International Journal of Health, 5 (1) (2017) 55-59

International Journal of Health

Website: www.sciencepubco.com/index.php/IJH
doi: 10.14419/ijh.v5i1.7303
Research paper

Occupational accidents and injuries among workers in the construction industry of Windhoek, Namibia

Nghitanwa Emma Maano [1]*, Zungu Lindiwe I [2]

[1] Doctoral student, Department of Health Studies ,University of South Africa, Pretoria
[2] Department of Health Studies, University of South Africa, Pretoria
**Corresponding author E-mail: enghitanwa@unam.na*

Abstract

The construction industry is the most dangerous industry in the word with higher prevalence of occupational accidents, injuries and diseases. There is a paucity of studies that investigate occupational accidents, injuries and diseases in the Namibian construction industry. The study was conducted to determine the magnitude of occupational accidents, injuries and diseases in the construction industry of Windhoek, Namibia. A quantitative, retrospective document review was conducted to investigate the documents for reported occupational accidents, injuries and diseases for the period of five years, from April 2011 to March 2016. Data was analysed with SPSS version 23. The study found out that occupational accidents and injuries are prevalent in the Windhoek construction industry. The study recorded the total of 37 cases of occupational accidents and injuries. Young, male construction workers are mostly sustained accidents and injuries. Labourers were mostly affected than other occupations while cut by machinery comprise the majority of the source of accidents. The most body part injured is the general body. The researchers did not find any documentation for reported occupational diseases from the construction industry of Windhoek. The researchers recommended the preventive measures to be implemented to prevent occupational accidents and injuries and enforcement of legislations on occupational accidents, injuries and diseases recording and reporting.

Keywords: *Accident; Construction; Disease, Injury; Occupational; Worker.*

1. Introduction

The construction industry accounted for the majority of occupational accidents, injuries, fatalities and diseases, which shows that is one of the most dangerous sectors than any other sectors globally (Health and Safety Executive, 2011). Workers in the construction industries are at risk of occupational accidents, injuries and diseases, due to the nature of work which is dynamic and require physical demand and due to the exposure to occupational hazards such as noise, dust, vibration, chemical hazards and radiations (Pinto et al., 2011). Occupational injury refers to any person injured or any death resulting from occupational accidents (Ministry of Health and Social Services of Namibia, 2006) while occupational accidents is defined as unplanned and undesired circumstances arising out of or during work that give rise to ill health or injury, damage to property, the plant or the environment, and lead to production losses or increased liabilities (International Labour Organization (ILO), 2012). Furthermore, occupational fatality refers to the death that occurs while a person is at work or performing work-related activities (ILO, 2012) and occupational disease is an illness contracted due to an exposure to the risk factors arising from work activities (ILO, 2013).

According to the International Labour Organization (ILO) (2014) about 6, 300 workers die daily due to occupational accidents, injuries and diseases. The 2012 rate of occupational injuries and fatalities in the United States of America's (USA) construction industries is twice higher than all other industries (Irumba, 2013). Furthermore, several countries have a poor mechanism on reporting work places accidents, injuries and fatalities with only fatalities and severe work-related injuries being the most notified (Burton, 2010) .The USA witnessed 8,993 deaths at construction workplaces during the period 2003 to 2011,which is the highest number of fatalities among deaths occurring in other industries over this period of time (Mahmaudi et al., 2014).The Labour Statistics of Taiwan puts the fatalities rate per 1,000 workers in the Taiwanese construction industry at 0.13 in 2008, which is much higher than the fatality rate from accidents in other industries (Cheng et al., 2012).

