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# Level of Knowledge and Awareness on Occupational Safety and Health Act 2007 Among Electrical Installation Trainees in Vocational Training Centres in Uasin Gishu County, Kenya

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**Abstract**

There have been several cases of industrial accidents in electrical sector in Kenya, some of which have been fatal. Awareness of occupational safety and health act (OSHA) is improved by training employees on safety as well as the provisions on its administration and reinforcement. The study assessed level of awareness on OSHA 2007, compliance of risk management and safe systems of work with OSHA 2007. Eleven public Vocational Training Centres in Uasin Gishu county were selected for the study. Participants included trainers, workshop technicians and trainees totaling to 205 respondents. Data was collected using interviews, observation checklist and questionnaire. Data obtained was analyzed using quantitative and qualitative techniques. Pearson Correlation Coefficient was employed to determine relationship that existed between the independent variables and dependent variable. Qualitative data from interview schedule was transcribed, thematically classified and arranged before they were reported in narrations and quotations. Based on the findings, the study concluded that that most of the instructors/workshop technicians have not attended any refresher course/facilitation regarding occupational safety. Similarly, most of the workshop attendants interviewed admitted that they are not aware of their safety rights at the workplace and generally the labor laws which advocate for the provision of a safe working environment for all people engaged in employment, insurance and regulation. It was also concluded that inadequate and poor quality of resources is a factor affecting proper implementation of skill development among students in technical and vocational training institutions in Uasin Gishu County. The study therefore recommended that vocational and technical training Institutions should be fully equipped with adequate, modern and appropriate training resources.

***Key words:*** Knowledge, awareness, Occupational Safety and Health Act 2007, Electrical installation trainees, Vocational training centers.

## 1.0 Introduction

Occupational safety is a cross-disciplinary area concerned with ensuring the safety, health and welfare of people engaged in work or employment. The goal of all occupational safety and health programs is to foster a safe work environment. As a secondary effect, it may also protect co-

workers, family members, employers, customers, suppliers, nearer by communities, and other members of the public who are impacted by the workplace environment (Boyce, Veith, Newsham, Myer & Hunter, 2013). Despite implementing the safety strategies in workplaces, occupational accidents and incidents have been increasing in parallel to developing industries and consequently their outcomes can be unpleasant (Asan & Akasah, 2015). This clearly depicted that there was need to investigate factors that were contributing to this increase of occupational accidents in workplaces.

Globally, over 264 million industrial accidents happen every year, with over 350,000 mortalities (Hamalainen, 2005). The International Labor Organization (ILO) and the World Health Organization (WHO) at its twelfth session in 1995 adopted the following aims of occupational safety and health: the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention amongst workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his/her physiological and psychological capabilities.

Occupational Safety and Health (OSH) has been a central issue for the ILO ever since it began operations in 1919 and continues to be a fundamental requirement for achieving the objectives of the decent work agenda (ILO, 2005). In Iran for instance a lot of funds are annually devoted to gather for workplace disabilities and compensating workers when they are not working (Dembe, 2005) generally, according to the Iranian Ministry of Labor, 43% of all occupational accidents annually occur for personnel who are under the management of this Ministry. This is due to the fact that Occupational injuries are mostly caused by work conditions as well as a number of personal characteristics (Dembe, 2005). In Taiwan, electrical mortalities involve 14.6% of all fatal accidents in construction industries and they are the second cause of occupational mortalities after falling accidents (30%) (Abongomera, 2009). Electricity is the fifth reason for occupational injuries leading to death (accounting for 7% of all workplace fatalities) in the USA, and it can create a specific hazard to workers who work routinely in proximity to electrical sources (Abongomera, 2009).

