

Evaluation of the Satu Sehat Health Pass (SSHP) Feature and Follow-Up Measures among Hajj Pilgrims at the Surabaya Embarkation in 2025

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ABSTRACT

The Satu Sehat Health Pass (SSHP) is a digital innovation developed by the Ministry of Health of the Republic of Indonesia to integrate the health data of Hajj pilgrims at the national level through the Satu Sehat platform. This study aims to evaluate the level of SSHP utilization and assess the health follow-up of Hajj pilgrims at the Surabaya Embarkation in 2025. The method used was a quantitative approach with a descriptive cross-sectional design. Data were obtained from the reports of the Hajj Organizing Committee (PPIH) at the Surabaya Embarkation and the Satu Sehat database, including the number of pilgrims who completed and did not complete SSHP data entry, as well as health follow-up measures such as additional examinations, medical referrals, and the completeness of medical documentation. Preliminary findings indicate that although the overall compliance with SSHP data entry is relatively high, it remains uneven across age groups and regions of origin. Pilgrims who did not complete SSHP data entry tended to encounter obstacles in the follow-up process, including delays in examinations and inconsistencies in medical data. This evaluation is expected to provide an overview of the effectiveness of SSHP implementation and serve as a basis for improving the health monitoring system for Hajj pilgrims in the future.

Key words: *Satu Sehat Health Pass*, evaluasi, jamaah haji, Debarkasi Surabaya, digitalisasi kesehatan.



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INTRODUCTION

The implementation of the Hajj pilgrimage involves millions of pilgrims from around the world, including Indonesia, which consistently contributes the largest number of participants. One of the crucial aspects of Hajj implementation is the health of the pilgrims, as a significant proportion of them are older adults and have pre-existing medical conditions. To ensure readiness and safety, the Ministry of Health of the Republic of Indonesia developed the Satu Sehat Health Pass (SSHP), a digital feature within the Satu Sehat ecosystem that functions as a platform for recording and integrating the health data of Hajj pilgrims. SSHP is expected to facilitate real-time health

monitoring, accelerate health screening processes, and ensure appropriate and timely medical follow-up.

However, the implementation of SSHP in the field faces various challenges, including limited digital literacy, internet access limitations, and differences in levels of understanding among pilgrims. From the pilgrims' perspective, factors such as advanced age, mobile device ownership, and access to stable internet networks play a substantial role in determining the success of SSHP data entry. Although socialization and training efforts have been carried out widely, low digital literacy and non-adherence to the recommended procedures remain major obstacles. From a regulatory standpoint, the effectiveness of SSHP implementation is also influenced by the intensity and quality of guidance provided by healthcare officers, particularly in offering technical assistance and education regarding data entry. Environmental factors, such as language barriers, also contribute, as the language used in the application may differ from the dialect or language commonly used by the pilgrims, making it difficult for them to understand system instructions.

Some pilgrims did not complete their SSHP data entry or failed to update their health information prior to departure, which may hinder medical follow-up processes, leading to delays in further examinations or inconsistencies in medical records. The Surabaya Embarkation, as one of the largest embarkation centers in Indonesia, is a strategic site for evaluating SSHP implementation due to the diversity of pilgrims' social and health backgrounds. This study aims to evaluate the level of SSHP utilization and analyze the relationship between SSHP data completion and health follow-up actions among Hajj pilgrims at the Surabaya Embarkation in 2025. The results are expected to provide insight into the effectiveness of the Satu Sehat digital system within the Hajj health context and serve as a foundation for improving policies and strategies for digital assistance among pilgrims in the future.

MATERIALS AND METHODS

1. Study design

This study employed a quantitative approach with a descriptive cross-sectional design, aiming to describe the level of utilization of the Satu Sehat Health Pass (SSHP) feature and the associated health follow-up among Hajj pilgrims within a specific period, namely the 2025 Hajj season. This design was selected because it allows for the simultaneous assessment of the relationship between SSHP utilization and health follow-up variables at a single point in time without any intervention.

2. Time and location

The study was conducted at the Surabaya Debarkation Center, which serves as the departure and return hub for Hajj pilgrims from the regions of East Java, Bali, and Nusa Tenggara. Data collection was carried out during the 2025 Hajj implementation period, from May to October 2025, encompassing the post-return (debarkation) phase of the pilgrims.

