



Sociodemography and Diseases Suffered by Prospective Hajj Pilgrimages 2025 in Batu City

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ABSTRACT

The Hajj pilgrimage is a mass gathering of Muslims from all over the world facing extreme physical and environmental conditions. Indonesian Hajj pilgrims, as one of the largest contributors, are dominated by older adults with comorbidities, so they are at high risk of experiencing health problems during the Hajj pilgrimage. This study aimed to describe the sociodemographic characteristics and types of diseases suffered by prospective Hajj pilgrims in Batu City in 2025 to support more targeted health intervention planning. This study is a quantitative descriptive study with a cross-sectional approach involving 123 prospective Hajj pilgrims in Batu City in 2025 and using the total sampling technique. Data were collected through questionnaires, confirmed with the Batu City Health Office data, and analyzed univariately. The results of the study showed the majority of respondents were women (51.22%), adults (65.85%), and had a bachelor's degree (36.60%). Most prospective Hajj pilgrims suffer from more than one chronic disease. The most common diseases suffered include hypertension (55 people), obesity (35 people), musculoskeletal diseases (20 people), sleep disorders (17 people), and digestive disorders (14 people). This finding emphasizes the need to strengthen the Hajj health development program more intensively and comprehensively, especially for high-risk groups.

INTRODUCTION

The Hajj pilgrimage is one of the largest mass gatherings in the world and presents unique public health challenges. Millions of Muslims worldwide gather each year to perform the Hajj pilgrimage in Mecca, Saudi Arabia. The Hajj pilgrimage is one of the five pillars of Islam. It is, therefore, obligatory for all Muslims who are physically and financially able to travel to Mecca once in their lifetime (Aldossari et al., 2019). Each year, 2-3 million pilgrims of varying ethnic backgrounds, socioeconomic statuses, and ages, and the majority of them elderly from around 184 countries around the world, gather at the holy site “Haram” in Mecca, Saudi Arabia, to perform the Hajj (Masud et al., 2016; Gaddoury & Armenian, 2024). The Hajj pilgrimage area is a sandy valley surrounded by rugged mountains exposed to the sun. In Mecca, especially from May to September, the temperature ranges from 38°C to 50°C, with a relative humidity of 25% to 50% (Ramadan & Zahra, 2016). The performance of Hajj and its rituals are physically demanding, and there is crowding due to the large number of pilgrims. During Hajj, pilgrims face harsh environments, crowding, physical disturbances, and mental stress due to difficult journeys, steep climbs, sun exposure, extreme temperatures, continuous walking during religious rituals, and traffic jams at specific times and places. Many pilgrims are injured, tired, sick, exhausted, and dehydrated (Ali & Abideen, 2024; Pane et al., 2019). It can also cause complications and burden physiological functions, including the heart, chest,

abdomen, and kidneys, for those suffering from chronic diseases. In addition to disease issues, the crowding of pilgrims can cause several other significant problems, including lost and stranded pilgrims, injuries, and even death (Masud et al., 2016). Environmental and physical stress and changes in eating and sleeping patterns experienced during the Hajj can also lead to the exacerbation of non-communicable diseases (NCDs). NCDs and their complications can pose significant health risks during the Hajj and are a major cause of hospitalization and death among pilgrims (Ali & Abideen, 2024).

It is estimated that the number of Muslims with chronic diseases performing the Hajj could exceed 300,000 per year. However, this may be an underestimate, as the prevalence of chronic diseases in Arab and Muslim countries is higher than in non-Muslim countries (Gaddoury & Armenian, 2024). Indonesia is the country with the largest Muslim population in the world. Indonesian Hajj pilgrims are the largest contributors each year, at 10%, and have relatively high health risks, so pilgrims are at risk of receiving treatment and dying while performing the Hajj (Riskiyah et al., 2024). The profile of Indonesian Hajj pilgrims is mostly elderly, and most have a risk of chronic and degenerative diseases. According to the 2017 Hajj Health report, in the last 10 years, the most common diseases among Hajj pilgrims include cardiovascular disease, respiratory infections, chronic obstructive pulmonary disease (COPD), diabetes, hypertension, stroke, urogenital disorders, geriatrics, psychiatric and malignant diseases (Rustika et al., 2019). East Java Province ranks first in Indonesia for hajj pilgrims who are at high risk (Wahjudi & Putriana, 2014).