In Kenya, Health and safety at work is amongst some of the most valuable assets of companies, individuals, communities, and countries. Occupational Safety and Health programs are therefore, key strategies within organizations in ensuring that the health and the safety of employees are observed, thus contributing positively to the productivity of an organization (WHO,2013). Trainees within a training environment are exposed to potentially dangerous working conditions, machines and equipment, chemical and tools. Creating workplaces that are safe and healthy for employees therefore prevents occurrences of accidents, illnesses and diseases, one approach the companies may incorporate with the intent of meeting their ever-growing expectations of improving productivity as well as their competitiveness (Torrington et.al,2013). Occupational Health and Safety programs are key to preventing injury and illness in the workplace. They similarly enable employers as well as employees know the likely hazards they are exposed to

each day. Effective health and safety programs therefore involve employees in formulating OHSP as well as procedures (Kumar, 2017).

Occupational Health and Safety awareness designed guidelines, policies, and programs that would be later on implemented across all boards to ensure the wellness and safety of employees is at par with the required standards. Organizations in Kenya developed an occupational health and safety program that is mainly established to take cognizance of their employee's safety (Jelimo, 2013). However, it is essential to note that the statutory and health audit report that was recently conducted revealed that work-related illnesses, accidents, and injuries increased significantly by 20-30% among technical employees, with this attributed to the challenges in the implementation of OHS programs (Puplampu & Quartey, 2012). The occupational Safety and Health Act 2007 aims at securing the safety, health and welfare of workers and the protection of persons other than the workers against the risk to safety and health arising out of, or in connection with the activities of persons at work.

The Act sets objectives to promote and improve occupational safety and health standards. The OSH services in Kenya are governed by two pieces of legislation: the Occupational Safety and Health Act (OSHA), 2007 and the Work Injury Benefits Act (WIBA), 2007. The purpose of OSHA, 2007 is to secure the safety, health and welfare of people at work, and to protect those not at work from risks to their safety and health arising from, or in connection with, the activities of people at work. The purpose of WIBA, 2007 is to provide compensation to employees for work-related injuries and diseases contracted in the course of their employment, and for connected purposes. This study sought to examine the level of knowledge and awareness on Occupational Safety and Health Act 2007 among Electrical Installation Trainees in Vocational Training Centres in Uasin Gishu County.

## 2.0 Literature Review

Occupational safety is a cross-disciplinary area dealing with safeguarding the safety, health and welfare of people involved in work (Hart et al., 2012). The aim of all occupational welfare and health programs is to enhance a safe work environment. As a secondary consequence, it can also guard co-workers, family members, employers, customers, suppliers, nearby communities, and other members of the public who are impacted by the workplace environment (ILO, 2011). This is also accepted in European Union strategy on occupational health and safety and in the OSH strategies of the Member States (ILO, 2001). The European Union Community strategy on health and safety at work for underlined the requisite to reinforce the prevention culture by means of education and training. OSH must be part of a cohesive strategy to encompass all the essential aspects of education, training, research, and innovation for tomorrow's European Union. In particular, there has been increasing recognition that risk education must form part of the training for those entering manual vocational trades and there has been inordinate deal of activity to set in it into vocational courses and grow suitable, participative learning methods and resources.

The study is in agreement with the European Union strategy of making sure that professionals entering the workforce need adequate risk education in order to grow the required OSH skills, knowledge and approaches. But (Hart et al., 2012) are of the opinion that in order for training to be effective, the training content must be based on the identified skills and knowledge gaps of the learners. It must include only the information or skills required to attain required job performance.

The British Standard Occupational Health and Safety Assessment Series (BS OHSAS) advocates that some workers may have certain wants. For example: new employees want basic orientation training on how to work safely, including preparations for first aid, fire and clearing, people shifting jobs or taking on extra tasks need to identify about any new health and safety implications, young employees are mostly vulnerable to accidents. Their needs require particular attention, and so their training should be a priority. It is also important that new, inexperienced or young employees are adequately supervised; some people's skills may need updating by means of refresher training (BS OHSAS, 2007). Kiweke,(2008) examined the determinants and effects of work-related training among employees in Britain, considering individuals employed in 1991 in their sample (aged 33) who undertook some form of work-related training between 1981 and 1991. They focused on employer-provided training courses and work-related training leading to a formal vocational qualification, whether employer-provided or non-employer provided.

