

Musculoskeletal Disorders Prevalence in Nurses at a Private Hospital in West Java Indonesia

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Abstract

Musculoskeletal disorders are prevalent among healthcare professionals, notably registered nurses. Typically, hospital nurses work long hours in awkward positions, bending and twisting. This study aimed to identify hospital nurses' musculoskeletal disorder complaints. This study was a cross-sectional study and conducted at a private hospital in West Java. This study recruited nurse respondents consisted of 73% were female nurses, with an average age of 27.66 ± 3.56 years. The nurse respondents reported mild to severe pain based on Nordic Musculoskeletal Disorder Survey. This study found that there were 41% of the nurses reported mild pain in the lower neck, 51% reported moderate pain in the waist, and 12% reported severe pain in the waist. Overall, nurses in the inpatient unit dominates the middle part of the body complaints. Musculoskeletal disorder complaints from nurses needed additional assessment and intervention to improve nurses' quality of life.

Keywords: complaint, musculoskeletal disorders, nurse

Prevalensi Keluhan Muskuloskeletal pada Perawat di Rumah Sakit Swasta di Jawa Barat Indonesia

Abstrak

Kelainan muskuloskeletal cukup sering ditemukan pada petugas kesehatan, terutama perawat. Biasanya perawat di rumah sakit bekerja dengan jam kerja yang panjang pada posisi yang kurang tepat, sering membungkuk dan memutar badan. Penelitian ini bertujuan mengidentifikasi keluhan kelainan muskuloskeletal pada perawat. Penelitian ini adalah penelitian potong lintang dan dilaksanakan di rumah sakit swasta di Jawa Barat. Penelitian ini merekrut responden perawat yang terdiri dari 73% perawat perempuan, dengan usia rata-rata $27,66 \pm 3,56$ tahun. Responden perawat melaporkan nyeri ringan sampai berat menurut Nordic Musculoskeletal Disorder Survey. Penelitian ini menemukan bahwa terdapat 41% perawat yang melaporkan nyeri ringan di leher bawah, 51% nyeri sedang pada pinggang, dan 12% nyeri berat pada pinggang. Secara umum, perawat di unit rawat inap mendominasi keluhan di bagian tengah tubuh. Keluhan kelainan muskuloskeletal dari perawat membutuhkan penilaian dan intervensi untuk meningkatkan kualitas hidup perawat.

Kata Kunci : kelainan muskuloskeletal, keluhan, perawat

Introduction

Musculoskeletal Disorders (MSDs) are considered a significant occupational problem across most occupational categories.¹ We know that MSDs are injuries or disorders of the muscles, nerves, joint tendons, cartilage, and spinal discs, per the Centers for Disease Control and Prevention (CDC).² This explanation is consistent with World Health Organization (WHO) which states that most

injuries are characterized by (often continuous) pain, limitations in mobility and dexterity, and a decrease in the ability to work.³

Nursing requires special attention because its MSD risk is more significant than other professions.⁴ Nurses encounter several occupational risk factors, such as extended periods of static postures, repetitive motions, and poor positioning.⁴ African and Asian nurses had rates of elbow MSDs that were three times higher than

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Oceanian nurses.⁵ The lower back, neck, shoulders, and hands/wrists were found to be the most affected areas for all healthcare professionals. Surgeons and dentists felt the lower back (>60%), shoulders, and upper extremities (35-55%), while nurses (>25%) felt the lower extremities.⁵

A preliminary data on 30 randomly selected medical surgical nurses at a private hospital in West Java Indonesia revealed that 27 nurses (90%) suffered from MSDs due to their working responsibilities. There were 70% of nurses complained in the midsection of body, 33% in the upper extremities, and 19% in the lower extremities. Moreover, only seven nurses (26%) went to control or treatment. In the meantime, nurses (100%) reported attending Hazard and Disaster training supported by the hospital's Occupational Safety and Security team, and nurses (100%) had attended Hazard and Disaster Training that covered Ergonomics.

A five-day motion study at the inpatient department in November 2022 revealed that nurses performed MSD-risking actions such as bending, documentation in static positions, and direct nursing actions. Previous research have found that nurses are at a high risk of MSDs due to factors directly related to their job.^{6,7} This study aimed to identify MSD prevalence complaints among hospital nurses at one private hospital in West Java Indonesia.

Methodology

This study employed a quantitative research approach with descriptive analysis. From February to April 2023, this study included nurses from a private hospital in West Java, Indonesia. The population consisted of 274 registered nurses in the private hospital. This study employed a total sampling. However, only 100 respondents (36.4% response rate) participated in this study.

