Texila International Journal of Clinical Research
Special Edition Mar 2019

Prevalence of Work-Related Musculoskeletal Pain, Knowledge and Practice of Ergonomics Among Clinical and Non-Clinical Staff in Tertiary Hospitals in Uyo Metropolis Nigeria

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Abstract

Musculoskeletal pain is one of the most prevalent occupational health disorders affecting all spheres of human endeavours with various predisposing factors being reported among hospital workers. This study determined the prevalence of musculoskeletal pains, knowledge and practice of ergonomics among clinical and non-clinical staff of University of Uyo Teaching Hospital, Uyo, Akwa Ibom State (UUTH). A total of 284 Participants were involved in this cross-sectional study, consisting of 153 clinical staff (49 males; 32%) and (104 females; 68%); mean age of 36±11.0 years, age range of 24 – 59 years; and 131 non-clinical workers of 62 males (47.3%) and 85 females (52.7%); mean age 38±14.0 years, age range of 20 – 58 years. Results showed that non-clinical staff had a higher annual prevalence of musculoskeletal pains (79.4%). Pains were mostly distributed to the low back region for both groups. Nurses were mostly affected (35%). Years of work experience was not significantly associated with musculoskeletal pain ($p = 0.194$). However, other factors assessed were significantly associated ($p<0.05$) with musculoskeletal pains in both groups. The knowledge of ergonomics and compliance to work safety regulations was high among the non-clinical staff than in the clinical staff. Improving the working condition of hospital workers and periodic seminars on work safety was recommended to reduce the prevalence of musculoskeletal pains among them.

Keywords: *Work-Related Musculoskeletal Pain, Ergonomics.*

Introduction

Background of study

Musculoskeletal pain (MSP) is one of the most prevailing occupational health challenges, and hospital staffs are no less at risk of MSP. It is a global problem affecting all spheres of human endeavours, with an enormous consequential economic drain in many developing and developed countries (Akinpelu, Odole & Odejide, 2010). International Association for the Study of Pain (IASP, 2009), described the economic burden of musculoskeletal pain as second only to that of cardiovascular disease. In the United States of America, the overall cost of MSP was estimated to be about 214.9 billion US Dollars and the direct costs of managing MSP that was work-related amounted to 88.7 billion US Dollars, of which 38% was spent on hospital admission and 21% on nursing home care (Akinpelu et al., 2010). The prevalence of MSP is very high with enormous economic implications. Musculoskeletal pain causes an impact on the quality of life and interferes in the daily activities of two thirds of individuals, especially for physical activities, sports, daily life activities and ability to go to work and to perform their job functions (Blyth, March, Bmabic, Jorm, Williamson & Cousins, 2001).

Work-related musculoskeletal pain (WRMSP) is a condition in work-related tasks that affects the nerves, tendons, muscles and supporting structures associated with exposures to job risk factors (Mosby, 2006). WRMSP is a musculoskeletal disorder as a result of work-associated activity (Tinubu et al, 2010). Musculoskeletal pain (MSP) is one of the most common symptoms of musculoskeletal disorders (MSDs) (Bruusgaard 2003. About one-third of all sick leaves among health care workers are related to WRMSDs (Meijesen & Kriebbe, 2007). Also, most occupations worldwide are associated with a high risk of developing injury (Nordin, Leonard & Thye 2011; Lee & Ismail, 2005), with MSDs as the most prevalent and frequently reported work-related disease according to the centre for disease control (CDC, 2001).

