

IMPACT OF HEALTH AND SAFETY PRACTICES ON BEHAVIOUR OF CONSTRUCTION WORKERS IN ABUJA, NIGERIA

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Abstract - The Health and Safety of workers is a very substantial issue to reflect with relation to the realization of construction industry's goal. However, health and safety behaviour of the industry is a challenge to the developmental initiative of the country. The research addressed the challenges encountered by construction workers when adopting health and safety practices capable of guiding construction activities on the safety performance of building construction workers. This led to the evaluation of the impact of health and safety practices on the behaviour of construction workers with a view to mitigating the challenges faced in adopting health and safety practices on construction sites. The use of quantitative approach was adopted in this research. The research data were collected with the aid of well-structured questionnaires. The questionnaires were administered to 220 selected construction firms registered with Abuja's business directory. The response rate of the questionnaires was 67%. Mean item score (MIS) was used to rank the health and safety practices workers adopted by construction workers on a 5-point Likert scale. The research found out that the most adopted health and safety practices by construction workers is "The use of personal protective equipment provided" (MIS = 4.58) and that the health and safety practices have significant influence on the behavior of construction workers on site. The challenges encountered when adopting health and safety practices is "Inadequate health and safety training for operatives (workers)", "Inadequate first aid kits box", "Lack of training facilities", and "Unavailability of proper protective personal equipment" (MIS = 4.77, 4.75, 4.41 and 4.38 respectively). The most effective strategies to aid successful adoption of health and safety practices by construction workers is "Rewarding workers who demonstrate exemplary safe work behavior on site to encourage others" (MIS = 4.89). The research recommends that Construction managers should embrace strategic approach on site such as: creating safety awareness, safety briefing, include safety matters right from the planning phase, set safety guidelines into conditions of contract, reward workers that exhibit excellent safety performances and there is need for the Government to intensify their effort towards safety implementation by partnership with professional bodies in the built environment to organizing special training on health and safety practice on construction site for the construction workers.

Keywords: *Behaviour, Construction Industry, Health, Impact, Safety, Workers.*

1. Introduction

The construction industry in any country is accompanied with invigorating contributions to national economic development through strategic planning, design, and construction by systematically changing various production processes into constructed infrastructures (Isa *et al.*, 2013). In developing countries like Nigeria, approximately 25% of the workforces were ascribed to the construction industry (Ibrahim and Musa-Haddary, 2010). The industry is also viewed as labour intensive because labour cost amounts to 40-65% of the overall cost of a project (Rao *et al.*, 2015). Therefore, the labour intensive nature of the industry will demand more human involvement at the production stage. However, the industry compared with other sectors of the economy, due to the caliber of casualties suffered in execution of

building projects across the globe, has made the construction industry to be seen as an industry which is prone to accidents with numerous challenges that have always been accompanied with elevating risks, where workers are subjected to hazardous and tough situations (Kukoyi and Smallwood, 2016; Emuze and Khetheng, 2016). The construction industry is a project-based firm that comprises various parties working together towards accomplishing same goal. Moreover, the means of accomplishing this goal is characterized by hazards which pose threat to workers life (Ayangade, 2000). Muiruri and Mulinge (2014) noted that the complexities of activities required in the building production process pose different challenges to workers health inherent risks in the production stage. The construction industry always has a poor safety record and it is still seen as a global occurrence (Emuze and Khetheng, 2016; Zhou *et al.*, 2013), and Nigeria is no exception. Although industrialization and advances in technology in recent decades have made inroads into the construction industry, which still make the industry to be highly dependent on human resources to perform the physical work required on a construction site (Emuze and Khetheng, 2016). It is therefore essential that the health and safety of workers is taken into consideration. This consideration will be advantageous as it will save any employer a lot of effort, time and money that would have been spent in managing an accident that would occur due to poor health and safety on site. This research study therefore, seeks to evaluate the influence of health and safety practices on behaviour of construction workers in Abuja, Nigeria.