Nurses' MSD complaints were measured using the Indonesian version of the Nordic Musculoskeletal Questionnaire. The item validity test yielded scores between 0.501 and 0.823, and Cronbach's Alpha reliability index is 0.726. This research was approved by the Faculty of Medicine Ethics Committee, Universitas Pelita Harapan (No.111/K-LKJ/ETIK/II/2023).

Results

The results of this study included demographic data of the respondents, and nurses' MSD complaints (middle and lower body). According to Table 1, the average age of the respondents in this study was 27.66 years old. The majority are female (73%). More than half of the respondents (62%) held a bachelor's degree in nursing, and most nurses (49%) worked in the inpatient department.

Table 1. Nurses Demographic Data

		Mean±SD	(n)	(%)
Age		27.66±3.56		
Gender	Male		27	27
	Female		73	73
Education	Diploma in Nursing		38	38
	Bachelor of Nursing		62	62
Working site	Inpatient Unit		49	49
	Hemodialysis Unit		17	17
	Outpatient Unit		14	14
	Emergency Unit		12	12
	Operating Room Unit		4	4
	Critical/High Care Unit		2	2
	Nursing management Unit		2	2

More than half nurses experienced pain (mild to severe) on their upper body except left and right elbow (Table 2). Two-third of nurses reported pain in their neck and shoulder (Table 2). Nurses also reported mild pain in their lower neck (41%), moderate pain in the left shoulder and right shoulder (30%), and severe pain in the right shoulder (5%), according to Table 2. Table 3 shows

that one-third nurses experienced mild pain on their right wrist (33%) and right hand (32%), most nurses (>80%) reported pain (mild to severe) on their back and waist with half of them experienced moderate pain. Half of the nurses also reported they experienced pain (mild to severe) on their buttock and bottom with almost two-third of them had mild pain.

Table 2. MSDs Complaints of Nurses Based on Upper Body Part I

	Upper Neck		Lower Neck		Left Shoulder		Right Shoulder		Left Upper Arm		Right Upper Arm		Left Elbow		Right Elbow	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Not pain	30	30	31	31	38	38	30	30	46	46	42	42	66	66	64	64
Mild pain	39	39	41	41	31	31	35	35	35	35	38	38	19	19	20	20
Moderate pain	29	29	25	25	30	30	30	30	18	18	19	19	15	15	15	15
Severe Pain	2	2	3	3	1	1	5	5	1	1	1	1	0	0	1	1

Table 3. MSDs complaints of nurses based on upper body part II and Middle Body Part

	Left Lower Arm		Right Lower Arm		Left Wrist		Right Wrist		Left Hand		Right Hand		Back		Waist		Buttock		Bottom	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Not pain	59	59	54	54	54	54	45	45	56	56	47	47	13	13	11	11	48	48	53	53
Mild pain	27	27	29	29	27	27	33	33	29	29	32	32	36	36	26	26	28	28	28	28
Moderate pain	14	14	16	16	18	18	21	21	14	14	20	20	43	43	51	51	23	23	19	19
Severe Pain	0	0	1	1	1	1	1	1	1	1	1	1	8	8	12	12	1	1	0	0

Table 4. MSDs Complaints of Nurses Based on Lower Body Part

	Left Tight		Right Tight		Left Knee		Right Knee		Left Calf		Right Calf		Left Ankle		Right Ankle		Left Foot		Right Foot	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Not pain	53	53	54	54	49	49	46	46	30	30	29	29	41	41	39	39	45	45	44	44
Mild pain	29	29	27	27	28	28	33	33	36	36	39	39	32	32	32	32	27	27	30	30
Moderate pain	16	16	17	17	19	19	18	18	31	31	29	29	23	23	27	27	22	22	21	21
Severe Pain	2	2	2	2	4	4	3	3	3	3	3	3	4	4	2	2	6	6	5	5