In addition to disease, sociodemographic profiles such as age, gender, and education level can affect the health conditions of pilgrims and their understanding of health risks during the Hajj. Age has a strong correlation with an increased risk of death, especially among Hajj pilgrims (Fajriani, 2024). Based on data from the Batu City Ministry of Religious Affairs Office, in 2023, the number of Hajj pilgrims departed reached 204 people, while in 2024, it was 140 pilgrims, and the majority were elderly. Most Hajj participants were over 60 years old, with a higher prevalence of chronic diseases in older people (Gaddoury & Armenian, 2024). Biologically, the aging process results in decreased organ function, endurance, and the ability to adapt to extreme environments such as hot weather in Saudi Arabia. In addition, elderly Hajj pilgrims also tend to have comorbidities that worsen their health conditions during the physically demanding Hajj (Fajriani, 2024). Men generally dominate Hajj pilgrim deaths that occur within five years of the Hajj because men are responsible for their wives or elderly pilgrims during the Hajj, especially when throwing stones, so this can be one of the factors that burden the physical activity and responsibility of male pilgrims during the Hajj (Febriyanti & Adisasmita, 2023). For education level, the higher the level of education is significantly related to the lower prevalence of chronic diseases and also the lower frequency of suffering from health complaints during the Hajj because education is

generally believed to be related to improved health, life expectancy, and quality of life (Alamri et al., 2020).

Prospective hajj pilgrims need to be aware of the risks and the importance of health to ensure that the pilgrims perform the hajj safely (Ali & Abideen, 2024). Therefore, understanding the sociodemographic factors and diseases suffered by prospective hajj pilgrims is crucial in improving their health readiness before departing for the hajj pilgrimage (Rustika et al., 2019). Based on the background above, this study aims to determine the sociodemographic picture and diseases suffered by prospective hajj pilgrims in Batu City in 2025. The results of this study are expected to contribute to the planning of more targeted health programs and increase the effectiveness of Hajj health development to improve the health readiness of pilgrims before leaving for the Holy Land. Thus, the risk of health complications during the hajj pilgrimage can be minimized, and pilgrims can perform the pilgrimage more smoothly and safely.

METHOD

This study used a quantitative descriptive research design with a cross-sectional approach to determine the sociodemographic picture and identify diseases suffered by prospective Hajj pilgrims in Batu City in 2025 before they departed for Hajj. This study was conducted from August to December 2024 in Batu City. The sample was selected using a total sampling technique: all Prospective Hajj Pilgrims who will depart for Hajj in 2025 registered at the Batu City Ministry of Religion office and the Batu City Health Office, totaling 123 people. The inclusion criteria for this study were prospective Hajj pilgrims in Batu City in 2025 who can be contacted and are willing to be research respondents. The sociodemographic profile of respondents, including age, gender, education, and data on diseases suffered by prospective Hajj pilgrims, were obtained using a questionnaire containing questions about age, gender, education level, and health history. Information about prospective Hajj pilgrims' health history was rechecked using the Health Office Batu City data. Sociodemographic data and various diseases suffered by respondents used univariate analysis, which was displayed in the form of frequency distribution and percentage.

RESULT

According to data from the Ministry of Religion, the number of prospective Hajj pilgrims in Batu City in 2025 is 157 people. Still, in this study, only 123 prospective Hajj pilgrims were obtained because several prospective Hajj pilgrims could not be contacted/no home address was found, and the location was outside Batu City, withdrew, or postponed. Sociodemographic data of Hajj pilgrims is only divided by gender, age, and education level, as presented in Table 1 below. The following is the sociodemographic data of Hajj pilgrims.

Table 1. Sociodemographic Characteristics Data of Prospective Hajj Pilgrims

Characteristics Respondents	Number (n)	Percentage (%)
Gender		
Male	60	48.78 %
Female	63	51.22 %
Age		
Teenagers (10-18 Years)	0	0 %
Adults (19-59 Years)	81	65.85 %
Elderly (60 Years and above)	42	34.15 %
Education		
Elementary School	15	12.20 %
Junior High School	23	18.70 %
High School	32	26.01 %
Diploma 1	3	2.43 %
Bachelor's degree 1	45	36.60 %
Bachelor's degree 2	5	4.06 %

Some of the 2025 Batu City Hajj Candidates Suffer from more than 1-2 Diseases. The following are some of the Diseases Suffered by Prospective Hajj Pilgrims Presented in table 2.

