Hospital Environment Length of Working Analysis: Musculoskeletal Disorders

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Abstract: Work-related musculoskeletal disorders (WMSDS) long way known as one of the most common occupational illnesses which bring a serious concern to the industry around the globe. The WMSDS increased the rate of absenteeism, illness, disability, high costs health care, not mentioned it could bring damage to company assets more than the other occupational sickness. The aims of the present study tried to explore the relations WMSDS with the length of work in a medical setting. This cross sectional study conducted in the hospital X and selected randomly 205 out of 496 medical staff as its sample. The hospital was selected using convenience sampling however due to the confidential reason the name stayed anonymous. The dependent variable set work-related musculoskeletal disorder which is measured by the Nordic Body Map. While the length of working in the hospital set as the independent variable. All the data were analysed using a multiple regression model and found a high prevalent WMSDS with 170 mild WMSDS cases and 35 severe WMSDS cases. However, due to the analysis in this study on length of work in the hospital, it only has a minimum impact. It means that there is no strong relationship between long working with WMSDS cases. Indeed, to reduce the prevalence of WMSDS in hospital personnel, the management should implement health and environment safety wisely at the hospital.

Keywords: WMSDS, hospital staff, length of work

1. Introduction

Work-related musculoskeletal disorders (WMSDS) long way known as one of the most common occupational illnesses, concern in many industries including medical. The WMSDS seems can increase the rate of absenteeism, illness, disability, high costs health care, not mentioned it could also bring damage to company assets more than another occupational sickness [1], [2], [3]. The ILO in 2015 released statement that 40% of the global compensation costs for work-related injuries and illnesses came from WMSDS cases. Its illustrating 59% WMSDS of total general health disorders [4]. Nevertheless, Bureau of Labour Statistics (BLS) in 2013 also found 33% WMSDS from injured worker and illness cases coming from a restricted working time [5]. Moreover, the European Agency for Occupational Safety and Health in 2007, stated WMSDS as one of the often found health cases in the industry not mentioning almost 1/4 of the total population of labor experiencing muscle pain or ache [6].
In 2004 the United States health care system covered 16.3 million strains and sprained cases with $127.4 billion for only musculoskeletal injury treatments cost. WMSD results seem to show a longer recovery time compared to injuries or other workplace illnesses. This results costs millions regarding lost working days each year and affect the labor quality of life. In 2011 the estimation raised into $ 900 billion of direct expenditure on medical expenses from visits to health facilities at the primary level, hospitals, and even rehabilitation treatments.

On the other hand, labor experiencing a reduction in their salary when they are not working. It was estimated at nearly or reaching five point seven percent of 2011 total national expenditure. Moreover, in 2011 the United States recorded 253,700 injuries and illnesses in relation with working illness. Consequences, Hospital staff need to work helping patients with long hours of working shift. Therefore, hospital staff in the medical industry can experience WMSD than other sectors.

The things can get worse when the hospital facilities that do not comply with occupational safety and health standards. At the hospital, many WMSDS cases found caused by sprain and strains. All of it is seems because of lack of occupational safety and healthy knowledge as well as the body's reaction and fatigue [8]. WMSDS cases were found around the globe; the Tunisian hospital staff reported found 65.4% of their cases. Moreover, almost 75% percent of the cases showed that there is a problem in the lower waist. Its estimated at nearly 40% of problems were found in the neck and 30% problems in the legs [9]. Furthermore, a student at King Saud University medical school, Riyadh, found a prevalence of 92% WMSDS in physical therapy. Consequences, it makes them change their daily activities, and even their jobs [10] or Hospital nurse in Rural Maharashtra India also found 89.1% WMSDS cases experiencing by nurses [11].

Hospital staffs work within a certain long hour period of working and it extremely high chances exposed the risks of WMSDS. The workload, working environment with the hospital staff ratio not proportionally, can make the situation getting worst. Sometimes tasks make the hospital staff at high risk for acute and cumulative WMSDS. This accumulation came from the length of work in many hours. Length of work and workload capacity were found as a reason in a study of the nurse who worked more than twenty years had four times more WMSDS than nurses who worked 11-20 years [12].

Similarly, Hendra Raharjo (2008) found a significant relationship between WMSDS and length of work [13]. Moreover, the length of work and workload capacity found a significant correlation between WMSDS and length of work [14,15]. Therefore, The study tries to find out the prevalence of work-related musculoskeletal disorders in relationship length of working at Hospital Staff.