Developing countries experience higher rates of accidents and injuries than developed countries due to the lack of effective health management practices in the construction industry, reliance on outdated legislation systems and lack of statutory requirements for meeting the health and safety standards (Mwanaumo &Thwala, 2011). In Tanzanian, construction industry has been ranked the second most dangerous industry after mining due to a constant increase in fatalities and permanent disabilities that has been experienced in the country (Phoya, 2012). A cross-sectional survey by Irumba (2013), which analysed accidents in the construction industry in Kampala, Uganda, indicates an injury rate in Kampala alone of 3,797 per 100,000 workers and a fatality rate of 84 per 100,000 workers, which are higher accident and fatality rates. In addition, lack of leadership commitment and failure to implement OHS in South Africa contributes to the often increasing injuries and fatalities in the country's construction industry (Cassiem , cited in Jacobs, 2010).This is evidenced by the 2010 and 2011 fatality and injury rates in the South Africa's construction sector which stood at 19.2 and 14,626 per 100,000 workers, respectively. Although this shows an improvement when compared to the fatality rate of 53.51 per 100,000 workers reported in the country's 1990s construction industry, it is clear that occupational health and safety challenges remain high in South Africa

(Arquillos et al., 2012). It can be inferred that the construction industries in developed countries also face challenges that are related to an increase in occupational accidents, injuries and diseases (Raheem &Issa, 2016).

Several authors report common accidents in construction industry that arise from falls from above or falls at the same level struck by moving objects, slip trips, accidents caused by machineries and those caused by fire (Kaskutas et al., 2010 ; Phoya, 2012). The most common part of the body which sustained injuries in the construction industry were found to be fingers, arms and wrists (Choi, 2013). Eppenberger and Haupt (2009) also note that the construction worker's body part commonly injured are fingers.

In Namibia, occupational accidents and injuries are poorly recorded and poorly reported to the regulatory authority, which is the Ministry of Labour, Industrial relations and Employment creation. The Ministry of Labour Industrial relations and Employment creation of Namibia raised its concern after carrying out workplace inspections during the period of 2013/2014. The inspections indicated that employers were not reporting occupational accidents and injuries possibly due to employers' ignorance of procedures to report accidents or fear of repercussions (Ministry of Labour Industrial relations and Employment creation of Namibia, 2014). However, studies that investigated occupational accidents, injuries and fatalities in the Namibian construction industry could not be located. Therefore, the researchers decided to investigate the magnitude occupational accidents, injuries and diseases in the construction industry of Windhoek, Namibia.

2. Study purpose and objectives

The purpose of the study is to determine the magnitude of the occupational accidents, injuries and diseases in the construction industry of Windhoek, Namibia.

The study objective was to review documents to determine the nature of occupational accidents, injuries and diseases among workers in the construction industry of Windhoek in Namibia.

3. Methodology

A quantitative, cross-sectional, descriptive, retrospective review of all documents regarding the occupational accidents, injuries and diseases from the construction industry such as notification forms, and injury and accident registers, were reviewed to assess the magnitude of the reported occupational accidents, injuries and diseases from the construction industry of Windhoek, Namibia. The documents, retrieved from the Ministry of Labour, Industrial relations and Employment creation, focused on Windhoek's construction industry's occupational accidents, injuries and diseases for the period April 2011 to March 2016. The researchers used document review forms which consist of questions regarding the sex, age and occupation of injured worker, the nature or severity of occupational accidents, source of accidents, nature of injury and the body part that was injured. The document review regarding occupational diseases consisted of questions such as the sex, age and occupation of the construction worker, occupational disease the worker is diagnosed of and the date of the diagnoses. Data was entered in to the data sets and was analysed with SPSS version 23.

4. Result

The study recorded the total of 37 occupational accidents which results in occupational injuries during the studied period. Among those, the study period witnessed 59.5% accidents that were major and required the worker to be absent from work for more than three days. These are followed by 27% fatal accidents and 13.5 % minor accidents which only needed first aid treatment and no absence from work for three days or more. The study revealed that there was no documented information regarding occupational diseases from the construction industry during the reviewed period of five years (April 2011 to March 2016).

4.1. Socio-demographic characteristics of injured construction workers

The study shows that 97.3% males were involved in accidents while only 2.7 % female sustained an accident during the studied period. The demographic analysis shows that workers falling in the 18 – 59 years range were injured after sustained accidents, with 43.2% of workers aged 18 – 29 years injured and followed by 32.4%, 30-39 year old workers who also sustained injuries. Furthermore, 21.6% of the construction workers aged 40-49 sustained injuries, while only 2.7% construction worker between 50 and 59 years sustained injuries. The mean age of injured workers was 32.54years.

