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Role of Masonry Work Procedures in Management of Musculoskeletal Disorders of Masonry Workers in Building Construction Workplaces, Nairobi County, Kenya

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Abstract

Globally masonry workers are often exposed to work-related risks resulting in the development of musculoskeletal disorders affecting their body's movements. Despite the gains made, existing engineering and administrative preventive and control methods have not adequately addressed this problem. This investigation was on the role of masonry work procedures in the management of Musculoskeletal Disorders (MSD) of masonry workers in Building Construction Workplaces (BCW) in Nairobi County, Kenya. Cross-sectional survey research design was employed to undertake the inquiry. The study was guided by the General Systems Theory. Literature in the field of the study was reviewed and the knowledge gap was identified. The field data was collected using questionnaires and interview guides. The data was subjected to descriptive and inferential analysis for logical patterns, relationships, and levels of statistical significance. The Pearson correlation results (P<= 0.05) showed that the masonry work procedures were positively related to the development of musculoskeletal disorders of masonry workers in building construction workplaces. The key recommendations of the study were; to improve masonry workers' teamwork spirit through regular education, skills training, and mentorship on workplace Occupational Health and Safety (OSH) management; review of existing Occupation, Safety and Health Act, (OSHA, 2007) legislations to including the participation of project sponsors and designers in OSH risk management in BCW and the BCW management to establish and effect medical surveillance, and treatment of masonry workers.

Keywords: Masonry work, musculoskeletal disorders, building construction workplaces, occupational safety, and health.

INTRODUCTION

Musculoskeletal disorders (MSDs) refer to work-related injuries or disorders of workers' muscles, nerves, tendons, joints, cartilage, and spinal discs. The management strategy for work-related MSD includes proactive interventions for early detection, elimination, or reduction of exposure to hazards and associated risks. These strategies are considered to be more effective when the workplace MSD symptoms are mild and potentially reversible (Steenkamer et al., 2017). A cross-sectional study by Cieza et al. (2019) indicated that close to 1.71 billion people globally suffer from MSD. Hartvigsen et al. (2018) opine that MSD in the workplace is highly associated with significant mental health decline and deteriorated functioning. According to the 2017 report by the Australian Institute of Health and Welfare, MSD contributed up to 12 percent of the burden of disease and injury in 2011. Oakman, Stuckey, and Clune (2019) observed that in 2014–15, the MSD prevalence amongst the Australian population was about 6.9 million. Schofield et al. (2013) observed that MSD substantially impacted the economies of Australia's workforce at societal and personal levels. Oakman, Stuckey, and Clune (2019) postulated that comprehensive strategies to address physical and psychosocial workplace hazards in Australia are limited. They observe that the focus on prevention and control of MSD in the workplace was on changing behavior and minimizing task-specific risks without much regard to other critical masonry work procedures such as organization culture-related quality of leadership, worker-centered work organization, and management as well as core values associated with the effective management of MSD.

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Organizational culture in BCW is a system with many management parts (sub-systems), operating within the BCW's boundaries as it interacts with the outside world (Bertalanffy,1969). Management of MSD of masonry workers is considered as a dynamic sub-system constantly interacting with interrelated sub-systems within the main BCW's organizational culture framework (Allen, 1988; Brown & Eisenhardt, 1997). A system tends to be responsive and resilient to internal and external disruptions to maintain its characteristics. An organizational culture system has distinct leadership and management qualities necessary for its balance. The required qualities for the organization's system stability and resilience to change are measurable and controllable. Workplace organizational culture has an impact on the management of Work-related MSD in workplaces.

The Hong Kong construction industry accident statistics between 1986 and 2013 revealed that effective organizational culture procedures reduced the number of work-related accidents and incidents in workplaces (OSHC, 2011). Lop et al. (2008) identified the causes of MSD among Malaysian construction trade workers, especially masons and bricklayers, as frequent bending, twisting, straightening up, turning, awkward posture, and repetitive work (Groysberg et al., 2018). Other identified causes include work pace, autonomy, monotony, the work/rest cycle, task demands, social support from colleagues and management, employment uncertainty, as well as individual factors like age, gender, strength, and anthropometry (Erick & Smith, 2015; Bernard, 1997; EU-OSH, 1999; Nunes, 2009a).

