify an alternative means of notifying occupants of a fire as well as alternative means of reporting to the fire office.

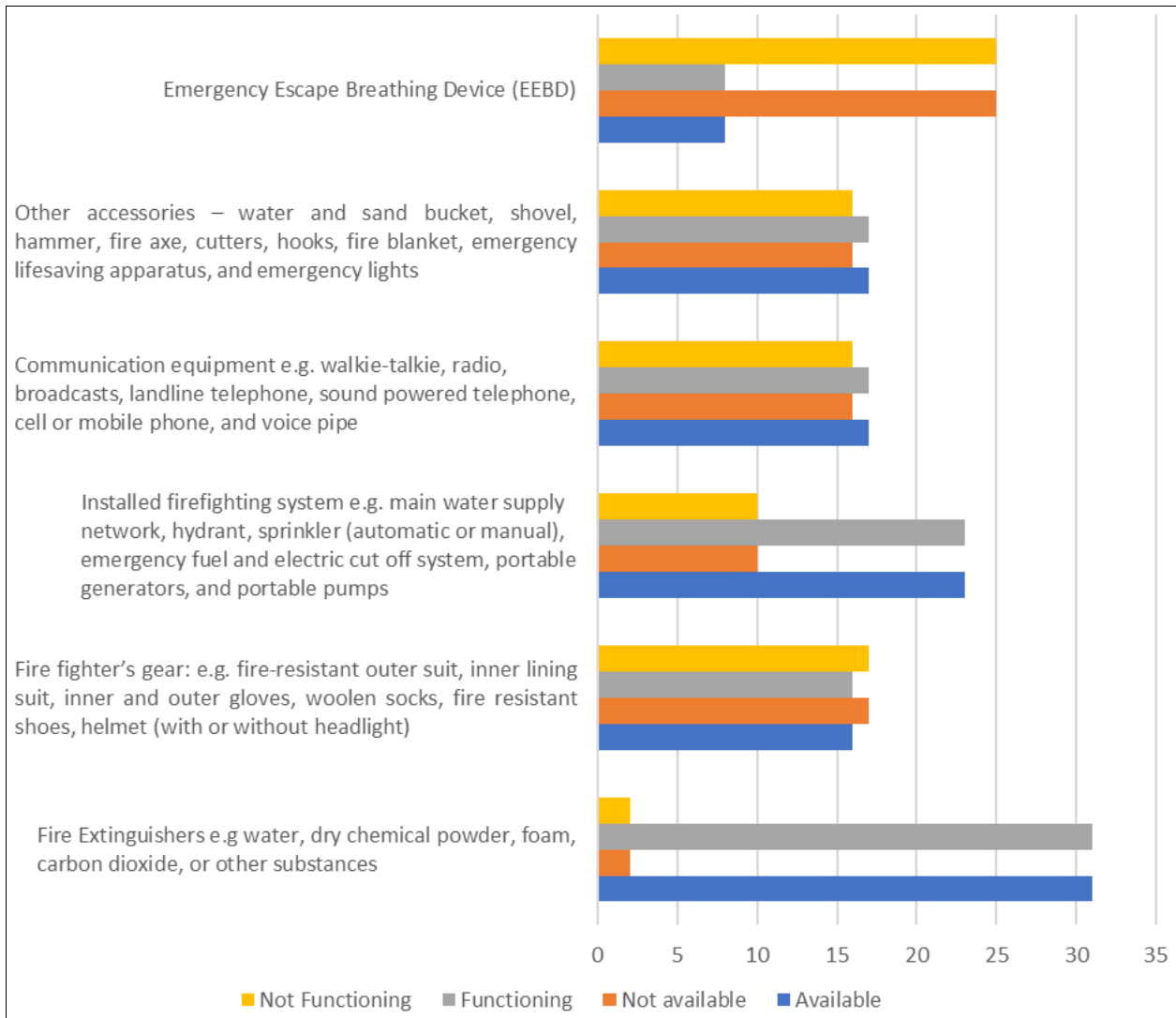


Fig 2: Multiple bar chart for the summary of responses on provision of firefighting facilities within the institutions

Fig 2 shows that the institutions have available and functioning Fire Extinguishers, Installed firefighting system, Communication equipment and Other accessories especially water. However, they lack Emergency Escape Breathing

Device (EEBD) and Fire fighter’s gear like fire-resistant outer suit, inner lining suit, inner and outer gloves, woolen socks, fire resistant shoes and helmet as shown in figure 3.1 above.

