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Occupational Hazards and Health Challenges in Bricklaying: An Analysis

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DOI: https://doi.org/10.5281/zenodo.13850883

Abstract: In a developing country like Nigeria, construction industries plays an important role and bricklayers are mostly involved in this sector. A significant number of individuals are directly involved in this sector too, and the number is growing at a fast rate in the cities. Due to several occupation health risks, this sector is placed top of the list according to workplace accidents and injuries. Moreover, socioeconomically poor people, particularly from rural areas, are engaged in this sector. Research on occupational health in this occupation is highly needed to give safety and awareness to the bricklaying workers. This work is a review of researches from the available published articles to identify a spectrum of occupational health problems of bricklayers. This profession is associated with a lot of hazards. The research on occupational health hazard of this research may create more awareness to these bricklayers on the risks associated with their professions, and ways to promote safety. Amongst health challenges associated with the profession. The definition of term are dis cuss while the objectives of this article will be discuss under the following sub-heading – identifying different types of hazards among bricklayers, enumerate types of hazards, list the risk factors to hazard among bricklayers and possible harmful effect, mention health challenges associated with bricklaying, identify possible preventive measure. Methodology and review of related articles base on objectives of the paper, observation, discuss of the observations based on different facts retrieved from different author.

Keywords: Bricklaying, Hazards, Health challenges, Occupation

Introduction

A bricklayer, who is related to not different from a mason, is a craftsman who lays bricks to construct brickwork. The term also refers to personnel who use blocks to construct block work walls and other forms of masonry (Richard, 2003). Bricklayers are responsible for building or repairing walls in accordance with construction plans (All about Careers, 2017).

Bricklayers work with clay bricks, concrete and repair veneer and full brick construction, partitions, arches and other structures. (Bricklayer Industry Information 2019).

There is more to being a bricklayer than meets the eye. In fact, a single bricklayer project calls upon variety of skills (Bricklayer Industry Information 2019). These may include building materials, spreading layers of mortar

between joints, repairing and maintaining clay bricks, cement blocks/bricks and related structures, operating brick cutting machines, and erecting scaffolding (subject to license requirements in some stages).

A bricklayer may work at heights and will generally work outdoors-although at times, could work at tunnels and shafts too. On occasion bricklayers may have contact with the public and more often than not, will be working as part of a team may be employed by bricklaying subcontractors and building and construction companies. To become a bricklayer, one can get into the job by a college courses, an apprenticeship or working towards this role (world Skills, 2015)

Definitions of Terms

Hazards: Hazard is defined as something that has the potential to causes harm to people, property, on processes. Gupta (2010) Prasher and Bensal (2010) also defined hazards as a potential condition which might be converted into an event (accident)

Health Challenges: Is a state in which one is unable to function normally and without pains. Vocabulary (2022)

Associated: Means to have had a relationship of some sort with another person or organization. Or to be associated is defined as two or more things to be connected (your dictionary.com)

Bricklaying: Means the act or occupation of laying bricks in construction Dictionary.com (2021).

Occupation: a person's usual or principal work or business, especially as a means of earning a living. Or any activity in which time is spent by a person. Dictionary.com (2021)

The objectives of this paper will be discussed under the following sub-headings to:

1. Identifying different types of hazards among bricklayers.
2. Enumerate types of hazards
3. List the risk factors to hazard among bricklayers and possible harmful effect.
4. Mention health challenges associated with bricklaying.
5. Identify possible preventive measure.

Enumerate the causes of the health challenges and illness associated with bricklaying occupation.

Identifying different types of hazards among bricklayers

There are five main different types of workplace hazard they are as follows:

1. Physical Hazard
2. Chemical Hazard
3. Ergonomic Hazard
4. Mechanical Hazard
5. Psychosocial Hazard

Enumerate Types of Hazards

Physical hazards:- Are form of energy that can harm the body if exposed. Amanze & Agi (2014). They are those dangerous items found in our physical working environment that can cause injuries or harm to the health of an individuals.

