Journal of Human Resource & Leadership

The Impact of Occupational Safety, Health Legislations and Policies on the Health of Steel Reinforcement Workers in Building Construction Sites, Kenya Case Study of Nairobi County, Kenya

Nyamboki Rasugu Japheth, Professor Robert Rukwaro (PhD) & Dr. Isabella Njeri Wachira-Towey (PhD)

ISSN: 2616-8421

Stratford Peer Reviewed Journals and Book Publishing
Journal of Human Resource & Leadership
Volume 5||Issue 1||Page 1-24||February ||2021|
Email: info@stratfordjournals.org ISSN: 2616-8421

The Impact of Occupational Safety, Health Legislations and Policies on the Health of Steel Reinforcement Workers in Building Construction Sites, Kenya Case Study of Nairobi County, Kenya

[*1]Nyamboki Rasugu Japheth, [2] Professor Robert Rukwaro (PhD) & [3] Dr. Isabella Njeri Wachira-Towey (PhD)

[1]Post Graduate Student, Department of Real Estate and Construction Management University of Nairobi, Kenya

Corresponding Author Email: nyaraconsults@yahoo.com

[2] Senior Lecturer, Department of Real Estate and Construction Management University of Nairobi, Kenya

Email: rukwaro@uonbi.ac.ke

[3] Senior Lecturer, Department of Real Estate and Construction Management University of Nairobi, Kenya

Email: wnjeri@uonbi.ac.ke

***How to cite this article*: Nyamboki, J. R., Rukwaro, R. & Wachira-Towey, I. N. (2021). The Impact of Occupational Safety, Health Legislations and Policies on the Health of Steel Reinforcement Workers in Building Construction Sites, Kenya: Case Study of Nairobi County, Kenya*, Journal of Human Resource & Leadership,* Vol. 5(1), 1-24.**

Abstract

Steel reinforcement work in building construction sites is an important contributor to the building construction industry overall social and economic development of the world. Steel reinforcement work has continually impacted negatively on the health of workers in building construction sites thus raising stakeholders concern. This study investigates the impact of occupational safety, health legislations and policies on the health of steel reinforcement workers in building construction sites. The objective of the investigation was to establish how the impact of occupational safety, health legislations and policies on the health of steel reinforcement workers in building construction sites. The study was premised on the hypotheses that there was no statistically significant relationship between the management of occupational safety, health legislation and policies, and the health of workers of steel reinforcement works in building construction sites. Descriptive cross-sectional method was used for data collection. Testing for reliability of data collection instrument was done by use of Cronbach alpha formula. Data analysis and hypothesis testing were by descriptive and inferential statistical methods. Data presentation was in frequencies, tables, charts, and graphs. The main results of the investigation were that management of occupational safety, health legislation and policies had impact on the health of workers of steel reinforcement works in building construction sites. From descriptive results it indicates that more than 77 % of the respondents were of the opinion that management of occupational safety, health legislation and policies had impact on the health of workers of steel reinforcement works in building construction sites. While from inferential analysis the computation yielded a Pearson correlation coefficient (r) had a positive value of 0.29 which was greater than 0.2 but not more than 0.4, indicative of a moderate positive linear correlation between OSH legislation and policies and workers' health. The Sig. (2-tailed) or p value obtained was 0.001 which is less than 0.05 and very close to 0, implying that there was a statistically significant correlation between OSH legislation and policies and workers' health. This implies that increases or decreases in effectiveness of OSH legislation and policies directly relates to increases or decreases in workers' health in building construction sites. This implies that the existing management system for protection and occupational safety, health legislation and policies, and the health of workers in building construction sites in Nairobi County, Kenya is a problem. Review of this system in response to emerging building and construction sector specific needs was therefore recommended.

Keywords: *Impact of Occupational Safety, Health Legislations, Policies and the Health of Steel Reinforcement Workers.*

1.1 Background of Study

Occupational safety and health legislation and policies under articles One to Four of its 1985 Geneva Convention, ILO is mandated to promote and protect workers' safety and health in workplaces on behalf of the international community through regional and national governments (ILO, 1985). Subsequently, guidelines on OSH management systems for establishing, implementing and improving OSH in workplaces were issued (ILO-OSH, 2001).

Globally in the United States of America, review panel on the effectiveness of the OSH Act, 1970 revealed that the adverse effects of workplace occupational health hazards on workers' health was due to management systems failure requiring systems solutions to fix. In Malaysia, Deros, Ismail and Yusof (2012) noted that only a few of the management personnel from SMEs had the knowledge, skill and ability in carrying out OSH regulation within their respective organizations. In Sweden, Rwamamara (2005) observed that lack of incorporation of workplace safety and health issues at project design stage undermines implementation of safety and health programs in building and construction sites. Goldie (2001) espouses that the Australian Standard 4801-2000 has established an OSH management system incorporating objective setting, planning, evaluation and monitoring of performance standards of health, safety and environment matters in building construction sites. While in Great Britain, the government amended provisions of existing health and safety regulations on construction projects coordination and management to include: developers' duties in relation to managing projects, principal designers' duties as the overall coordinators of all health and safety matters relating to the pre-construction phase in addition to the overall planning, management and monitoring of the pre-construction phase of the project and the principal contractors' duties as the safety and health coordinator for the project execution stage as required (CDMR, 2015).

Locally, the OSH legislation (OSHA, 2007), was enacted to regulate and control the management of OSH matters in workplaces in line with the Kenya National OSH policy 2012 objectives. However, Kariuki (2012); Kirombo (2012) opine that existing OSH workplace administrative and enforcement instruments are apparently not sufficient and effective tools for protective management and control of the workplace health in Kenya. This has resulted to unsafe workplaces and poor worker protection leading to poor workers' health, injuries and accidents, low productivity, high worker absenteeism, corruption, poor data collection and loss of state benefits. A review of the administrative and enforcement structure of these instruments is therefore recommended (Muiruri & Mulinge, 2014 ; Muiruri, 2012).Thus investigation on the impact of occupational safety, health legislations and policies on the health of steel reinforcement workers in building construction sites a case study; Nairobi county, Kenya.

1.2 Problem Statement and Justification

The building and construction industry is complex and dynamic involving many players at various stages of development. The overall adverse effect of workers' health in building construction sites has raised concern among stake holders' trade supervisors and workers on how to minimize or eliminate these risks in workplaces. A survey report by EWCS (EU-27, 2005) showed that 35% of all building and construction industry workers within the European union were exposed to safety and health risks associated with handling of heavy loads, with a sectorial breakdown of the report indicating that 64% of them worked in the building construction sites (EWCS, 2005). 25% to 40% of work-related deaths in industrialized countries occur in building and construction sites and 30% of construction workers suffer from various musculoskeletal disorders (ILO, 2005). A study by Messing, Stock, and Tissot (2009) revealed that occupational health risks and injuries are a common feature among building and construction workers. Huhtala (2013) noted that good workplace ethics resulted in improved health of the workers in workplaces. Konchar and Sanvido (1998) concluded that the fragmented nature of the traditional construction industry where design is separated from construction impairs effective planning, management and monitoring of safety and health activities in building construction sites.