Table 5. MSDs complaints of nurses upper body based on units

		Upper Neck		Lower Neck		Left Shoulder		Right Shoulder		Left Upper Arm		Right Upper Arm		Left Elbow		Right Elbow		Left Lower Arm		Right Lower Arm		Left Wrist		Right Wrist		Left Hand		Right Hand	
		n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Inpatient	No Pain	16	16	13	13	18	18	15	15	24	24	22	22	29	29	30	30	24	24	22	22	21	21	18	18	24	24	21	21
	Mild Pain	16	16	18	18	16	16	16	16	16	16	16	16	11	11	10	10	16	16	16	16	15	15	16	16	15	15	17	17
	Moderate Pain	15	15	15	15	14	14	14	14	9	9	10	10	9	9	9	9	9	9	10	10	13	13	15	15	9	9	10	10
	Severe Pain	2	2	3	3	1	1	4	4	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	1	1	1	1
Hemodialysis	No Pain	2	2	4	4	4	4	3	3	11	11	10	10	11	11	11	11	11	11	10	10	9	9	7	7	8	8	6	6
	Mild Pain	10	10	7	7	3	3	5	5	3	3	3	3	3	3	3	3	3	3	3	3	5	5	6	6	5	5	5	5
	Moderate Pain	5	5	6	6	10	10	9	9	3	3	4	4	3	3	3	3	3	3	4	4	3	3	4	4	4	4	6	6
	Severe Pain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Outpatient	No Pain	4	4	5	5	5	5	3	3	8	8	8	8	10	10	9	9	8	8	8	8	8	8	7	7	6	6	7	7
	Mild Pain	7	7	9	9	6	6	7	7	6	6	6	6	4	4	5	5	6	6	6	6	6	6	6	6	6	7	7	
	Moderate Pain	3	3	0	0	3	3	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	
	Severe Pain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Emergency	No Pain	3	3	4	4	5	5	4	4	9	9	9	9	8	8	9	9	9	9	9	9	9	9	9	7	7	9	9	
	Mild Pain	5	5	5	5	4	4	6	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	4	2	2		
	Moderate Pain	4	4	3	3	3	3	2	2	2	2	2	2	3	3	2	2	2	2	2	2	2	2	2	1	1	1	1	
	Severe Pain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operating Room	No Pain	3	3	3	3	4	4	3	3	4	4	3	3	4	4	2	2	4	4	3	3	4	4	3	3	4	4	3	3
	Mild Pain	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0
	Moderate Pain	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1
	Severe Pain	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Critical/High Care	No Pain	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	1	1	1	1	2	2	2	2	2	2	2	2
	Mild Pain	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
	Moderate Pain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Severe Pain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nursing Management	No Pain	1	1	1	1	1	1	1	1	2	2	1	1	2	2	1	1	2	2	1	1	2	2	2	2	2	2	1	1
	Mild Pain	0	0	1	1	1	1	0	0	0	0	1	1	0	0	1	1	0	0	1	1	0	0	0	0	0	0	1	1
	Moderate Pain	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Severe Pain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 6. MSDs complaints of nurses middle and lower parts based on units

		Back		Waist		Buttock		Bottom		Left Tight		Right Tight		Left Knee		Right Knee		Left Calf		Right Calf		Left Ankle		Right Ankle		Right Foot		Right Foot		
		n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	
Inpatient	No Pain	5	5	4	4	22	22	23	23	23	23	24	24	21	21	20	20	13	13	13	13	18	18	17	17	22	22	23	23	
	Mild Pain	16	16	10	10	14	14	13	13	14	14	12	12	14	14	16	16	17	17	18	18	14	14	14	14	12	12	12	12	
	Moderate Pain	25	25	31	31	12	12	13	13	11	11	12	12	12	12	12	12	19	19	18	18	15	15	17	17	13	13	13	13	
	Severe Pain	3	3	4	4	1	1	0	0	1	1	1	1	2	2	1	1	0	0	0	0	2	2	1	1	2	2	1	1	
Hemodialysis	No Pain	0	0	0	0	7	7	9	9	8	8	9	9	7	7	7	7	4	4	4	4	6	6	6	6	8	8	7	7	
	Mild Pain	4	4	4	4	4	4	5	5	6	6	4	4	6	6	6	6	6	6	6	6	8	8	7	7	4	4	5	5	
	Moderate Pain	8	8	7	7	6	6	3	3	2	2	3	3	4	4	4	4	6	6	6	6	3	3	4	4	5	5	5	5	
	Severe Pain	5	5	6	6	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	
Outpatient	No Pain	2	2	3	3	7	7	8	8	8	8	8	8	8	8	8	8	3	3	3	3	5	5	5	5	5	5	5	5	
	Mild Pain	9	9	5	5	5	5	5	5	4	4	5	5	4	4	5	5	8	8	9	9	6	6	7	7	6	6	7	7	
	Moderate Pain	3	3	5	5	2	2	1	1	2	2	1	1	1	1	0	0	2	2	1	1	2	2	2	2	2	2	1	1	
	Severe Pain	0	0	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	
Emergency	No Pain	1	1	1	1	6	6	7	7	7	7	7	7	5	5	5	5	4	4	4	4	5	5	4	4	3	3	3	3	
	Mild Pain	5	5	3	3	3	3	3	3	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	4	4	4	4
	Moderate Pain	6	6	7	7	3	3	2	2	1	1	1	1	2	2	2	2	4	4	4	4	3	3	4	4	2	2	2	2	
	Severe Pain	0	0	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	3	3	3	3
Operating Room	No Pain	3	3	1	1	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2
	Mild Pain	1	1	3	3	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
	Moderate Pain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Severe Pain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Critical/High Care	No Pain	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	1	1	1	1	2	2	2	2	2	2	2	2	
	Mild Pain	1	1	0	0	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	
	Moderate Pain	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Severe Pain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Nursing Management	No Pain	1	1	1	1	1	1	1	1	2	2	1	1	2	2	1	1	2	2	1	1	2	2	2	2	2	2	2	2	
	Mild Pain	0	0	1	1	1	1	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	
	Moderate Pain	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Severe Pain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

