

Patterns and Trends of Respiratory Diseases in Indonesian Hajj Pilgrims in Mecca 2024 Descriptive Study

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ABSTRACT

Background and Objective: Respiratory diseases are a major health problem for Indonesian Hajj pilgrims in Mecca, triggered by extreme environmental factors such as high temperatures (39-43°C), crowding, and air pollution. Changes in physical activity and dust exposure also play a role, especially in the elderly and those with comorbidities. Data from the Ministry of Health shows that >50% of Hajj pilgrims experience respiratory problems, with pneumonia, bronchitis, and asthma as common diagnoses, particularly after the peak of the Hajj pilgrimage. This study aims to analyze the patterns and trends of respiratory diseases among Indonesian Hajj pilgrims in Mecca in 2024. **Methods:** This descriptive-analytic study uses secondary data from the registration of regular Hajj pilgrims at the KKHI Mecca in 2024 (1445 H). The total sample consists of 1962 Hajj pilgrims. Data were analyzed quantitatively using descriptive. **Results:** The majority of Hajj pilgrims seeking treatment were male (55.4%) and aged >61 years (65.3%). Pneumonia was the most common respiratory disease (62%), followed by COPD (11.8%), asthma (4.3%), and ARI (8.1%). Risk factors included old age, extreme weather changes, physical fatigue, and air pollution. The majority of cases were treated on an outpatient basis at the KKHI Mecca (61.1%). **Conclusion:** Pneumonia is a major health problem among Indonesian Hajj pilgrims in Mecca. Old age is an important risk factor. Comprehensive prevention and treatment efforts are needed, including health education, awareness of medical personnel, and further research. This study provides valuable information for the development of more effective Hajj health policies.

Introduction

Respiratory diseases are a major health problem experienced by Indonesian Hajj pilgrims while performing their worship in Mecca. Environmental factors, such as extreme temperatures ranging from 39–43°C, crowd density, and exposure to air pollutants, are the main triggers for the high number of acute respiratory tract infection (ARI) cases among Hajj pilgrims (Kementerian Kesehatan RI, 2023). In addition, changes in physical activity patterns and exposure to dust in Saudi Arabia also contribute to an increased risk of respiratory disorders, especially for vulnerable groups such as the elderly and those with comorbid diseases (Kementerian Agama RI, 2024).

Data from the Indonesian Ministry of Health (2023) shows that more than 50% of Hajj pilgrims experience respiratory problems, with pneumonia, bronchitis, and asthma as the most common diagnoses. Pneumonia cases, in particular, have increased significantly after the peak of the Hajj pilgrimage, with many pilgrims requiring intensive care in local health facilities (Kementerian Kesehatan RI, 2023). This indicates that more effective health strategies are needed to prevent and treat respiratory diseases in Hajj pilgrims.

Objective

This study aims to analyze the patterns and trends of respiratory diseases among Indonesian Hajj pilgrims in Mecca in 2024 based on outpatient and inpatient data from the Indonesian Hajj Health Clinic (KKHI) in Mecca. The results of this study are expected to provide in-depth insights into the main risk factors and morbidity trends of respiratory diseases, which can then be used to develop more comprehensive Hajj health policies.

Method

This study employs a quantitative approach with a descriptive-analytic research type. The objective is to describe the characteristics of respiratory diseases among Indonesian Hajj pilgrims in Mecca in 2024 and to analyze the relationship between various variables and the incidence of respiratory diseases. The research design used is a retrospective study, utilizing secondary data from the medical records of Hajj pilgrims at the KKHI Mecca during the 1445 H/2024 M Hajj season.

The study population consists of all Indonesian Hajj pilgrims who visited the KKHI Mecca in 2024. The sampling technique used is total sampling, with a sample size of 1962 Hajj pilgrims. Data will be presented in tabular form and analyzed quantitatively using descriptive and inferential statistics. The research instrument used is secondary data from patient medical records.

Results

This section presents the research findings regarding the characteristics of Indonesian Hajj pilgrims treated at the KKHI in Mecca in 2024. The data includes gender, age groups, and the types of respiratory diseases diagnosed.