2. Literature Review

A Construction activity is believed to have been in existence as humanity, while building project in Nigeria started as early as 1930's. Construction activities were executed via public works department (PWD) and Royal Army Engineers who later became (Nigerian Army Engineers). Construction industry has been known for its physical nature due to the activities of works embedded in the building production process. Health and Safety is a major factor in ensuring that any construction project fully accomplished its objectives within the estimated budget with minor or no accident. Similarly, Muhammad *et al.* (2015) expressed that, worker's compliance with Health and Safety regulations will have a positive influence in assessing workers quality delivery and productivity of construction projects. Dodo (2014) added that Health and Safety is an unavoidable part of construction process with the contributions of different tradesmen and professionals at each production stages.

Construction Workers in Nigerian Construction Industry

Construction industry always attract different participants working together to perform one tasks or the other which are interdependence and each of this operative input are required in meeting up client's satisfaction in all ramification. Fagbenle *et al.*, (2011) viewed site workers as the core that links other construction resources together (building materials, plants and equipment, and finance) in order to achieve project expected outcomes. Site operatives are needed to perform specific tasks which could or/and could not be done mechanically. Currently, construction industry employs different categories of operatives on site for the executions of building production process. They include the skilled and unskilled workers.

Health and Safety Practices on Construction Sites

The construction industry is labour intensive and utilizes people for physical conversion processes on site even for works that possibly is perilous (ILO, 2005). The industry in emerging nations is subjugated by small and medium contractors and most of these do not have operational systems to manage health and safety (Kheni *et al.*, 2007). Protecting people through different health and safety practices is therefore mandatory on construction sites. However, there are various health and safety practices adopted on construction sites.

Personal Protective Equipment (PPE)

Personal protective equipment (PPE) is protective clothing or safety wear against the occurrence of injuries at any work which are designed to protect construction workers from injury by blunt impacts, electrical hazards, heat, chemical hazards and infections (Emuze and Khetheng, 2016). The choice of selecting appropriate PPE is based on the anticipated hazards. However, some of the PPE for the construction work includes: head protective wear, eye protective wear, ear protective wear, breathing protective wear, body protective wear, hand protective wear, foot protective wear and so on.

First Aid Kits

According to oxford English dictionary, first aid kit is a standard collection of first aid supplies for treatments of minor injuries or stabilization of major injuries. First aid has to do with a particular level of treatment, whereas medical treatment exists when injuries or diseases requires a higher degree of care and management to make certain a full recovery, for example; prescribing and providing drugs to control a perceived change (ICMM, 2014). Medical treatment beyond first aid should be employed on construction sites (Biggs *et al.*, 2009; ICMM, 2014).

Induction Training

In order to endorse a good safety culture on construction sites, different wits are necessary such as conducting health and safety induction training to workers before they gain access to a construction site (Choudhry *et al.*, 2007; Loosemore and Andonakis, 2007). Construction workers have been successfully trained through the use of induction training on health and safety risks and how to control these on different types and sizes of temporary endeavours. Makin and Winder (2008) quoted induction training for both operatives and visitors as a crucial component of a framework to make better the application Occupational Health and Safety management systems. Health and Safety induction training has to do with familiarizing site operatives with the site specific health and safety hazards which may likely be stumble upon while carrying out work on the site so that they may comportment themselves in a manner which does not imperil themselves or anyone else (Godfaurd and Abdulkadir, 2011). Health and Safety induction training is also carried out to make sure that workers comprehend their Health and Safety responsibilities (Bust *et al.*, 2008). For health and safety induction training to be significant and valued, it must address issues that address the particular hazards the operatives will stumble upon continuously on the working environment (Safe Work-Australia, 2014).