According to Rwamamara (2005) observed that construction processes account for some of the highest occupational injuries and fatalities in both developed and developing nations. Kariuki (2012) opines that existing OSH administrative and enforcement instruments are apparently not sufficient or effective tools for protective management and control of the workplace health in Kenya. Kirombo (2012) asserted that outdated legislation, inadequate controls and enforcement, unethical practices and easy entry by unqualified people into the construction industry in Kenya has significantly contributed to the deterioration of health of workers in building construction sites.

Construction sites are unique and specific in terms of project promoters, financiers, designers, contractors, location, project design, size, complexity, construction time and budget (Baccarini 1996). Steel reinforcement work (SRW) in building construction sites as a component of the larger building and construction industry is a major contributor to the overall social and economic development of a nation. Due to its temporary nature and unpredictable workloads, SRW in building construction sites in Kenya are often executed under informal labour arrangements where workers' safety and health compliance requirements are largely not strictly observed (Mitullah & Wachira, 2003).

Workers executing SRW in building construction sites are regularly exposed to various work related risks (ILO, 1998). This is in spite of there being OSH monitoring, evaluation and enforcement mechanism intended to minimize and control such occurrences in workplaces in Kenya (OSHA, 2007). ILO (2010), regional and national bodies like EWCS (EWCS, 2005) and NIOSH (2009) as well as international and local researchers has raised concern on the impact of these factors on the health of workers in the construction industry (Kheni, 2008; Muiruri, 2012). These concerns have also drawn attention of other stakeholders outside the construction industry who have organized seminars and workshops to discuss these matters (ICPAK, 2018). Whereas some research work has been done on the management of health and safety matters in building and construction sites generally, none of them has addressed the issue of management of SRW and its impact on workers' health in building and construction sites (ILO, 2013; Kibe, 2016; Nohath, 2018). This investigation was therefore to address issues of the impact of occupational safety, health legislations and policies on the health of steel reinforcement workers in building construction sites a case study; Nairobi county, Kenya.

1.3 Research Question

How does occupational safety, health legislations and policies impact on the health of steel reinforcement workers in Building construction sites in Nairobi County, Kenya?

1.4 Research Objective

Establish how occupational safety, health legislations and policies impact on the health of steel reinforcement workers in building construction sites in Nairobi County, Kenya.

1.5 Hypotheses

HO: There was no significant relationship between the impact of occupational safety and health legislation and policies and the health of steel reinforcement workers in Building construction sites.

Ha: There was a significant relationship between the impact of OSH legislation and policies and the health of steel reinforcement workers in Building construction sites.

2.0 Literature Review

2.1 Occupational Safety and Health Legislation and Policies

The building construction sites in Kenya require a good health and safety management system for the construction industry which provides for development of a sustainable health and safety policy setting, monitoring and reviewing standards needed to address or reduce safety and health risks; planning and implementation of performance standards, targets and procedures; performance review to enable evaluation of performance against objectives and targets and audit to assess compliance and identify areas for improvement (Kirombo, 2013). A survey by ILO (2010) revealed that weaknesses in the implementation of the OSHA, 2007 included: inadequate enforcement personnel, low or lack of awareness in its provisions for site record keeping and notification by employers, workers and other stakeholders and lack of centralized advisory centers for providing information on health issues to employers and employees among others. Alhajeri (2011) stated that a work policy statement sets out intentions of an organization in terms of aims, objectives and targets. It clearly indicates that the structure, duties and responsibilities of the management and employees on health and safety matters. It is signed and dated by a senior management official of the enterprise to confirm the management's commitment and posted in a prominent building construction's notice board.

Instruments for monitoring and evaluation of safety and health performance in workplaces include: Task and environmental design; frequency and quality of training of management personnel and workers; structure and quality of supervision; instructions and guidance to workers; supply and maintenance of appropriate and adequate tools, machinery and equipment including personal protection equipment; construction methods; technologies and systems; worker participation in decision making; establishment of health and safety committees; risk management; accidents, incidents and sickness recording and reporting; project audit; OSH compliance notices and feedback.

2.2 The Workers Health

The Workers health is a person's state of complete physical, mental, and social wellbeing, and not merely the absence of disease or infirmity (WHO, 1948). Literature reviewed raised a number of health concerns for workers such as injuries, fatigue and burnouts, stress, low worker concentration, motivation and self-esteem, low job satisfaction, absenteeism and sick-offs in workplaces. Physical, mental and social wellbeing must therefore be the goal towards which we all work as essential means of fostering economic development, poverty reduction and overall social cohesion both nationally and locally (Krekel *et al.*, 2018).

2.3 Theoretical Framework of Systems Theory

The investigation was based on principals of Systems Theory (Von Bertalanffy, 1968), conceptual framework and Qualitative Data Analysis Models for both frameworks adopted from Littlejohn (1999). LeCompte and Preissle (1993) observed that a system is "a group of things relating and interacting between themselves, within their environment and making up a larger whole with function or purpose of the elements within the group affecting the function or purpose of the group as a whole" Johnson, Kast and Rosenzweig (1963) opines that a system is made up of four components; the input, transformation, output and feedback. The Systems theory helps us understand and explain various social and behavioral systems and processes encountered in daily lives (Infante, 1997). Smith and Sainfort (1989) suggests that every workplace has a work system defined by its environment, organization, tasks, technology and the human resource necessary to perform the tasks. Where connections or interaction between components is out of control, out of balance or broken, the system adjusts to the new demands and where not possible, the systems or its components' wellbeing and performance suffers.

The steel reinforcement work (SRW) is a dynamic organizational sub-system constantly interacting with its environment and interrelated parts working in balance with each other to accomplish the enterprise and individual participants' objectives and goals. The SRW sub-system is part of the larger construction site sub-system operating within a country's building and construction industry system which forms part of the global construction industry system. When hazards and risks are not effectively identified, assessed, and timely preventive measures taken in compliance with occupational safety and health(OSH) laws and regulations, the interaction with and connections between the SRW sub-system components are disrupted.

2.4 Conceptual Framework

The systems theory was applied which provided a conceptual framework for visualizing internal and external factors in management of steel reinforcement work that impacted on the health of steel reinforcement workers in building construction sites as a sub-system within the building and construction system. The impact of occupational safety, health legislation and policies represented the independent variable while and the health of steel reinforcement workers in building construction sites (BCS) represented the dependent variable. Established conceptual variables were subsequently defined before being operationalized to create a measure of related constructs for purposes of informing the problem statement and guiding the investigation accordingly. In Figure 1 below Indicates the conceptual framework model for the study showing considered variables and relationships among them.