3. Population and sample

The study population consisted of all Hajj pilgrims registered at the Surabaya Embarkation in 2025. The sample was obtained using a total sampling approach when complete data for all pilgrims were available, or through proportional random sampling when it was necessary to limit the number of respondents based on data availability. The inclusion criteria were pilgrims officially registered in the Satu Sehat system and having identifiable SSHP completion status data. The exclusion criteria were pilgrims with incomplete data or those whose information could not be verified in the Satu Sehat system.

4. Study variable

Independent Variable

Level of SSHP Utilization, which includes the following aspects

- Completeness of data entry (complete/incomplete)
- Frequency of updates to pilgrims' health data
- Compliance with SSHP data entry based on instructions provided by healthcare officers

Dependent Variable

Health Follow-Up of Pilgrims, measured through

- Implementation of additional medical examinations during the post-debarkation phase
- Provision of medical referrals or additional consultations
- Timeliness of follow-up actions based on SSHP data

5. Data collection

Data for this study were collected quantitatively and documentarily through the Satu Sehat Health Pass (SSHP) database of the Ministry of Health and the 2025 Surabaya Hajj Organizing Committee (PPIH) reports. The data included the number of pilgrims who completed SSHP data entry, the color-based health screening categories (Red [High-risk], Orange [Moderate-risk], Yellow [Low-risk], and Green [Healthy]), as well as health follow-up measures such as additional medical examinations and medical referrals. Data collection was further supported by field observations and brief interviews with healthcare officers and pilgrims to assess challenges, digital literacy, and the effectiveness of system socialization.

6. Data analysis

Data analysis was conducted using a quantitative descriptive approach with a cross-sectional framework. The data were presented in the form of tables and graphs to illustrate the level of SSHP data completion and the distribution of the pilgrims' health screening results

RESULT AND DISCUSSION

1. General Characteristics of Hajj Pilgrims

This study included 97 Hajj pilgrim groups (kloter) from the Surabaya Debarkation in 2025, with an average total of approximately 379–380 pilgrims per group. Based on the recapitulated data, the number of male pilgrims ranged from 155 to 200 individuals per group, while the number of female pilgrims ranged from 171 to 225 individuals per group. Overall, the proportion of male and female pilgrims was relatively balanced, with an average distribution of 47.3% male and 52.7% female..

2. Level of SSHP Completion

Across all pilgrimage groups, variations were observed in the level of completion of the Hajj Surveillance System (SSHP). The color categories indicated the completeness status or the results of the pilgrims' health screening, namely:

Category	General Meaning	Total Number	Percentage*
Merah	Risiko tinggi / perlu rujukan	≈ 4.000 jamaah	≈ 1,1%
Oranye	Risiko sedang	≈ 400 jamaah	≈ 0,1%
Kuning	Risiko ringan	≈ 3.300 jamaah	≈ 0,9%

Hijau	Sehat / tanpa keluhan signifikan	≈ 360.000 jamaah	≈ 97–98%
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The majority of pilgrims (approximately 97%) were classified in the Green category, indicating good health status and a high level of SSHP data completeness. The Red and Orange categories were identified in a small proportion of groups, representing pilgrims with chronic conditions or those requiring closer health monitoring throughout the Hajj journey.

3. Distribution of Completion Status Across Groups

Distribusi pengisian SSHP menunjukkan bahwa:

- The groups with the highest number of Red (High-risk) classifications were Group 13 and Group 53, each with more than 140 and 180 high-risk pilgrims respectively.
- The groups with the highest proportion of Green (Healthy) pilgrims were later departure groups such as Group 59, 80, and 81, each reaching over 400 healthy pilgrims.
- Early departure groups (Groups 1–10) showed greater variation in completion status, likely due to the initial adaptation process to the SSHP system.

DISCUSSION

Based on the findings from 97 Hajj pilgrim groups (kloter) at the Surabaya Debarkation in 2025, the majority of pilgrims were classified in the Green category (97–98%), indicating good health conditions and a high level of SSHP data completeness. Meanwhile, pilgrims in the Yellow category (approximately 0.9%) showed mild health risks, those in the Orange category (approximately 0.1%) were identified as having moderate risks, and those in the Red category (approximately 1.1%) represented high-risk pilgrims who required further medical referral. The variation in color distribution across groups illustrates differences in data completeness and validity within the SSHP system, suggesting that pilgrim-related factors, regulatory factors, and environmental factors each contribute to the final outcomes of the health screening.

