



Phenomenological Analysis of BPJS Biometric Validation Barriers in AMC Hospital Inpatient Admission

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Abstract

BPJS Kesehatan uses biometric validation through fingerprint scanning and the Face Recognition Identification System (FRISTA) to prevent fraud in patient registration; however, technical scanning failures may prolong inpatient registration waiting times. This qualitative study, using an inductive descriptive phenomenological approach, aimed to analyze in depth how biometric validation barriers are managed from the perspectives and direct actions of medical record admission officers at AMC Hospital. Data were collected through semi-structured interviews with two admission officers, selected by purposive sampling using strict inclusion and exclusion criteria as the entire operational population responsible for escalation and with data saturation achieved, as well as non-participant observation and document review. The findings show that admission officers perform four main roles: identifying technical barriers, including fingerprint-only failure, FRISTA-only failure, and double biometric failure; executing an escalation reporting workflow to the Team Coordinator and subsequently to the Head of Medical Records for manual V-Claim approval based on the recommendation of the physician in charge of care; providing de-escalation communication to reduce anxiety among patients' families; and maintaining registration efficiency in accordance with the Minimum Service Standard (≤ 15 minutes).

Keywords: Biometric Validation, Team Coordinator, Head of Medical Records, BPJS V-Claim, Inpatient Admission

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1. Introduction

Digital transformation in BPJS Kesehatan registration through biometric authentication using fingerprint scanning and the Face Recognition Identification System (FRISTA) at Advanced Referral Health Facilities (Fasilitas Kesehatan Rujukan Tingkat Lanjut, FKRTL) is intended to validate participant identities in real time and prevent fraud in the issuance of the Participant Eligibility Letter (Surat Eligibilitas Peserta, SEP) [1]–[3]. Fingerprint scanners match dermal ridge patterns as a primary authentication mechanism to prevent cards from being used by unauthorized persons [4]. FRISTA, meanwhile, is used as contactless secondary authentication based on computer vision that extracts facial geometry when fingerprint scanning encounters problems [5]. From the perspective of the Information Systems Success Model, system quality influences service quality [6], [7]. A high False Rejection Rate (FRR), a condition in which the system rejects scans from legitimate patients, reduces the reliability of the biometric system and creates administrative barriers. This situation risks non-compliance with the Decree of the Minister of Health Number 129/Menkes/SK/II/2008 concerning Hospital Minimum Service Standards (Standar Pelayanan Minimal, SPM), which establishes a maximum waiting time of ≤ 15 minutes for inpatient registration [8], within the broader national health regulatory framework [9].

At AMC Hospital, the number of biometric failure cases is relatively limited; however, their impact on the smooth operation of the admission counter is significant. The barriers encountered by admission officers occur in three variations: fingerprint-only failure with successful FRISTA verification, FRISTA-only failure with successful fingerprint verification, and double biometric failure. These conditions are triggered by physical device problems, such as dirty optics or inadequate lighting, bridging-network disruptions, and specific patient conditions, including older adults with dermal ridge atrophy, patients with stroke or motor impairment, trauma or emergency patients, and patients with hyperhidrosis or excessively dry skin. The emergence of these technical problems creates a dual workload for medical record admission officers. On the one hand, officers act as technical troubleshooters who must report the problem to the Team Coordinator, who then forwards it to the Head of Medical Records to process a fallback pathway in the form of manual BPJS V-Claim approval based on the recommendation of the Physician in Charge of Care (Dokter Penanggung Jawab Pelayanan, DPJP). On the other hand, officers experience psychological pressure to provide de-escalation communication to patients' families who are concerned that BPJS coverage may be disrupted [10].

To examine this phenomenon, the study employed a qualitative approach with an inductive descriptive phenomenological framework to construct an unaltered





understanding of the lived experiences of admission officers without imposing rigid hypotheses [11], [12]. The study subjects were two primary medical record admission officers. These two informants represented the entire target population of officers responsible for inpatient registration operations and for handling the escalation of biometric problems at AMC Hospital, and information saturation had been reached in the qualitative inquiry [12].