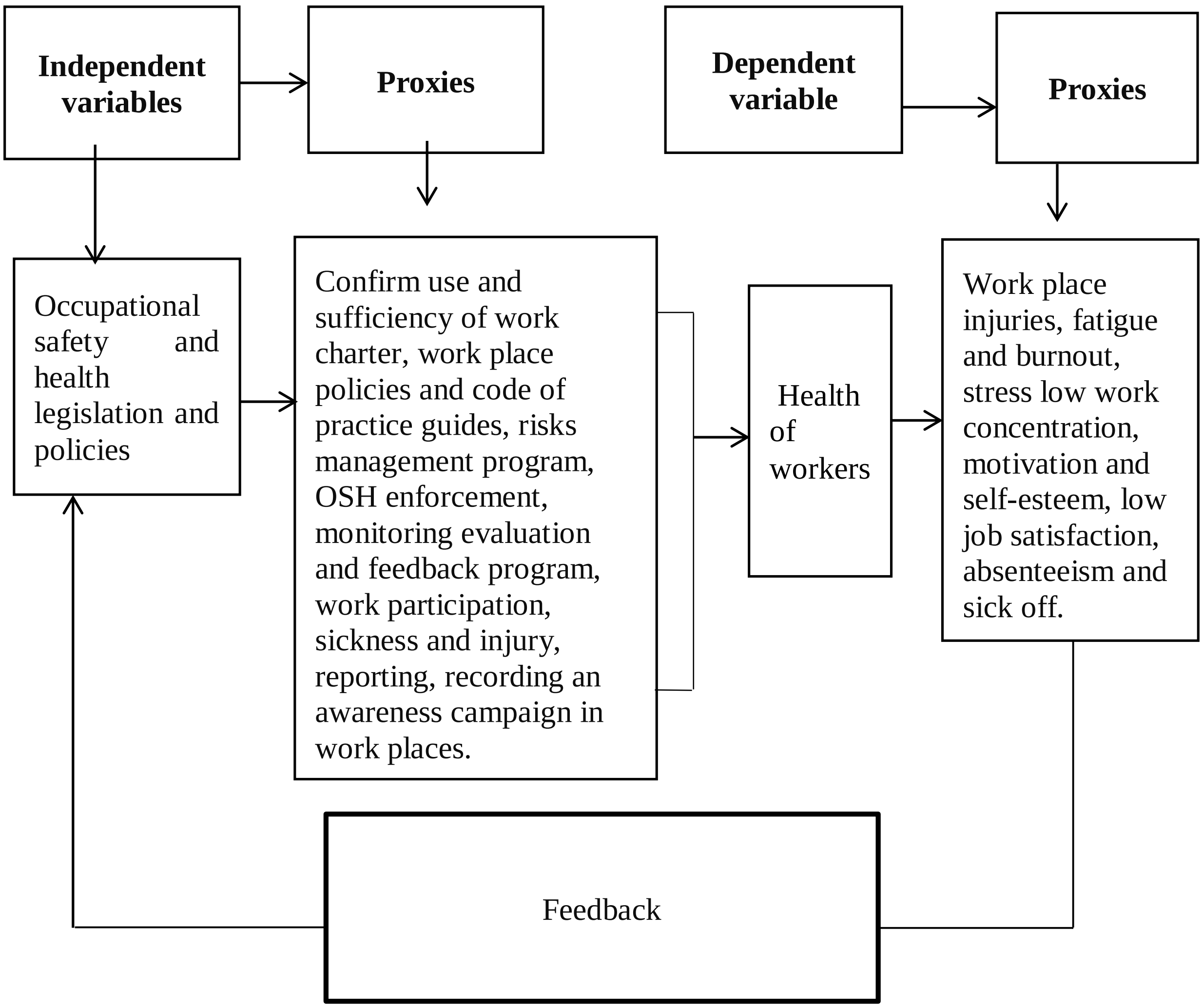

Figure 1: Conceptual Framework Model

Adopted from Little John (1999); Mthalane (2008); Mugenda and Mugenda (2003).

3.0 Methodology

This study was based on a multiple-case study research design which is an empirical research inquiry on a contemporary phenomenon, within the real-life context which the researcher has no control over (Rukwaro, 2016; Mugenda & Mugenda, 2012;Yin, 1994).This was considered to appropriately address the research objectives and questions by enabling the researcher to collect necessary information to explain relationships between variables in management of SRW and their impact on the workers' health within Building construction sites. Further, the multiple –case study has the advantage of covering the study objectives and allowing direct case replication including analytical external generalization of its results (Yin, 2003). Analytical generalization is the generalization of a particular set of results to some broader theory (Yin, 1994., Cavaye, 1996).

The evidence from multiple cases was therefore considered to be more compelling, robust and therefore acceptable than single case evidence (Herrotta & Firestone, 1983).

Various practical and ethical techniques and instruments were applied to collect data from the study sample for analysis, interpretation, explanations and linking conclusions drawn to the initial study questions including allowing the researcher to transfer or generalize the conclusions to other settings or populations (Yin, 2003 & Kemper *et al.,* 2003).

The study was conducted within the Nairobi County physical boundaries. Nairobi County was preferred because it is the capital and largest city in Kenya and second largest in the African Great Lakes region (World Population Review, 2017). It is the largest and most established commercial center in Kenya with approximately three and half Million inhabitants and home to about 1,758 (38.7%) out of the 4,543 registered contractors undertaking building construction works of various sizes and complexities in Kenya (G.o.K., 2016). Lastly, Nairobi County had some of the best and most accessible facilities for the research and was therefore the best area of choice for the study within the available time and budget constraints.

The primary sources of data for the study included questionnaires, interviews, observations, site records and physical artifacts (Yin, 2009). The secondary sources of data were documentary materials such as textbooks, manuals, journals and publications, past studies, libraries and internet (Rukwaro, 2016).

The unit of analysis for this study was building construction sites in Nairobi County which was the focus of the research inquiry (Yin, 2003; Babbie, 2001 & Mugenda & Mugenda, 2012). The population for the study was the total number of steel reinforcement workers in building construction sites in Kenya. The target population was the study population listed in specific sites in Nairobi County.

Stratified random sampling technique was used because the study population was not homogeneous and could be subdivided into groups or strata to obtain a representative sample (Kothari, 2011; Mugenda & Mugenda, 2012). Stratified random sampling involved dividing the population into homogeneous subgroups and then taking a simple random sample in each subgroup for reliable estimates in each stratum and for the population as a whole (Cooper & Schindler, 2003). This sampling strategy was preferred because the target population was heterogeneous and not very much widely spread geographically.