Challenges of Health and Safety Practices Adoption

Adopting safety practices has always been a challenge for construction workers across the construction industry. This however could be due to the migration of workers, method of worker employment, work standards, different training ground and experience (Mohamed *et al.*, 2009). Muiruri (2014) conducted a survey and noted that some of the major challenges workers faced in adoption of health and safety practices in the constructions sites are inclusive, though not narrowed to; inadequate personal and protective equipment, poor maintenance of personal protective gear, lack of top management support in the management of health and safety in construction sites, inadequate enforcement mechanisms, inadequate welfare facilities, absence of safety committees, unawareness of health and safety matters among the workers and lack of first aid kits on the construction sites. Also, Muiruri (2014) noted welfare facilities as a big challenge since they are not sufficiently provided as well as personal protective equipment. Certain site managers pointed out that lack of adequate funds, lack of monitoring and evaluation, lack of personal protective equipment implementation programs among others as some of the certain factors that upsurge to the mentioned challenges.

Health and Safety Practices on Workers' Behaviours on Construction Sites

Safety practices in construction projects have received several attentions over the year, but how safety compliance affects worker productivity and performance requires some attention. Okeola (2009) justified that health and safety in construction is all about avoiding people from been injured or killed at work or becoming hostile through appropriate safety measure and providing an adequate working environment. The culture and attitude of workers in the industry and the managers about health and safety frequently oversee taking of risk and perilous work practices. Lack of appropriate information and unawareness are to blame for the poor safety actions in construction sites. For instance, some workers felt that the safety equipment such as hard helmets and reinforced boots are too burdensome and uncomfortable (Muiruri, 2008). Belel and Mahmud (2012) discovered that construction workers' attitude toward safety is influenced by their own perception of risks, safety rules and procedures.

Strategies for mitigating the Challenges Faced in Adopting the Health and Safety Practices on Construction Sites

Most site managers and workers advocated that the provision of protective gear, formation of safety committees, inspections by the government, and training and education as procedures to lessen some of the major challenges stumble upon in the construction sites (Muiruri, 2008). However, owing to the fact that lack of enforcement mechanisms such as inspections on site to check adherence to safety requirements on the numerous actions the suggestions still remain not implemented.

3. Methodology

For the purpose of the research study, the Quantitative approach in the form of a well-structured questionnaire survey was deemed appropriate and adopted. The format of the questionnaire basically involves responding by ticking. This was adopted to facilitate easy response. The sample frame for this study therefore, comprises of professional in the construction industry. In order to minimize the possibility of biasness for choosing the sample frame for the study, a mix of construction professionals with different background was randomly sampled. The targeted population of the research is 244 construction companies registered with Abuja’s business directory. The sampling technique adopted for the research study is a simple random sampling technique. Abuja business directory maintained a total of 244 registered companies in Abuja. The value 244 was subjected to Krejcie and Morgan (1970): formula for determining the minimum sample size in the total population. The value was reduced to a minimum of 148 at 95% confidence level and at 5% limit of error which shows that 148 is the minimum numbers of questionnaires that can be administered in that population. The descriptive method of analysis was employed to analyze collected data from well-structured questionnaires. The method of data analysis includes the Mean item score (MIS) and ranking method.

Table 1: Sample Frame of the Study

Respondents	Population size	Questionnaire Administered	Questionnaire Received and valid for analysis	Percentage rate
Construction firms	244	220	151	67

Source: Researcher’s analysis (2018)

4. Results and Discussions

Health and safety practices commonly adopted by construction workers

Table 2: Health and safety practices commonly adopted by Construction Workers

S/No	Health and Safety Practices	Mean	Rank	Decision
1	The use of personal protective equipment	4.58	1 st	Strongly Agree
2	The use of first aid kits or box	4.19	2 nd	Agree
3	Providing ideas on H&S matters when asked	4.15	3 rd	Agree
4	Networking with other employees(workers)	4.07	4 th	Agree
6	Implementing Employees drug testing	4.02	5 th	Agree
5	The use of cloak and toilets	4.02	5 th	Agree
7	Attending site induction organised for Operatives (Workers)	3.94	6 th	Agree
8	Participating in hazards identification on sites	3.92	7 th	Agree
9	Viewing H&S information through company’s newsletter	3.91	8 th	Agree

