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WORK RELATED MUSCULOSKELETAL DISORDERS AMONG NURSES IN OM HOSPITAL AND RESEARCH CENTRE, KATHMANDU

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Abstract

Work-related musculoskeletal disorder (WRMSDs) is a disorder that affects the tendons, muscles, joints, peripheral nerves, inter-vertebral discs and vascularsystem, resulting from work activities which are frequent and repetitive, or activities with awkward postures. In the nursing profession WRMSDs is caused by repetitive movements, continuous static awkward postures, genetic predisposition and number ofyears in practice. WRMSDs are common among health care workers, with the nursing population that constitutes about 33% of the hospital workforce. Thus study sought to assess the prevalence of WMSD among nurses of Om hospital and research centre.This study involved descriptive cross-sectional study of 120 nurses working in Om hospital and research centre through non probability purposive sampling technique. Self administered Modified Nordic Questionnaire was used to collect the data.This study examined the 12 month prevalence of WMSD among nursing personnel working in Om hospital and research centre. A total of 170 questionnaires were distributed to the participants of whom 120 completed the questionnaire giving a response rate of 70.58%. 29.2% of the respondents has the been affected by the work related musculoskeletal problems at least 3 times in 12 month time period and are prevented from doing the normal activities at and away from home in last 12 month time period.This study revealed that lower back is major affected body part, which is 16.7% followed by upper back (10%), ankles/feet (9.2%), neck (6.7%), knees (3.3%), shoulders (3.3%), hands/wrists (1.7%), hips/thighs (1.7%). The study concluded that working in the same position for long periods was found to be the major common risk factor. And work scheduling was found to be the least common risk factor causing workrelated musculoskeletal disorders among nurses. The average age of the respondents is27 years and this study showed that the prevalence of WMSD is higher among those who are below 27 years old (35.2%) than those who are above 27 years old. Respondents who never had training on injury prevention are found to have higher prevalence of WMSD (32.3%) when compared to those having training that is (18.5%). This study showed that the respondents working in general ward has the high prevalence of WMSD (32.7%) than the respondents working in specific wards/units (26.5%). Respondents having less than 6 years of professional experience as a nurse hasthe higher prevalence of WMSD (32.8%) than those having more than 6 years experience (25.0%).Respondents who do not take breaks in between the patients care had the higher prevalence of WMSD (30.0%) when compared to those taking breaks (28.3%) and these were statistically significant with $p<0.05$.This study shows that 29.2% of the respondent has the prevalence of work related musculoskeletal disorder. Lower back is the most affected body part followed by upper back, ankles/ feet, neck, knees, shoulders, hands/wrists, hips/thighs.This study shows that taking or not taking break time between caring the patient has the significant impact on the prevalence of WMSD. Other problems identified were caring the 1 patient for more than 60

minutes, not having training on injury prevention. The most common risk factor was found to be working in the same position for prolong period.This study recommends detailed research and training on injury prevention and body mechanics to the nurses relating to WMSD and risk factors

Keywords: *Prevalence, WRMSDs, Nurses, Risk factors*

ACRONYMS

MMIHS Manmohan Memorial Institute of Health Sciences
WMSD, Work Related Musculoskeletal Disorder
WRMSDs Work Related Musculoskeletal Disorders

INTRODUCTION

Background of the Study

Work-related musculoskeletal disorder (WRMSDs) is a disorder that affects the tendons, muscles, joints, peripheral nerves, inter-vertebral discs and vascular system, resulting from work activities which are frequent and repetitive, or activities with awkward postures. In the nursing profession WRMSDs is caused by repetitive movements, continuous static awkward postures, genetic predisposition and number ofyears in practice (Michel Aptel*, 2002)

Work-related musculoskeletal disorders (WMSDs) are defined as musculoskeletal disorders that results from a work-related event. WMSDs are common among health care workers, with the nursing population that constitutes about 33% of the hospital workforce at particularly high risk and accounting for 60% of the reported occupationalinjuries. WMSDs are reported to significantly impact on quality of life, causes lost worktime or absenteeism, increase work restriction, transfer to another job, or disability than any other group of diseases, the organization and the society as a whole. (Bolanle MS Tinubu1, 2010).