Table 1. Overview of characteristics of Indonesian Hajj pilgrims who visit the KKHI in Mecca

| Gender | n (%) |
|---------------|---------------|
| Man | 1643 (55,4%) |
| Woman | 1316 (44,4%) |
| Age | |
| <40 years | 97 (3,27 %) |
| 41 - 50 years | 262 (8,84 %) |
| 51 - 60 years | 668 (22,5 %) |
| >61 years | 1935 (65,3 %) |

Table 2. Overview of respiratory disease characteristics in hajj pilgrims

| Characteristics of Respiratory | |
|--|-------------|
| Diseases | n (%) |
| Pneumonia | 343 (62 %) |
| COPD | 65 (11,8 %) |
| Asthma | 24 (4,3 %) |
| Pulmonary tuberculosis | 12 (2,1 %) |
| Pleural Effusion | 9 (1,6 %) |
| Post-tuberculosis obstructive syndrome | 9 (1,6 %) |
| Acute Bronchitis | 31 (5,6 %) |
| Bronchiectasis | 8 (1,4 %) |
| Acute Respiratory Infection | 45 (8,1 %) |
| Acute Lung Oedema | 4 (0,7 %) |

Table 3. Overview of follow-up of hajj pilgrims after visiting the KKHI in Mecca

| Category | n (%) |
|--------------------------|---------------|
| Evacuated to KKHI Madina | 1 (0,03 %) |
| Hospitalized | 882 (29,7 %) |
| Outpatient Treatment | 1811 (61,1 %) |
| Referred to RSAS | 257 (13,09 %) |

| | |
|---|------------|
| Tanazul (Transfer to another health facility) | 10 (0,3 %) |
| Deceased/Passed Away | 1 (0,03 %) |

Discussion

Overview of Characteristics of Indonesian Hajj Pilgrims Who Visit The KKHI in Mecca

Based on table 1 above, the majority of Hajj pilgrims seeking treatment were male, with a proportion reaching 55.4% or 1643 people. Meanwhile, female Hajj pilgrims numbered 1316 people or about 44.4% of the total patients. In terms of age group, Hajj pilgrims who needed health services at the KKHI in Mecca were dominated by the elderly, those over 61 years old. This age group includes 1935 people or 65.3% of all patients. This number is much larger than other age groups, indicating that elderly Hajj pilgrims are more vulnerable to health problems while performing the Hajj pilgrimage.

Hajj pilgrims aged between 51 and 60 years occupied the second largest number, with 668 people (22.5%). Followed by the age group 41 to 50 years as many as 262 people (8.84%), and the age group under 40 years which only amounted to 97 people (3.27%). This data indicates that the dominance of men, the number of male Hajj pilgrims who sought treatment was more than women, which may be related to different physical factors or health conditions between the two. Elderly Age as a risk factor, the majority of pilgrims who seek treatment are elderly, indicating that age is an important risk factor for health problems during Hajj. This emphasizes the need for thorough health preparation for elderly pilgrims before leaving for Hajj.

Overview of Respiratory Disease Characteristics in Hajj Pilgrims

Based on table 2 above, the data on the characteristics of respiratory diseases in Hajj pilgrims at the KKHI Mecca revealed that pneumonia dominated as the most common disease suffered, reaching 343 cases or 62% of the total cases of respiratory diseases. This finding is consistent with previous research that highlighted pneumonia as the main cause of morbidity and mortality in Hajj pilgrims (Al-Abdaly et al., 2019). Several risk factors have been identified to contribute to the high incidence of pneumonia in Hajj pilgrims, including advanced age, a history of chronic diseases, and extreme environmental conditions during the Hajj season (Memish et al., 2014). In addition to pneumonia, other respiratory diseases also found in Hajj pilgrims include COPD (11.8%), Asthma (4.3%), Pulmonary TB (2.1%), Pleural Effusion (1.6%), PTOS (1.6%), Acute Bronchitis (5.6%), Bronchiectasis (1.4%), ARI (8.1%), and Acute Lung Edema (0.7%). The diversity of respiratory diseases indicates that Hajj pilgrims are susceptible to various types of respiratory disorders. Environmental factors such as extreme weather changes, physical fatigue due to the dense activities of the Hajj pilgrimage, and exposure to air pollution during the Hajj pilgrimage are also suspected to play a role in increasing the risk of respiratory diseases (Khan et al., 2017).