The fact that numerous subgroup differences in risk perceptions exist including documented differences within the same culture, work setting, and occupation) proves that the social construction of threat beliefs are context bound. In fact, Josten (2003) discussed notions of safety subcultures and how these subcultures influence the perception of risk and, ultimately, work behavior. More recently, investigators have begun to discover social and experiential influences to better understand why different social groups (within the same organization) appear to have different interpretations of risk (Josten, 2003). While several studies have boosted the understanding of how workers' experiences recount to risk perceptions, these investigations have generally neglected the literature on dialogical theories of learning and behavior (Cekada,2011). It is our conviction that these latter learning perspectives offer considerable theoretical perception for understanding the social construction of not only learning but also risk perceptions and the motivation to learn.

Mainstreaming occupational safety and health (OSH) into the education of learners and people has an important part to play in developing and improving safety cultures in the workplace (Takala, 2010). Kiwekete (2008) commented on the scarcity of occupational hygiene publications, which took into account developing countries, and looked forward to the 4$^{th}$ International Occupational Hygiene Association (IOHA) Conference in Cairns, where their problems were to be a major theme. In September 2005, the 6th IOHA Conference became the first IOHA Conference to be held in Africa, after three conferences in Europe, one in Asia and the other Australia. From previous research it is concluded that the level of occupational safety and health in Africa is low compared with the rest of the world. Generally, the opinion is that in

Sub-Saharan Africa public health problems are so massive that occupational health problems are subordinate to those like child mortality, malnutrition, water quality and AIDS. It is true that these factors are the main causes of the short life expectance of the African population. But working conditions also influence the life expectance.

The Comparative Risk Assessment Collaborative Group has evaluated the causes of diseases and premature mortality due to a variety of hazards (Gudmunsson, 1996). Their studies reveal that in Africa, work-related factors cause twice as many lost years (expressed in disability adjusted life years, Daly) per thousand people as in Europe and North America. Therefore, it is mandatory for success that initiatives are taken within the countries themselves and supported from outside. There are certainly positive signs, but if OSH is truly to become an integral part of business management in all sizes of organizations, then all future managers and professionals need relevant risk education, not just those who will work in high-risk sectors (Takala, 2010). It is important to be aware of the challenges and to identify what seem to be the more successful approaches that can be taken (Takala, 2010).

In 2004, Kenya came up with occupational safety and health (OSH) profile. It served a major role in providing insights for the efficient strengthening of the national occupational safety and health system that exist currently. It has provided a continuous review of the national OSH system and the remarkable developments made in the last decade. Furthermore, it has given basic data on the major issues that affect the sound administration of OSH at both countrywide and workstation levels, it will allow the country to find gaps in, and desires for further growth of existing; authorized, institutional, organizational and technical infrastructure associated to the sound managing of OSH.

In Kenya, 75 institutions offer OSH training for safety and health committee members, and also for awareness creation. The country has 49 active registered safety advisers, 30 fire safety auditors, 38 designated health practitioners, and many other professionals such as plant examiners involved in the OSH field. (ICOH 2013) The Constitution of the Republic of Kenya is supreme, and lays the foundation for all other laws. Although it is not specific on OSH, it provides, in the Bill of Rights, the right for every citizen to fair labor practices, reasonable working conditions, and a clean and healthy environment. Through a series of consultations, the Government has also approved a national policy that will greatly improve the OSH profile when it is implemented (OSHA 2012).

## 3.0 Materials and Methods

Eleven public Vocational Training Centres in Uasin Gishu county participated in the study. Respondents included trainers, workshop technicians and trainees totaling to 205 respondents. Data was collected using interviews, observation checklist and questionnaire. Data obtained was analyzed using quantitative and qualitative techniques. Pearson Correlation Coefficient was employed to determine relationship that existed between the independent variables and dependent variable. Qualitative data from interview schedule was transcribed, thematically classified and arranged before they were reported in narrations and quotations.