Chemical Hazards: These are hazardous substances that can cause potential harm to the body if exposed to the body. They are in form of solid, liquid and gaseous, Amanze & Agi (2014).

Ergonomic Hazard or Work Design Hazard emanates from the design and organization of work including man to man machine relationship.

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Mechanical Hazards: Machine with moving parts can pose serious safety hazards in the work place. Such moving parts can tangle a worker's clothes or come in contact with the body. Workers may be crushed or sustain serious injuries by rotating shafts, belts and saws. Workers may equally be struck by flying projects from machines. Amanze & Agi (2014).

Psychosocial hazards: Psychosocial hazards are associated with the workers state of mind. Workplace stressors can lead to stress or distress and have be identified as an inducing sickness factor. Gupta, (2010).

Risk factors to Hazard among Bricklayers:

1. **Physical hazard:** Powered tools and non powered tools including brick saw, rotating saw angle grinder, electric mixer, working height. Possible Harmful effects

Contact with electricity, amputation or laceration, eye or ace injury, fall from height, potential for fatality or serious injury, collapse of structure – fall crushing. Identify the possible employed measure to prevent injury /illness i. Provide instruction in safe use of hand tools.

ii. Use hand tools carefully, according to your instruction (chechester, 2018).

iii. Require appropriate personal protective equipment (PPE) including foot wear (Chechester, 2018).

2. **Chemical Hazards:** Cement product and mortar, gases, dusts, fumes and vapours.

Possible harmful effects

Dermatitis, allergic reactions, vapour inhalation, mortar splashes in eyes

Possible Employed measure to prevent injury/illness

i. Provide material safety data sheet (M.S.D.S) for hazardous substance which should be used and follow.

ii. Provide appropriate PPE

iii. Provide first aid kit and emergency eye wash facility (Chechester, 2018)

3. **Ergonomic Hazard:** Causes of Hazard – poor design of equipment, work station design

Possible Harmful Effects

Musculoskeletal disorder including sprains and strains

Possible Employed measure to Prevent Injury/illness

i. Document safe work procedures

ii. Provide mechanical aids(Use mechanical aids provided)

iii. Provide training in safe manual handling techniques

iv. Encourage team lifts where appropriate (seek help when you think a team lifts is required)

v. Exercise, warm up/stretch before starting work, and cool down/stretch at end of the shift or working day (Chichester, 2018).

4. **Mechanical Hazards:** Cause of Hazards: Unleveled terrain, manual handling (bending, reaching, stretching, pulling, repetitive motions, awkward posture)

Possible Harmful Effects

Fall, cuts

Possible Employed measure to Prevent injury/illness

i. Document safe work procedures

ii. Provide material aids and ensure usage

iii. Provide training in safe manual handling techniques (Chichester, 2018).

5. **Psychosocial Hazards:** Causes of Hazard: Sexual harassment, work place bullying, noise, shift work, workload

Possible Harmful Effects

Emotional stress, fear and anxiety, physical illness, long-term exposure to excessive noise can lead to hearing loss and excessive workload may lead to other stress related health challenges.

Possible Employed measure to Prevent Injury/illness

i. Maintain powered tools to reduce noise

ii. Limit exposure to excessive noise

iii. Provide appropriate PPE, use PPE (hearing protection) provided (Chichester, 2018).

iv. Reduce workload, breaks should be observed

v. Establish staff briefings or training (Chichester, 2018).

Methodology

The research engines used to retrieved information of this paper is from available i. Articles ii. Medline iii. Embase

iv. Research gate v. Medweb line vi. Scholar goggle

vii. Med ped

viii. Text books like concepts in occupation, health and safety technology ix. Fundamentals of occupational health and safety etc

Identifying the causes of health challenges / injury and illness associated with bricklaying as an occupation

Mention health challenges associated with bricklaying

As regard to the hazards mentioned above, several diseases have been associated with the bricklaying occupation.