Due to their dynamic, unique, complex and temporary nature, obtaining an updated and reliable database of active steel reinforcement work construction sites in Nairobi County being a challenge, a list of NCA registered and licensed building construction firms was obtained and used as a viable basis for selecting legitimate building construction sites for the study (G.o.K, 2016). This was because all steel reinforcement work was being carried out in building construction sites under the overall management of NCA registered building construction firms. With the probability of each registered firm managing one steel reinforcement building construction site, the total number of these firms was considered representative of the number of building construction sites of interest to this study. This approach accorded equal chances to workers for registered firms in all categories to be selected. However, no more than one building construction site under the management of one firm was considered. This was to avoid the error of duplication of steel reinforcement management styles in those sites.

Stratford Peer Reviewed Journals and Book Publishing
Journal of Human Resource & Leadership
Volume 5||Issue 1||Page 1-24||February ||2021|
Email: info@stratfordjournals.org ISSN: 2616-8421

Out of the 6,917 NCA Nairobi county registered and categorized building construction firms licensed to carry out business in Kenya, 196 of them fall under category NC1 and 2; 1,311 under category NCA3 to 5 and 5,410 under category NCA 6 to 8 as listed in the Kenya Gazette, Vol.CXVIII-No.41 of 15th April 2016, pp1415-1755. To arrive at the number of steel reinforcement work building construction firms for sampling, the formulae n = (z2pq)/d2 were applied, where:

n = the desired sample size when the target population is > 10,000.

z = standardized normal deviations at a confidence level of 95% which is 1.96.

p= the proportion in the target population that assumes the characteristics being sought.

In this study, a 50:50 proportion was assumed which is a probability of 50% (0.5).

q = The balance from p to add up to 100%. That is 1-P, which in this case will be 1- 50% (0.5).

d = Significance level of the measure, that is at 90% confidence level the significance level is 0.1. This was in line with Mugenda and Mugenda (2003) statistical technique for selecting a sample from a population of less than ten thousand. Using the above formulae, the number of building construction firms undertaking steel reinforcement work to be sampled was calculated as below.

n = (1.962 X1.962 X 0.5 X 0.5)/ (0.1)2 = 96.

However, the target population in this study was less than 10,000, thus the sample size of 96 was adjusted using the formula below (Mugenda & Mugenda, 2003).

nf = n/(1+n/N); where:

nf - is the desired sample size when sample size is less than 10,000.

n - is the sample size when the target population is more than 10,000.

N- is the target population size.

nf = n/(1+n/N) = 96/ (1+96/6,917) =95.

Using the above formulae, the number of registered and licensed building construction firms to be sampled was reduced to Ninety-Five (95) and thereafter proportionate stratified random sampling technique was used to select them from the strata. By apportioning the registered and licensed building construction firms in every stratum, the number of registered and licensed building construction firms to be sampled in every stratum were calculated as follows;

NCA 1 and 2: (196), 196/6917 x 95 = 3.

NCA 3 and 5: (1311), 1311/6917 x 95 = 18.

NCA 6 and 8: (5410), 5410/6917 x 95 = 53.

This gives a total of 74. The sample distribution of the number of registered and licensed building construction firms was as shown in Table 1.

Table 1: Sample Distribution for Companies and Respondents

Classified site type	Targeted construction sites selected	Stratum sample size	Stratum Percent
NCA 1-2	196	3	4.05%
NCA 3-4	1311	18	24.33%
NCA 6-8	5410	53	71.62%
Total	**6917**	**74**	**100%**

Source: G.o.K, 2016

The above stratum sample size of 74 relates to registered and licensed building construction firms with the probability of each owning and managing a minimum of one building construction site, the optimum total number of building construction sites for the study across the strata was therefore 74 as shown in table 3.1 above. With the research being a multiple case study, 74 building construction sites were considered too large for the purpose. Whereas reviewed literature does not indicate the ideal number of cases for multiple case studies (Yin, 1994; Patton, 1990.P, 184), 20 information- rich cases across the strata were considered sufficient for the study and therefore selected using purposive sampling technique (Rowley, 2002). The selection was guided by the available budget and time constraints for the study. Using the stratified cluster stratum percentage shown in Table 3.1 the distribution of the selected sites proceeded according to stratified categories as follows NCA 1-2 4.05% * 20 = 0.81, NCA 3-4 24.33% *20=4.87 and NCA 6-8 71.62% *20 =14.32 as shown in Table 2.

Table 2: Number of Building Construction Sites

Classified site type	Stratum Percent	Stratum sample size	Stratum sample number selected
NCA 1-2	4.05%	0.81	1
NCA 3-4	24.33%	4.87	5
NCA 6-8	71.62%	14.32	14
Total	**100%**	**20**	**20**

Source: G.o.K, 2016

The sample numbers required for each stratum were rounded off to whole numbers as shown in table 2 above since it is not feasible to work with fractions of sample sizes in this regard.

From the 20 multiple case studies targeted for sampling, a total of 20 respondents were selected in each building construction site as follows: site manager 1, clerk of works 1, steel trade supervisors 2, sorting and straightening 2, measuring 2, cutting and bending 4, assembling 2, and installation 6. The respondents were identified and selected due to their particular traits of interest essential for the study. The site manager was selected because of his role in enforcement of company policy and overall building construction site management, clerk of works (COW) due to quality assurance and control responsibilities on site, trade supervisors due to their role in overseeing steel reinforcement work, task allocation and supervision of workers, each in accordance with tasks assigned to them. The total number of respondents for the study was calculated as follows: Number of construction sites sampled (20) *Number of workers, supervisors and Managers (20) =400, and distributed as follows.

NCA 1-2 sites: stratum sample number (1) * number of respondents (20) =20

NCA 3-4 sites: stratum sample number (5) * number of respondents (20) =100

NCA 5-8 sites: stratum sample number (14) * number of respondents (20) =280

Total =400

This number was adjusted from 400 to the desired study sample size of 200 respondents by using the formulae (n = (z2pq)/d2) and further enhanced by formulae nf =n/ (1+n/N). This is in line with Mugenda & Mugenda, (2003), statistical technique for selecting a sample from a population of less than ten thousand. The adjusted stratum respondent size was computed as follows.

NCA 1-2 sites: (20), 20/400*200 =10

NCA 3-4 sites: (100), 100/400*200=50

NCA 5-8 sites: (280), 280/400*200=140

Total =200

The adjusted respondents' sizes per stratum was as shown in Table 3.