Findings of a cross-sectional study by Ekpenyong and Inyang (2014) indicate a 39.25% overall prevalence of MSD among construction workers in Nigeria. Variations in physical work characteristics were associated with the development of MSD of workers. Workplace ergonomic factors such as psychological demands and mental workloads, awkward movements, repetition, excessive force, and vibrations were also positively associated with workers' MSD (Ekpenyong & Inyang, 2014). In evaluating ergonomic risk factors in selected skilled construction trade workers in BCW in Mombasa County, Kenya. Ndiwa (2019) observes that 97.1% of the respondents were exposed to awkward posture and 90.3% to excessive force exertion when manually handling materials. Back and waist pain were the most affected body parts, followed by general body aches, sore muscles, and joints.

Ndiwa (2019) established that inappropriate work methods (41.7%) and faulty equipment (34.3%) were significant risks strongly associated with MSD of workers in BCWs. The study observed that 95% and 87% of the BCWs had neither an ergonomic program nor a weight-lifting restriction, respectively. Prolonged exposure to these risk factors leads to the development of MSD-related diseases such as Carpal Tunnel Syndrome, tendonitis, muscle/tendon strain, ligament sprain, tension neck syndrome, thoracic outlet compression, rotator cuff tendonitis, and epicondylitis. Economic and social consequences of these ailments include worker absenteeism, loss of productivity and effectiveness, high medical bills, and insurance claims. Suggested MSD intervention measures include engineering redesign, changes in work methods, administrative controls, and training (EU-OSH, 2008).

The existing work-related MSD risk management methods such as engineering and administrative management strategies have not achieved the desired goals (Ndiwa, 2019; Groysberg et al., 2018; Guldenmund, 2010). (Hämäläinen et al., 2017; Takala et al., 2014). Punnett et al. (2004) observed that in 33% of all newly reported occupational illnesses in the general population, MSD are considered a significant contributor to work-related illness globally. Construction industry stakeholders attribute the persistent MSD cases in construction workplaces to a lack of effective response mechanisms to changes brought about by, among other factors the fragmented nature of the construction industry, where design and construction are separated, and projects are unique in terms of management set up, site location, size, complexity, timing, quality, resource requirements, clientele, the design team, and contracting arrangements.

The situation has been made worse by the under-resourced, hierarchical, stereotypical management systems that have largely adopted a reactive rather than proactive monitoring, enforcement, and feedback approach to risk management BCW. The existing administrative structure, operating laws, and systems tend to focus more on the mechanics

of service delivery without much regard forquality leadership, worker-centered work organization, and management strategic components. This has resulted in the proliferation of MSD among masonry workers in BCW. The purpose of the study therefore was to examine the role of masonry work procedures in the management of MSD of masonry workers in BCW in Nairobi County.

The study aimed to review existing literature to identify existing policy and management gaps for improvements and effective management of MSDs of masonry workers in BCW.

The outcome of the study was to encourage the BCW management to embrace masonry work best practices as an investment and gateway to improved workplace productivity rather than a cost to be minimized or avoided. The results would also inform masonry workers on the benefits and importance of adopting masonry work best practices as a viable approach to effective management of MSD for improved workplace safety, health, performance, and effectiveness. The results would be an important source of the stakeholders' knowledge and basis for adequate resource allocation to work procedures for effective management of MSD of masonry workers in BCW. Finally, the study findings would provide important reference material for further research studies in similar areas.

THEORY

General Systems Theory

The study was based on the principles of the General systems theory which identifies a system as an entity made up of interrelated, interdependent parts operating within clear boundaries that define and distinguish it from similar structures in a given environment (Bertalanffy, 1969). The theory was preferred for the study because it offered a mechanism of disassembling a system into its constituent components for identification, analysis, and better understanding of their interactive and interdependent relationships including their contributions to the whole.

The BCW management is a system consisting of various interrelated parts that interact as they work together for the better functioning of the whole. The study considered masonry work as a dynamically balanced sub-system interacting with other interrelated sub-systems within the main BCW management framework setting. In other words, the management of MSDs of masonry workers is a sub-system within the workplace risk management framework operating as an important component of the main workplace organizational culture system.

A system tends to resiliently respond to internal and external disruptions for the maintenance of its identity and key characteristics. Disruptions caused by masonry work procedures affect the management of MSDs of masonry workers which in turn impacts the overall BCW management system. The general systems theory was adopted to explore possible relationships between workplace masonry work procedures and the management of MSDs of masonry workers in BCW. It provided insight into why masonry work procedures and best practices are essential components to the effective management of MSD among masonry workers in BCW. The key variables of the study included organizational leadership, work organization and management of employees, organizational glue (core values), strategic emphasis, and criteria for success (Cameron & Quinn,2011).