Table 2. Diseases Suffered by Prospective Hajj Pilgrims in Batu City in 2025

Disease	Frequency
Hypertension	55
Obesity	35
Musculoskeletal Diseases (joint pain, muscles, bones, kyphosis)	20
Sleep Disorders (insomnia)	17
Gastrointestinal Disorders (GERD, Gastritis, Constipation, Unable to Control Defecation, Hemorrhoids)	14
Dyslipidemia	14
DM (Diabetes Mellitus)	13
Non-hypertensive Cardiovascular Diseases (CHD, Heart Failure, Arrhythmia)	11
Hyperuricemia	9
Mental Disorders (Depression, Anxiety)	8
Nervous System Disorders (CVA, Vertigo, Migraine)	10
Eye Disorders (Cataracts)	7
Neuropathy	5
Respiratory System Disorders (Asthma, Chronic Cough)	4
Urogenital Urinary Disorders (Prostate, Urinary Disorders)	3
Skin Disorders (Dermatitis Atopy and Urticaria)	3
Cognitive Decline	1
Hypotension	1

DISCUSSION

Sociodemographic Characteristics of Respondents

The gender distribution in this study was slightly more dominant in females, namely 63 people (51.22%), three more than men. Prospective female hajj pilgrims were at 2.113 times the risk of having an unfit physical fitness status compared to prospective male hajj pilgrims. This difference is due to differences in hormone development and function (Yusri et al., 2020). This is in contrast to the research, which stated that the majority of Indonesian hajj pilgrims who died were in the male group (Febriyanti & Adisasmita, 2023). The weaker male immune system influences this compared to women because women produce

more antibodies, which can last longer in circulation than men, making men more susceptible to various infectious diseases (Ardini, 2023).

The age distribution of prospective hajj pilgrims shows that the majority are adults (19-59 years), as much as 65.85%, followed by the elderly group, as much as 42 people (34.15%). The large number of prospective elderly hajj pilgrims in 2025 needs to be a concern for the government. Elderly hajj pilgrims have health in the high-risk category. The elderly are included in the at-risk group because they are often accompanied by declining health status, especially physical health. The declining health status of the elderly and increasing age will affect their quality of life because it will be accompanied by the emergence of various diseases, decreased body function, body balance, and the risk of falling. The elderly also often experience decreased cognitive abilities, so they often forget, are disoriented about time, place, or space, do not easily accept new things, and are even unable to carry out normal daily activities (Wara & Boy, 2021). The elderly who also have a history of comorbidities and do heavy physical activities while performing the hajj pilgrimage will be at risk of worsening their illness and can even cause the pilgrim to die. In addition, the high mortality and morbidity rates among Hajj pilgrims in Saudi Arabia are closely related to the age factor of the pilgrims who are elderly accompanied by chronic diseases and the climate, which is very different from that in Indonesia (Elwindra, 2020).

The level of education of prospective Hajj pilgrims is quite diverse, but in this study, the majority had a bachelor's degree, namely 45 people (36.60%). A person with a higher education tends to consider health important, and it is easier to accept and absorb information (Fatimah & Indrawati, 2019). Higher education makes a person think more logically and rationally and see an issue from various sides to analyze and solve a problem. In addition, a person's high education can also affect health because they have a healthier lifestyle and a greater awareness of health and disease (Pradona & Sulistyowati, 2014 ; Harahap & Nurwahyuni, 2019).

Diseases Suffered by Prospective Hajj Pilgrims

The diseases suffered by Prospective Hajj Pilgrims of Batu City in 2025 are diverse. Most prospective hajj pilgrims do not only suffer from 1 disease but 2-3 diseases. The 10 most common diseases suffered by prospective hajj pilgrims in Batu City in 2025 include hypertension, obesity, musculoskeletal diseases, sleep disorders (insomnia), digestive disorders, dyslipidemia, diabetes mellitus, non-hypertensive cardiovascular diseases (CHD, heart failure, and arrhythmia), hyperuricemia, mental disorders (depression, anxiety).