2. The Theory: A Review

WMSDS (occupational diseases) arises if work capacity, workload, and work environment are not balanced. Labour with different working capacities (age, sex, length of work, height, smoking) receives physical and mental workloads and exposure to diverse working environments. This increases the prevalence of WMSDS including hospital staff had to work more to save patient than their selves.
3. Research Methods

This cross sectional study conducted among hospital staff in Hospital X in Pekanbaru Indonesia. The population covers 496 people as it hospital staff selected randomly, this study took 205 hospital staff as it samples. Work-related musculoskeletal disorders set as a dependent variable. While Length of work set as an independent variable. Multiple logistic regressions used to help in the data analysis.

3.1 Prevalence WMSDS

The analysis revealed that some 170 hospital staff were found experiencing a mild WMSDS while 35 people experienced severe WMSDS cases. This Figure 2 illustrated the findings.

The analysis showed that a high prevalence of WMSDS in hospital staff was found during the analysis. There was 170 hospital staff seems to suffer from mild WMSDS and 35 severe WMSDS. This is means almost all hospital staff had experienced with WMSDS cases. This finding seems to show a similarity with the research conducted at Tunisian Hospital where it found 65.4% of WMSDS cases. Moreover, there is a problem in the lower waist, it was estimated at almost 70%, or almost forty percent of problems in the neck while problems in the legs around 30% [9]. Similarly study as well as the student at King Saud University medical school Riyadh, which found a prevalence around 92% WMSDS in physical therapy.

![Figure 1. Research Model](image1)

![Figure 2. Prevalence of WMSDS](image2)
3.2 Prevalence WMSDS in relationship length of work

Figure 3 below shows the length of hospital staff who are less occupied (less than three years old) who are naturally experiencing mild WMSDS (38 people) and hospital staff with less risk working duration (less than three years) natural severe WMSDS (4 people). It was revealed that Hospital staff with long-term work (bigger and equal to 3 years) experienced mild WMSDS (132 people) and long-time hospital worker at risk (more than three years) natural severe WMSDS (31 people).

![Figure 3. The length of working-hospital staff in relationship WMSDS](image)

### 3.3 Bivariate analytical

| Length of work | WMSDS          |         |         |         |         |
|----------------|----------------|---------|---------|---------|---------|
|                | Mild (N(%))    | Severe (N(%)) | Total (N(%)) | P(Value) | POR(95%) |
| Low risk (<3 years) | 38(90,5) | 4(9.5) | 41(100) | 0,145 | 2,231 |
| High risk (≥3 years) | 132(81,0) | 31(19,0) | 163(100) | (0,741-6,716) |

This present study found a prevalence of 35 hospital staff with mild WMSDS and 170 hospital staff with severe WMSDS. This is similar to the study of Tunisian hospital staff which found 65.4% WMSDS cases. There is a problem in the lower waist, estimated at almost seventy-five percent, estimated at almost forty percent of problems in the neck and problems in the legs around thirty percent. Similarly student at King Saud University medical school, Riyadh, also found a prevalence around 92% WMSDS cases in physical therapy. This makes them change their daily activities, and even they have to change jobs to change their jobs. Nevertheless, a study at Hospital nurse in Rural Maharashtra India also came out with quite similar findings 89.1% WMSDS experienced by their nurses.

Hospital staff experienced high WMSDS seems doubled than other industrial officers. This might happens for several reasons, i.e., hospital staff work more on patient safety than themselves, lack of the standard on health and safety regulation, infrastructure does not take anthropometry on average hospital staff, lack of training staff on medical safety. Therefore this study saw that there was no significant relation between a long working relationships with WMSDS cases. This findings, inline with Bolanle MS Tinubu (2010) who found a nurse who worked more than twenty years had four times more WMSDS than nurses who worked 11-20 years. However, it's slightly contradicted with Hendra Raharjo (2008) who found a significant relationship between WMSDS and length of work as well as Sang and Zulfikor (2010) who found a significant correlation between WMSDS and length of work. This unlike findings might happen because the length of work used was not in equal hours/years of working.
5. Conclusion

This present study found a high prevalence WMSDS with 170 mild WMSDS alongside 35 severe WMSDS cases. This study saw that there is no significant relationship on a length of work with WMSDS cases. However, WMSDS cases need to be paid more attention due to its impact, therefore to reduce the prevalence of pain-based WMSDS it should be carried out by maintaining safety and health regulations at facilities and hospital infrastructure. Nevertheless, hospital staff should receive proper training on health and safety including special health services for house attendants when sick.

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