Masonry Work Procedures and the Management of Musculoskeletal Disorders

The development of MSD in masonry workers in BCW is often attributed to physical, organizational, or cognitive ergonomics components of work tasks being undertaken, tools and equipment used, or the work environment.

Physical and organizational ergonomics

Physical masonry workplace activities such as frequent heavy load handling, bending, stretching, truck twisting, squatting, kneeling, pushing, prolonged standing, and frequent repetitive movements have been linked to MSD of the lower back, upper and lower body extremities amongst workers (NRC&IM, 2001; Fujishiro & Weaver, 2005; Choobineh, Rajaeefard, & Neghab, 2006). Psychosocial factors such as high job demand, work monotony, and low social support lead to workers' low job satisfaction and high work-related perceived stress (Demerouti et al., 2001). Other identified major factors significantly associated with the development of work-related MSD among workers include personality type (Kamardeen & Sunindijo, 2017; Allread, 2000), and gender (Bruce et al., 1996; Esmaeelzade et al., 2014).

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In their study on work-related MSD, the European Agency for Safety and Health at Work (EU-OSH, 2008) compiled a summary of results from various studies on risk factors attributable to the pain in the lower back and upper body extremities of workers in workplaces. **Table 1** shows the factors considered, the related number of studies reviewed, and the range of attributable fractions as indicated in the different studies reviewed.

The attributable fraction of the corresponding risk factor is indicated by the likely reduction in the occurrence of MSD when the risk factor is eliminated without altering the effects of the other risk factors present. The study observed that the prevention or control of these factors could potentially diminish most common MSD or workers in workplaces by up to 65-75% of the prevalence rate at best and 10–20% in the worst-case scenario. The study observed that while reducing the risk factors should result in a corresponding reduction in MSD, in reality, continuous changes in the workplace environment may alter such outcomes. As a result, the study concluded that implementing a participatory approach that involves workers in decision-making on working systems may minimize these problems. Embracing robust mechanisms for solving related workplace problems (workers' education, training, and management of work) will prevent or control MSD of workers in workplaces. Another approach is applying physical and organizational ergonomic interventions targeting workplace tool and equipment design, work organization and methods, as well as the physical environment factors (Leyshon et al., 2010). These approaches have the inherent advantage of allowing the use of a combined preventive and control measurement approach to achieving the desired improvements to risk management efforts in workplaces (NRC&IM, 2001; Silverstein & Clark, 2004). However, the study noted the scarcity of reliable quality studies on repetitive movements, high job demands, task monotony, and excessive force to help advance this course.

From 2002 to 2006, bricklayer manufacturers and contractors in the Netherlands and Europe jointly sponsored a longitudinal study on the effects and possible reduction of frequent bending and rotation of the trunk and lifting actions of bricklayers (Fujishiro & Weaver 2005). The study found that limiting brick lifting heights to a maximum of 500 mm from floor level significantly reduced the bricklayer's lower back injuries and increased job satisfaction and overall productivity. However, this faced challenges due to the increased cost of the work methods' improvements, the lack of employers' awareness of the bricklaying risk exposure occasioned by the use of the traditional working method, and the bricklayer assistants' resistance, resulting in an increase in workload for the skilled bricklayer.

Cognitive Ergonomics and Masonry Work in Workplaces

The daily schedules of a masonry worker involve cutting, placing, aligning, and bonding bricks, stone, or concrete blockwork in conformity with established work procedures, specifications, and programs. Masonry workers' attention, working memory, decision-making, and learning are constantly required. Poor or non-responsive workplace organization and management structures or systems create a working environment that can lead to cognitive failures and subsequent stress or strain.

Workers' hearing and vision impairment; mobility; learning (slow reading, writing, or understanding); emotional stability (irritability, short temper, demotivation, or sensitivity to criticism); and mental health disorder are examples of these failures (Moody et al., 2013; BrckaLorenz et al., 2014). Masonry worker cognitive failures lead to workplace errors or mistakes made by a worker on simple and straightforward tasks that arise out of or in connection with the worker's distractions, blunders, memory lapses, and oversights (Martin, 1983). Workers' negative task aptitude and personality traits result in boredom or an overload of short-term memory. Consequences of this include high worker stress, errors, accidents, and immense personal and organizational loss or damage (Carriere, Cheyne & Smilek, 2008; Smallwood et al., 2004; Wallace, Kass & Stanny, 2002; Kass et al., 2001).