In terms of diseases suffered by CJH Batu City in 2025, hypertension is the most dominant disease, occupying the first level of as many as 55 people. In 2023, hypertension is also the most common disease suffered by Solo embarkation Hajj pilgrims, followed by hypercholesterolemia, diabetes mellitus, and cardiomegaly (Amada et al., 2025). Hypertension is a major risk factor for stroke, cardiovascular disease,

and kidney disease. In addition, hypertension is also the largest metabolic risk factor in the world, which causes 19% of global deaths, and only 20% of hypertension sufferers can control their blood pressure (Yezli et al., 2021). In 2017, it was reported that 49% of Indonesian Hajj pilgrims died due to cardiovascular disease, the majority of whom had risk factors such as hypertension (53.4%) (Sakti et al., 2019). Therefore, strict blood pressure management is an important strategy in the health development of prospective pilgrims so that their blood pressure can be properly controlled.

Obesity ranks second as a disease suffered by prospective Hajj pilgrims in 2025 in Batu City, with as many as 35 people; this shows that many prospective Hajj pilgrims face significant metabolic challenges. Obesity is an imbalance between height and weight caused by too much fat tissue (Jayanti et al., 2019). Obesity has a detrimental effect on humans and causes various impacts on other diseases, such as worsening asthma, back pain, osteoarthritis, gallstone formation, and sleep apnea (Toar et al., 2023). The Hajj pilgrims who suffer from non-communicable diseases, 80% are included in the pilgrims who suffer from obesity (Saidah et al., 2023). In East Java Hajj pilgrims from 2017 to 2019, there were 38,403 (36.36%) Hajj pilgrims who were categorized as overweight and 14,301 (13.54%) Hajj pilgrims who were categorized as obese (Utami & Ardiana, 2021). Being overweight and obese increases the risk of cardiovascular disease and diabetes as well as hypertension. Prospective Hajj pilgrims with obesity had a 1.555 times higher risk of developing hypertension than those with a normal body mass index (Harahap & Nurwahyuni, 2019).

Twenty prospective pilgrims are suffering from musculoskeletal diseases. Musculoskeletal diseases can directly impact the pilgrims' ability to carry out rituals requiring high mobility, such as tawaf and sai. The Hajj pilgrimage is an activity that requires heavy physical activity, so pilgrims need physical strength and good physical fitness so that they can carry out a series of worship activities smoothly. Problems often complained about by pilgrims are pain in the neck, shoulders, knees, waist, and other body parts. If these complaints are not handled properly, they will hinder the Hajj process later (Santoso et al., 2024). 80.46% of 1,715 pilgrims reported experiencing musculoskeletal pain during the Hajj. The most common pain reported was in the ankles/feet (38.34%), legs (29.89%), lower back (28.47%), and knees (21.84%). Factors such as advanced age, female gender, and high body mass index (BMI) are associated with an increased prevalence of musculoskeletal pain. This condition can lead to limited mobility, severe pain, and even total inability to complete the Hajj rituals (Alshehri et al., 2021).

Sleep disorders (insomnia), anxiety, and depression often occur together and influence each other, especially in high-pressure conditions such as those experienced by prospective Hajj pilgrims. In this study, 17 pilgrims experienced insomnia, and 8 showed symptoms of mental disorders such as anxiety and depression. Hajj's emotional and social aspects are very important in shaping pilgrims' mental and physical health. The challenges pilgrims face during Hajj include heat exposure, physical exhaustion,