According to Table 5, nurses reported their complaints based on their lower body part. Two-third of them experienced pain (mild to severe) on their calf, with one-third felt moderate pain. The nurses also reported that half of them had pain (mild to severe) on their thigh, knee, ankle, and foot with almost one-third felt moderate pain on their ankle. Table 5 also shows that the inpatient unit has the most nurses' complaints. Nurses (19%) reported minor discomfort in the upper right arm, followed by significant pain in the upper neck and lower neck, and 15% reported pain in the right wrist. The right shoulder of nurses experienced severe pain (4%).

According to table 6, the nurses in the inpatient unit dominates the middle part of the body complaints. The waist had the largest percentage of moderate pain (31%), followed by the back (16%). In addition, 6% of nurses in the dialysis unit reported that acute pain in the waist. Table 6 also shows that 19% of nurses in the inpatient unit reported significant discomfort in their left calf, whereas 18% reported mild pain in their right calf. The emergency department nurses reported severe pain in 3% of the left and right feet.

Discussion

Nurses at a private hospital in West Java Indonesia reported MSDs complaints from mild to severe pain. Nurse respondents who mostly work at inpatient department, complained of pain in their upper, middle, and lower part of the body. Most complaints were around neck, shoulder, back, waist and calf. These results align with previous studies, which show that the middle area of the body has the highest presentation of MSD complaints,⁸⁻¹⁰ these studies were recruited only nurses working at operating room⁸ and intensive care.^{9,10} On the other hand, nurses working in operating room and intensive care in this current study reported mostly no pain and mild pain. Shuai's study at intensive care unit in China, reveals that the middle area of the body has the highest percentage of complaints, followed by the upper body area on the neck.¹⁰ A study among nurses in hospital and nursing home caregivers in Indonesia supported that two third of them experienced MSD problems on their shoulder, neck, and right wrist.¹¹ Lin et al. argued that the back and neck area had the high percentage of pain due to the static body position most of the time.¹² This result is per the initial data of this current

study that nurses conducted nursing care documentation in a static position.

Previous research has found that working hours, time pressure, workload distribution, influence musculoskeletal complaints in nurses.¹³⁻¹⁵ Most nurses work sometimes under time constraints and uneven workload distribution, which is associated with musculoskeletal complaints.¹⁶ Nurses also have trouble to take short breaks while working and to change the working posture.¹⁷ The most risk factors for musculoskeletal disorders in nurses include working postures and movements.^{14,18,19} According to the current study, nurses in inpatient units reported no discomfort till severe pain, but nurses at critical care and nursing management only reported no pain and mild pain. However, only two nurses from critical care and two nurses from nursing administration took part in this study. It is necessary to conduct additional research on the factors impacting MSD nurses' complaints with more nurses at the critical care and nursing management units in the hospital. Some regression analysis studies.^{16,18-20} indicate that bending, twisting, and stretching work, standing work, and BMI are predictors of musculoskeletal complaints. Good working conditions can reduce musculoskeletal complaints and high-risk work movements, such as bending and twisting.¹⁶ The improved ergonomics of the workplace, such as furniture size, equipment size, and workplace organization, could be an example of favorable working conditions.¹⁴

This study's limitation is that participants were recruited from a single hospital; generalization must be considered. Further research with a larger sample size and multiple settings is suggested. In addition, other confounding factors such as other activities performed by each subject after working hour, comorbidities, and history of physical trauma might influence nurses' MSDs.

Conclusion

Nurses at one hospital have expressed concern about their experience of MSDs. The most common complaints concern the neck, shoulder, back, waist, and calf. The results suggest a further study of factors influencing MSD nurses' complaints at the hospital. Better understanding of working postures and movements will help the process of maintaining occupational health and safety.

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