## 4.0 Results

### 4.1 level of knowledge and awareness on Occupational Safety and health act 2007 among trainees pursuing electrical installation training on safety skills development

The purpose of this study was to establish level of knowledge and awareness on Occupational Safety and health act 2007 among trainees pursuing electrical installation training on development of safety skills. To achieve this objective, the participants were requested to indicate the level of agreement/disagreement on a five point likert scale questions in the questionnaire on safety practices awareness. The findings are as summarized in table 1.

**Table 1: Safety practices in Vocational Training Centers**

| Statement | | Strong Disagree | | Disagree | | Undecided | | Agree | | Strongly Agree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | F | % | F | % | F | % | F | % | F | % |
| There are emergency exits in the building | $T_C$ | 5 | 17.2 | 2 | 6.9 | 0 | 0 | 11 | 37.9 | 11 | 37.9 |
| | $T_R$ | 12 | 7.8 | 16 | 10.4 | 3 | 1.9 | 111 | 72.1 | 12 | 7.8 |
| There are warning signs attached to machines | $T_C$ | 9 | 31.0 | 14 | 48.3 | 3 | 10.3 | 2 | 6.9 | 1 | 3.4 |
| | $T_R$ | 112 | 72.7 | 9 | 5.8 | 8 | 5.2 | 12 | 7.8 | 13 | 8.4 |
| Workshop pathways are clearly demarcated | $T_C$ | 11 | 37.9 | 11 | 37.9 | 0 | 0 | 3 | 10.3 | 4 | 13.8 |
| | $T_R$ | 105 | 68.2 | 13 | 8.4 | 15 | 9.7 | 9 | 5.8 | 12 | 7.8 |
| There are safety notices in the workshops | $T_C$ | 13 | 44.8 | 7 | 24.1 | 2 | 6.9 | 5 | 17.2 | 2 | 6.9 |
| | $T_R$ | 104 | 67.5 | 31 | 20.1 | 10 | 6.5 | 4 | 2.6 | 5 | 3.2 |
| Ventilations are adequate | $T_C$ | 11 | 37.9 | 10 | 34.5 | 2 | 6.9 | 5 | 17.2 | 1 | 3.4 |
| | $T_R$ | 5 | 3.2 | 16 | 10.4 | 34 | 22.1 | 95 | 61.7 | 4 | 2.6 |
| I am aware of OSHA Act (2007) | $T_C$ | 8 | 27.6 | 11 | 37.9 | 0 | 0 | 10 | 34.5 | 0 | 0 |
| | $T_R$ | 90 | 58.4 | 26 | 16.9 | 5 | 3.2 | 20 | 13.0 | 13 | 8.4 |



Table 1 shows that 28(18.2%) and 7(24.1) % of trainees and instructors disagreed with the statement that there are emergency exits while 3(1.9%) were undecided and 22(75.8) % of instructors and 123(79.9% of the trainees agreed with the statement. It emerged therefore that majority 75.8% and 79.9% of the instructors and trainees in VTCs in Uasin Gishu County agreed that there are emergency exits in most of the buildings. This goes hand in hand with OSHA Act (2007) which clearly points out that every public building must have an emergency exit. It was also found that 121(78.5%) of trainees and 23(79.3%) of instructors disagreed with the statement that there are warning signs attached to machines.8 (5.2%) and 3(10.3%) of the respondents were undecided while 25(16.2%) and 3(10.3%) of trainees and instructors respectively agreed with the

statement. The findings also showed that 22(75.8%) of the instructors and 118(76.6%) of the trainees disagreed with the statement that Workshop pathways are clearly demarcated.