Low Back Disorder

For the bricklayers the most demanding task in terms of physical work is one handed repetitive lifting of bricks (1-6kg with bended lower back for more than four hours per day) or two handed lifting of blocks (6-48kg). An increase of the brick/block mass leads to an increase in the moment of compression curves which leads to an increased risk of low back pain for workers laying large sandstones (7-10kg). It is also found that more than 10 years working as bricklayer increased the chance of low back disorders (Molen, 2019).

Silicosis and Lung Cancer

Silicosis is a form of occupational lung disease. It is caused by inhalation of crystalline silica which leads to inflammation of the lungs (American Lung Association, 2019).

Bricklayers are exposed to dust when sawing bricks or blocks or when mixing cement/glue. This dust may contain quartz. The highest dust concentrations will occur when working indoors. Short term exposures may exceed to Dutch threshold limit value for “inert” dust.

The Dutch threshold limit value or respirable quartz dust (0.075 mg/m^3) can be exceeded, especially when sawing blocks containing quartz indoors. In the Netherlands quartz dust concentrations of up to 0.2mg/m^3 have been measured when preparing and handling blocks. In USA bricklayers are exposed to median concentrations of respirable dust and respirable quartz of 2.13 and 0.32 respectively. Long term exposure to high concentrations of

quartz dust may result in silicosis. Moreover, quartz dust is considered to cause lung cancer in humans (Rappaport et al, 2013).

Hearing loss

Bricklayers are exposed to noise caused by the equipment present in their environment, to impulse noise when positioning bricks and when chipping bricks to size, to noise caused by cutting bricks/blocks, and by work involving power tools (drilling, sawing, grinding) may be regularly exceeded, which can result in hearing loss if no hearing protection or insufficient hearing protection is used (Molen et al, 2019).

White finger syndrome

Also known as vibration white finger (VWF) or hand-arm vibration syndrome (HAVS) or dead finger is an industrial injury triggered by continuous use of vibrating hand-held machinery. It is a disorder that affects the blood vessels, nerves, muscles, and joints of the hand, arm and wrist.

People who work with grinders, drills, saws, or chisel hammers are exposed to hand/arm vibration. Long term exposure to high levels of hand/arm vibration may result in "white finger syndrome" or damage to the writs or other parts of the body. Bricklayers, average exposure levels are expected to be below the EU vibration guideline.

Skin Cancer, colds, sunburn/eye irritation and musculoskeletal complaints

The bricklaying job is done outdoors and partly indoors. Working outdoors involves exposure to cold or heat, wind, and rain. Indoors, exposure to cold and draughts may occur if the rooms are not fully glazed yet. This may lead to musculoskeletal complaints and colds. During the summer and during the sunny weather in particular, there is exposure to ultraviolet radiation, which may result in sunburn or eye irritation. Years of exposure may lead to skin cancer later in life (Hildebrandt et al 2002).

Chronic obstructive pulmonary disease

Jordan et al (2013) reported higher prevalence of respiratory symptoms in bricklayers with significant difference for cough and phlegm. Majority of the chronic respiratory symptoms in bricklayers were work-related. The prevalence of chronic obstructive pulmonary disease COPD was significantly higher in bricklayers than in office workers.

Chronic Obstructive pulmonary Disease and Bricklaying Occupation

Occupational hazards characterize all forms of occupations and bricklaying is not an exception. From the type of work done by bricklayers, they are frequently exposed to high levels of dusts through many regular tasks. Mixing cement and mortar; emptying or disposing of cement bags, cutting, sawing and drilling through bricks, and sweeping/cleaning floors and block work can all generate airborne dust which is easily inhaled. Close-up work, such as brick marking and carving, can also mean the worker is breathing very near to a dust sources (Breathe freely, 2019).