DOI: 10.21522/TIJCR.2014.SE.19.01.Art002
ISSN: 2520-3096

- MSP has been described as one of the main occupational problems among health care workers with prevalence rate between 40 – 50% (Freimann et al 2013; Phongamwong et al, 2014). Prevalence of work-related musculoskeletal pain among physiotherapists in some epidemiological studies reported 91% in Australia (Cromie, Robert & Best, 2000), 85% in Turkey (Salik & Ozcan, 2004), 68% in United Kingdom (Glover, et al, 2005), and 91.3% in Nigeria (Adegoke, Akodu & Oyeyemi, 2008) having the highest occurrence. The range of prevalence rate reported for the most prominently affected areas including the lower back is between 19% to 77% (Adegoke et al., 2008; Rozenfield et al., 2010; Kayode & Adeyekun, 2013; Sandul & Paramasivan, 2013; Udoye & Aguwa, 2016; Nur et al., 2016), for the neck, between 31% to 48.9% (Adegoke et al., 2008; Rozenfield et al, 2010; Ashu & Kamo, 2016; Nur et al., 2016), and shoulders between 10% to 36.9% (Adegoke et al., 2008; Rozenfield et al., 2010; Kayode & Adeyekun, 2013; Udoye & Aguwa, 2016).

Ergonomics is an important aspect in order to improve workers performance at work, develop an autonomous rhythm at work which will synchronize physical, physiological and psychological aspects that is responsible for human behavior and efficiency at work and stands as a key factor deciding workers effectiveness (Evanoff, 1999). Proper posture or positioning, equipment modification as well as rest periods of at least six minutes per hour (Ashburn & Staats, 2005), are some of the strategies for reducing the occurrence of work-related musculoskeletal pain).

Multiple causative factors for MSP have been established to include both work-related and non-work-related factors (Stock et al., 2005; Wearing et al., 2006; Tiemessen et al., 2008). Thus, the aim of this study is to estimate the prevalence of work-related musculoskeletal pain, ascertain the knowledge and practice of back care among staff of University of Uyo Teaching Hospital, Uyo, Akwa Ibom State.

Statement of problem

Musculoskeletal pain have been shown to cut across all professions evident in the work carried out by (Karahan et. al., 2008), to describe the prevalence and risk factors for lower back pain amongst a variety of Turkish hospital workers including nurses, physicians, physical therapists, technicians, secretaries and hospital aides. Musculoskeletal disorders (MSDs) are also common among employees throughout the world, particularly in high risk groups such as nurses (Shafiezadeh, 2011). Health care work is known as a high-risk job for MSDs. It is estimated that almost one-third of all cases of sick leave among health care workers are related to MSDs. Even in developed countries, it appears that MSDs are under reported among health care providers. Back, neck, shoulder, and knee problems are the most common complaints among medical, dental, and nursing students. (Mehrdad et al., 2012). However, there is a paucity of data on the prevalence of WRMSP among non-clinical workers of hospitals in this region as there have been quite a number of studies mainly on clinical health workers, hence this study sought to bridge the gap in knowledge in this regards.

According to (IASP, 2009), musculoskeletal pain from overuse affects 33% of adults and accounts for 29% of lost workdays due to illness. Low back pain is most prevalent and most common work-related injury in Western society and it is the most costly work-related musculoskeletal disorder. Also, the hospital departments that presented more significant risks for MSDs are nutrition, cleaning and laundry services being the top ranked (Norton, et al, 2009). Epidemiologic studies of workers have associated these musculoskeletal disorders with many work-place physical and psychosocial factors. Specific physical factors associated with these disorders include intense, repeated, or sustained exertions, awkward, sustained, or extreme postures of the body, excessive workload, insufficient recovery time, vibration, and cold temperatures. Specific examples of work-place psychosocial factors include monotonous work, time pressure, high workload, lack of peer support, and a poor supervisor-employee relationship (Bruno & Edgar, 2009). The realization of the complaints of some clinical and non-clinical staff of University of Uyo Teaching Hospital (UUTH), Uyo, Akwa Ibom State on occurrence of musculoskeletal pain stimulated the interest embodied in this study to investigate the prevalence of work-related musculoskeletal pain, knowledge, and practice of ergonomics among clinical and non-clinical staff in University of Uyo Teaching Hospital, Uyo.