15 (9.7%) of trainees were undecided while 21(13.6%) and 7(24.1%) of trainees and instructors respectively agreed with the statement. Further (20)68.9% of the trainees and (135)87.6% of the instructors disagreed with the statement on Availability of safety notices.10 (6.5) % and 2(6.9%) of them were undecided unlike 9(5.8%) and 7(24.1%) of trainees and instructors respectively who were in agreement with the statement. On the statement that Ventilations are adequate in the buildings 111(72.1%) trainees and 21(72.4) instructors disagreed while 34% of trainees and 6.9% of instructors were undecided. On the other hand, 9(5.8) % and 6(20.6) % of trainees and instructors respectively agreed with the statement. that they have read OSHA Act (2007). The findings from this study clearly depicts that majority of vocational training centers in uasin gishu county have not implemented safety guidelines from OSHA ACT (2007) .This results were consistent with findings from a study done in Nyamira County, Kenya which depicted the status of safety in public secondary schools where only 36% of schools had fully implemented safe school environment (Migiro, 2012).(Alli,2001) points out that company practices show that OSH activities like having notices ,demarcated pathways, proper ventilations, emergency exits amongst others have a crucial effect on safety-related behavior and help employees to identify potential hazards and risks. In addition, it enables them understand operating procedures, make safe decisions and properly respond to emergencies. A summary of what was observed is indicated in Table 2 which shows Safety practices/items observed in the vocational training institutions



**Table 2: Summary of observation checklist**

| Safety practice/Item Observed | Vocational Institution AB | Vocational Institution CD | Vocational Institution EF | Vocational Institution GH | Vocational Institution IJK |
|---|---|---|---|---|---|
| **Condition of the equipments: Are they fitted properly? Are the electric cables properly insulated?** | All the electrical installation boards seen were fitted properly. | Electric cables were not properly insulated | The sockets seen were not in proper condition. | Live wires protruding from power outlets | The equipments seen were in proper condition |
| **Availability of safety equipment such as fire extinguishers and first aid facilities.** | Fire extinguishers seen in the workshop no first aid kit | Fire extinguishers seen in the offices but non in the workshop but no first aid facilities were seen | No Fire extinguishers and first aid facilities seen | None was seen | Only fire extinguishers seen |

| | | | | | |
|---|---|---|---|---|---|
| **Dressing code for the trainees and instructors.** | All the trainees seen had overalls and safety boots. | Majority of the trainees had overalls but lacked safety boots. | Some trainees lacked overalls and safety boots. | Trainees seen dressed in overalls but without safety boots. | Trainees seen dressed in overalls but without safety boots. |
| **Availability of enough working space and proper ventilation.** | Spacious work area and properly ventilated | Spacious work area and properly ventilated | Small working area and poorly ventilated | Congested workshop and poorly ventilated | Congested workshop and poorly ventilated |

***Source: Field data, 2018***

As indicated in Table 2 the study observed that in vocational training institutions A and B equipments were in good working condition and all the electrical installation boards were fitted. Fire extinguishers were also available but first aid kits were missing. In C and D Electric cables were not properly insulated. Fire extinguishers were in the offices but there was none in the workshop and first aid facilities were missing. Majority of the trainees had overalls but lacked safety boots. There were Spacious working space and enough ventilation. In E and F training centers, the sockets seen were not in proper condition and some were broken. Some trainees were missing overalls but majority lacked safety boots. Working space was not enough and there was poor lighting in the room and electric lights were used during the day. Centers G and H had sockets broken in the workshop and Live wires were protruding from power outlets. Fire extinguishers and first aid kits were missing. Trainees seen dressed in overalls without safety boots. The workshop was congested with chairs and tables and those rooms were poorly ventilated. The equipment available which included electric boards were seen in proper condition and well fitted Fire extinguishers were available but first aid kits were missing. Trainees seen dressed in overalls without safety boots.