Musculoskeletal Disorders present a serious public health problem affecting work performance with various personal, social and economic impacts on nursing. Those affected by these disorders experience difficulty in mobility and other work limitations; which reduces their productivity. According to the Center for Disease Control and prevention, musculoskeletal disorders are more severe than the average nonfatal injury or illness at work such as hearing loss occupation skin diseases like dermatitis. Studies have suggested Low Back Pain (LBP) as the commonest musculoskeletal disorders affecting nurses, closely followed by neck-shoulder and knee disorders. (Tonny Mutanda1, 2017).

Nursing is a profession within the health care sector that focuses on the care of individuals, families, communities so they may attain, maintain, or recover optimalhealth and quality of life. On average, hospital nurses work an average of 8 hours every day 5 days a week. Nurses always involve with heavy physical work activities such as lifting heavy loads, working in awkward postures, transferring patients and operating hazardous equipment. They work under mental overload, engaging in multitasking and coming across frequent interruptions. Working under physical overload due to long work hours and patient handling demands, leads to a high risk of developing WRMSDs (Ezrin Hani SUKADARIN, 2016)

Most employees including Nurses complained most of back pain followed by neck and shoulder as a result of their day to day work activities (WHO, 2005). The WRMSDs are very common health problem experienced by workers and a major cause of disability throughout the world in the workplace.(WHO, 2010).

A number of intrinsic and extrinsic factors have been implicated in the etiology of WMSDs. repetitive movement,

awkward postures, and high force levels as the three primary risk factors that have been associated with WMSDs. Nurses routinely perform activities that require lifting heavy loads, lifting patients, working in awkward postures, and transferring patients out of bed and from the floor. (Deepak B. Anap1*, 2013).

CONCLUSION

Hence the prevalence of WRMSD is found to be high. It has been concluded that this problem doesn't only affect the worker physically but also affects the quality of life. This problem is one of the serious public health issues which need to be timely addressed else it will hinder the work performance and quality health service delivery.

RATIONALE OF THE STU

The nursing profession is a very demanding job, both physically and emotionally. Nurses are exposed to poor working condition for instance, stressful posture. This makes nurses more prone to develop WRMSDs. So I want to investigate how many of the nurses are already suffered and what are the leading associated risk factors.

Considering the significance of Work Related Musculoskeletal Disorders as a common problem in the nursing profession, it is worth investigating the prevalence of WRMSDs among them, because they are the one who are continuously engaged in patient care in different awkward positions for prolong time.
Despite the large literature on work related WRMSDs in other parts of the world, very little has been done in Nepal among the nurses who experience WRMSDs at an exceeding rate. Nurses in some times are forced to work for long hours and deal with a large number of patients especially in public Hospitals. These actions often result in musculoskeletal disorders.

WRMSDs are reported to significantly impact on quality of life of nurses which also has a very important effect on patient care and to the whole productivity of hospital, so it is very important issues to investigate on.

OBJECTIVES OF THE STUDY

General objective:

- to determine the prevalence and contributing factors of work-related musculoskeletal disorders among nurses working in Om hospital and research centre.
- Specific Objectives:
- to determine the prevalence of work-related musculoskeletal disorders on nurses of Om hospital and research centre.
- to assess the contributing risk factors that may contribute to development of work-related musculoskeletal disorders among nurses in Om hospital and research centre.
- to identify the association between risk factors and work related musculoskeletal disorders among nurses.

SIGNIFICANCE OF THE STUDY

This study will create awareness on existing risk factors and the prevalence of work related musculoskeletal disorder among the particular respondents, which will enable them to take preventive actions against WRMSDs. This study will help the managerial level personnel to decide what action to be strictly taken to prevent the risk of WRMSDs, eg; adding extra staffs, minimizing the working hours, changing the work shifts, changing the working unit, adding the ergonomic friendly equipments for the quality service delivery of patient care. This study will be useful to not only the particular respondents but to all the nurses from all the hospital, when they know the real situation of WRMSDs then they will be more aware and conscious about the application of proper body mechanics while working, which ultimately helps in prevention of WRMSDs in the near future. The findings from this study may help to understand prevention and coping strategies for musculoskeletal disorders among

nurses in order to reduce the rate of occupation hazards and also improve patients' care.