Research questions

1. What is the prevalence of musculoskeletal pain among clinical and non-clinical staff of university of Uyo Teaching Hospital, Uyo?
2. What is the body regional distribution of work-related musculoskeletal pain among clinical and non-clinical staff of University of Uyo Teaching Hospital, Uyo?
3. Which occupation has the most prevalence of musculoskeletal pain among clinical and non-clinical staff of University of Uyo Teaching Hospital, Uyo?
4. What is the health-seeking behavior of clinical and non-clinical staff of University of Uyo Teaching Hospital, Uyo?
5. Is there an association between years of experience and the prevalence of musculoskeletal pain among clinical and non-clinical staff in University of Uyo Teaching Hospital, Uyo?
6. Is there an association between the job risk factor and prevalence of musculoskeletal pain among clinical and non-clinical staff of University of Uyo Teaching Hospital, Uyo?
7. What is the level of knowledge and practice of ergonomic principle among clinical and non-clinical staff of University of Uyo Teaching Hospital, Uyo?

Research objective

Main objective

The general objective of the study is to determine the prevalence of work-related musculoskeletal pain, knowledge and practice of ergonomic among clinical and no clinical staff of University of tertiary hospitals in Uyo metropolis.

Specific Objectives of the Study include:

1. To determine the prevalence of musculoskeletal pain among clinical and nonclinical staff in University of Uyo Teaching Hospital, Uyo.
2. To determine the body regional distribution of work-related musculoskeletal pain among clinical and nonclinical staff in University of Uyo Teaching Hospital, Uyo.
3. To determine the occupation with the most prevalence of musculoskeletal pain among clinical and non-clinical staff in University of Uyo Teaching Hospital, Uyo.
4. To determine the health-seeking behavior of clinical and non-clinical staff in University of Uyo Teaching Hospital, Uyo.
5. To determine the association between years of experience and the prevalence of musculoskeletal pain among clinical and nonclinical staff in University of Uyo Teaching Hospital, Uyo.
6. To ascertain an association between the job risk factor and prevalence of musculoskeletal pain among clinical and non-clinical staff in University of Uyo Teaching Hospital, Uyo.
7. To ascertain the level of knowledge and practice of ergonomic principle among clinical and non-clinical staff in University of Uyo Teaching Hospital, Uyo.

Significance of study

1. Stimulating policy makers in improving working conditions of Nigerian Hospitals.
2. Identifying the common job related risk factors of musculoskeletal pain and hence promoting awareness and prevention via the organization of seminars on prevention.
3. To understand the health seeking behaviour of hospital workers in view of promoting proper and adequate health care for musculoskeletal pain in order to promote prevention of chronic MSP and improve productivity in the health industry.
4. Adding to the body of knowledge of musculoskeletal pains especially in the South-South part of Nigeria where such are relatively scarce.

Scope of the study

The study was delimited to clinical and non-clinical staff working at University of Uyo Teaching Hospital (UUTH), Uyo, Akwa Ibom State.

DOI: 10.21522/TIJCR.2014.SE.19.01.Art002
ISSN: 2520-3096

Assumptions

It is assumed that all information provided by the subjects are correct.

Literature review

Introduction

This chapter discussed critical literature around musculoskeletal pains and will incorporate literature around the following major topics:

- Ergonomics in the Workplace
- Musculoskeletal pain
- Review of empirical literature
- Summary of the literature

Ergonomics in the work place

Fundamentals of the flexible work place variability and compatibility with desk components, that flex from individual work activities to team settings. Work station provides supportive ergonomics for task – intensive environment (EASH, 2007).

Al-Zuheri et al. (2000) discussed in his paper that Work-related musculoskeletal disorder (WRMDs) occurred mainly due to improper design of work station and negligence of ergonomics measures. Proper ergonomically design of work station guarantees to fulfill the objectives of industry with the context that considers productivity, integration, workers comfort, worker variety and safety. If these ergonomics measures are neglected in designing and analyzing of manual assembly systems than can expose workers to the major risk of WRMDs.