Table 3: Adjusted Respondents' Sizes per Stratum

Classified site type	Stratum respondents size	Sample respondents sizes
NCA 1-2	20	10
NCA 3-4	100	50
NCA 6-8	280	140
Total	**400**	**200**

Source: G.o.K, 2016

Data as collected using interviews, questionnaires, observations and building and construction sites. Data was analyzed using descriptive analysis of the information was subsequently carried out to establish a logical chain of evidence by examining and understanding data trends and patterns through triangulation, data convergence and other methods of developing logical relationships (Cooper & Schindler, 2011). Inferential statistical tests were used to examine and establish relations between variables and interrelationships between different parts of the data. Pearson correlation coefficient was used for measuring linear correlation between two variables for relations, the closer the coefficient values were to 1.0, the higher the correlation. The significance of relationship between variables were measured using p values, the closer the value was to zero, the higher the significance. Pearson correlation method was preferred because of its appropriateness in measurements taken from an interval scale. The method was preferred because of its characteristic of measuring relationships between two categorical variables. And finally,

Stratford Peer Reviewed Journals and Book Publishing
Journal of Human Resource & Leadership
Volume 5||Issue 1||Page 1-24||February ||2021|
Email: info@stratfordjournals.org ISSN: 2616-8421

short discussions and explanations were included so as to give meaning to the data analysis outcomes obtained.

4.0 Findings and Discussions

4.1 Response Rate

A total of 143 valid responses were received comprising 125 workers and 18 supervisors, translating to a response rate of 71.5%. According to Mugenda and Mugenda (2010), 50% to 60% response rate is considered sufficient, 61% to 70% good and above 70% excellent. The obtained response rate of 71.5% for the study was therefore good for the analysis to be undertaken.

4.2 Demographic profile of respondents

Table 4: Gender Distribution

	Frequency	Percent	Frequency	Percent
	Workers		Supervisors	
Male	118	94.4	12	66.7
Female	6	4.8	6	33.3
Total	**125**	**100.0**	**18**	**100**

Source: Author, 2019

In the workers' category, a total of 95% respondents were male while in supervisors' category, 66.7% respondents were male. The statistics show that majority of employees in steel reinforcement work in building construction sites were male, suggesting that efforts of various gender mainstreaming campaigns have not been successful in this respect.

Table 5: Age Bracket of the Respondents

	Age	Frequency	Percent
Workers	18-28 years	33	26.4
	29-40 years	64	51.2
	41-60 years	28	22.4
	Total	**125**	**100.0**
Supervisors	18-28 years	5	27.8
	29-40 years	9	50
	41-60 years	4	22.2
	Total	**18**	**100**

Source: Author, 2019

The results indicated that 78.6% of the respondents were between 18 to 40 years and 22.4% between 41 to 60 years of age implying that majority of workers in SRW were youthful. This outcome was supported by Ohlsson *et al.* (1994) who observed that age is a risk factor for worker's health. Youthful age group employees are suited for tasks requiring force exertion and frequent repeat motions as the older ones get weaker with continued muscle degeneration.

Table 6: Education level

	Frequency	Percent	Frequency	Percent
	Workers		Supervisors	
Primary school	36	28.8	3	16.7
Secondary School	82	65.6	8	44.4
College	5	4.0	5	27.8
University	2	1.6	2	11.1
Total	125	100.0	18	100

Source: Author, 2019

The workers' Literacy levels are a key aspect in management of steel reinforcement work as is the basis for determining the type and level of induction and training programs requirement, influences worker learning and communication skills, ability to take instructions and effective participation in management and decision making in workplaces (OSHA, 2007). The statistics show that majority of respondents, 71.2% workers and 83.3% supervisors had attained secondary school level of education and above, indicative of their ability to effectively read the bar bending schedule and perform basic math, communicate, take instructions, learn and participate in management and decision making on workers' health in their workplaces.

Table 7: Craftsmanship

	Frequency	**Present**	**Frequency**	**Present**
	Supervisors		**Workers**	
Apprentice	3	16.7	40	32
Certificate	6	33.3	43	34.4
Diploma	5	27.8	5	4
Total	14	77.8	88	70.4
No response	4	22.2	37	29.6
Total	**18**	**100**	**125**	**100**

Source: Author, 2019

In the supervisor's category, 50.0% had attained certificate and below while 27.8% had diploma level of craftsmanship training. In the workers' category, a total of 66.4% had attained certificate and below while only 4.0% had attained diploma level of craftsmanship training. The high level of unresponsiveness indicates the respondents' inability to take instructions or reluctance in effective participation in management of SRW decision making. The statistics suggests a gap and therefore need for advancement in craftsmanship for steel reinforcement workers so as to enhance their skills. This indicates a higher demand for resources on employers who are under duty to induct, train and regularly refresh workers on the use of existing and new work systems, processes, technologies, tools and equipment for SRW in line with the organization's workplace policy and safe work method statement (OSHA, 2007).

Stratford Peer Reviewed Journals and Book Publishing
Journal of Human Resource & Leadership
Volume 5||Issue 1||Page 1-24||February ||2021|
Email: info@stratfordjournals.org ISSN: 2616-8421

Table 8 Age Steel Fixers Started Working

Category	Percentage
Below 18 years	39%
Above 18 years	61%

Source: Author, 2019

The results indicated that 39% of respondents started working when below 18 years and 61% above 18 years of age. The results suggest that a significant minority (39%) of the workers were employed before attaining the legal age of 18 years which was unethical and against OSH laws. Mathenge (2012) supports this study finding and affirms that lack of effective enforcement of professional code of practice and ethical conduct has encouraged unlawful practices in the construction industry in Kenya.

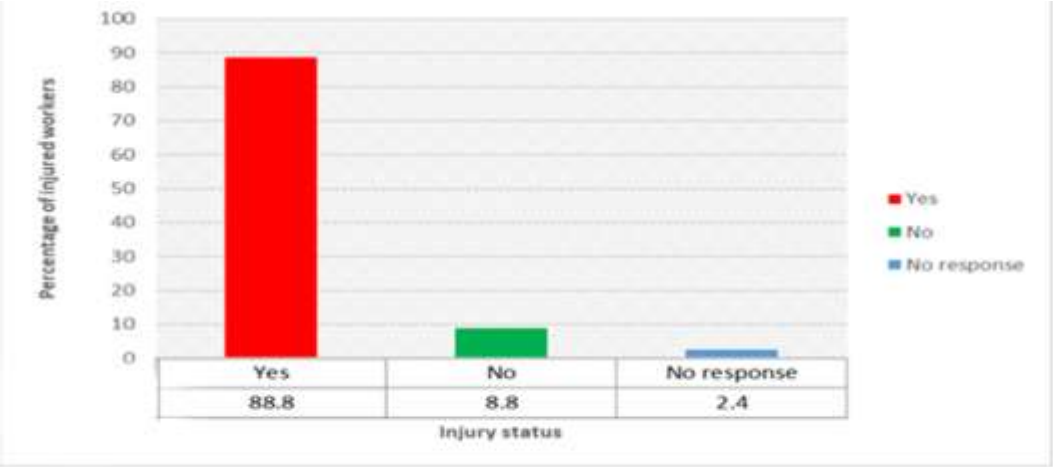

Figure 2: Health Problems at Work

Source: Author, 2019

A total of 88.8% respondents reported to have experienced health problems such as body part injuries, work stress etc. while 8.8% had not experienced any health problems within the first six months of employment in building construction sites. This implies that a majority of the steel reinforcement workers encountered health problems in building construction sites. The results suggest that there were risks in building construction sites that impacted on the workers' health within six months of employment. Literature reviewed indicated that workers are constantly exposed to health risks such as, force, posture, repetition and vibration in workplaces often resulting to workers' body injuries (Rwamamara, 2010). The nature and severities of these depends on the risk type, part of the body involved, exposure duration, frequency and intensity (Simonies-Vincent & Chicoine, 2003).