Pilgrim-related factors emerged as the primary component influencing these variations. Pilgrims classified in the Red and Orange categories were generally older adults (≥ 60 years) with comorbidities such as hypertension, diabetes, or cardiovascular disorders. This age group also tended to have lower levels of digital literacy, which contributed to challenges in completing or updating SSHP data. Incomplete or inaccurate data may result in delays in risk identification and medical follow-up, explaining why older pilgrims were more frequently categorized as high-risk. In contrast, younger pilgrims who were more accustomed to using digital devices were more likely to complete SSHP accurately and consistently, resulting in a greater proportion categorized in the Green group. These findings align with those of Choi and DiNitto (2013) and Kim and Xie (2017), who reported a positive correlation between technological adaptability, digital literacy, and the completeness of electronic health data.

Regulatory factors also played a critical role in influencing the accuracy and completeness of SSHP data. Pilgrim groups that received active assistance from healthcare officers and underwent structured and continuous socialization showed a higher proportion of pilgrims categorized as Green compared to groups with limited guidance. Effective regulatory implementation ensures appropriate initial screening, accurate data recording, and timely medical follow-up for pilgrims in the Red or Orange categories. Conversely, weak coordination or insufficient training of health officers resulted in incomplete SSHP data entry, delays in follow-up actions, and an increased proportion of high-risk pilgrims. This finding is consistent with Greenhalgh et al. (2017) and the World Health Organization (2023), who emphasize the importance of sustained regulatory support and ongoing capacity-building in the implementation of digital health systems.

Environmental factors further contributed to variations in SSHP outcomes. Language barriers were a major factor influencing incorrect or incomplete data entry, particularly among pilgrims from regions with strong local languages such as Lombok and Madura. Pilgrims who were unfamiliar with standardized Indonesian medical terms were more likely to fill out information inaccurately, resulting in their classification as moderate- or high-risk (Yellow–Red categories). This observation supports the findings of Alvarez, Lazo-Porras, and Bernabe-Ortiz (2021), who reported that language mismatches in digital health applications can negatively affect user accuracy and participation. Additionally, limitations in internet connectivity and technical system conditions at the debarkation site affected the timeliness of data updates and health monitoring processes.

These three factors interact synergistically in shaping the final SSHP classification results. Older pilgrims with limited digital literacy become more vulnerable when they lack assistance from healthcare officers or encounter system interfaces that are not linguistically accessible. Conversely, a combination of adequate user digital literacy, strong regulatory support, and a user-friendly digital environment increases SSHP data completeness and enhances the proportion of pilgrims classified in the Green category. Therefore, improving SSHP effectiveness requires not only technological innovation but also comprehensive social and policy interventions to ensure readiness among pilgrims, active involvement of healthcare officers, and system suitability to the actual conditions encountered in the field...

CONCLUSION

The findings of this study demonstrate that the implementation of the Satu Sehat Health Pass (SSHP) at the Surabaya Embarkation in 2025 showed a generally high level of data completion among Hajj pilgrims; however, the level of compliance was not uniform across all age groups and regions. Pilgrims classified in the Red (High-risk) and Orange (Moderate-risk) categories were predominantly elderly individuals with pre-existing comorbidities and limited digital literacy, which contributed to incomplete SSHP data entry and delays in medical follow-up. In contrast, pilgrims in the Green (Healthy) category largely consisted of individuals who were younger and more familiar with digital platforms, resulting in more accurate and complete health data records. These findings indicate that the effectiveness of SSHP is influenced by three key factors: pilgrim characteristics, the strength of regulatory implementation, and environmental support in the form of digital access and language familiarity. Strengthening digital literacy support, improving structured and continuous health officer guidance, and ensuring user-friendly system accessibility are essential to enhance SSHP utilization. Therefore, improving SSHP implementation requires a holistic approach that integrates technological, educational, and policy strategies to ensure comprehensive and effective health monitoring for Hajj pilgrims.

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