Various workplace studies have demonstrated a strong association between mental distress on the one hand and MSD-related pain and work-related injuries on the other (Kessler et al., 2001; Demyttenaere et al., 2006; Zheng et al., 2010). Zheng et al. (2010) found a statistically significant correlation between work-related injuries and the reported depressive symptoms of workers.

TABLE 1
Work-related exposures and the estimated attributable fractions for back and upper extremities disorders

Item	Work-related risk factor	n	Range of attributable fraction (%) in different studies
	Back disorders		
1	Manual material handling	17	11-66
2	Frequent bending and twisting	8	19-57
3	Heavy physical load	5	31-58
4	Static work posture	3	14-32
5	Repetitive movements	1	41
6	Whole-body vibration	11	18-80
7	High job demands	2	21-48
8	Low stimulus from work (monotony)	1	23
9	Low social support at work	3	28-48
10	Low job satisfaction	6	17-69
11	High perceived stress	1	17
	Upper extremity disorders		
12	Manual material handling	17	11-66
13	Repetition	3	53-71
14	Force	1	78
15	Repetition and force	2	2
16	Repetition and cold	1	89
17	Vibration	15	44-95

Source: Adopted from the European Agency for Safety and Health report on MSDs 2008
n- Number of studies reviewed

Besides, mental distress influences workers' unsafe worker behavior and negative attitudes toward safety and health in the workplace. Siu, Phillips, & Leung, 2004 and Asfaw & Souza (2012) found the effect of these factors to be higher for men than for women workers. This was attributed to the tendency of female workers to be more risk-avasive than their male counterparts. Andersen et al. (2010), Heller, Hawgood, & De Leo (2007), and De Looper 1960- & AIHW (2005) opine that undiagnosed or untreated mental disorders among construction workers have been linked to higher suicide rates when compared to workers in other industries.

RESEARCH METHODS

The inquiry adopted a cross-sectional study designto collect, and analyze data from building construction works. The investigation applied this method due to the possible replicability and generalization of the results to the entire masonry worker population. The principles of general systems theory (Bertalanffy, 1969), underpinned the study process. The knowledge gap for the inquiry was identified and established by critiquing the existing literature on the subject.

The study was carried out within the Nairobi County administrative boundaries. The study location was preferred because it is home to the Nairobi metropolitan city, the largest commercial center in Eastern Africa, the capital city, and the seat of power of the government of Kenya. It is the most significant contributor to the GDP, capital formation, and employment in the Kenyan economy. It is home to most registered building construction firms in terms of the National Construction Authority (NCA) classification and organizational culture domain characteristics.

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Construction projects within Nairobi vary from small to large and complex commercial, industrial, institutional, residential, and recreational projects.

The units of analysis for the study were the NCA classification-based stratified, and randomly sampled BCW within the geographical area of the study (Babbie & Mouton, 2001; Mugenda & Mugenda, 2003; Yin, 2003). The identification and selection of participants for the inquiry was by the random selection statistical method. The nature of population distribution for the study was evaluated and determined by the use of the Kolmogorov-Smirnov normality test method.

Random sampling technique was used to obtain the study sample because it assures the law of statistical regularity (Kothari, 2004), meaning that it guaranteed that the composition and characteristics of the study sample selected were statistically representative of the study population. Stratified random sampling was used to select construction firms for the study based on the NCA (2020) approved classification. This sampling method was preferred due to its inherent chance of increasing the sample's representativeness while allowing comparisons among individuals in the different strata (Cooper & Schindler, 2003).

A Nordic questionnaire-based, and OSH (2007) guided approach was adopted for formulating data collection questionnaires for the study (Kristensen, 2010). An open-ended, often long-form questions interview guide was also developed and used for data collection. This was to enable the respondents to elaborate on their thoughts. The data collection instruments were designed to cover specific areas of interest to the study, including BCW leadership, work organization and management of employees, and the organization's core values. The reliability and internal consistency of the research tools were tested and their suitability was confirmed using Cronbach's Alpha reliability test method.