The workshop was congested with chairs and tables and those rooms were poorly ventilated. Generally, the study noted that most workshops were poorly equipped and the institutions lacked adequate instructional materials. Most of the institutions used the workshop as the only lecture room for electrical installation students. Some institutions had only one instructor who acted as a workshop attendant also for electrical installation. Nalumansi et al (2014) are in agreement with Okinyal, (2006) view and also described the vocational training in that the current TVET system is not in a position to carter for the present and the future skills requirements of the economy. Even practical skills are theoretically explained with gestures and pictures. Further, view that many research reports abound on the inevitability of instructional materials and resources on learning out comes. In spite of this, many of these resources and instructional materials are inadequate and sometimes brought late towards the end of a semester in our training institutions.

Another important aspect of interest to the study was to observe the availability of safety equipment such as fire extinguishers, fire alarms and first aid facilities at the training institutions. As indicated in Table 2, some of these equipment like first aid kits were missing in most vocational training centers and all the instructors revealed that injuries are referred to the institution clinic. Moreover, in all the vocational training institutions no fire alarms were seen. As regards the trainee dressing codes, most of them wore overalls and dust coats except in

institutions E and F where some trainees lacked overalls/overcoats. A general observation by the study in all the vocational training centers was that most trainees lacked the right workshop safety wear, therefore although all the programs have a component of safety training in the curriculum not much is practiced in the training institution workshops.

**4.2 Safety facilitation seminars for the instructors.**

Findings on how often instructors'/workshop technicians in the five vocational training institutions had attended facilitation seminars/workshops regarding occupational safety for at least the last two years; the findings are presented in table 3:

**Table 3: Number of times instructors from the vocational institutions had attended safety facilitation seminars/workshops**

| Vocational training institutions | Number of times instructors from the vocational institutions have attended safety facilitation seminars/workshops. |
|---|---|
| Vocational training institution AEF | Twice, training conducted by police fire brigade |
| Vocational training institution BG | None |
| Vocational training institution CH | None |
| Vocational training institution DJ | Once, training conducted by police fire brigade |
| Vocational training institution KI | None |

***Source: Field data, 2018***

From Table 3, it can be seen that 5 institutions have had their instructors/workshop technicians attend refresher courses or received facilitations in form of lectures regarding occupational safety training from the police fire brigade. The other six vocational training institutions had not organized similar training for their instructors and workshop technicians. Conversely, Tapp (2011) is of the view that safety trainers should review their training materials, and if possible, refresh them every year, especially if the content presented is essentially the same every year. Adding new activities and even new examples and stories from current events can keep the class fresh. Also, attending conferences and workshops for trainers is always a good idea since people can always learn something new, even if the ideas come from outside the safety field. Participation in professional safety organizations can help everyone practicing in safety by giving them a great opportunity to share ideas with and learn from others. For those delivering safety training, this is the key to keeping the training content fresh and interesting.

Nilsson cited by Mjelde (2006) is in agreement with Tapp's view and notes that another specific feature of vocational teaching is that the lessons should be linked to the changes and developments in on-going production life. For the teachers, then, the process of acquiring skills to teach in the vocational field is a constant process of 're-skilling' from work in the production and service sectors to the teaching field. In the course of acquiring their skills competence, vocational teachers are socialized with a very basic understanding that the vocations change in step with technological changes in society. From the study found out that the lack of refresher courses or facilitations can be attributed to two main factors: there are no strong collaborations

between the vocational training institutions and the workplaces yet it is a fact that there are many industries which would be willing to help training institutions, most especially in terms of training equipment; and inadequate financial support from the government to enable institution administrators to organize these facilitations.

## 5.0 Conclusion and Recommendations

Based on the findings, the study concluded that that most of the instructors/workshop technicians have not attended any refresher course/facilitation regarding occupational safety. Similarly, most of the workshop attendants interviewed admitted that they are not aware of their safety rights at the workplace and generally the labor laws which advocate for the provision of a safe working environment for all people engaged in employment, insurance and regulation. It was also concluded that inadequate and poor quality of resources is a factor affecting proper implementation of skill development among students in technical and vocational training institutions in Uasin Gishu County. The study therefore recommended that vocational and technical training Institutions should be fully equipped with adequate, modern and appropriate training resources.

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