The occupation of injured workers reveal that 40.5% labourers were injured, followed by 18.9 % carpenters, 16, 2% in the other categories of workers, and 13.5% bricklayers. There were also 2.7 % injury each for the painters, electricians, plumbers and engineers.

4.2. Source of occupational accidents

The analysis shows that majority of the accidents types were cut by machinery 27.0 %, falls from above 18.9%, hit by falling objects 16, 2% and hit by equipment 10.8 %. Furthermore, there were 8.1% accidents due to slip /trip, while 5.4% other accidents were due to a fall from the same level, while 2.7 % were also incidents each for electrocution, hit by collapsed wall, trench burying and hit by moving vehicles.

4.3. Nature or severity of occupational injuries

An analysis of the nature of sustained injuries shows that 21.6% of the construction workers sustained other types of injuries which include fatalities while amputation and lacerations were sustained by 18.9 % construction workers. The results are displayed in figure 1.

4.4. Body part injured

Analysis of the reviewed records indicates the most injured body part of the affected workers. The findings are that the general body (whole body) accounted for 35.1% of the injured part and this was followed by finger injuries amounting to 32.4 %. Furthermore, that there were 10.8 % head and hands injuries, 8.1% injuries to the arms and 2.7% foot injuries that were reported during the study period as displayed in figure 2.

5. Discussion

5.1. Discussion on the socio-demographic characteristic of participants

This current study finding showed that an overwhelming majority of males in the Windhoek construction industry were injured. Similar findings are reported in studies on the construction industries, by Ling et al., (2009) where all the worker fatal injuries in Singapore were male. However, the study by Baruah (2010) on the Indian construction industry indicated, to the contrary, that females sustained most of the occupational injuries.

It emerged, from this study's findings that, about three-sevenths of the workers aged 18-29 sustained more injuries than any other age categories. This finding is almost similar to that from a study conducted on China's construction industry by Chen and Tian, (2012) which found out that about three-eighths of construction workers under 25 years had sustained injuries. However, the current study findings are contrary to those from the Cheng et al. (2012) study on Taiwan's construction industry which stated that 31% of the

injured construction workers were aged between 35 and 44 years. However, Eppenberger and Haupt, (2009), in their study on the South African construction industry, found out that 68.7% of the workers who sustained injuries were less than 40 years.

The results of this current study indicated that two-fifths of the labourers sustained injuries more than other occupation categories. This study finding is similar with that from a study conducted by Choi ,(2015)that, in its investigation on the trade-related injuries in the UK during 2004 -2006, found out that more than four-ninths of labourers were injured, which is higher than in any other occupation.

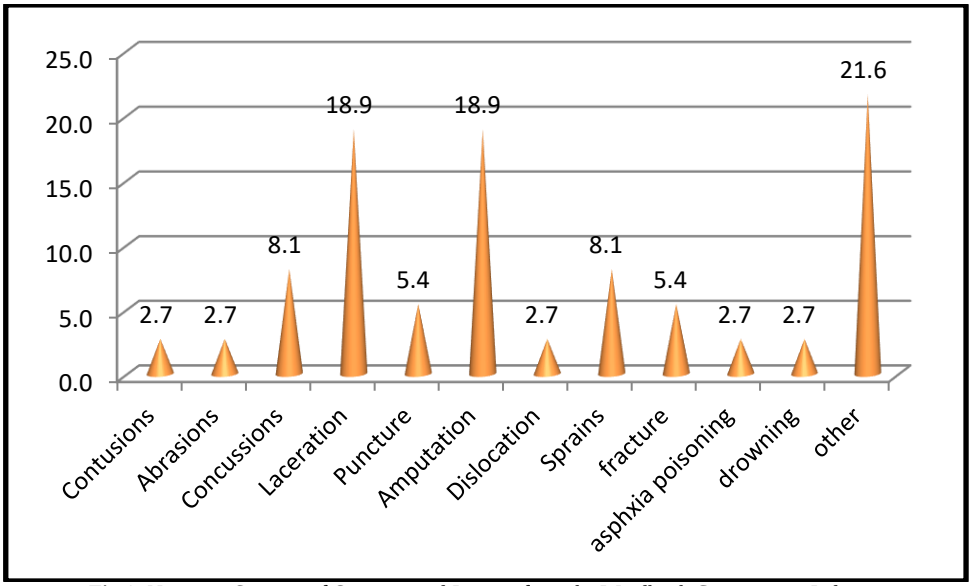

Fig.1: Nature or Severity of Occupational Injuries from the Windhoek Construction Industry