The respondents for the study were picked from information-rich BCW using simple random sampling methods. This was on the assumption that the leadership and management characteristics of the BCW selected were isomorphic to the parent building construction firm managing them. The data collection instruments were physically administered and collected from the sampled 96 BCW.Analysis of the collected data included editing, arranging, coding, and tabulating. The information was classified based on their common characteristics and descriptive or numerical attributes. The groups consisted of class intervals with upper and lower limits, and each class consisted of a definite number of members (frequency). The data were summarized and tabulated in columns and rows for comparison and the detection of errors and omissions. This data presentation format was for ease of reference and deductive and inductive logic to find patterns and themes in the datasets for decision-making (Xia & Gong, 2014).

RESULTS

The field data were analyzed using descriptive statistical techniques. The exercise was to establish a logical chain of evidence and examine trends, patterns, and relationships of the field data of the study. The data collected related to the respondents' gender, age, level of education, professional and skill training, and work experience. All study participants were male, with 69.5% aged between 29 and 39 years old. 60.4% of masonry workers had a secondary level of education or higher, while 97.9% of building construction works managers had a tertiary/College or higher level of education. 62.1% of BCW managers had professional training in workplace OSH management. 86.3% of them had work experience of 4 years and above. 97.9% of masonry workers had a trade test certificate in masonry work technical skills and above. 68.4% of them were NCA registered and accredited, and 89.6% had masonry work experience of 4 years and above. 64.5% of masonry workers were full-time (42 hrs. /week), and 35.4% were on temporary or part-time/temporary (< 42 hrs. / week) employment.

On whether masonry workers always had a variety of masonry work tasks to choose from, 44.8% of the respondents strongly disagreed; 14.6% disagreed; 15.6% were not sure; 9.4% agreed; and 15.6% strongly agreed with the statement provided. On whether masonry workers always completed their daily assigned tasks in time within the prescribed official working hours, 6.3% of the respondents strongly disagreed; 3.1% disagreed; 3.1% were not sure; 11.5% agreed; and 76% strongly agreed with the statement provided. On whether masonry workers exerted excessive force to execute their daily tasks (pulling, pushing, and lifting), 35.4%

of the respondents strongly disagreed; 9.4% disagreed; 1.1% were not sure; 10.4% agreed; and 43.8% strongly agreed with the statement provided.

On the question of the level of mechanization in executing masonry works in BCW 8.3% of the respondents said they were highly mechanized; 11.5% average; 23.9% minimal; 46.9% none; and 9.4% did not respond. On whether the repetitive nature of masonry tasks (regular or irregular bending, squatting, kneeling, twisting, and reaching over heights) was more than they could handle, 28.1% of the respondents strongly disagreed; 6.3% disagreed; 3.1% were not sure; 14.6% agreed; and 47.9% strongly agreed.

Whether the masonry workers' daily tasks demanded persistent overstretching of their body parts when bending, twisting, and reaching forward or above shoulder heights; 34.4% of the respondents strongly disagreed; 8.3% disagreed; 1% were not sure; 7.3% agreed; and 49% strongly agreed. Whether masonry workers were exposed to excessive (random/regular oscillating, reciprocal, or periodic) vibrations while performing their daily tasks using power tools or work platforms 20.8% strongly disagreed, 7.3% disagreed, 3.3% agreed, and 68.8% strongly agreed.

The results indicated that 66.7% of masonry workers experienced persistent pain in their neck, shoulders, and chest muscles, tendons, and joints; 71.6% reported pain in their arms and wrist muscles, tendons, and joints; and 75% in their finger muscles, tendons, and joints, as well as the surrounding skin. 70.9% of masonry workers reported pain in their lower back muscles, tendons, and joints; and 50.5% in their hips and knees. The Pearson correlation coefficient($\beta 1$) between the management of MSDs of masonry workers and challenges was 0.496, meaning that $\beta 1 \neq 0$ and hence, was significant for the model. At a 99% confidence level, the corresponding P-value was 0.000, and being less than the threshold P-P-P-value of <= 0.05, the predictor variable was significant in the prediction of the target variable.

DISCUSSION

Issues considered included a variety of tasks to choose from, daily task allocations, execution and completion time, and work breaks. Also considered were the effects of physical risk factors such as the use of excessive force, task repetitiveness, prolonged static or awkward posture, and vibration intensity on the safety and health of masonry workers in BCW. All respondents in the study were male, indicating that female workers avoided masonry work due to the risks associated with heavy lifting and other social demands (Bruce et al., 1996; Esmaeelzade et al., 2014). The majority of masonry workers were aged between 29 and 39 years (69.5%) with 65.4% of them having a secondary level of education and above, and more than 5 years of work experience. The results implied that age, work experience, and level of education were determining factors in the selection and employment in BCW. However, the study results did not indicate the significance of these factors in the overall outcome of the management efforts of MSD of masonry workers in BCW.

