Factors affecting low back pain occurrence in nurses of Purwokerto Islamic Hospital

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ABSTRACT

Low Back Pain (LBP) is one of the pains due to work, usually called lower back pain, and has always become the main cause of a disability, in which its effect has influenced the activities in the workplace. The risk factors influencing the pain occurrence include individual factor (age, gender, years of service, body mass index, smoking habit, exercising habit), psychosocial factor, and occupational factor. The aim of the sesearch was determine the factors influencing low back pain occurrence in nurses of Rumah Sakit Islam Purwokerto. The research used a quantitative descriptive design with a cross-sectional study. The sampling technique was total sampling with 75 respondents. The research instrument was a questionnaire with Chi-Square test. The research result indicates that there is no correlation between the factor of gender (0.648), smoking habit (0.418), and exercise habit (0.484) to low back pain occurrence. This is because the p value from the Chi Square test = 0.05.Mean while, it is found that there is a correlation between the factor of age (0.045), body mass index (0.000), years of service (0.002), occupational (0.002), and psychosocial (0.032) to low back pain occurrence. This is because the p value from the Chi Square test = 0.05. The factors influencing low back pain occurrence in nurses of Rumah Sakit Islam Purwokerto are the factors of age, years of service, body mass index, occupational, and psychosocial.

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1. INTRODUCTION

Low Back Pain (lbp) is a work-related disease or commonly called low back pain and is always the main cause for a disability, which as a result can affect a person's productivity at work and disturb the well being of the person. Complaints of Low Back Pain will usually occur to everyone despite of the gender, age, race, as well as educational status or employment status [1]. The risk factors for Low Back Pain can be categorized into two main groups, those are individual risk factors and occupational risk factors. Occupational risk factors consist of two sub groups; physical and psychosocial factors. Individual risk factors for Low Back Pain in nurses are aging, low economic status and smoking (which increases the frequency of Low Back Pain). Exercising can reduce the Low Back Pain. Physical risk factors state that there is a significant relationship between physical factors and musculoskeletal problems. Repetitive movements, improper posture and use of excessive force are the three main factors causing musculoskeletal problems. Psychosocial factors can increase muscle tension, work-related mechanical tension. Physical characteristics, stress and anxiety are the main psychosocial factors that can cause Low Back Pain. Long work schedules, excessive workload, inadequate personnel and equipment, insufficient rest, standing for long periods of time, working in the wrong body position, sleep cycle disorders are some of the job risk factors that can lead to Low Back Pain [2].

Low Back Pain (lbp) is a common complaint. Nearly 70 - 80 percent of the population in developed countries have experienced Low Back Pain. Every year 15-45% of adults suffer from Low Back Pain, and one in 20 sufferers must be hospitalized because of an acute attack. Low Back Pain is very common at age 35 - 55

years. Nearly 80% of the population in industrialized countries have experienced lower back pain. In the United States, the prevalence in one year ranges from 15% -20% while the incidence based on new patient visits to the doctor is 14.3%. Epidemiologic data on Lower Back Pain in Indonesia does not yet exist. It is estimated that 40% of Central Java population aged over 65 years have suffered from back pain and the prevalence in men is 18.2% and 13.6% in women. This prevalence increases with increasing age. Incidence based on patient visits to several hospitals in Indonesia ranges from 3% -17%.

According to WHO, out of 35 million health workers abroad, it is known that 41% of nurses in hospitals have experienced spinal injuries due to work / occupational low back pain (Decree of the Minister of Health of the Republic of Indonesia). Low back pain often occurs among nurses, especially nurses who work in the inpatient room. Nursing staff are included in the professional group at high risk for musculoskeletal injuries, especially in the thoraco-lumbar spine which will cause low back pain [3].