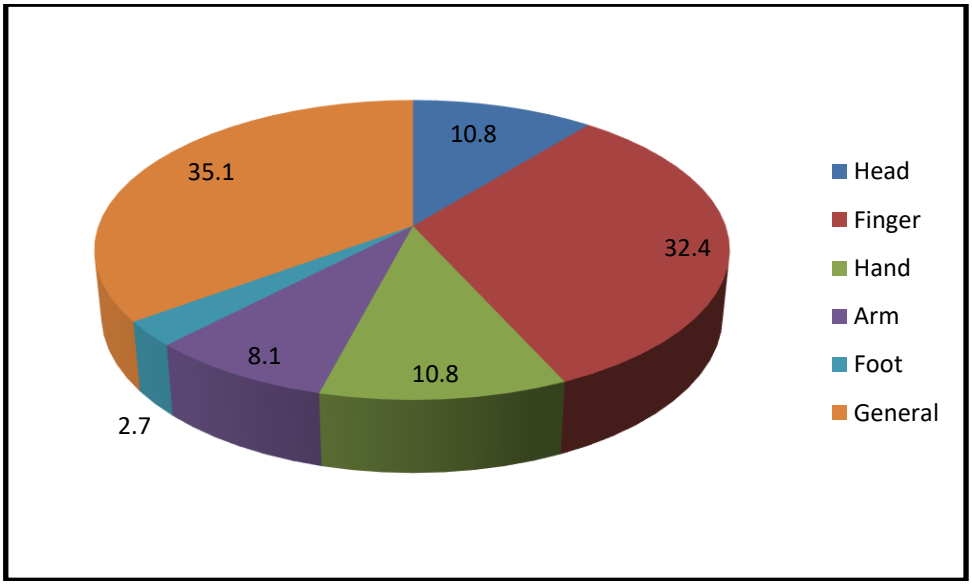

Fig. 2: Body Part Injured in Occupational Injuries.

5.2. Nature or severity and sources of occupational accidents and injuries

The study's findings showed that major accidents were the most common and responsible for nearly three-fifths of accidents. The findings are contrary to the study findings by Fass et al., (2017) in which incidents of minor accidents were noted as higher (29.1%) in the Arabian Gulf region.

Current findings indicated that being cut by machinery was the common accident, but it was responsible for just two-sevenths of the accidents. The findings from this present study are similar to those from Chinniah's (2015) study regarding the analysis and prevention of serious and fatal accidents related to moving parts of machinery in Canada that established that cuts by machinery accounted for 70.8% of the fatalities. On the contrary, several construction industry studies have shown that the common source of accidents are falls as confirmed by Cheng et al., (2012) with regards to the observed conditions in Taiwan, Chi and Han, (2013) on the USA and Görcanli and Möngen (2013) on Turkey. Furthermore, the findings from this current study indicated that other nature injuries, which include sustained fatalities, were common and accounted for one-fifth of the cases. Contradicting this current study finding is a previous study conducted by Choi, (2015), which in its analysis of aging workers' and trade –related injuries in the US construction industry, found out those sprain/strains were the most common nature of injury sustained by one-third of the construction workers.

The results of this current study indicated that the most injured body part was the whole body, which represents three-eighths of

the total cases and followed by injuries to the fingers, which accounted for one-third. The findings are, however, different from those arising from Choi's , (2016) study on the USA's construction industry which found out that the most injured body part of workers in the construction industry were fingers and these accounted for 26%of the incidents followed by injuries to the back, which stood at 10%.