Construction dust is generally term of dust typically found on a construction site, the risk to health depends on the actual composition of the dust as well as the level of exposure to it. The highest risk to a bricklayer's health is likely to be from breathing in silica dust (respirable crystalline silica or RCS) over time can lead to serious lung diseases, including fibrosis, silicosis, chronic obstructive pulmonary disease (COPD) and lung cancer.

These disease cause disability and early death; over 500 construction workers die every year from exposure to silica dust. Breathing in any dust can lead to lung irritation, asthma and other acute and chronic respirable condition (breathe freely 2019).

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Review of Related article base on Objective of the Paper.

According to Achalu, (2019). He categorized different types of hazard and their health effect as to be five different occupational hazards as physical, biological, chemical, psychosocial, ergonomic hazard. He defines occupational hazard as any object, substance events or activity that has the potential to cause harm, injury, disease, disability and even death.

According to Oluwagbemi, (2003). He classified occupational hazard into five physical hazard, chemical hazard, biological hazard, psychosocial hazards, ergonomic or work design hazards they are the aspect of work environment which may cumulatively result to deterioration of worker state of wellbeing.

According to Gupta, (2010). Enumerate types of hazard to be physical hazard are form of energy that can harm the body if exposed; they include noise, vibration, extremes of temperature (hot or cold) and radiation.

According to Onyia, (2011). Submitted that physical hazards are hazards in the physical environment that can be seen, heard, felt or experiences in the physical way.

According to Simple, (2010). Averred that substances considered to be biological hazards are micro-organisms. Cell culture or human endo parasite whether or not genetically modified which may causes infection, allergy, and toxicity otherwise create a hazard to human health.

According to Gupta, (2010). Chemical hazards, occur basically from chemical substances and can take the form of solids, liquids, vapours, gases, dusts, fumes and mist and their routes of entry into the body includes inhalation, absorption and ingestion.

According to Gupta, (2010). That machine hazards with a moving parts can pose serious safety in the workplace. Such moving parts can tangle a worker's clothes or come in contact with the body, workers may be crushed or sustain serious injuries by rotating shaft, belts blades and saws. Workers may equally be struck by flying projections from machine.

Other ones are energy hazard, work practice hazard, confined space hazard, material handling hazard.

According to Achalu, (2019). Psychosocial hazard are stressors that can cause distress and contribute to physical or mental disorders. Examples of psychosocial hazard include excessive work load, boredom at work, poor relationship at work, role conflict and among others.

According to Achalu (2019) also submitted that ergonomic hazard arise from posture design work that causes harm. Example of ergonomic hazard due to poor interaction between the work environment and the tools. Improper posture that can lead to musculoskeletal disorders improper height of chairs and tables.

According to Gupta (2010) itemized the causes of physical hazard as lifting, carrying lowering, pushing and pulling it can result to muscle strains, tears and pulls of the back, shoulders, arms and abdomen. He also mentioned mechanical material handling that involves devices like conveyors, cranes, handcarts, trucks and forklifts, he said that the devices may introduce hazards including accidental contact with moving equipment, loads or electricity.

Chemicals – handling of hazardous materials such as corrosive, flammable and reactive can cause serious harms to workers and damage to property.

According to Gupta (2010), identify the causes of psychosocial hazards to be equally result from faulty unity of command and relationship, psychosocial issues in the work place he included:

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i. violence from and outside the organization ii. Bulling which may include emotional and verbal abuse. iii. Sexual harassment iv. Mobbing v. Burn out

vi. Exposure to unhealthy element

According to Prasher and Bansal (2009), asserted that ergonomic hazards can arise from the following causes.

1. Failure to components of a mechanical system due to faulty design, faulty assembly, faulty materials, lack of repair and maintenance plight
2. Inadvertence and complacency on the part of the workers at the points of operation.
3. Inadequate safeguard of machine.
4. Laxity in the use personal protective equipment.