10	Using the communicated H&S poster and other signs to give safety education	3.90	9 th	Agree
11	Attending H&S site meetings	3.87	10 th	Agree
12	Attending organised orientation on safety for new Workers	3.82	11 th	Agree
13	The use of drinking water on site	3.76	12 th	Agree
14	Attending fire protection programmes	3.62	13 th	Agree
15	Attending alcohol and abusive substance programs	3.60	14 th	Agree
16	Concentrating on task at hand	3.50	15 th	Agree
17	Attending toolbox talks organized by Employer	3.28	16 th	Not Sure
18	Meeting with H&S consultants	3.21	17 th	Not Sure
19	Working in good physical condition	3.19	18 th	Not Sure
20	Adopting company's H&S policies	3.16	19 th	Not Sure
21	The use of the canteen services on site	2.82	20 th	Not Sure
22	Keeping of safety records and follow ups	1.88	21 st	Strongly Disagree

Source: - Researchers analysis, (2018)

Table 2 revealed that the most commonly adopted health and safety practices is “The use of personal protective equipment” with of MIS = 4.58. The 2nd ranked is “The use of first aid kits box” with a MIS = 4.19. The next ranked is “Providing ideas on health and safety matters when asked”, “Networking with other employees (workers)”, “Implementing employees drug testing”, “The use of cloak and toilets”, “Attending site induction organised for operatives” and “Participating in hazards identification on sites” is ranked 2nd 3rd, 4th, 5th, 5th, 6th and 7th respectively (MIS= 4.19, 4.15, 4.07, 4.02, 4.02, 3.94 and 3.92 respectively). The least ranked health and safety practices adopted is “Keeping of safety records and follow ups” (MIS 1.88).

Challenges encountered when adopting various health and safety practices by construction workers

Table 3: Challenges encountered when adopting various health and safety practices by construction workers

S/No	Challenges encountered	Mean	Rank
1	Inadequate H&S training for operatives (workers)	4.77	1 st
2	Inadequate first aid kits or box	4.75	2 nd
3	Lack of training facilities	4.41	3 rd
4	Unavailability of proper protective personal equipment (PPE)	4.38	4 th
5	Improper or no site induction for operatives	4.33	5 th
6	No willingness to follow safety norms	4.32	6 th

7	Uncomfortable working while using personal protective equipment	4.26	7 th
8	Low level of awareness on using personal protective equipment (PPE)	4.25	8 th
9	No verbal communication with operatives during site meetings	4.23	9 th
10	Improper communication by employer	4.21	10 th
11	Lack of awareness on site safety and regulations	4.01	11 th
12	Lack of understanding of safety rules and regulations due to illiteracy	3.99	12 th
13	No or improper orientation on safety for new operatives	3.75	13 th
14	Lack of awareness on health and safety hazards	3.74	14 th
15	Competency level	3.57	15 th
16	Lack of fire protection programmes	3.40	16 th
17	Unfamiliar with construction process	3.27	17 th
18	Perception of risk/ hazard on the work site	3.25	18 th
19	Too much work pressure	3.04	19 th
20	Inadequate emergence response plan	2.27	20 th
21	No or lack of Insurance cover for employees	2.17	21 st
22	Inadequate drinking water on site	2.13	22 nd
23	Broadness of safety system procedure	2.03	23 rd
24	Lack of adequate cloak and toilets	1.91	24 th
25	Lack of safety pre-task planning by employer	1.27	25 th

Source: - Researchers analysis, (2018)