6. Conclusion

The study results confirmed that the Windhoek construction industry is the higher risk occupation characterized by the presence of occupational accidents and injuries. Male, young workers are mostly sustained injuries and accidents than their female counterpart. It was also concluded that cut by machinery was the most source of accidents and general body part injuries including fatality was more common than other types of injuries. The study also concluded that, occupational diseases from the Windhoek construction industry are neither recorded nor reported. Based on the study findings the researchers are recommending that the government of Namibia should enforce regulations regarding the implementation of occupational health management system in all construction sites for the prevention of occupational accidents and injuries. In addition, the government should also ensure that legislations regarding occupational diseases diagnosis, recording and notification are enforced in order prevent and monitor occupational diseases.

7. Ethical aspects

The study was approved by the University of South Africa, Department of Health studies research ethical committee as well as from the permanent secretary for the Ministry of Labour, Industrial relations and Employment creation and the Ministry of Health and Social Services respectively. Confidentiality of the records was maintained and only researchers had access to the records.

Acknowledgement

The researchers would like to thank the permanent secretaries for the Ministry of Labour, Industrial relations and Employment creation and the Ministry of Health and Social Services for granting the permission to conduct the study. In addition , the researcher appreciate the assistance rendered by the Chief Health Inspector from the Ministry of Labour, Industrial relations and Employment creation and the Chief Medical officer from the Ministry of Health and Social Services who provided required documents for the study to the researchers

References

[1] Arquillos, AL, Romero, JCR, Gibb, A.2012. Analysis of construction accidents in Spain, 2003-2008. *Journal of Safety Research* 43: 381-388.https://www.ncbi.nlm.nih.gov/pubmed/23206511. https://doi.org/10.1016/j.jsr.2012.07.005.

[2] Baruah, B. 2010. Gender and Globalization. Opportunities and Constraints faced by Women in the Construction Industry in India. *Labour Studies Journal* 35 (2): 198–221. http://journals.sagepub.com/doi/abs/10.1177/0160449X08326187.

[3] Burton, J. 2010. *WHO Healthy Workplace Framework and Model: Background and Supporting Literature and Practice*. Geneva, Switzerland: WHO.

[4] Chen, D & Tian, H.2012. Behaviour Based Safety for Accidents Prevention and Positive Study in China Construction Project. *Procedia Engineering*. 43: 528-534. https://doi.org/10.1016/j.proeng.2012.08.092.

[5] Chi, S. & Han, S. 2013. Analyses of systems theory for construction accident prevention with specific reference to OSHA accident reports. *International Journal of Project Management* 31(7): 1027–1041. http://www.sciencedirect.com/science/article/pii/S0263786312001809. https://doi.org/10.1016/j.ijproman.2012.12.004.

[6] Chinniah, Y. 2015. Analysis and prevention of serious and fatal accidents related to moving parts of machinery. *Safety Science* 75:163–173.http://www.sciencedirect.com/science/article/pii/S0925753515000326. https://doi.org/10.1016/j.ssci.2015.02.004.

[7] Cheng, C, Leu, S, Cheng Y, & Lin, C. 2012. Applying data mining techniques to explore factors contributing to occupational injuries in Taiwan's construction industry. *Accident Analysis and Prevention* 48: 214 – 222. https://www.ncbi.nlm.nih.gov/pubmed/22664684. https://doi.org/10.1016/j.aap.2011.04.014.

[8] Choi, SD. 2015. Aging Workers and Trade-Related Injuries in the US Construction Industry. *Safety and Health at Work* 6 (2):151–155.https://www.ncbi.nlm.nih.gov/pubmed/26106517. https://doi.org/10.1016/j.shaw.2015.02.002.

[9] Eppenberger, M & Haupt,T. 2009. Construction worker injuries and costs – a comparative study of older and younger workers. *Occupational Health Southern Africa* (September/ October): 6–13.www.occhealth.co.za/.../Construction+worker+injuries...costs...comparative+study.

[10] Fass, S, Yousef, R, Liginlal, D & Vyas, P. 2016. Understanding causes of fall and struck-by incidents: What differentiates construction safety in the Arabian Gulf region? *Applied Ergonomics* 58:1-12.http://www.sciencedirect.com/science/article/pii/S0003687016300898.