On masonry work task variety, 60.4% of respondents indicated that there was no variety of masonry work tasks to choose from. This implied that workers were exposed to job monotony which could lead to job dissatisfaction and perceived stress. This finding was supported by Demerouti et al. (2001) who opined that work monotony and low social support lead to workers' low job satisfaction and perceived stress. On daily time allocations, 87.5% of respondents thought that masonry workers always completed their daily allocated tasks in time within the prescribed official working hours. This may be explained by earlier results which indicated that workers received regular task briefs, and were allocated tasks according to their skill, experience, and competencies. However, the study results indicated that these positive work organization attributes did not minimize or eliminate workers' exposure to work-related MSD risks and associated injuries.

Another noted feature is that workers complete their daily tasks within the prescribed official working hours. This meant no overtime or work overloads that could have been detrimental to the worker's workplace health. 90.6% of respondents indicated that they were always allowed to take regular work breaks between pre-determined task cycles. The results implied that work/ rest interludes shielded them from work intensity or repetitiveness related MSDs to workers' health problems. However, the study results indicated that the workers were exposed to work-related risks

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associated with repetitive movements. This was confirmed by 62.5% of respondents who indicated that the repetitive nature of masonry tasks was more than they could bear. The high exposure level could be attributed to a lack of sufficient training in material handling, insufficient mechanization of masonry work, poor mason/helper ratio, and poor work-brake observance culture.

Regarding force as a risk factor, 54.2% of respondents indicated the use of excessive force to execute their daily tasks (pulling, pushing, lifting). This could be attributed to the adoption of poor material handling techniques and lack of or insufficient task mechanization. Prolonged exposure to excessive force for whatever reason may lead to body injuries or the development of MSD.

Examining data on working positions indicated that 56.3% of respondents opined that their tasks demanded persistent overstretching of their body parts when bending, twisting, and reaching forward or above shoulder heights. The problem might be attributed to inadequate task management training, inadequate work mechanization, and inadequate or inappropriate working platforms, including work intensity and overload due to poor/mason/helper ratio. Data examination on workplace vibration revealed that 72.1% of respondents were of the view that they were always exposed to excessive vibrations from power tools or working platforms used when executing their daily tasks. Power tools and equipment associated with masonry work include mortar mixing and hand-held circular power saws for stone cutting. Whereas the cause of the vibrations reported was not ascertained, it nevertheless might have been due to poor tool and equipment design, handling, or maintenance.

The foregoing results were supported by NRC&IM, (2001), Fujishiro & Weaver (2005), Choobineh, Rajaeefard & Neghab, (2006), and Ndiwa 2019 who postulated that physical masonry workplace activities such as frequent heavy load handling, bending, stretching, trunk twisting, squatting, kneeling, pushing, prolonged standing, and frequent repetitive movements have been linked to MSDs of the lower back, upper and lower body part extremities amongst workers.

CONCLUSION

The results indicated that masonry workers experienced persistent muscle, tendons, and joint pains in various parts of their bodies. This included the neck, shoulders, arms, wrists fingers, hips, and knees. The pains were symptomatic development of work-related musculoskeletal disorders. The results indicated that the majority of BCW management had not integrated and mainstreamed positive masonry work procedures into their main management system. The results indicated that the majority of BCW management viewed adequate resource allocation to improving masonry work procedures as a const and not an investment. A critical part of their human resource (masonry worker) was found ailing and therefore likely to progressively throw the management of MSD of the masonry worker sub-system in BCW off-balance.

RECOMMENDATIONS

The study results indicated the need for the establishment of workplace safety committees including engagement and enablement of masonry workers to effectively participate in masonry work-related risk management decision-making and implementation activities. Masonry workers' regular education, training, sensitization, and mentorship on workplace OSH management are to be enhanced. BCW management to establish and implement effective communication and change management strategies, including conducting regular masonry work procedures and process audit appraisals and reviews for improvement purposes. The BCW management to establish and effect medical surveillance, regular check-ups, and treatment of masonry workers in BCW. Review of existing OSH legislations to include involvement of project sponsors and designers in OSH risk management participation in BCW.

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