

RESEARCH ARTICLE

STUDY ON THE PREVALENCE OF LOW BACK PAIN BASED  
ON AGE AND GENDER IN INDONESIAN HAJJ PILGRIMS :  
PERIOD 1438 – 1443 H

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ABSTRACT

**Background:** Musculoskeletal pain is a common complaint in men and women with a wide age range and in all sociocultural groups. Low back pain significantly contributes to the overall burden of musculoskeletal conditions. In 2020, low back pain (LBP) affected 619 million people globally and it is estimated that the number of cases will increase to 843 million cases by 2050, driven largely by population expansion and ageing. Hajj is a series of worship with high demands on physical strength, and musculoskeletal pain experienced by the pilgrims will significantly affect the worship and the pilgrims' classification of health, known as health *istithaah*.

This study aims to determine the prevalence of low back pain incidence based on the age and gender of Indonesian pilgrims in periods 1438-1443 H.

**Methods:** This descriptive study with a cross-sectional design used secondary data from Health Information System

for Indonesian Hajj Pilgrims (*SISKOHATKES*) with a period of Hajj from 1438 H until 1443 H.

**Results:** This study showed that the prevalence of Indonesian pilgrims in 1438-1443 H diagnosed with low back pain in Saudi Arabia based on age group was highest at 46 years and over each year. However, the prevalence of female sex was not consistently higher than male in 1438-1443 H. The percentage of the male sex (0.020%) was higher than the female sex (0.016%) in 1438 H, and the female sex was consistently higher than the male sex in 1439 – 1440 H, while in 1443 H, the male and female sexes had the same proportion.

**Conclusion:** Indonesian pilgrims aged 46 years and over with a diagnosis of low back pain have a higher prevalence in each year of examination, and female and male pilgrims do not consistently have a higher prevalence value in the period 1439 - 1443 H

**Keywords:** Low back pain, hajj, pilgrims, age, gender.

INTRODUCTION

Musculoskeletal pain is known as one of the causes of physical disability in hundreds of millions of people worldwide. It can occur in men and women with a wide age range and in all sociocultural groups. The latest analysis from Global Burden of Disease 2019 showed that around.<sup>1,2,3</sup>

1.71 billion people worldwide lived with musculoskeletal conditions, including low back pain, neck pain, fractures, other injuries, osteoarthritis, amputations, and rheumatoid arthritis. Low back pain significantly contributes to the overall burden of musculoskeletal conditions (570 million general cases worldwide, responsible for 7.4% of global YLD (years lived with disability)).<sup>4</sup>

Hajj is a series of worship with high physical strength demands because of more walking activities between a

series of places of pilgrimage for 5-7 days on specific routes with an average distance of 5-15 km/day, and the distance is estimated to 63 km during the period pilgrimage.<sup>5,6,7</sup> Throughout the pilgrimage journey, pilgrims must walk for tawaf and *sa'i*, which are quite far with a total distance of at least 7 km and can go further if the pilgrims want to perform various types of *thawaf* (*Thawaf Qudum*, *Thawaf Ifadhah*, *Thawaf Wada'*, *Thawaf Sunah*) and the pilgrims must throw the *Ula*, *Wustha*, *Aqabah* (7 times each) on the 11th, 12th and 13th for three consecutive days in the appropriate order.<sup>8,9</sup>

Before the Hajj, the pilgrims are expected to fulfill the conditions of health *istithaah* (the ability of the pilgrims to carry out the activities of the pilgrimage series) through the tiered examination stages when they are still in their country. Musculoskeletal pain experienced by the pilgrims will significantly affect their health *istithaah*. Based on previous research, age, and gender are risk factors for musculoskeletal

pain, which can affect the health of pilgrims.<sup>5,6,7</sup> This study aims to determine the prevalence of low back pain based on age and sex risk factors in pilgrims who performed Hajj in 1438-1443 H with the exception of data in 1441 - 1442 H due to covid-19.<sup>8,9,10</sup>

**METHODS**

This study design was cross-sectional, which used secondary data from Integrated Hajj Computerized System for Health Sector (*Sistem Komputerisasi Haji Terpadu Bidang Kesehatan/SISKOHATKES*) provided by the Hajj Health Center, Ministry of Health, Republic of Indonesia. The source population of this study was the Indonesian Hajj Pilgrims in the year of departure from 1438 H until 1443 H. Inclusion criteria were the Indonesian Hajj Pilgrims who carried out inspections during the Saudi Arabia period and were diagnosed with low back pain at that time (n=45.992). Sample size determination in this study was based on the

formula of estimating one population proportion by Lemeshow (1990) with  $\alpha$  5%, P=50%, precision d=0.1. Therefore, the minimum sample size of this study was 97 respondents, who were selected by total sampling technique.