Table 3 revealed that the most challenge encountered when adopting the health and safety practices is “Inadequate health and safety training for operatives” (MIS = 4.77). The second ranked challenges are “Inadequate first aid kits or box” (MIS = 4.75). The next ranked challenges is “Lack of training

facilities”, “Unavailability of proper protective equipment” , “Improper or no site induction for operatives”, “No willingness to follow safety norms”, “Uncomfortable while working with personal protective equipment”, “Low level of awareness on using personal protective equipment (PPE)”, “No verbal communication with operatives during site meetings”, “Improper communication by employer”, “Lack of awareness on site safety and regulations”, “No or improper orientation on safety for new operatives”, “Lack of awareness on health and safety hazards” and “Competency level” (MIS = 4.41, 4.38, 4.33, 4.32, 4.26, 4.25, 4.23, 4.21, 4.01, 3.99, 3.75, 3.74 and 3.57 respectively). The least ranked challenges encountered by construction worker when adopting health and safety practices is “Lack of safety pre-task planning by employer” (MIS = 1.27).

Effect of health and safety practices on the behaviour of construction workers

Table 4: Effect of health and safety practices on the behaviour of construction workers

S/No	Health and Safety Practice	Mean	Rank
1	The use of personal protective equipment	4.46	1 st
2	The use of first aid kits or box	4.29	2 nd
3	Providing ideas on H&S matters when asked	4.22	3 rd
4	Using the communicated H&S poster and other signs to give safety education	4.17	4 th
5	The use of cloak and toilets	4.09	5 th
6	Networking with other employees(workers)	4.03	6 th
7	Attending site induction organised for Operatives(Workers)	3.99	7 th
8	Participating in hazards identification on sites	3.95	8 th
9	Viewing H&S information through company’s newsletter	3.95	8 th
10	The use of drinking water on site	3.94	9 th
11	Attending organised orientation on safety for new Workers	3.92	10 th
12	Attending alcohol and abusive substance programs	3.83	11 th
13	Implementing Employees drug testing	3.77	12 th

14	Attending fire protection programmes	3.62	13 th
15	Working in good physical condition	3.56	14 th
16	Attending H&S site meetings	3.56	15 th
17	Attending toolbox talks organized by Employer	3.54	16 th
18	Concentrating on task at hand	3.48	17 th
19	Adopting company's H&S policies	3.46	18 th
20	Meeting with H&S consultants	3.37	19 th
21	The use of the canteen services on site	3.24	20 th
22	Keeping of safety records and follow ups	1.71	21 st

Source: - Researchers analysis, (2018)

In Table 4, it was revealed that the health and safety practice that have effect on workers' behaviour is "The use of personal protective equipment" (MIS = 4.46). the next ranked health and safety practices that have effect on workers behaviour is "The use of first aid kits or box provided", "Providing ideas on health and safety matters when asked", "Using the communicated health and safety poster and signs to give safety education", "The use of cloak and toilets", "Networking with other employees(workers)", "Attending site induction organized for Operatives(Workers)", "Participating in hazards identification on sites", "Viewing H&S information through company's newsletter" and "The use of drinking water on site" (MIS = 4.29, 4.22, 4.17, 4.09, 4.03, 3.99, 3.95, 3.95 and 3.94 respectively). The least ranked health and safety practices that have effect on the behaviour of construction workers is "Keeping of safety records and follow ups" (MIS = 1.71).

Strategies for successful adoption of health and safety practices by construction workers

Table 5: Strategies for successful adoption of health and safety practices by construction workers

S/No	Strategies for Successful Adoption	Mean	Rank
1	Rewarding operatives who display exemplary safe work behaviour on site to encourage others	4.89	1 st
2	Enforce safety rules for workers	4.85	2 nd
3	Use of coercive enforcement mechanism such as fine (to use force)	4.80	3 rd
4	Provide and encourage the use of personal protective equipment	4.74	4 th
5	Have safety norms and health standards	4.54	5 th
6	Safety on site should be discussed at every general project meetings	4.54	5 th
7	Regularly train and retrain workers on safe work procedures	4.51	6 th

