

Prevention of workplace musculoskeletal disorders



The prevalence of work related musculoskeletal injuries has been on the rise. These injuries have a significant influence in the work place and its one of the emerging problem in the societies representing second largest work related temporary disability (Miller, 2006). They are known as one of the most significant occupational problems hence requiring more compensation, increased medical bills, lower productivity and poor quality of life. This has mostly affected nurses and nurse aids. It is also responsible for joint sickness in working populations. Work related musculoskeletal injuries are the most expensive disabilities since a large sum of money is used in treatment of these injuries. Those who regularly engage in activities of lifting patients are at a greater at risk.

According to a research that was conducted by Collins (2004), shearing and compressive forces at lumbar 5 (L5) and sacral bone 1(S1) are the causes of these musculoskeletal injuries. These injuries lower the workers' productivity and quality of life. The rising prevalence of musculoskeletal injuries associated with handling of patients amongst health care providers has spurred deep efforts to develop safe ways of handling the patients. The vulnerable areas include the back shoulder and neck. Proper use of equipment and machines can help minimize these injuries therefore, improve quality of life among health care providers. Moving of the patients has been made easier by use of mechanical devices.

Some of the commonly used devices include mechanical lifts, overhead lifts and ceiling lifts. However, these devices are becoming less effective due to poor access, lack of storage space for these devices as some of them are bulky, making storage difficult since most of them are delicate (Chhakar,

2005). This study aims to focus on the rate musculoskeletal disorders amongst health care providers and the time lost in direct care of healthcare providers suffering from musculoskeletal injuries over a period of five years. Also, the research focuses the benefits and efficiency of using mechanical lifts in health facilities.

Background

A study was conducted in three health care facilities (St John's hospital, St Michael hospital and St Martin's hospital) to assess the efficiency and benefits of. Analysis of trends of these injuries in 3 years before intervention and 3 years after intervention was done. The analysis showed that there was a decrease in the number of health care providers admitted in that facility due to musculoskeletal injuries. Furthermore, the research also revealed that the number of compensation claims per bed has also decreased in these facilities. The decrease in compensation claims and hospitalization is attributed to use of mechanical, overhead and ceiling lifts.

Moreover, it was noted that musculoskeletal injuries resulting from patient handling are not abrupt; rather they result from compounded damages that has occurred for days, months and years (Collins, 2004). Despite the fact that staff have been trained on lifting techniques, these maneuvers do little to protect them because they must bend repeatedly in order to help their patients. Lifting of patients and moving patients from one place to another cause uneven distribution of weight causing shear and compressive forces affect their back leading to musculoskeletal injuries. The best remedy to this

problem is use of assistive devices such mechanical, overhead and ceiling lifts.

Methods

Data was collected in three long term health care hospitals. St John's hospital has a capacity of 100 beds. St Michael hospital serves 130 long term patients with musculoskeletal injuries. St Martin's hospital on the other hand serves 150 patients, many of them have been admitted in the orthopedics ward. Mechanical lift was fitted in St John's hospital, overhead lifting was employed in St Michael hospital and ceiling lifts were used in St Martins hospital in 2014. The total amount used to procure and fit these assistive devices in these three hospitals amounted to a total of 1430000 dollars. Training of staff on proper use of these devices and maintenance costs amounted to 70000 dollars; the sum total was 1500000 dollars.

Data from these three facilities was obtained using an injury incident tracking device installed in each facility. The device obtained the number of healthcare providers admitted due to musculoskeletal disorders, compensation claims, and the cost incurred during the hospitalization period (Edlich, 2004). The data obtained also included pre-intervention phase and post intervention phase. The number of health care providers admitted due to musculoskeletal injuries was recorded for the entire research period. Calculations on the claims, costs and the number of working days lost by these patients were done and the claims cost converted to the 2017 United States dollar using consumer price index. 3 percent was discounted in the total amount because of differential time value of the money (Daynard,

2001). The post intervention costs were calculated with reference to pre-intervention injuries rate. An assumption was made that the variation between actual rates and earlier rates was caused by mechanical, overhead and ceiling lifts intervention.

Results

The results obtained were analyzed basing on the musculoskeletal injuries claims, claim costs and time lost in form of working days. In trend analysis, there was a gradual decline of musculoskeletal claims over the study days. The trend tests of injuries per bed in the working days also decreased tremendously.

In the cost-benefit analysis, 110 musculoskeletal cases were reported during the four-year study period. Each claim costs 10000 US dollars, resulting to 1100000 US dollars claim cost. Therefore, any intervention to prevent these cases will help prevent direct claim cost. The variation between the pre-intervention rates and post intervention rates was computed every year and therefore the number of injuries prevented throughout the study period were obtained. The total intervention cost was 1500000 US dollars.

Using interrupted series analysis, the data obtained demonstrated a downward shift in the musculoskeletal injuries that were before the installation of mechanical, overhead and ceiling lifts (Engkvist, 2000). A separate study was conducted to evaluate the efficiency of these assistive devices in reducing musculoskeletal injuries related to handling of patients by staff. During the study, 15 per 100 musculoskeletal injuries were reported

in the pre-intervention period. 5 out of 100 musculoskeletal cases were reported in the post intervention period.