overcrowding, lack of sleep, and fear of getting lost. These factors can cause physical and emotional stress that can lead to anxiety, depression, and other mental health problems (Alzeer & Abuzinadah, 2024). Muslims may have pre-existing mental illnesses or may experience mental illness for the first time during Hajj. Pilgrims who are performing Hajj for the first time and the elderly are at high risk of developing mental illness. Common mental illnesses seen during Hajj are stress, psychosis, insomnia, and mood disorders (Hankir et al., 2019). Sleep disorders/insomnia, if not treated immediately, can affect the overall health of the pilgrims. Sleep disorders in the form of lack of sleep or restless sleep make the body feel tired and can also affect the quality of a person's health (Nugroho et al., 2022 ; Wahyuningrum et al., 2015). Causes of insomnia include stress, hormonal changes, and chronic disorders, depression (Wahyuningrum et al., 2015). The Hajj pilgrimage can also cause anxiety for pilgrims due to social pressure and the busy rhythm of the journey (Islamiyah et al., 2024). Pilgrims experience anxiety, especially during activities such as staying overnight in Muzdalifah and throwing pebbles. Sources of this anxiety include environmental factors, weather conditions, and the physical and emotional conditions of the pilgrims. To overcome their anxiety, these elderly pilgrims use various methods, including praying and maintaining a positive mindset. Their strong intentions and good spirits also play an important role in reducing their anxiety levels (Thirafi & Hakim, 2018).

Gastrointestinal Disorders such as GERD, gastritis, constipation, inability to control bowel movements, and hemorrhoids are also experienced by many prospective hajj pilgrims, as many as 14 people. Gastrointestinal system disorders are one of the common health problems that occur during the hajj. Several reports indicate that the incidence of gastrointestinal diseases is relatively high and has a comparable incidence rate with several other diseases. However, respiratory disorders remain the most common health problem. One report noted the prevalence of gastrointestinal disorders at 6.3% (Shaikh-Omar et al., 2013).

The number of prospective hajj pilgrims suffering from type 2 diabetes mellitus (DM) is not as large as those suffering from hypertension and obesity, only 13 people, but this still needs to be a concern for the government. The number of hajj pilgrims with DM has increased from 2022, namely from 38 people (13.06%) to 130 people (19.1%) in 2023 (Ekawati et al., 2024). Diabetes mellitus has been identified as a cause of morbidity and mortality during the hajj. Diabetic patients face various logistical and environmental constraints that can complicate the management of their disease, including exposure to extreme heat, prolonged physical activity, and difficulty in accessing and storing their medications (Helmizar et al., 2024). Approximately 20% of pilgrims with underlying diseases who visit Mecca have diabetes. These people are at higher risk of serious complications such as hypoglycemia, hyperglycemia, diabetic ketoacidosis, cardiovascular disease, heat exhaustion, heat stroke, dehydration, leg injuries, and some infectious diseases (Helmizar et al., 2024; Ekawati et al., 2024).

Several prospective hajj pilgrims suffer from cardiovascular diseases, including coronary heart disease (CHD), heart failure, and arrhythmia, for as many as 11 people. Cardiovascular disease is the most common cause of morbidity (34.1%) in patients requiring hospitalization in Mecca during the 2005 hajj. The Saudi Arabian Ministry of Health reported that cardiovascular disease is the most common cause of death compared to other diseases, both infectious and non-infectious (Ardiana et al., 2023). In 2017, in Indonesia, it was reported that 49% of hajj pilgrims died due to cardiovascular disease (Pratiwi & Helda, 2024). In addition, 14 hajj pilgrims have dyslipidemia. Dyslipidemia is related to cardiovascular disease, where dyslipidemia is a significant risk factor for atherosclerotic cardiovascular disease (Tokgozoglu et al., 2022). Increased LDL cholesterol is a major aspect of dyslipidemia and is associated with increased cardiovascular risk, especially in atherosclerotic cardiovascular disease (Tall et al., 2022).

CONCLUSION

Most of the prospective hajj pilgrims in Batu City in 2025 will consist of adults and older people with a fairly high educational background. Most of them do not only have one type of disease but also suffer from more than one health problem. Hypertension and obesity are the most common conditions found, followed by musculoskeletal diseases, sleep disorders (insomnia), and digestive disorders. Interestingly, not only physical conditions are of concern, but also psychological aspects such as anxiety and depression begin to appear before departure. Data and information regarding the health conditions of prospective hajj pilgrims are very useful in planning and implementing health services for all parties, especially the government, health workers, and families, so that they can pay more attention to the physical and mental readiness of prospective hajj pilgrims. More comprehensive health guidance, not only from a medical perspective but also psychosocially, needs to be carried out before departure so that pilgrims can carry out their worship safely, comfortably, and safely until they return to their homeland.

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