4.3 Descriptive Analysis

Table 9: Response Analysis of Occupational Safety and Health Legislation and Policies

Respondents' opinion		Strongly disagree-5	Disagree-4	Not sure-3	Agree	Strongly Agree	No Response
There is a published work charter in your building construction site.	N	0	0	0	7	7	4
	%	0	0	0	38.9	38.9	22.2
There is a building and construction industry-wide code of practice and guidelines	N	0	2	0	10	5	1
	%	0	11.1	0	55.5	27.8	5.6
There is regular monitoring, evaluation and enforcement of steel reinforcement work safe method guidelines	N	0	0	1	11	5	1
	%	0	0	5.6	61	27.8	5.6
The management provides for workers' participation in important decision making regarding steel reinforcement work.	N	0	2	2	10	3	1
	%	0	11.1	11.1	55.5	16.7	5.6
There is are designated risk assessment and prevention personnel	N	0	1	0	14	2	1
	%	0	5.6	0	77.8	11.1	5.5
There is safety and health emergency response and first aid teams in your building construction site	N	0	0	0	12	5	1
	%	0	0	0	66.7	27.8	5.5
Workers report to the management all incidents and potential hazards in steel reinforcement work	N	0	0	0	13	4	1
	%	0	0	0	72.2	22.2	5.6
The management allows workers to decline execution of steel reinforcement work under hazardous conditions	N	0	2	0	7	6	3
	%	0	11.1	0	38.9	33.3	16.7
Sickness or injury cases of steel reinforcement workers are reported and recorded.	N	0	0	0	7	10	1
	%	0	0	0	38.9	55.5	5.6
There are adequate welfare facilities for workers in your building construction site.	N	0	0	1	13	3	1
	%	0	0	5.6	72.2	16.6	5.6
There are regular local Occupational health and Safety officials visiting your building construction site,	N	0	4	1	9	3	1
	%	0	22.2	5.6	50.0	16.6	5.6

Source: Author, 2019

The respondents' opinion on whether there was a published work charter in building construction sites clearly indicating workers and management roles, operational budget and performance goals including SRW methods and daily work schedules, 77.8% of them agreed or strongly agreed. On whether there was a building and construction industry-wide code of practice and guidelines for management of OSH matters in steel reinforcement work in building construction sites, 11.1% respondents disagreed and 83.3% agreed or strongly agreed. On whether there was regular monitoring, evaluation and enforcement of steel reinforcement work safe method guidelines in building construction sites, 88.8% agreed or strongly agreed.

On whether the management provided for workers' participation in important decision making regarding steel reinforcement work in building construction sites, 11.1% respondents disagreed and 72.3% agreed or strongly agreed. On whether there was a designated risk assessment and prevention personnel, 5.6% of the respondent disagreed, 88.9 % agreed or strongly agreed. On whether there existed safety and health emergency response and first aid teams in building construction sites, 94.5% of the respondents agreed or strongly agreed. On whether workers report to the management all incidents and potential hazards in steel reinforcement work, 94.4% of the respondents agreed or strongly agreed. On whether management allowed workers to decline execution of steel reinforcement work under hazardous conditions, 11.1% respondents disagreed while 72.2% agreed or strongly agreed. On whether cases of sickness or injury were reported and recorded, 94.4% of the respondents agreed or strongly agreed. On whether there were adequate welfare facilities for workers use in building construction sites, 88.9% agreed or strongly agreed. On whether there were regular local occupational health and Safety officials visiting to building construction sites, 22.2% respondents disagreed and 66.6% agreed or strongly agreed.

Whereas the results indicated that over 83% of the respondents agreed that OSH laws and regulations on the management of steel reinforcement work in building construction sites were being complied with, earlier results of this study on the demographics of the respondents and steel reinforcement work procedures do not support this outcome. For instance, 88% of respondents reported to have suffered injuries within six months of employment in building construction sites yet, the study indicated that there was regular monitoring, evaluation and enforcement of safe work method guidelines 88.9%, worker participation in management decisions 72.3% and risk assessment and prevention personnel 88.9% in building construction sites.

Results from interviews carried out indicated that most of construction sites visited, 65% lacked clear policies on management of steel reinforcement works, performance standards, targets and assessment procedures, mechanism for monitoring and evaluation of health and safety standards. For instance, on publication of workplace policy setting out duties and responsibilities of both management and workers on safety and health matters,70% of the correspondents indicated that policy matters are handled by their head office and not on site, a clear misunderstanding of the purpose and objective of workplace the instrument. A casual observation confirmed that indeed only 30% of respondents had such policy displayed on site as required by OSH regulations. (Kirobo, 2013) observes that construction sites in Kenya require adoption of a good health and safety management system to include a sustainable health and safety policy clearly setting out company objectives, duties and responsibilities of workers and management on safety and health management matters in construction sites and how they can be achieved.

On implementation of safety and health performance standards, targets and procedures, 60% of the respondents indicated that they were no other established safety and health standards and procedure guidelines for implementation except as contained in OSH regulations to which they are committed to comply with. As to whether management and workers undergo regular training on health and safety matters, 72% of the respondents indicated that there were no established training programs to follow but prior to engagement, all new workers were appropriately inducted by their

Stratford Peer Reviewed Journals and Book Publishing
Journal of Human Resource & Leadership
Volume 5||Issue 1||Page 1-24||February ||2021|
Email: info@stratfordjournals.org ISSN: 2616-8421

safety and health officers. These results demonstrated lack of serious endeavor on majority of respondents in commitment towards effective planning, implementation, regular monitoring and review of safety and health matters in building construction sites.