According to Simple (2010) classified generally chemical into various sensitizing, carcinogenic, mutagenic and toxic, irritant material, safety data sheets (MSDS) should be made available for all hazardous chemical as well as the classification for use, first aid and firefighting procedures.

According to Simple (2010) require several management guidelines click include: i. Assessment of the risks to health by the hazardous substances.

ii. Decision on precautions needed by exposed employee's iii. Prevention of exposure and central where prevention is not feasible IV. Ensuring that control measures are used and maintenance v. Monitoring of exposed employees VI. Carrying out appropriate health surveillance vii. Preparing of plans and procedures to deal with accident, incidents and emergences. viii. Ensuring that employees receive necessary information, instruction and training.

Boschman et al (2011), in their systematic researched design was adopted related to occupational demand and health effects for bricklaying and construction supervisions.

A total of 60 articles were included evidence was formed for the following demands for bricklaying; energetic load on the lower back [exceeding 25 % heart rate reserve] load on the lower back [exceeding the noise – threshold value of 3,4km], repetitive force exertion of the upper extremities, frequent bending with trunk flexion exceeding 60˚ and working with the arms more than 60˚elevated. Environmental demands includes;

Dust and quartz exposure [exceeding the limited value of 3.0 and 0.05 mg⁄m [3], respectively], vibration and noise [exceeding the limited value 80 decibel].

Bricklayers are at increased risk of lung cancer, low back pain complaints of arms and legs and getting injuries. Among construction supervision and walking and standing evidence for supervision were mental demand, demands with common physically work load, time pressure, working long hours and social organizational factor, supervisors are at increased risk of lung cancer and injuries still their musculoskeletal and respiratory illness. This study participants suffer from different musculoskeletal problems.

Heuer , et al [1996] ,in their cross−sectional study,195 bricklayers were interviewed and subjected to a medical examination concerned with complaint functional impairment of the musculoskeletal system of different body regions [neck ⁄ shoulder ⁄ arms ⁄ hands ⁄ hips ⁄ legs ⁄feet]. Summary variables for complaints and impairments indicate an increase with increasing age. Contrary to expectation in pairs of bricklayers of the same, but different length of employment a general decline of complaint and impairment with longer employment was served this finding suggested a health worker effect in following up the turnover rate among 190 of the 195

bricklayer of the original study was determine. Bricklayers who had stayed in the job, the relation between turnover and low back problem were limited to bricklayers older than about 40 years.

Work related illness is very common among the brick killing workers because they are living a poor environment adjoining brick making unit. Several studies show that the labourers working in the brick manufacturing units suffered from acute and chronic musculoskeletal problems due to awkward postures, heavy work load factors such as force, manual handling , repetitive work and vibration as well as movements, previous study's has identified the relationship between highly repetitive work with neck and neck/shoulder musculoskeletal disorder. In this study it was found that about 58.2% of responders had been in the brick manufacturing occupation for less than 5 years working experience. However, they did not continue working more than six month in a year. Several studies had been conducted among the brick field workers to evaluate.

Buothenbacher, et al [2013], of cohort study of occupational risk factor of low back pain in construction workers. The Hamburg construction worker study comprises 571 male construction workers who have undergone two comprehensive interview and physical examination surveys. a cohort of 285 subjects without L.B. Pat baseline was identified . After a following up of 3 years, the 1 year prevalence of self-reported L.B.P was determined in the 230 men followed up [80.7%] prevalence intervals [95%] of L.B.Pat follow up according to self-reported work task of construction worker measured at baseline were estimated from coxs regression model which were adjusted measures for age , and anthropometric

Follow up 71 out of 230 workers [30 – 9%] reported L.B.P during the precedry 12 months. Four work task [scaffolding , erecting root structures, sawing wood , laying large sand stones] with an increased risk of years prevalence of L.B.P at follow up were further evaluated . After further adjustment for occupation, the relative risk was increase for workers who had reported≥ two⁄shift laying large sand stones [pr = 2.6: 95% cl 1.1 to 6.5] work load of bricklayers was additionally estimated by an index on stone load [high exposure : pr =4.0 :95% cl 0.8 to 19.8], and an index for laying large bricks/ blocks [yes⁄no: pe =1.7 ;

95% cl 0.5 to 5.7]

Conclusion; the result suggest that self-reported difference in bricks characteristics [size and type of stones] and temporal aspects of the work of the bricklaying [average hours per shift laying specified stones] can predict the future prevalence of lbp .the data have to be interpreted with caution because multiple risk factors were fisted.