2. RESEARCH METHOD

This research is a quantitative descriptive study using a cross sectional study method (cross-sectional study). The sample technique in this study using total sampling. The sample in this study amounted to 75 respondents with inclusion criteria, namely all nurses at the Purwokerto Islamic Hospital who were in services including: IRI, IRJ, ICU, IGD, HD and IKBS and nurses whose work period was ≥ 1 year while the exclusion criteria were nurses who is on leave. The place of this research was conducted at the Islamic Hospital Purwokerto which includes inpatient installations, outpatient installations, central surgical rooms, emergency departments and care units and hemodialysis rooms. While this research was conducted on November 1 - 25, 2019. Unifariate analysis used distribution and frequency while for the bivariate analysis was to use the $\chi 2$ (Chi-square) statistical test with a confidence level of 95% or $\alpha = 0.05$.

3. RESULTS AND DISCUSSIONS

3.1 Univariate Analysis

Table 1. Frequency Distribution of Nurse Respondents Characteristics at Islamic Hospital Purwokerto (n=75)

Characteristic	Frequency	Percentage
Age		
< 30	44	58.7%
> 30	31	41.3%
Sex		
Male	28	37.3%
Female	47	62.7%
Years of Service		
1-5 years	46	61.3%
> 5 years	29	38.7%
BMI		
Normal	34	45.3%
Abnormal	41	54.7%
Smoking Habit		
No	55	73.3%
Yes	20	26.7%
Exercising Habit		
Regular	34	45.3%
Irregular	41	54.7%
LBP Incidence		
No	32	42.7%
Yes	43	57.3%
Occupational Factor		
Good occupation	21	28.0%
Poor occupation	54	72.0%
Psychological Factor		
Good Psychology	25	33.3%
Bad Psychology	50	66.7%

Based on table 1, it is known that there are 75 respondents (100%) showing that most respondents are aged ≤ 30 years, namely 44 people (58.7%), most of the respondents are female, amounting to 47 (62.7%). The majority of respondents have a work period of 1 - 5 years, amounting to 46 people (61.3%). Respondents with the BMI category were mostly abnormal as many as 41 (54.7%). Most of the respondents did not have a

smoking habit, amounting to 55 people (73.3%). Respondents with irregular exercise habits were 41 people (54.7%). Most of the respondents experienced Low Back Pain as many as 43 people (57.3%), the majority of respondents experienced poor occupational as many as 54 people (72%). The majority of nurses who experienced bad psychology were 50 people (66.7%).

3.2 Bivariate Analysis

The bivariate analysis in this study is to use the chi square test analysis, which is to determine the factors that influence the incidence of Low Back Pain in Nurses at the Islamic Hospital of Purwokerto.

Table 2. Factors that influence the incidence of low back pain in nurses at the Islamic Hospital in Purwokerto

Variable	Low Back Pain				p-value	OR	CI95%	
	No		Yes				lower	Upper
	f	%	f	%				
Age								
≤ 30	23	52.3	21	47.7	0,045	2.677	1.009	7.101
> 30	9	29.0	22	71.0				
Sex								
Male	11	39.3	17	60.7	0,648	0.801	0.309	2.075
Female	21	44.7	43	57.3				
Years of Service								
1-5 years	26	56.5	20	43.5	0,002	4.983	1.708	14.543
> 5 years	6	20.7	23	79.3				
BMI								
Normal	23	67.6	11	32.4	0,000	7.434	2.651	20.847
Abnormal	9	22.0	43	57.3				
Smoking Habit								
No	25	45.5	30	54.5	0,418	1.548	.536	4.472
Yes	7	35.0	13	65.0				
Exercising Habit								
Regular	16	47.1	18	52.9	0.484	1.389	.553	3.487
Irregular	26	63.4	15	36.6				
Occupational Factor								
Good	15	71.4	6	28.6	0.002	5.441	1.798	16.466
Poor	17	31.5	37	68.5				
Psychological Factor								
Good	15	60.0	10	40.0	0,032	2.912	1.081	7.846
Bad	17	34.0	43	66.0				

Based on table 4.2, the results show that there is no relationship between gender (0.648), smoking habits (0.418), sports habits (0.484), to the incidence of Low Back Pain because the p value results with the Chi Square test, namely> α = 0 , 05. As for the factors related to age (0.045), BMI (0.000), work period (0.002), occupational (0.002) and psychological (0.032) to the incidence of Low Back Pain with p value using Chi Square <α = 0.05. The factors that influence the incidence of Low Back Pain in nurses at the Islamic Hospital Purwokerto are as follows:

3.3 Age

Respondents aged <30 years who experienced Low Back Pain were 21 people (47.7%) and respondents aged> 30 who experienced Low Back Pain were 22 people (71.2%). Chi Square test results obtained p value of 0, 045 which is smaller than α: 0.05, meaning that Ho is rejected and Ha is accepted, so it can be concluded that there is a relation between the age factor and the incidence of Low Back Pain in Nurses at Purwokerto Hospital. In line with research conducted by Qareeballa [4] that age is considered a significant risk factor, because nurses who are <30 years old have the highest prevalence of Low Back Pain (92%) when compared to other age groups. Age affects the capacity of workers to do their jobs, related to their physiological body functions. Complaints generally begin at working age, namely 25-60 years. Most workers have this complaint for the first time at the age of 35 [5]. According to researchers, nurses that are >30 years of age will get a higher workload because they have become permanent employees and have worked for a long time, compared to nurses aged <30 years who have not worked for a long time and often change new employees to replace outgoing nurses with the number of 46 nurses who work under 5 years from the main nurses as many as 75 people.

3.4 Sex

Respondents who were female who experienced Low Back Pain were 26 people (53.3%) and respondents who were male who experienced the incidence of Low Back Pain 17 (60.7%). Chi Square test results obtained a P value of 0.648 which is greater than α: 0.05, meaning that Ho is accepted and Ha is rejected, so it can be concluded that there is no correlation between gender and the incidence of Low Back Pain in Nurses at Purwokerto Hospital. In line with research conducted by Umboh [6] with the chi square test showing a probability value of 0.592 with a significance level of α = 0.05. The results of this study can be interpreted that, H0 is accepted, in other words there is no relation between gender and complaints of low back pain in nurses in the inpatient room of RSU GMIM Pancaran Kasih Manado. Physiologically, the muscle ability of women is lower than that of men. In women, this complaint often occurs, for example, when experiencing a menstrual cycle, besides that the menopause process can also cause the decreasing of bone density due to a decrease in estrogen hormones that may cause low back pain to occur [7]. According to researchers, male nurses and female nurses have the same task in providing services to patients. Although physiologically, women's muscle ability is lower than men's. In women, this complaint often occurs, for example, during the menstrual cycle.

3.5 Years of Service
Respondents with a work period of 1-5 years who experienced low back pain were 26 people (56.5%). Respondents with a service period of> 5 years who experienced Low Back Pain were 23 people (79.3%). Chi Square test results obtained a p value of 0.002 which is smaller than α: 0.05, meaning that Ho is rejected and Ha is accepted so that it can be concluded that there is a relation between working tenure and the incidence of Low Back Pain in Nurses at Purwokerto Hospital. In accordance to the research conducted at GMIM Pancaran Kasih Hospital Manado, the results obtained were that nurses with a working period <5 years had fewer complaints of low back pain with 8 people (15.1%) compared to nurses. with a work period of ≥5 years who experienced low back pain totaled 38 people (71.7%). By using the chi square test, it is known that the P value is 0.039 which is smaller than α: 0.05, which means that Ho is rejected and Ha is accepted, so it can be concluded that there is a relation between working tenure and complaints of low back pain in nurses in the inpatient room at RSU GMIM Pancaran Kasih Manado. Tenure is a factor related to the length of time a person works in a place. Related to this, Low Back Pain is a chronic disease that takes a long time to develop and manifest. Hence, the longer the working time or the longer a person is exposed to these risk factors, the greater the risk of experiencing Low Back pain. According to researchers, nurses who have a service period of >5 years at the Islamic Hospital Purwokerto carry out more activities with patients. Then for nurses whose working period <5 years is still new and often waits for insructions from the Head of the Team because on average they are still new to work because in Islamic Hospital Purwokerto there are still frequent in and out of nurses, so the risk to get low back pain is still quite low.