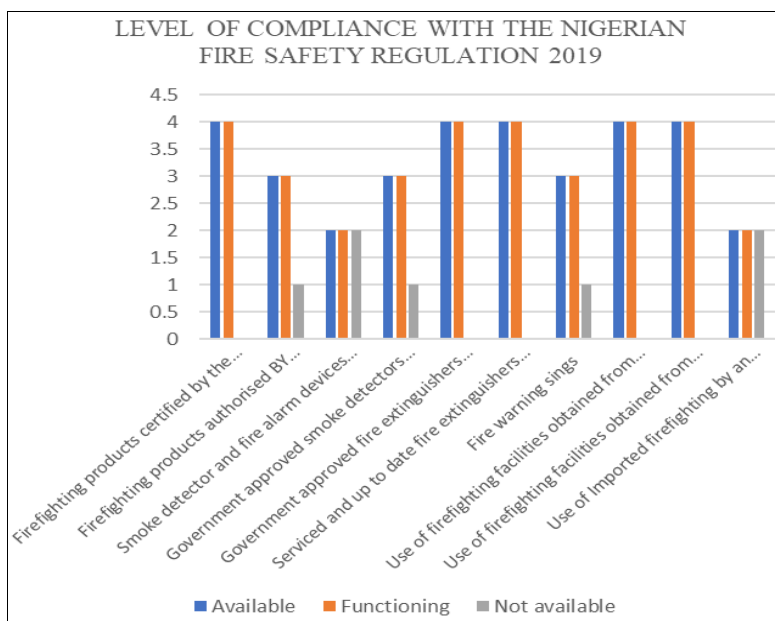


Fig 3: Multiple bar chart showing the level of compliance with the Nigerian fire safety regulation 2019

Figure 4 shows that all (100%) the institutions' firefighting products were certified by the standard organization of Nigeria (SON) and all were functioning, they all have government approved fire extinguishers to every premise of the institution and were functioning. Similarly, they all (100%) have available and functioning but non serviced and up to date fire extinguishers with certificates. The institutions use of firefighting facilities obtained from roadsiders and were well functioning. They use firefighting facilities obtained from unregistered vendor. There is available 75% firefighting products authorized by National fire data repository centre (NFDR) by the institutions, Government approved smoke detectors to every premise of the institution (75%) and Fire warning sings (75%).

Conclusion

By reviewing the related literature and official statistical records, the study has found through field work that, most institutions has no fire safety management plan that can be used as a quid to minimize the risk of fire in the event of fire outbreak, many researchers consider fire safety management plan as a vital document that is necessary to be provided in each public building especially higher institutions.

Recommendations

After a careful study of the data collected from the field and information obtained from the reviewed literature, the study, therefore, made the following recommendations:

1. The school managements should make sure that, each building should be design in such a way that safety of the occupants (staff and the students) and the items to be housed in should be given priority by providing exit ways, functional fire alarming systems, relevant updated fire extinguishers, muster points, emergency contact number in the event of fire outbreak etc.
2. Government should make a monitoring team that will make sure that Nigerian tertiary institutions are satisfactorily complying to the Nigerian fire safety code and be enforcing the code to all Nigerian tertiary institutions for the safety of all users and their materials.
3. Future study should also use a regression analysis to estimate the number staff in the Nigerian tertiary institutions that were affected fire outbreak while in the institutions and to also estimate the cost of items lost as a result of fire outbreak in these institutions.

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