The results are supported by Kemei, Kaluli and Kabubo (2013) who observed that reluctance to invest in safety and health matters; lack of training and enforcement of safety and health regulations, enterprise organizational commitment, adherence to strict operational procedures and competence in machine and equipment handling contribute to poor building construction sites safety and health management in Kenya. Kirobo (2013) concurs with this outcome and adds that the building and construction industry in Kenya lacks an effective safety and health management system. The above results confirm concerns raised by Kariuki (2012) and Kirombo (2012) stated that existing OSH workplace administrative and enforcement instruments are apparently not sufficient and effective tools for protective management and control of the workplace health in Kenya. Goldie (2001) alluded to similar challenges and adds that the Australian Standard 4801-2000 approach had given the construction industry a common template on which to build an OHS management system incorporating planning, management, monitoring, review and feedback on safety and health matters. In Great Britain, OSH regulations have been revised to include duties and responsibilities of developers, designers, contractors and workers in planning, management, monitoring, regular review and feedback on safety and health matters in the building and construction industry.

4.4 Inferential Analysis

Pearson correlation analysis technique was used to determine the relationship between **OSH** legislation and policies, and health of the workers' in building construction sites**.** To facilitate application of this analysis method, the respondent anchors in table 10 were assigned numerical values of 1 for "strongly agree", 2 for "agree", and 3 for "not sure", 4 for "disagree" and 5 for "strongly disagree" (Bowling, 1997; Burns, & Grove, 1997). The assignment of values to the ranked opinions of respondents was to give them meaning for inferential analysis purposes. These values together with the corresponding number of respondents obtained in respect of each questionnaire item were then used to compute Pearson correlation coefficient and p value using statistical package for social sciences (SPSS version 2.1) with results as shown as shown in table 10.

Table 10: Correlation between OSH Legislation and Policies and Workers' Health

		Workers health	OSH Legislation
Workers health	Pearson correlation	1	.285**
	Sig.(2-tailed)		.001
	N	18	18
Occupational safety and health legislation and policies	Pearson correlation	.285**	1
	Sig.(2-tailed)	.001	
	N	18	18
** Correlation is significant at the 0.01 level (2-tailed).			

Source: Author, 2019

The computation yielded a Pearson correlation coefficient (r) value of 0.29 which is greater than 0.2 but not more than 0.4, implying a moderate positive linear correlation between OSH legislation and policies and workers' health. The Sig. (2-tailed) or p value obtained was 0.001 which is less than 0.05 and very close to 0, implying that there was a statistically significant correlation between OSH legislation and policies and workers' health. This implies that increases or decreases in effectiveness of OSH legislation and policies directly relates to increases or decreases in workers' health in building construction sites.

5.0 Conclusion

This study was on the impact of occupational safety and health legislation and policies on workers' health in building construction sites: multiple case studies in Nairobi County, Kenya. Twenty NCA registered building construction sites were selected and stratified for purposes of generalization of the results to the rest of the general population. The literature reviewed for the study showed that very little research work had been done on the subject of this study. Data for the study was collected using questionnaires, structured interview and observation guidelines were formulated to direct and shade light on this new topic in Kenya. Results showed that management of occupational safety, health legislation and policies impacted on workers' health in building construction sites and hence were significant predictor indicators of steel reinforcement in management of occupational safety and health legislation and policies on workers' health in building construction sites.

The descriptive results indicates that more than 77 % of the respondents were of the opinion that management of occupational safety, health legislation and policies had impact on the health of workers of steel reinforcement works in building construction sites. While from inferential analysis the computation yielded a Pearson correlation coefficient (r) had a positive value of 0.29 which was greater than 0.2 but not more than 0.4, indicative of a moderate positive linear correlation between OSH legislation and policies and workers' health. The Sig. (2-tailed) or p value obtained was 0.001 which is less than 0.05 and very close to 0, implying that there was a statistically significant correlation between OSH legislation and policies and workers' health. This implies that increases or decreases in effectiveness of OSH legislation and policies directly relates to increases or decreases in workers' health in building construction sites. This implies that the existing management system for protection and occupational safety, health legislation and policies, and the health of workers in building construction sites in Nairobi County, Kenya is a problem.

6.0 Recommendations

The study recommends to the government in consultation with other stake holders in the building and construction industry to consider:

Enriching programs and cause to be published manuals and handbooks for continuous professional development of safety and health officers, and training of developers, designers, contractors and workers on safety and health matters including work and environment design and safe working methods in BCS.

The study highlighted the role and importance of steel reinforcement works as part of a workplace system defined by its environment, organization, tasks, technology and the human resource necessary to perform these tasks. It also identified weaknesses and risks associated with steel reinforcement work process, their impact on the health and safety of the worker including indicating ways and means of overcoming them in line with the concept of designing work to fit the worker. Results of this investigation would therefore be useful to academia as study reference material for skills training and understanding of management of health and safety matters relating to steel reinforcement work in BCS.

The study will be useful to other researchers wishing to expand knowledge on this study by carrying out further investigations to establish: The impact of management of steel reinforcement work procedures on the health of workers in building and construction site in other counties in Kenya and or other African countries.

REFERENCES

Aina, O. O., & Adesanya, D. A. (2015). Factors affecting performance of incentive schemes in the construction industry in Nigeria. *Civil and Environmental Research, 8* (7), 81-89.

Alhajeri, M. (2011) Health and safety in the construction industry: challenges and solutions in the UAE. Unpublished Thesis. Coventry: Coventry University.

Babbie, E. (2001). The practice of social research (9th ed.). Belmont, CA USA: Wadswaorth Thomson Learning.

Baccarini, D. (1996) the concept of project complexity - a review. International Journal of Construction Management. 14: 201-204.

Bowling, A. (1997). Research Methods in Health. Buckingham: Open University Press.

Cavaye, A.L.M. (1996). Case Study Research: A Multi-Faceted Research Approach for IS, Information Systems Journal, vol. 6, pp. 227-242.

Cooper, D. & Schindler, P. (2011) Business Research Methods. 11th Edition, McGraw Hill, Boston.

Deros, B. M., Ismail, A. R., &Yusof, M.Y. M. (2012)- conformity to occupational safety and health regulations and policies in small and medium enterprises. Journal of Occupational Safety and Health. Vol. 9, No. 1 ISSN 1675-545, 2012.Malaysia.

EWCS (2005). European Foundation for the Improvement of Living and Working Conditions. 4th European Working Conditions Survey.

G.o. K (2013). Ministry of Devolution and Planning. Kenya vision 2030, strategic plan 2013/14 2017/2018. Nairobi. Government Press.

G.o.K., (2013-2017). Ministry of Devolution and Planning. Kenya National Bureau of Statistics.

G.o.K., (2016). The Kenya Gazette, Vol.CXVIII-No.41 of 15th April 2016, pp1415-1755 Nairobi: Government Press.

Goldie, M. (2001), Introducing OHS Management Systems – A Great Leap Forward or Just the Latest Fad? Occupational Health & Safety Management Systems, Proceedings of the First National Conference: Published by Crown Content A.C.N. 096 393 636 A.B.N. 37 096 393 636 75 Flinders Lane Melbourne Vic. 3000.