**ETHICAL CLEARANCE**

Data analysis in this study was univariate with a frequency distribution based on age and gender and compared with the period 1438 until 1443 H. This study was approved by the Ethics Committee of the Faculty of Medicine, Syarif Hidayatullah State Islamic University Jakarta.

**RESULTS**

This study's total number of subjects who underwent an examination in Saudi Arabia was 45.992, consisting of 335 patients with low back pain and 45.657 with other diseases. Data collection was carried out by filtering the subject data from Siskohatkes.

**Table 1. Characteristics of Indonesian pilgrims during the period of Saudi Arabia 1438-1443 H**

Variable	1438 H		1439 H		1440 H		1443 H	
	n	%	n	%	n	%	n	%
<b>Age group</b>								
17 – 25 years	10	0.14	20	0.18	26	0.14	14	0.15
26 – 45 years	383	5.20	762	7.00	824	4.43	531	5.82
46 – 55 years	1217	16.52	2058	18.91	2684	14.43	2029	22.25
56 – 65 years	2521	34.21	3901	35.84	5838	31.39	6535	71.67
≥66 years	3238	43.94	4142	38.06	9228	49.61	9	0.10
<b>Gender</b>								
Men	3814	51.7	5813	53.4	9252	49,7	4325	47.4
Women	3555	48.2	5070	46.5	9364	50,3	4799	52.6

Based on the table above, it was known that 1438 H, 1439 H, and 1440 H had more pilgrims aged 66 years (43.9%, 38%, and 49.6%) except in 1443 H, which was related to the requirements for Hajj and Umrah pilgrims post-COVID-19 pandemic by the Ministry of Health of the Kingdom of Saudi

Arabia.<sup>11</sup> Whereas based on gender, it can be seen that the proportion of women and men was not much different. In 1438-1439 H, there were more male pilgrims than female pilgrims, while in 1440-1443 H, there were more female pilgrims.

**Table 2. Proportion of low back pain based on age and gender in all Indonesian Hajj pilgrims examined in Saudi Arabia for 1438-1443 H.**

Variable	Characteristics	1438 H		1439 H		1440 H		1443 H	
		n	%	n	%	n	%	n	%
Age group	17 - 25	0	0.00	0	0.00	0	0.00	0	0.00
	26 - 45	1	0.01	5	0.05	4	0.02	4	0.04
	46 - 55	9	0.12	6	0.06	14	0.08	15	0.16
	56 - 65	30	0.41	14	0.13	40	0.22	73	0.80
	≥66 years	34	0.46	33	0.30	53	0.28	0	0.00
Gender	Men	42	56.76	17	29.31	44	39.64	46	50.00
	Women	32	43.24	41	70.69	67	60.36	46	50.00

Based on the table above, the total proportion of pilgrims with low back pain was 335 out of 45.992 Indonesian pilgrims who were examined in Saudi Arabia (0.728%). It was known that in 1438-1439 H, pilgrims aged 66 years and over contributed to the highest proportion of pilgrims with

low back pain (0.46%, 0.3%, and 0.28%) from other age categories, whereas in 1443 H, the highest proportion was in the age group 56-65 years old (0.8%). No congregations had low back pain at 66 years and over in 1443 H.

**Table 3. The proportion of low back pain based on age and gender of all pilgrims departing from Indonesia in Saudi Arabia period 1438 – 1443 H.**

Variable	1438 H		1439 H		1440 H		1443 H	
	n	%	n	%	n	%	n	%
<b>Status on departure</b>								
Fit	204999	99.94	205719	99.98	215312	99.95	93621	99.96
Not Fit	129	0.06	49	0.02	101	0.05	39	0.04
<b>Age group</b>								
17 - 25	0	0.0000	0	0.0000	0	0.0000	0	0.0000
26 - 45	1	0.0005	5	0.0024	4	0.0019	4	0.0043
46 - 55	9	0.0044	6	0.0029	14	0.0065	15	0.0160
56 - 65	30	0.0146	14	0.0068	40	0.0186	73	0.0780
≥66 years	34	0.0166	33	0.0160	53	0.0246	0	0.0000
<b>Gender</b>								
Men	42	0.0205	17	0.0083	44	0.0215	46	0.0224
Women	32	0.0156	41	0.0200	67	0.0327	46	0.0224

Based on the table above, the proportion of low back pain was obtained from all pilgrims who were declared fit to depart as denominators at the stage 3 examination when pilgrims were still in Indonesia. Same as the results in table

2, Indonesian pilgrims in 1438-1439 H aged 66 years and over contributed to the highest proportion of pilgrims with low back pain compared with other age categories (0.017%, 0.016%, 0.025%).