3.6 Body Mass Index
Respondents with normal BMI who experienced Low Back Pain, amounting to 11 people (32.4%). Respondents with abnormal BMI who experienced Low Back Pain totaled 32 people (78.0%). Chi Square obtained a p value of 0,000 which is smaller than α: 0.05, meaning that Ho is accepted and Ha is rejected, so it can be concluded that there is a relation between BMI and the incidence of Low Back Pain in Nurses at Purwokerto Hospital. Similar with research conducted which shows that respondents who experience complaints of low back pain are workers who have underweight nutritional status with a BMI value <18.5. The cramer coefficient c analysis test showed p = 0.03, so there was a relationship between nutritional status and complaints of low back pain. Studies show a link between height and low back pain that taller people seem to have a greater risk for bone instability. Changes in facet joints in patients with lumbar disc hernias are more pronounced in taller patients. Several studies have clearly shown that people with a high BMI are more prone to Low Back Pain. A meta-analysis including 33 studies shows that obesity is associated with an increased prevalence of Low Back Pain in the past 12 months. In this study it can be concluded that there is a relationship between Body Mass Index and the incidence of Low Back Pain in Nurses at Purwokerto Hospital. Because according to the researcher, most of the nurses at the Islamic Hospital of Purwokerto were women with a BMI with a value of> 23 and for new male nurses with a BMI with a value of <18.5. The presence of excess body weight will cause complaints of low back pain.

3.7 Smoking Habit
Respondents who have smoking habits experience Low Back Pain, namely 30 people (54.5%). Respondents who did not have smoking ability experienced low back pain, namely 43 people (65.0%). Chi Square test results obtained a p value of 0.418 which is greater than α: 0.05 means that Ho is accepted and Ha is rejected, so it can be concluded that there is no relation between smoking habits and the incidence of Low Back Pain in Nurses at Purwokerto Hospital. In line with research conducted by Gim (2017) that respondents

who do not smoke are 79 (71.8) and respondents who smoke are 14 (12.7%) with a P value of 0.789 so that there is no significant relation between smoking and Low Back Pain.

The World Health Organization (WHO) reports the number of deaths due to smoking each year is 4.9 million and by 2020 it will reach 10 million people per year. There is a significant relation between smoking and lumbago, especially for jobs that require muscle exertion, because nicotine in cigarettes can cause reduced blood flow to the tissues. In addition, smoking can also cause reduced mineral content in bones, causing pain due to fractures or damage to bones. Smoking habits can reduce the ability of the lungs to support oxygen so that oxygen distributed to the tissues, including the musculoskeletal system, is low. As a result, energy production decreases, accompanied by the buildup of lactic acid as a product of anaerobic respiration which causes fatigue to muscle pain. This study found that there was no relation between smoking habits and the incidence of Low Back Pain among nurses at the Purwokerto Hospital. Most of the nurses at Purwokerto Hospital are women and they do not have a habit of smoking.

3.8   Exercising Habit

Respondents who have regular exercise habits experience Low Back Pain, namely 18 people (52.9%). Respondents who have irregular exercise habits experience Low Back Pain, namely 25 people (61.0%). Chi Square test results obtained a p value of 0.484 which is greater than α: 0.05, meaning that Ho is accepted and Ha is rejected, so it can be concluded that there is no relation between exercising habits and the incidence of Low Back Pain in Nurses at Purwokerto Hospital. In line with research conducted by Gim [8] that respondents who exercise irregularly experience Low Back Pain amounting to 54 (49.1%) with a P Value of 0.058, which means that there is no relation between exercising habits and low back pain. Respondents who exercise irregularly have a greater risk of developing low back pain. According to workers with less physical fitness have a three times greater risk of experiencing this complaint than workers with sufficient physical fitness. Regular exercise can be used as an indicator of a person's physical fitness. An efficient exercise is that is done three to five times, with a duration of each exercise of approximately 30 minutes, for one week. In this study, it was concluded that there was no relation between exercising habits and the incidence of Low Back Pain among nurses at the Purwokerto Hospital. Because some nurses who enter the morning shift every Friday carry out morning exercise together.