Mikrani, et al (2017). In their review on musculoskeletal symptoms among the brick killing workers of kathmanlu valley.

Musculoskeletal disorders [w.m.s.d.s] affect the muscles, tendens joint and nerves when they are stressed, or traumatized on a repetitive basis over an extended period of time. In the development countries some mechanization was introduced but various studies show that the workers working in the brick manufacturing unit suffer from musculoskeletal problems. In most of the brick kiln India brick making and associated work are done manually.

Anselm, et al (2011), on their systematic review of hand – arm vibration syndrome in tropical countries. Review the internationally accepted limited values for hand transmitted vibration exposure were determine from the dose response relationship as specified in the ISO 5.349 documentation based on the prevalence of vascular disorder of hand arm

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Vibration syndrome

The health effect of hand transmitted vibration exposure in tropical countries was used to determine the prevalence of syndrome and compare the result with established data from temperate climate countries.

Finding- despite extensive literature search, the available literature from tropical countries was limited to four at the times of review. The clinical features of hand arm vibration syndrome in tropical countries were found to be different from that of temperate climate in terms of prevalence of vascular outcomes.

Observation

Achalu, (2019), classified hazard in five different types physical hazard, chemical hazard, biological hazard psycho-social and ergonomic hazards while Gupta (2010) classified occupational hazard into two broad categories types as hazards dealing with safety (safety hazards) and hazards dealing with health (occupational health hazard). Oluwagbemi (2003), classified occupational health hazards into the categories, physical hazards, chemical hazards, biological hazard, psychosocial hazards, ergonomic or work design hazards.

Gupta (2010), explain that physical hazards are form of energy that can harm the body if exposed e.g noise, vibration, extremes of temperature (hot or cold) and radiation while Onyia (2011) submitted that physical hazards are hazards in the physical environment that can be seen, heard, felt or experienced in physical way. Noise is a major physical hazard Simple (2010) averred that substance considered to be biological hazards are micro-organisms call culture or human endo-parasites whether or not genetically modified which may cause infection, allergy, loxicity or otherwise create a hazard to human health, while (Gupta 2010) explained that biological hazards are living things or substances produced by living things that can cause illness in humans. These hazards enter the body through inhalation and absorption they include bacteria, viruses, fungi, parasites and plants.

Gupta (2010) explained that chemical hazards occur basically from chemical substances and can take the form of solids, liquids, vapour, gases, dusts, fun. Their route of entry into the body includes inhalation, absorption and ingestion.

Prasher and Bansel (2009) noted that workers may suffer from respiratory diseases, skin infections, allergy, neurological and reproductive disorders as a result of exposure to chemical hazards. He also said ergonomic or work design hazard emanate from the design and organization of work including man to man machine relationship. This hazards can arise from the failure of components of mechanical system due to faulty design faulty assemble, faulty materials, lack of repair and maintenance etc.

Achalu (2019), explain that ergonomic hazards has to do with body position in relation to work task e.g poor pasture, mismatch between man and machine, lifting heavy objects, stretching the body, twisting the body and poor desk seating. Ergonomic hazard are associated with musculoskeletal disorder (MSP) and repeated strenuous movements or lifting.