## DISCUSSION

This study found that in 1440 H, more pilgrims experienced lower back pain in the age group 66 years above than in 1438 H, 1439 H, and 1443 H. This could be due to more pilgrims in 1440 H than in the other years. Apart from the more significant number of congregations, there was a possibility that errors while recording the diagnoses may occur during the examination or pilgrims' coaching before Hajj. Pilgrims' coaching was essential because that included promotive, preventive, curative, and rehabilitative activities. The activities included screening for non-communicable diseases, checking blood pressure, cholesterol, blood sugar levels, uric acid, and the Rockport test (fitness test).<sup>8</sup>

In this study, the proportion of low back pain for Indonesian pilgrims during Saudi Arabia for the 1438 – 1443 H period was related to the age group. Based on the previous study on the prevalence of musculoskeletal pain based on age in different body locations, the age group 55-64 years

accounted for the highest prevalence (50%) of all age categories. Low back pain was the most troublesome musculoskeletal pain for patients (25%) than in other organs such as the neck (18%), knees (17%), and shoulder (17%).<sup>12</sup> In another study, low back pain had a reasonably high prevalence (28.47%) in pilgrims with musculoskeletal pain in various organs, and the prevalence was significantly different based on age groups (p-value <0,05) and the higher patient's age, the higher the risk of developing low back pain.<sup>13</sup> The previous study in Iran found that ages 50 years and over had the highest prevalence rate of low back pain (57.9%) of those aged group 40 years and under (37%) and aged 41-50 years (35.3%).<sup>14</sup> Several studies and the results of this study found that as you get older, the incidence of musculoskeletal pain increases.

Besides the age group, this study showed that the male or female gender did not differ in the proportion of low back pain incidents. An Epidemiology Study of Low Back Pain in Saudi Arabia showed that women (54%) and men (46%) of

their respondents (2,190) were associated with low back pain in Qatar.<sup>15</sup> A previous study in 2018 regarding the prevalence and factors associated with musculoskeletal pain among Hajj Pilgrims found that women were more prevalent than men, which was statistically significant ( $p$ -value<0,05).<sup>16</sup> In another study, it was stated that females (38.3%) had a higher prevalence than males (30.9%).<sup>17</sup> However, Another study in Iran found that male (40.7%) was more prevalent than female (39.1%).<sup>14</sup>

Differences in body function between men and women are dominated by differences in male and female growth spurts during puberty. Androgen hormones (male sex hormones) increase dramatically in males, which causes protein synthesis and higher bone growth. In contrast, estrogen hormones (female sex hormones) can reduce the female growth spurt through the closing of the epiphyseal plates in late adolescence so that it can participate in influencing the strength of skeletal muscles between women and men.<sup>18</sup> However, based on this study's results and several previous studies regarding the prevalence of low back pain among pilgrims during the Saudi Arabia period 1438 – 1443 H, it can be concluded that gender does not have a significant meaning related to the incidence of low back pain.

This study's limitation was the absence of data regarding the body mass index and history of illness of pilgrims, which was one of the factors that could affect low back pain. It is hoped that in further studies, the BMI factor can be included as a research variable and can be analyzed further to see the relationship between age, gender, BMI and intensity of activities during Hajj in pilgrims to the incidence of low back pain.

## CONCLUSION

Based on age, most of those aged 46 years and over contributed the highest number each year and during the examination period. In 1438 H, there were 73 pilgrims (0.0356%). In 1439 H, there were 53 pilgrims (0.0257%). In 1440 H, there were 107 pilgrims (0.0497%), and in 1443 H, there were 88 pilgrims (0.0940%). The prevalence of female sex was not consistently higher than male in 1438-1440 H. The percentage of male sex (0.020%) was higher than female sex (0.016%) in 1438 H, and gender women were consistently higher than men in 1439 – 1440 H, while in 1443 H men and women had the same percentage.

## CONFLICT OF INTEREST

There is no conflicts of interest in this study.

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## FUNDING SOURCES

No declare

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