There are many ways in which ergonomic problems can be identified. These can range from general observations and checklists to quantitative risk assessment tools. Ideally, several approaches should be used:

1. Talking to employees and seeking their views.
2. Assessing the work system by asking questions such as: Is the person in a comfortable position? Does the person experience discomfort, including aches, pain, fatigue, or stress (ISO, 1997).
3. Examining the circumstances surrounding frequent errors and incidents where mistakes have occurred, and people have been injured. (ISO, 1997).

Musculoskeletal pain

Musculoskeletal pain is defined as the pain that affects the muscle, ligaments, tendons, along with the bones (Mosby, 2006).

It is a condition where in work-related task affect the nerves, tendons, muscles, and supporting structures (Mosby, 2006) associated with job risk factors. Acute pain within the various components of the musculoskeletal system is a cardinal symptom of the pathophysiological process involved with tissue damage, disease or dysfunction. These disorders are generally well characterized and management usually associated with goods symptomatic and functional outcomes.

Some of the Work-related musculoskeletal disorder known (Mosby, 2006), includes:

Muscle strain and tears, ligament sprains, joints and tendon inflammation, pinched nerves, spinal disk degeneration, low back pain, tension neck syndrome, rotator cuff syndrome, trigger finger, de Quervain syndrome, carpal tunnel syndrome, sciatica, lateral epicondylitis, tendonitis, carpet layers knee, hand-arm vibration syndrome, reynaud's phenomenon, herniated spinal disk, trapezius myalgia. Areas of the body mostly affected are the low back, neck, shoulder, chest, upper back, legs and the upper extremities.

The causes of musculoskeletal pain, according to Cromie et al (2000), are varied:

1. Muscle tissue can be damaged with wear and tear of daily activities.
2. Trauma to an area e.g. the jerking movements, auto accidents, falls, fractures, sprains, dislocations and direct blows to the muscle etc., can cause musculoskeletal pain.
3. Postural strain, repetitive movements and overuse.

4. Poor body mechanics (change in posture) may bring about spinal alignment problems and muscle shortening, therefore causing other muscles to be misused.
5. Repetitive manipulations.

Ergonomically, the risk of developing musculoskeletal disorder can be curtailed through;

1. Job and Equipment/Tool design (NIOSH, 2007).
2. Improving the work practices Improving the work Environment: The work level should be raised to an appropriate height improving the layout of the work area and clearing the door ways for safe passage and maneuver of equipment. This will help reduce bending, twisting and reaching out motions. Attention should also be paid to the temperature and lighting of work place. This is because inadequate lighting can cause hunching and awkward posture while excessive temperature can reduce muscle efficiency thereby increasing the risk of developing injury (NIOSH, 2007).
3. Using safe lifting technique.

Review of empirical study

Bork, Cook, Resecrance, Engelhardt, Thomson, Wanford & Worly (1996) carried out a study on work-related musculoskeletal disorder among physical therapists by mailing a four-page questionnaire to physical therapists who attended university of Iowa between 1943-1993, with 80% response rate. In their work, the highest annual prevalence of Work-related musculoskeletal disorder was low back (45%) followed by the wrists and hands (29.6%) upper back (28.7%), neck (24.7%) shoulders, elbows, hips and thighs, knees, ankles and feet (each less than 20%).

In a cross-sectional survey carried out by Tinubu et al… (2010) to determine the Work-related musculoskeletal disorder among nurses in Ibadan south-west Nigeria recorded 80% response rate from the self- administered questionnaire to respondents in different hospitals. Eighty-four-point four percent of the nurses have had Work-related musculoskeletal disorder once or more in their occupational lives. The 12-months period and point prevalence rate of Work-related musculoskeletal disorder at anybody region was 78% and 66.1% respectively. Work-related musculoskeletal disorder occurred mostly in low back (44.1%), neck (28.0%), and knees (22.4%) completed by 1600 employees in six hospitals associated with one Turkish university using Data were collected over nine months from December 2005 to August 2006 result obtained was that Most respondents (65.8%) had experienced low back pain, with 61.3%reporting an occurrence within the last 12 months. The highest prevalence was reported by nurses (77.1%) and the lowest amongst secretaries (54.1%) and hospital aides (53.5%). In the majority of cases (78.3%), low back pain began after respondents started working in the hospital.