RESEARCH QUESTIONS

1. What is the prevalence of WRMSDs on nurses in Om hospital and research centre?
2. What are the contributing risks factors that cause work-related musculoskeletal disorders?
3. What is the association between risk factors and work related musculoskeletal disorders among nurses?

RESEARCH METHODOLOGY

Study Design

A descriptive cross –sectional research design was adopted in this study to determine the prevalence of musculoskeletal disorders among hospital nurses.

Study Setting

This study was conducted in Om hospital and research centre, of Kathmandu district.

Study population

All the registered nurses of Om hospital and research centre.

Sampling technique

Non probability purposive sampling technique was applied to select the sample.

Sample size

All the registered nurses working in Om hospital and research centre during the data collected from 2075/5/21to2075/6/13. Sample size was 120.

Exclusion criteria

The nurses who are in 2nd & 3rd trimester pregnancy fell under exclusion criteria.

Instrumentation

A Self Administered Structured Questionnaire was distributed to each participants and collected after completion. Modified version of Nordic Musculoskeletal Questionnaire (NMQ) (I. Kuorinka*, 1987) was used to collect data on WRMSDs. The questionnaire studies the WRMSDs according to body regions which are the neckshoulder, elbows, wrists/hands, upper back, lower back, hips/thighs, knees, and ankles/feet.. The modified Nordic questionnaire consists of a general questionnaire and a more detailed body-part- specific questionnaire. The general questionnaire depicts a body map divided into nine anatomic regions and asks about the presence of physical disorders including ache, pain and discomfort, for the past 12 months and in each of the body areas. The set of questionnaire consist of socio-demographic variables related questions in section A, likewise, the general and body part specific questions in section B and job related risk factors related questions in section C.

VALIDITY OF THE TOOL

The modified version of Standard Nordic's musculoskeletal questionnaire was used in this study. The validity of this questionnaire was maintained by consulting with the concerned experts.

RELIABILITY OF THE TOOL

To determine the reliability of the tool, a pre test was done in 10% of the registered nurses at Manmohan Memorial Teaching Hospital.

DATA COLLECTION PROCEDURE

For data collection procedure, informed written and verbal consent was taken from institutional Research committee of MMIHS, Administrative Authority of Om hospital and research centre. Total number of nurses working in Om hospital and research centre was collected from the administration. Prior to data collection, written and verbal consent was taken from each nursing staff with information about the purpose, nature of the study and their role in research.

Data was collected by using self administered structured questionnaire to gather prevalence of WRMSDs. Approximately, 15 minutes time was given to each respondents to fill up the questionnaire and it was checked for the completeness before leaving the data collection area.

Data was collected from 2075/05/21 to 2075/06/13 among the registered nurse in Om Hospital and Research Centre.

ETHICAL AND ADMINISTRATIVE CONSIDERATION

To maintain ethical soundness of the study, an approval letter was obtained from Institutional Research Board of MMIHS. An official letter from Manmohan Memorial Institute of Health sciences was submitted to the concerned authority of Om hospital and research centre, Kathmandu.

The detail purpose of the study was explained to the respondents before data collection. Precaution was taken throughout the study in every steps to safeguard the right and welfare of all the respondents in the study. The respondents was given full authority to withdraw from the study without fear or explanation any time during the investigation. The confidentiality was maintained throughout the study by omitting the name or any other identity of the respondents.

DATA ANALYSIS PROCEDURE

- After the collection of data, it was checked for completeness.
- The collected data was edited, organized and coded using statistical packages for Social Sciences, SPSS.
- Data was presented using descriptive statistics in the form of frequencies, percentage, mean deviation.
- The association between risk factors and the prevalence of WRMSDs was analyzed by using the chi square test.