According to Simple (2010) chemical and generally classified into various categories very toxic, harmful corrosive, while the global harmonized system of classification chemicals base on their effects on human health. Acute toxicity, serious eye damage /eye irritation, germ cell mutagen city specific target organ, toxicity, respiratory or skin sensitization. According to Gupta (2010) psychosocial hazard are associated with the worker state of mind. Work place stresses can lead to stress or distress and have been identified as an inducing sickness factor. This may equally result from faulty unity of command and relationship.

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Discussion of observation

In my observation, I found out that Achula (2019) and Oluwagbemi (2003) classified occupational hazard into five categories why Gupta (2010) classified the occupational hazard into 2 broad categories, such as hazards dealing with safety (safety hazards) and hazards dealing with health which is occupational health hazards. In my observation, safety hazard are different from health hazard. Safety hazard are those hazard that are included in the material handling hazards that can involve lifting, carrying, lowering, pushing and pulling that can result to muscle strains, tear and pulls of the back shoulder, aims and abdomen. Gupta while occupational health hazards are those aspect of work environment which may cumulatively result to deterioration of a workers state of wellbeing Oluwagbemi (2003).

Gupta (2010) explanation of physical hazards and explanation of Onyia (2011) are the same. Because physical hazard are thing that can see, felt, heard in our physical environment e.g noise. Simple (2010) consider biological hazard as micro-organisms, cell culture or human endo parasite whether genetically modified which may cause infection, allergy, toxicity or otherwise create a hazard to human health while Gupta 2010 also explained that Biological hazard are living things or substances produced by living things that can cause illness in human. These explanations are the same but through the inhalation and absorption they enter into the body and cause bacteria, virus and infection to human's health.

In Gupta (2010) explanation I observer that chemical can take form of solid, liquid vapour, gases, dusts and also take the shape of its container and they enter into the body through so many route like, inhalation, absorption and ingestion Prashar and Bansal 2009 also observed that many workers suffer from respiration disorder, skin infection e.g because of exposure to chemical, precaution should be take when handling this chemical to minimizes the effects on human health.

Chemical can damage the eye when they come in contact with the eyes, they can even cause permanent damage to eye cornea, iris, conjunctiva, and the worker state of mind is cause by psychosocial hazard, work place stress or distress but if there will be good relationship from the management and the workers this will m*i*nimized this hazard.

Ergonomic or work design hazards this can be cause due to failure of components of a machine system or lack of repair and maintenance Prasher & Bansah (2009). Achalu (2019) also explain that ergonomic hazard has to do with body position, mismatch between man and machine, lifting heavy objects the same view on ergonomic hazard but for this hazard to be minimized, team lifted where possible is needed and exercises before and after work, be sure that the worker are well train in handling machine.

Prasher and Bansal (2009) suggested that in occupation, where there is potential exposure to biological hazards, workers should practice proper personal hygiene, particularly hand washing. Hospitals should provide proper ventilation, personal protective equipment, waste disposal systems and appropriate control including isolation in case of contagious disease. According to Gupta (2010). Materials safety data sheets (MSDS) should be made available for all hazardous chemical as well as the classification, chemical and physical properties, precaution for use, first aid and firefighting procedures. Orashaw & Banal (2009), workers should receive be training on how to operate guarded machines. Training on the use and maintenance of personal protective equipment is very important in the work place. Physical hazard, provide instruction in safe use of hand tools, use hand tool, carefully according to your instructions Chichester (2018).

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Preventive measure for ergonomic hazard according to Chichester (2018), document safe work procedures provide training in safe manual handling techniques, ensure team lifts where appropriate (seek for help when your think a team lifts is required). Exercise, warm up/stretch before starting work and cool down/stretch at end of the shift or work day etc.

Psychosocial hazards limit expose to excessive noise, reduce work load, breaks should be observed and establish staff briefing or training (Chichester 2018).