This work seeks to bridge these gaps in knowledge, by conducting a study on the prevalence of work-related musculoskeletal pain knowledge and practice of ergonomic principles among clinical and nonclinical staff in University of Uyo Teaching Hospital (UUTH), Uyo, Akwa Ibom.

Summary of literature review

The economic burden of musculoskeletal pain is second only to that of cardiovascular disease. Musculoskeletal pain has been reported as the major and the most common cause of chronic pain and physical disability that affect hundreds of millions of people across the world. Musculoskeletal pain is the main sign of work-related musculoskeletal disorder and a significant burden on the sufferers, employers and more over the national economy. As this disorder usually follow a pathological process that may lead to impairment or functional disabilities, pain and general discomfort, anxiety or depression and decreased endurance leading to low performance activity of daily living, decreased speed at work, low productivity and poor output, cause individuals to be absent from their work, change of career or even death.

In the workplace, both clinical and nonclinical workers are often vulnerable to sustaining musculoskeletal pain during course of the work routine.

DOI: 10.21522/TIJCR.2014.SE.19.01.Art002
ISSN: 2520-3096

Materials and Method

Research design

The study utilized a cross-sectional survey design.

Location of study

This study was carried out in University of Uyo Teaching Hospital (UUTH), Uyo, Akwa Ibom state.

Target population

Male and female clinical and non-clinical staff in University of Uyo Teaching Hospital (UUTH), Uyo, Akwa Ibom state that have practiced for at least 12 months and above and currently working at UUTH within the period of this study (March – April).

Sampling technique

The study employed convenience sampling technique to select the participants for the study.

Selection criteria

Inclusion criteria

- This study involved only clinical and non-clinical staff working in University of Uyo Teaching Hospital (UUTH), Uyo, Akwa Ibom state.
- Subjects that were recruited for this study were only those that have worked for at least 12 months and above.
- Only those between the age group of 18 to 65 years of age.

Exclusion criteria

- Clinical and non-clinical staff that have not practiced or worked for at least 12 months and above.
- Clinical and non-clinical staff that are not employees of the University of Uyo Teaching Hospital, Uyo.
- Clinical and non-clinical staff that have musculoskeletal problems not associated to their work.

Materials

a) In this cross-sectional survey study, the instruments that were used for collection of data were the Standardized Nordic Questionnaire developed by Kuorinka et al. (1986) and a modified General Nordic Questionnaire for psychological and social factors at work (QPSnordic) developed by Lindstrom et al. (2000).

Ethical consideration

Ethical permission from the ethical committee of the University of Uyo Teaching Hospital, Uyo, Akwa Ibom State, was obtained before carrying out the study. Informed consent was obtained from participants before involving them in the study. As such, the research abided by the rules and regulations guiding research in the hospital.

Method of data collection/procedure

The copies of the self-administered questionnaires were distributed, by the researcher to the target population who are within the inclusion criteria in the above-mentioned location of study. The nature, objectives and relevance of the study was also explained to them by the researcher. The collection of the questionnaire from the respondents after distribution was within a period of two weeks.

Data analysis

Analysis was performed using the Statistical Package for Social Sciences (SPSS) 20.0 for Windows Evaluation Version. Continuous variables were presented as mean and standard deviation (mean±S.D). Qualitative variables were presented as absolute and relative frequencies; While Chi square and binomial logistic regression were used to determine association between non-parametric variables. Probability values of $p<0.05$ were considered statistically significant.