DATA ANALYSIS AND INTERPRETATION

Table No. 1: Socio-demographic Data

n=120

Variables	Frequency	Percentage
Age		
≤27 years	71	59.2
≥27 years	49	40.8
Education		
PCL	56	46.7
Bachelor	64	53.3
Marital Status		
Married	70	58.3
Single/never been married	50	41.7

No of Children		
None	76	63.3
1	32	26.7
2	12	10.0
Health Problems		
No	101	84.2
Yes	19	15.8
Housemaid		
No	42	35.0
Yes	78	65.0

Above table shows that majority (59.2%) of the respondents out of 120 were below 27 years and 40.2% were more than 27 years. More than half of the population of respondents (53.3%) of respondent has the educational status of PCL level and 46.7% has bachelor level. Majority (58.3%) respondents are married whereas 41.7% are single/never been married, 63.3% of respondents do not have any children, 26.7% has 1 child and 10.0% has 2 children. Similarly, 84.2% of respondent has no any kind of health problems whereas 15.8% has previously diagnosed health problems, 65.0% of respondent has housemaid to help whereas 35.0% do not have housemaid.

Table no. 2: Overall Prevalence of Work Related Musculoskeletal Disorder

n=12

Prevalence	Frequency	Percentage
No	85	70.8
Yes	35	29.2

The above table shows that 29.2% of the respondents has the been affected by the work related musculoskeletal problems at least 3 times in 12 month time period and are prevented from doing the normal activities at and away from home in last 12 month time period.

Table no. 3: Prevalence of WMSD in different body parts

n=120

Prevalence	Frequency	Percentage
Neck	8	6.7
Shoulders	4	3.3
Elbows	0	0
Hands/wrists	2	1.7
Upper back	12	10
Lower back	20	16.7
Hips/thighs	2	1.7
Knees	4	3.3
Ankles/feet	11	9.2

From the above table it is evident that lower back is major affected body part, which is 16.7% followed by upper back (10%), ankles/feet (9.2%), neck (6.7%), knees (3.3%),shoulders (3.3%), hands/wrists (1.7%), hips/thighs (1.7%).

Table no.4: Contributing Risk Factors

n=120

Job risk factors	Mean deviation

Performing the same task over and over	4.90
Treating excessive number of patients in one day	5.33
Not enough rest breaks or pauses during the workday	5.70
Working in awkward and cramped positions	4.56
Working in the same positions for long periods	6.90
Bending or twisting your back in an awkward way	5.31
Lifting or transferring dependent patients	5.75
Carrying, lifting, or moving heavy materials or Equipment	5.09
Work scheduling	4.66
Inadequate training on injury prevention	5.05

From the above table it is evident that working in the same position for long periods was found to be the major common risk factor. And work scheduling was found to be the least common risk factor causing work related musculoskeletal disorders among nurses.

Table no.5: WRMSDs Prevalence and its Association with different variables

n=120

Variables	**Prevalence of MSD**		
	Absent (%)	**Present (%)**	**p-value**
Designation	80 (69.6%)	35 (30.4%)	0.143
Staff nurseIncharge	5 (100%)	0	
No of patient scared in one day			
1-5 patients	51 (81.0%)	12 (19.0%)	0.056
6-10 patients	19 (65.5%)	10 (34.5%)	
11-15 patients	7 (53.8%)	6 (46.2%)	
>15 patients	8 (53.3%)	7 (46.7%)	
Training			
No	63 (67.7%)	30 (32.3%)	0.167
Yes	22 (81.5%)	5 (18.5%)	
Bending &Twisting	4 (80.0%)	1 (20.0%)	
Never/Rarely Sometimes	79 (70.5%)	33 (29.5%)	0.233
Most of the times	2 (66.7%)	1 (33.3%)	
Time spent in caring one patient			
<30 min	35 (75.0%)	13 (25.0%)	1.039
31 to 60 min	36 (69.2%)	16 (30.8%)	
>60 min	10 (62.5%)	6 (37.5%)	
Break time			
No	42 (70.0%)	18 (30.0%)	0.040*
Yes	43 (71.7%)	17 (28.3%)	
Department			
General ward specific ward/unit	35 (67.3%)	17 (32.7%)	0.552
	50 (73.5%)	18 (26.5%)	
Professional age			
≤6 years	43 (67.2%)	21 (32.8%)	0.882
≥6 years	42 (75.0%)	14 (25.0%)	

From the above table it is shown that the respondents who spent more than 60 minutes in caring one patient has the high prevalence of WMSD (37.2%). Respondents who do not takes breaks in between the patients care had the higher prevalence of WMSD (30.0%) when compared to those taking breaks (28.3%) and these were statistically significant with $p<0.05$ as shown in the above table.