3.9   Occupational Factor

Respondents with good occupational factors experienced Low Back Pain, namely 6 people (28.6%). Respondents with poor occupational factors experienced Low Back Pain, namely 43 people (57.3%). The results of the Chi Square test obtained a p value of 0.002 which is smaller than α: 0.05, meaning that Ho is rejected and Ha is accepted so that it can be concluded that there is a relation between occupational factors and the incidence of Low Back Pain in Nurses at Purwokerto Hospital. In accordance to the research conducted by Ningsih [9], it shows that 10 nurses (83.3%) experience complaints of low back pain due to a risky work attitude. The results showed that the value of P value = 0.001 means that the value of P <0.005, namely there is a relation between work attitude and complaints of low back pain. In musculoskeletal, repetitive movements and improper posture and use of excessive force are the three main factors that cause musculoskeletal problems. These factors lead to overuse of tendons, ligaments and muscles, static muscle loading and fatigue, thereby increasing the likelihood of lower back trauma. Performing tasks related to carrying without getting any support or supporting equipment can also result in Low Back Pain.

In this study, it was concluded that there was a relation between occupational factors and the incidence of Low Back Pain in Nurses at Purwokerto Hospital. According to researchers, nurses at the Purwokerto Hospital in carrying out activities in the service have not been supported by equipment that makes it easier or helps to ease work, such as the presence of stretchers used for patient transportation. Then there is no tool used for the process of moving the patient so that it can be easier to move the patient around, so that the patient does not need to be lifted or carried, only need to be to be pushed.

3.10 Psychosocial Factor

Respondents with good psychological factors experienced Low Back Pain, namely 10 people (40.0%). Respondents with bad psychological factors experienced Low Back Pain, namely 43 people (57.3%). Chi Square test results obtained p value of 0.032 which is smaller than α: 0.05 means that Ho is rejected and Ha is accepted, so it can be concluded that there is a relationship between psychological factors and the incidence of Low Back Pain in Nurses at Purwokerto Hospital. In line with the research conducted that the results of this study found that stress or those experiencing bad psychology is one of the determining factors for Low Back Pain with a significance level of p value = 0.008. Stress or anxiety can cause pain. The muscles become tense, causing neck, head, or back pain. Jaw that is tightened or teeth grinding can cause facial pain. Anxiety, especially if it is chronic, can lower the pain threshold value, so that the person experiences greater pain, such

as in chronic disease with pain, for example cancer. Anxiety can amplify pain and also when attention is focused on sensations not normally considered pain such as prestige, itching and even heartbeat or bowel movements.

Psychosocial factors can increase muscle tension, work-related mechanical tension and symptom perception. Attacks of pain associated with physical injury at work can lead to chronic psychological and physiological central nervous system dysfunction which can lead to chronic pain. In some job situations changes in psychosocial expectations may be related to physical characteristics and changes in biomechanical stress. Nurses' dissatisfaction with their work, lack of times to relax at work and a lack of a supportive culture, monotonous work life, heavy workloads and passive coping methods can cause stress and anxiety for health professionals. In addition, some negative situations such as working long hours, frequent night shifts, work obligations to stay away from family and children can lead to a variety of psychosocial problems for nurses. Stress and anxiety are the main psychosocial factors that can cause Low Back Pain. This study concludes that there was a relation between psychosocial factors and the incidence of low back pain among nurses at the Purwokerto Hospital. According to researchers for Psychosocial factors in Nurses at Purwokerto Hospital, most of them are not good because they experience pressure at work and high workloads because the workforce patterns are still not according to standards and a lack of relaxation opportunities at work, a lack of a supportive culture, as well as monotonous work.

4.   CONCLUSION

Factors that influence the incidence of Low Back Pain in Nurses at the Islamic Hospital of Purwokerto are age, work period, BMI, occupational and psychosocial factors. While the factors that did not affect were gender, smoking and exercise habits.

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