8	Site inductions for workers	4.51	6 th
9	Involve workers in the safety inspections processes regularly	4.44	7 th
10	Increasing workers awareness on identifying health and safety risk factors	4.37	8 th
11	Incentive programs should be developed	4.28	9 th
12	Involve workers in setting safety goals and asking them for ideas on safety matters	4.03	10 th
13	Identifying hazards on sites before work commences	3.97	11 th
14	Ensure that a very new worker on site is given an appropriate orientation regarding health and safety inspections	3.91	12 th
15	Remove hazards as much as possible	3.83	13 th
16	Attending work health and safety training courses by workers	3.67	14 th
17	Provision of Insurance cover for employee	3.67	14 th
18	Communicating health and safety information to workers through newsletters, leaflets and posters	3.58	15 th
19	Make work practices safe for workers	3.55	16 th
20	Exercising disciplinary measures to correct wrong behaviour	3.40	17 th
21	Help workers in deciding precautions	3.33	18 th
22	Providing job hazard analysis	3.05	19 th
23	Inform workers about health hazards on site before work	2.93	20 th
24	Obtaining a labour certificate for every contract	2.08	21 st
25	Carrying out safety pre-task planning	1.35	22 nd

Source: - Researchers analysis, (2018)

Table 5 revealed that the most effective strategy to aid for successful adoption of health and safety is “Rewarding workers who demonstrate exemplary safe work behaviour on site to encourage others” (MIS = 4.89). The next ranked is “Enforce safety rules for workers” , “Use of coercive enforcement mechanism such as fine (to use force)” , “Provide and encourage the use of personal protective equipment”, “Have safety norms and health standards”, “ Safety on site should be discussed at every general project meetings”, “Regularly train and retrain workers on safe work procedures”, “Site inductions for workers”, “ Involve workers in the safety inspections processes regularly” , “Increasing workers awareness on identifying health and safety risk factors” (MIS = 4.85, 4.80, 4.74, 4.54,4.54, 4.51, 4.51, 4.44 and 4.37 respectively). The least ranked strategy is “Carrying out safety pre-task planning” (MIS = 1.35).

5. Conclusion

This study focused on the impact of health and safety practices on behaviour of construction workers in Abuja, Nigeria. It emphasized that construction workers should carry out an initial hazard identification exercise to generate baseline for safety practices.

Twenty-two (22) health and safety practices were identified from literature out of which “The use of personal protective equipment” was adopted the most. The research also found out that some major challenges encountered when adopting health and safety practices are Inadequate health and safety training for operatives, Inadequate first aid kits or box, Lack of training facilities, Unavailability of proper protective equipment, Improper or no site induction for operatives and No willingness to follow safety norms. The use of personal protective equipment and the use of first aid kits or box have a positive effect on the behavior of workers. The study also found out that effective strategies to aid successful adoption of health and safety practices by construction workers are Rewarding workers who demonstrate exemplary safe work behaviour on site to encourage others, enforce safety rules for workers and Use of coercive enforcement mechanism such as fine (to use force).

5. Recommendations

In line with the conclusions made in the research the following recommendations were drawn:

- Construction managers should engage the use of safety audio, video and visual displaying gadgets on site to demonstrate safety consciousness among workers. Workers who are majorly vulnerable to accident on site can be controlled with this approach on sites; this might include appointing personnel that will keep reminding workers about their safety.
- Construction managers should embrace strategic approach on site such as: creating safety awareness, safety briefing, include safety matters right from the planning phase, set safety guidelines into conditions of contract, reward workers that exhibit excellent safety performances.
- Construction managers should adopt require site base training for the operatives especially on the use of safety wears while safety managers should regularly attends safety training course.
- Finally, Government should intensive their effort towards safety implementation by partnership with professional bodies in the built environment to organizing special training on health and safety practice on construction site for the construction workers.

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