Respondents who never had training on injury prevention are found to have higher prevalence of WMSD (32.3%) when compared to those having training that is (18.5%).

The study showed that there is association between taking break in between patient care and the prevalence of WMSD which means not taking break time contribute to the prevalence of WMSD among the nurses. This variable is statistically significant with the prevalence of WMSD at 95% level of confidence

DISCUSSION

This study examined the 12 month prevalence of WMSD among nursing personnel working in Om hospital and research centre. A total of 170 questionnaires were distributed to the participants of whom 120 completed the questionnaire giving a response rate of 70.58%. Akello (2013) in a similar study at Kenyatta National hospital reported an overall response rate of 77.7%. This response rate is considered reasonably adequate because from these results, the purpose of the research which was to recognize the magnitude of WMSDs and identify the risk causing factors were achieved. Babbie (2007) ascertains that "a review of the published research literature suggests that a response rate of at least 50% is considered adequate for analysis and reporting; a response of 60% is good; a response of 70% is very good; a response of 80% and above is excellent".

The average age of the respondents is 27 years and this study showed that the prevalence of WMSD is higher among those who are below 27 years old (35.2%) which is similar to the result of (Ezrin Hani SUKADARIN, 2016) which showed that the higher prevalence among those below 29 years old (34.26%).
Majority of prevalent respondents had 2 children which is similar to the study of (Tonny Mutanda1, 2017) which showed the majority of prevalent cases had average of 3 children.
In this study, the mostly affected body part was found to be lower back pain (16.7%) which is supported by the study of (Tânia Ribeiro Mastera, 2017).

According to this study, working in the same positions for long periods and lifting or transferring dependent patients were the most perceived job risk factors for WMSDs which has positive significance with the study performed by (Bolanle MS Tinubu1, 2010).

This study showed that the respondents working in general wards has the high prevalence of WMSD (32.7%) which is in contrast with the result of (Dohyung Keea

S. R., 2007) which showed the higher prevalence among the respondents working in intensive care unit.
This study showed that the respondents having less than 6 years of professional experience as a nurse has the higher prevalence of WMSD which is in contrast with the result of study performed by (Ping Yan, 2017) which showed that the nurses who has worked more than 6 years has high prevalence of WMSD.

CONCLUSION

In conclusion, the study showed that 29.2% of the respondents reported with one or more form of WMSD. Lower back pain is the most prevalent musculoskeletal disorder among the respondents which is 16.7% followed by upper back (10%), ankles/feet (9.2%), neck (6.7%), knees (3.3%), shoulders (3.3%), hands/wrists (1.7%), and

hips/thighs (1.7%).

Among the different variables, the respondents who spent more than 60 minutes in caring one patient has the high prevalence of WMSD (37.2%) followed by respondents who are more than 27 years old.

This study showed that those who do not take breaks in between the patient care have significant impact on the prevalence of WMSD. Other problems identified include not having inadequate training on injury prevention, bending and twisting the body most of the time while working.

This study showed that working in the same position for long periods was found to be the major common risk factor. And work scheduling was found to be the least common risk factor causing work related musculoskeletal disorders among nurses.

RECOMMENDATION

1. From the study it is concluded that the prevalence affecting the respondents in performing their activities at home and at hospital is high so they should be provided with the technology as well as other preventive support measures against WMSD.
2. Training on body mechanics and injury prevention should be timely given to the staffs.
3. Since there has not been any significant study in this very topic, it is very important to carry out other such studies in this topic.
4. Adequate nurse patient ratio should be maintained in all hospitals so that all staffs get some rest between the patient care as rest is very important factor .communities so they may attain, maintain, or recover optimalhealth and quality