Results and discussion

This chapter presents the result of the study. It also described the results obtained in the study, data analysis of the research objectives and discussions based on the results obtained and data analysed. The results were presented in tables.

Results

A total of 380 copies of the questionnaire were distributed among the participants, 305 was completed and returned; a response rate of 80.3%. Data from 284 participants were computed and analyzed, 21 were discarded because of incomplete database. Out of the 284 participants, 153 were clinical workers (49 males; 32%) and (104 females; 68%); mean age of 36±11.0 years, age range of 24 – 59 years); while non-clinical health workers were 131 (62 males (47.3%) and 69 females (52.7%); mean age 38±14.0 years, age range of 20 – 57 years).

Summary, conclusion, recommendations and limitations

Summary

Musculoskeletal pain is common among employees throughout the world, particularly in high risk groups such as nurses. Health care work is known as a high-risk job for MSDs which is a leading cause of musculoskeletal pain. It is estimated that almost one-third of all cases of sick leave among health care workers are related to MSDs.

Participants of this study were a total number of 284 hospital staff, consisting of 153 were clinical workers (49 males; 32%) and (104 females; 68%); mean age of 36±11.0 years, age range of 24 – 59 years; while non-clinical health workers were 131 (62 males (47.3%) and 69 females (52.7%); mean age 38±14.0 years, age range of 20 – 58 years. The study is a cross sectional survey involving clinical and non-clinical health workers of the University of Uyo Teaching Hospital, Uyo, Akwa Ibom State. Convenience sampling was used to recruit the participants. Analysis was performed using the Statistical Package for Social Sciences (SPSS) 20.0 for Windows Evaluation Version; alpha was placed at $p < 0.05$.

Results revealed that the annual prevalence of work-related musculoskeletal pain among hospital staff at University of Uyo teaching Hospital is 78.9%. Meanwhile, non-clinical staff had higher prevalence of musculoskeletal pains (79.4%) than the clinical staff (78.4%). The body regions reported to be affected by musculoskeletal pain by both the clinical and non-clinical staff was the lower back (93.2%), neck (84.2%), Upper back (62.5%), shoulder (59.4%), knee (52.7%), ankle/feet (47.1%), hip/thigh (35.6%), wrist/hand (28.1%) and elbow (22.3%). Musculoskeletal pain was found to be prevalent among the clinical professions except for the dieticians. Similarly, among the non-clinical staff was noted a high prevalence of work-related musculoskeletal pain except among the laundry officers.

The results of this study revealed that there was no significant relationship between work experience and musculoskeletal pain. Furthermore, knowledge and practice of ergonomics was found to be lowest among the clinical staff than the non-clinical staff.

Conclusion

The result of the study shows**:**

- Non-clinical workers suffer musculoskeletal pains more than clinical workers.
- Musculoskeletal pains are mostly distributed to the low back in both clinical and non-clinical health workers.

DOI: 10.21522/TIJCR.2014.SE.19.01.Art002
ISSN: 2520-3096

- The annual prevalence of musculoskeletal pain among the clinical and non-clinical staff was highest among the nurses and administrative officers respectively.
- Occurrences of musculoskeletal pains were reported high among most of the clinical and non-clinical professions except among the dieticians and laundry officers.
- Rest and Physiotherapy were sought for most by clinical staff while pharmaceutical treatments and traditional treatments were sought for most by the non-clinical staff.
- Musculoskeletal pains are caused by several work-related risk factors.
- Occurrences of musculoskeletal pain was not directly influenced by years of work experience
- There is low knowledge and practice of the principle of ergonomics mainly among clinical staff.

Recommendations

- Government should consider improving the condition of work of the tertiary hospital in UUTH.
- Employment of more health workers to reduce the burden on the employed staff especially nurses.
- Organization of periodic seminar on ergonomics and work safety for health workers, especially for the clinical staff.

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