The dominance of Pneumonia as the most common respiratory disease suffered by Hajj pilgrims underscores the importance of comprehensive prevention and treatment efforts. Advanced age and chronic diseases are risk factors that are difficult to modify, but extreme environmental conditions during the Hajj season can be anticipated by various preventive measures. For example, ensuring adequate hydration, regular rest, avoiding excessive exposure to air pollution, and implementing clean and healthy lifestyle behaviors (PHBS). These findings have significant clinical implications for the health management of Hajj pilgrims. Medical personnel need to increase awareness of pneumonia symptoms in Hajj pilgrims, especially in those who have risk factors. In addition, education about the importance of maintaining respiratory health and infection prevention measures needs to be continuously improved. Influenza and pneumococcal vaccination programs also need to be considered to protect Hajj pilgrims from respiratory infections.

Further research is needed to identify other risk factors that may contribute to the high incidence of respiratory diseases in Hajj pilgrims. A better understanding of these risk factors will assist in developing more effective prevention and treatment strategies. Research also needs to be conducted to evaluate the effectiveness of various interventions for the prevention and treatment of respiratory diseases in Hajj pilgrims. Respiratory diseases are a significant health problem in Hajj pilgrims, with pneumonia being the most common disease suffered. Risk factors such as advanced age, chronic diseases, and extreme environmental conditions during the Hajj season play an important role in increasing the risk of respiratory diseases. Comprehensive prevention and treatment efforts, including health education, awareness of medical personnel, and further research, are essential to protect the health of Hajj pilgrims.

Overview of Follow-Up of Hajj Pilgrims After Visiting The KKHI in Mecca

Based on table 3 above, from the data collected, it appears that most Hajj pilgrims who experience respiratory problems at the KKHI in Medina receive outpatient treatment, namely 1811 cases (61.1%). This number is much greater than the pilgrims who require hospitalization, which is 882 cases (29.7%). Only a small proportion of pilgrims require evacuation to KKHI Medina (1 case, 0.03%), referral to RSAS (257 cases, 13.09%), Tanazul (10 cases, 0.3%), and those who died/DOA (1 case, 0.03%). This data shows that most respiratory problems in Hajj pilgrims at the KKHI Mecca can be treated on an outpatient basis. This indicates that most cases handled are mild or moderate cases that do not require intensive care in hospitals. The significant proportion of cases handled are outpatients, which demonstrates efficiency in the initial management and management of common respiratory conditions during the Hajj season. This is in line with research showing that most cases of respiratory tract infections in Hajj pilgrims can be treated in primary health care facilities (Setiawati & Nurrizka, 2019).

The number of pilgrims requiring hospitalization (29.7%) is also quite significant, indicating that there are some pilgrims who experience more serious respiratory problems and require observation and more intensive medical treatment. These conditions may include cases of pneumonia, bronchitis, or asthma exacerbations requiring further monitoring and more intensive medical intervention.

Research in Indonesia also shows that pneumonia is one of the main causes of morbidity and mortality in Hajj pilgrims (Al-Abdaly et al., 2019). Nevertheless, the number of pilgrims requiring evacuation, referral to RSAS, Tanazul, and those who died/DOA is relatively small. This shows that in general, the KKHI Mecca is able to handle most cases of respiratory diseases that occur in Hajj pilgrims. The low referral rate indicates that most cases can be handled at the KKHI Mecca facility, demonstrating the capacity and effectiveness of the Hajj health system in providing adequate care.

Conclusion

A 2024 study in Mecca revealed that pneumonia is a major health problem for Indonesian Hajj pilgrims, accounting for 62% of all respiratory disease cases. The elderly (over 61 years) are the most at-risk group. Factors such as extreme weather changes, physical fatigue, and air pollution are strongly suspected to contribute to the increased risk of these respiratory diseases.

Nevertheless, the majority of cases (the vast majority) were successfully treated on an outpatient basis at the KKHI in Mecca, which demonstrates the efficiency and effectiveness of managing respiratory conditions during the Hajj season. Only a few cases required referral to hospitals. This research provides valuable insights for the development of more comprehensive Hajj health policies, including more effective prevention, treatment, and resource allocation efforts.

Further research is needed to identify other risk factors that contribute to the high incidence of respiratory diseases among Hajj pilgrims and to evaluate the effectiveness of the prevention and treatment interventions provided.

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