Findings

The above statistics provides evidence that suggest application of mechanical, overhead and ceiling lifts as assistive devices that help in reducing cases of musculoskeletal injuries among health care providers. Furthermore, the study shows that the cost of preventing these injuries is cheaper than the amount used in treatment, therefore economic savings from intervention outweighs the medical bills. Therefore, the findings supports use of mechanical, overhead and ceiling lifts in hospitals to prevent health care providers from suffering from musculoskeletal injuries.

Lifting, transferring and positioning of patients is a strenuous activity and its always done in adverse conditions (Marras, 1999). Variation in patient's size, weight and cognitive functioning complicates the task of lifting patients.

Fixing of these assistive devices has been affected by laxity of many hospitals which are still waiting for more scientific evidence (Maul, 2003).

Evaluation of effectiveness of these assistive devices in reducing musculoskeletal injuries among health care providers in American hospitals has shown that there are few cases of musculoskeletal injuries in hospitals whose healthcare providers use assistive devices. As seen in the above study musculoskeletal injuries reduced from 15 to 5 after the installation of assistive devices in St Johns, St Michael and St Martins hospitals in the United States of America.

These notable drops in the number of patients and severity of musculoskeletal injuries among healthcare providers yield important financial savings too (Miller 2006). Although the costs of installing safe assistive devices are high, many studies have demonstrated that the cost of treating healthcare providers is way too much. The monetary investment of installing these patient handling devices can be recovered within a period of less than five years. An example is at Stanford University Medical Center, the hospital used 800000 US dollars, but this resulted to a net savings of 2. 2 million US dollars that could have been used as compensation claims.

The cost of claims in the study was adjusted because of inflation and monetary time value. However, the survey encountered a number of challenges the main one is methodological limitations (Nelson, 2004). The study only concentrated on cost and efficiency of mechanical, overhead and ceiling lifts. Hence it extrapolated findings to other hospital settings because the sample population used was small. The study also assumed that all these assistive devices were installed at the same time hence the impact was immediate. The study also excluded the costs incurred by the employer in recruiting, training and productivity; it only focuses on the compensation costs, and other savings. Direct perceptions of healthcare providers on the effectiveness of the program were not elicited in the study. Furthermore, the patients were not consulted on the effectiveness of these devices, if they are comfortable when they are carried, repositioned or moved by mechanical, overhead or ceiling lifts.

Further studies need to establish the cost of ceiling lifts in various situations; for example, when transferring, lifting or repositioning the patients. Long

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term effects of using these devices need to be included in future studies.

Nevertheless, the outcomes of this study are promising, the study recommends installation of mechanical, overhead and ceiling lifts in hospitals to prevent musculoskeletal injuries amongst healthcare providers in different hospital.

Long term impact of lifting machines needs to be felt in order to discern well their long-term effectiveness (Norman, 2000). Also, the study recommends for awareness, training and educational programs, on prevention and strategies of coping up with musculoskeletal injuries that originate from patient handling. In fact, these programs should be made mandatory for all healthcare providers, especially vulnerable groups like the nurses, physiotherapists, nurse aides, and dentists among others. This will not only minimize occurrence of musculoskeletal disorders among them but also promote efficiency in the care given to the patients.

The future study may involve all categories of healthcare providers involved not only in patient lifting but also those who are at risk of musculoskeletal injuries, including ward cleaners, casual workers, sanitary workers, and emergency aides among others.

References

Chhokar R, Engst C, Miller A, et al (2005). Effectiveness of overhead lifting devices in reducing the risk of injury to care staff in extended care facilities. *Appl Ergon*; 36: 223-9

Collins J, Wolf L, Bell J, Evanoff B. (2004) . An evaluation of a ' best practices' musculoskeletal injury prevention program in nursing homes. *Inj Prev*; 10: 206-11

Daynard D, Yassi A, Cooper JE, et al. (2001) Biomechanical analysis of peak and cumulative

spinal loads during simulated patient-handling activities: a sub study of a randomized

controlled trial to prevent lift and transfer injury of health care

workers. *AppleErgon*; 32: 199-214

Edlich F, Winters L, Hudson A, et al. (2004). Prevention of disabling back injuries in nurses by

the use of mechanical patient lift systems. *J Long Term Eff Med Implants*; 14: 521-

33

Engkvist IL, Hjelm EW, Hagberg M, et al. (2000). Risk indicators for reported over-exertion

back injuries among female nursing personnel. *Epidemiology*; 11: 519-22

Marras WS, Davis KG, Kirking BC, et al. (1999). A comprehensive analysis of low-back

disorder risk and spinal loading during the transferring and repositioning of

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patients using different techniques. *Ergonomics*; 42: 904-26.

Maul I, Laubli T, Klipstein A, et al.(2003). Course of low back pain among nurses: a longitudinal

study across eight years. *Occup Environ Med*; 60: 497-503.

Miller A, Engst C, Tate RB, Yassi A.(2006). Evaluation of the effectiveness of portable ceiling

lifts in a new long-term care facility. *Appl Ergon*; 37: 377-85

Nelson A, Baptiste A. (2004). Evidence-based practices for safe patient handling and movement.

Online *JIssuesNurs*; 9. Available at: http://www.nursingworld.org/ojin/topic25/tpc25_

. htm#Villeneuve

Norman R, Wells R. (2000). Ergonomic interventions for reducing musculoskeletal disorders.

In: Sullivan TS, editor. *Injury and the new world of work*. Vancouver, BC:

University of British Columbia Press;. p. 357.