Huhtala, K. M., Lämsä, A. & Feldt, T. (2013)."Ethical managers in ethical organizations? The leadership-culture connection among Finnish managers", Leadership & Organization Development Journal, Vol. 34 Issue: 3, pp.250-270.

ILO (1989), Low-Cost Ways of Improving Working Conditions: 100 Examples from Asia, chapter i: work organization and workstation design.

ILO (2005). A Global Alliance against Forced Labour, Global Report under the Follow-up to the ILO Declaration on Fundamental Principles and Rights at Work, Geneva.

ILO (2005). World Day for Safety and Health at Work 2005: a sustainable safety and health culture at the enterprise. 4 route des Morillons CH-1211 Geneva 22 Switzerland.

Kariuki, M.D. (2012). Realizing Occupational Safety and Health as a Fundamental Human Right in Kenya. *Mount Kenya University Law Journal* (MKULJ).: 47-74.

Kemper E.A, Stringfield S, Teddlie C. (2003) Mixed methods sampling strategies in social science research. In: Tashakkori A, Teddlie C, editors. Handbook of mixed methods in the social and behavioral sciences. Sage; Thousand Oaks, CA:. pp. 273–296.

Kheni, N.A. (2008). Impact of health and safety management on safety performance of small and medium-sized construction businesses in Ghana. Loughborough University, England.

Kirombo, H. M. (2012). 'Factors affecting implementation of Occupational health and safety measures in the construction industry: The case of Mombasa County', Kenya. Academic research project for a master's degree programme, University of Nairobi. Pp 23-24, 26.

Konchar, M. & Sanvido, V.(1998). Comparisions of US. Project Delivery Systems. Journal of Construction Engineering and Management Vol. 124(6), pp 435-444.

Kothari, C. R. (2004). 'Research methodology: Methods and techniques, 2nd revised Ed, New Delhi: New Age.

Krekel, C. , Ward, G., De Neve, J.E., Blankson, A., Clark, A., Cooper, C., Harter, J., Lim, J., Litchfield, P., McKinnon, E., Moss, J.,Norton, M., Rojas, M.,& Whillans, Ashley. (2018). Work and Well-being: A Global Perspective.

Littlejohn, S. W. (1999). Theories of human communication. Belmont, CA: Wadsworth. Louisiana, 2001, pp. 1-27.

Mathenge, G.D. (2012): Ethical Issues in the Construction Industry in Kenya: A Critical Analysis of the Professional Conduct in Engineering Technology Management: publications; Industrial Engineering Letters, Vol 2 No.7 pp1-11.

Messing, K., Stock S. R., & Tissot F. (2009). “Should studies of risk factors for musculoskeletal disorders be stratified by gender? Lessons from the 1998 Québec Health and Social Survey”. Scandinavian Journal of Work Environmental Health 35(2):96–112.

Miles, M. B. & Huberman A. M. (1994). Qualitative Data Analysis: An Expanded Sourcebook. 2nd Edition. Thousand Oaks, CA: Sage Publications.

Mitullah, W. V. & Wachira I. N. (2003). Informal labour in the construction industry in Kenya: A case study of Nairobi. ILO, 86, 2003. Labour management in Kenya.

Mthalane, D., Othman, A. A. E. & Pearl R. G. (2008). The economic and social impact of site accidents on the South African society, 5th Post Graduate Conference on Construction Industry Development, Bloemfontein, South Africa, 16 – 18, (2008).

Mugenda, O. M. & Mugenda, A. G. (1999). Research methods: Quantitative and Qualitative Approaches. Nairobi: Acts Press.

Mugenda, O. M. & Mugenda, A. G. (2003). Research methods: Quantitative and qualitative Approaches. Nairobi: African Centre for Technology Studies. Nairobi: Acts Press.

Muiruri, G. & Mulinge, C. (2014). Health and Safety Management on Construction Projects Sites in Kenya- A Case Study of Construction Projects in Nairobi County, Kenya. FIG Congress 2014; Engaging the Challenges – Enhancing the Relevance Kuala Lumpur, Malaysia 16-21 June 2014.

Muiruri, G., & Mulinge, C.(2011) Code of practice for the structural use of steel, The Government of the Hong Kong Special Administrative Region, pp, 2.

NIOSH (2009). Publication No.2009 107, DHHS. Information Circular 9509, Ergonomics Processes: Implementation Guide and Tools for the Mining Industry (in press).

Ohlsson, K., Hansson, G. A., Balogh, I., Strömberg, U., Pålsson, B., Nordander, C., et al. (1994). "Disorders of the neck and upper limbs in women in the fish processing industry". Occupational and Environmental Medicine51:826–832.

OSH (2007). Prevention of Work-Related MSDs in Practice. Bilbao: European Agency for Safety and Health at Work.

OSHA (2000). Ergonomics: The Study of Work; U.S. Department of Labour; Occupational Safety and Health Administration: OSHA Publications Office, P.O. Box 37535, Washington, DC 20012- 7535, (202) 693-1888.

OSHA (1999). Preventing Musculoskeletal Disorders in Construction Workers; OSHA's Advisory Committee on Construction Occupational Safety and Health.

OSHA (2007). Ministry of Labour. Occupational Safety and Health, Government Press.

Patton, M. (2002). Qualitative Research and Evaluation Methods. Thousand Oaks: Sage.

Rukwaro, R. (2016). Proposal writing in research, p36: Applied Research and Training Services.

Rwamamara, R. A. (2007). Planning the Healthy Construction Workplace through Risk Assessment and Design Methods. Doctoral Thesis. Division of Structural Engineering – Construction Engineering Management Department of Civil and Environmental Engineering. Luleå University of Technology.

Rwamamara, R. A. (2010). Evidence-based prevention of work-related musculoskeletal injuries in construction industry, Journal of Civil Engineering and Management, 16:4, 505.

Rwamamara, R.(2005). The Healthy Construction Workplace: Best Practices in the Swedish Construction Industry to prevent work-related musculoskeletal disorders among construction workers. Licentiate Thesis. Sweden: Lulea University of Technology.

Smith, M. J., & Sainfort, P. C. (1989). A balance theory of job design for stress reduction. International Journal of Industrial Ergonomics 4, 67-79. Spine (1993); 18:2153-62.

Ulin, S. S, Armstrong T. J, Snook S. H, & Keyserling W. M. (1993). “Perceived exertion and discomfort associated with driving screws at various work locations and at different work frequencies”. Ergonomics 36 (7):833–846.

Von Bertalanffy, L. (1968). General system theory. New York, NY: George Braziller.

Yin, R.K. (1994). Case Study Research: Design and Methods; (2nd Edition), Sages Publications. Thousands, Inc., Oaks.

Yin, R.K. (2009). Case Study Research, Design and Methods; Los Angeles; Sage.