[11] Gürcanli, GE &Müngen, U. 2013.Analysis of Construction Accidents in Turkey and Responsible Parties.*Industrial Health*. 51: 581-595.https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4202747. https://doi.org/10.2486/indhealth.2012-0139.

[12] Health and Safety Executive. 2011. *Work related injuries and illhealth 2010-2011 data*. http://www.hse.gov.uk/statistics/index.htm.

[13] International Labour Organization. 2014a. *Creating Safe and Healthy Workplaces for all.* Report prepared for the G20 Labour and Employment Ministerial meeting, Melbourne, Australia, 10-11 September 2014.Geneva. Switzerland. https://www.dol.gov/ilab/media/pdf/2014-G20-Ministerial- Declaration.pdf.

[14] International Labour Organization. 2012. *Estimating the economic costs of occupational injuries and illnessess in developing countries: Essential information for decision-makers. Programme on Safety and Health at Work and the Environment.* Geneva. Switzerland: ILO Publications. http://www.ilo.org/safework/info/publications/WCMS_207690/lang--en/index.htm.

[15] Irumba, R. 2014. Spatial analysis of construction accidents in Kampala, Uganda. *Safety Science* 64: 109–120. http://www.sciencedirect.com/science/article/pii/S0925753513002920. https://doi.org/10.1016/j.ssci.2013.11.024.

[16] Jacobs E. 2010. *Health and Safety in South African construction: status Quo*. Proceedings 5th Built Environment Conference. 18-20 July 2010. Durban. South Africa: 466-478. https://www.irbnet.de/daten/iconda/CIB_DC22770.pdf.

[17] Kaskutas, V, Dale, AM, Lipscomb, H, Gaal, J, Fuchs, M, Evanoff, B, Faucette, J, Gillen, M. & Deych, E. 2010. Fall Prevention in Apprentice Carpenters. *Scand J Work Environ Health* 36(3): 258–265. https://doi.org/10.5271/sjweh.2877.

[18] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3631008/.

[19] Mahmoudi, S, Ghasemi, F, Mohammadfam, I & Soleimani, E. 2014. Framework for Continuous Assessment and Improvement of Occupational Health and Safety Issues in Construction Companies. *Safety and Health at Work* 5 (3): 125–130. http://www.sciencedirect.com/science/article/pii/S2093791114000420. https://doi.org/10.1016/j.shaw.2014.05.005.

[20] Ministry of Health and Social Services of Namibia. 2006. *National Occupational Health Policy*. Windhoek: Ministry of Health and Social Services.

[21] Ministry of Labour and Social Welfare of Namibia .2014.*Annual report: 2013/2014.*Windhoek.Ministry of Labour and Social Welfare.

[22] Mwanaumo, E& Thwala , WD. 2012. Construction practitioners' awareness of occupational diseases in the Botswana construction industry : An exploratory study. *Occupational Health Southern Africa*18 (4): 12–17. http://www.journals.co.za/content/ohsa/18/4/EJC124108.

[23] Phoya, S., 2012. *The Practice of Risk Assessment, Communication and Control health and safety risk management in building construction sites*. Degree thesis. Chalmers University of technology.

Gothenburg, Sweden.http://publications.lib.chalmers.se/publication/164071-health-and-safety riskmanagement-on-building-constuction-sites-in-tanzania-the-practice-of-risk-ass.

[24] Pinto, a, Nunes, IL & Ribeiro, RA. 2011. Occupational risk assessment in construction industry – Overview and reflection. *Safety Science* 49(5):616–624. http://www.sciencedirect.com/science/article/pii/S0925753511000051. https://doi.org/10.1016/j.ssci.2011.01.003.

[25] Raheem, A & Issa, RRA. 2016. Safety implementation framework for Pakistani construction industry. *Safety Science* 82: 301–314. http://www.sciencedirect.com/science/article/pii/S0925753515002489. https://doi.org/10.1016/j.ssci.2015.09.019.