Boschman et al (2011), on their systematic research design related to occupational demand and health effects for bricklaying and constructions supervisor, there is a clear evidence that bricklaying energetic load on the lower back pains was very high because of large lifting of heavy blocks and frequent bending with their trunks. In this study, bricklayers are at increased risk of lung cancer because of halation of silicoses dust in their working environment and also complaint of low back pains, aims, leg and getting injuries due to heavy lifting of 6 – 48kg of blocks, laying large sandstones of 7 – 10kg, and awkward posture, long hours of work, time pressure. Construction supervisor are also at increased risk of lung cancer and injuries. These groups of workers also suffer from different types of musculoskeletal disorder.

Heuer, et al, (1996), in their cross sectional study, A medical examination was conducted among 195 bricklayers and also interviewed with those with complaint at functional impairment of the musculoskeletal system of different body like neck, shoulder, arm, hips, legs, feet for the complaints and impairments indicate an increase with increasing age. As the age is increasing the rate of the complaint continue to increases with the length of working experiences. This finding suggested a health worker effect in following up the turnover rate among 190 of the 195 bricklayers original study was determine. Bricklayers who had stayed in the job, the relation between turnover and low back problem were also limited to bricklayers older than 40 years

Bricklaying workers have work related illness, because they are living a poor environment adjoining brick making unit. Labourers working in the brick manufacturing unit suffered from acute and chronic musculoskeletal problem due to awkward postures, heavy workload factors such as force, manual handling, repetitive work and vibration as well as movement, say by several studies. There must be a way to prevent this work related illness among the brick killing workers. Also previous studies has identified the relationship between highly repetitive work with neck and neck / shoulder musculoskeletal disorder. In this study, it was found that 58.2% of responders had been in the brick manufacturing occupation for less than 5 years working experience. But they did not continue working more than six months in a year. And several studies had been conducted among the brick field workers to access.

Bualheubacher, et al, (2013) of cohort study of occupational risk factor of low back pains in construction workers. The Hamblury construction workers study comprises 571 male construction workers who have undergone two comprehensive interview and physical examination surveys. Because of multiple risk factors which were fisted, the result suggested that self-reported difference in bricks characteristic (size and types of stones) and temporal aspect of the work of the brick laying (average hours per shift laying specified stones) can predict the future prevalence of 1bp, the data have to be interpreted with caution.

Anselm, et al (2011), on their systematic review of hand – arm vibration syndrome in tropical countries. In their studies, it was found that the clinical feature of hand arm vibration syndrome in tropical countries was quite different from that of temperate climate in terms of prevalence of vascular outcomes.

In my own view high temperature promotes hand arm vibration syndrome in terms of prevalence of vascular outcome while clinical feature will reduce the effects of the illness.

Conclusion

In under-developed countries like Nigeria, most bricklayers and worker of construction sites is usually socioeconomically poor people and the number is seen to be growing. Like any other occupation, bricklaying, a form of masonry is faced with various occupational hazards which lead to long and short term health challenges. This is because they are exposed to different physical, chemical, biological, mechanical, and psycho social hazard during their daily working scheduled. Due to prolonged maintain of poor working postures, bent-position, manual handily of heavy weights with repetitive work and lack of rest, and musculoskeletal disorder are common among them.

Recommendations

Base on this review, the following recommendations are made:

1. Managers of the Bricklaying association should provide adequate number of personal protective equipment for their employees.
2. Workers, working in a bricklaying industries should avoid lifting of heavy weight block, machine is preferable to avoid musculoskeletal disorder, back pain, leg pain, and awkward posture.
3. Bricklayers working in dusty environment should put on their respirator to avoid inhalation of silicosis dust, which may causes cancer, COPD.
4. Workers, working in bricklaying industries or construction industries, should put on their ear plug or ear mupe to avoid excessive noise, which may cause loss of hearing.
5. The manages of bricklaying company should provide routine medical checkup for the workers.
6. The directors of Bricklaying Company should put on seminars bothering on proper orientation for construction workers which included bricklayers should be organized frequently for update on current safety procedures.

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