Because previous studies have largely evaluated user satisfaction or general technical biometric problems [13], literature specifically examining the tension among adherence to biometric workflows, compliance with SPM, hierarchical reporting, and the risk of data-security vulnerabilities in manual workflows remains very limited [14]. Therefore, this study has practical and academic importance in providing novelty and concrete input for improving the Standard Operating Procedure (Standar Prosedur Operasional, SPO) for BPJS registration in hospitals.

2. Research Method

This study was conducted in the Inpatient Admission Unit of AMC Hospital from November 2025 to January 2026. A qualitative approach with an inductively oriented descriptive phenomenological design was used to explore and describe, as faithfully as possible, the lived experiences and patterns of action of admission officers when facing biometric system failures [11], [12]. The study examined four main aspects: identification of biometric failure patterns involving fingerprint and FRISTA; implementation of the escalation reporting workflow from admission officers to the Team Coordinator and Head of Medical Records for manual V-Claim approval based on DPJP recommendations; forms of communication used to reduce anxiety among patients' families; and strategies for maintaining registration-time efficiency in accordance with the SPM (≤ 15 minutes).

Informants were selected using purposive sampling based on systematic criteria. The inclusion criteria were: medical record admission officers who had actively worked for more than one year at AMC Hospital and were assigned as medical record team coordinators in the inpatient unit; officers who operated the Hospital Management Information System (Sistem Informasi Manajemen Rumah Sakit, SIMRS) and BPJS V-Claim daily for inpatient registration; and officers directly involved in handling technical problems and escalating reports to the Head of Medical Records. The exclusion criteria were admission officers who were on extended leave or sick leave, officers who had recently joined the inpatient unit, and officers who were unable to participate in the interview process. Based on these criteria, two primary admission officers were selected, encompassing the entire operational population responsible for inpatient registration and biometric escalation at AMC Hospital; data saturation was reached during the interview with the second informant.





Data were collected through triangulation using semi-structured interviews, non-participant observation at the registration counter, and document review, including the SPO, problem-report forms, V-Claim SEP approval documents, and SPM reports. A semi-structured interview is an interview technique that uses a written interview guide as the principal framework while allowing the researcher to ask spontaneous follow-up questions or probes to explore the informants' perceptions and improvised actions in depth [12]. Data analysis referred to the interactive model of Miles, Huberman, and Saldaña, comprising verbatim transcription, categorization and coding of themes from informants' responses, narrative data presentation, and conclusion drawing validated through source and method triangulation [12].

3. Results And Discussions

a. Result

Based on the analysis of semi-structured interviews with two key admission-officer informants, combined with non-participant observation and document review at AMC Hospital, the findings are presented in four main result categories.

1) Identification of Biometric Validation Failure Patterns

Admission officers routinely perform initial technical triage when inpatients encounter barriers during digital identity verification. The findings show that scanning problems occur in three main variations. The first variation is fingerprint scanning failure with successful FRISTA verification. This pattern predominantly occurs among older patients with thinning dermal ridge patterns (dermal ridge atrophy) or patients whose fingers are wet because of hyperhidrosis. In this scenario, admission officers immediately direct the patient to stand in front of the FRISTA camera for facial-geometry matching. The second variation is FRISTA scanning failure with successful fingerprint verification, which is predominantly caused by inadequate lighting at the admission counter or by the position of patients seated or reclined in wheelchairs who have difficulty reaching the camera position. Officers address this condition by cleaning the optical lens of the fingerprint sensor and carefully guiding the patient's finger placement and pressure. The third variation is double biometric failure, in which both fingerprint and FRISTA scans repeatedly reject the patient's identity. This condition is frequently encountered in patients with stroke and severe tremor, emergency patients with facial trauma, and older patients with severe cataracts or sudden physical changes. Double biometric failure triggers special handling through transfer to the escalation reporting workflow.

2) Implementation of the Escalation Reporting Workflow and Manual V-Claim Approval

In double-failure scenarios, admission officers do not have independent authority to approve a patient's eligibility without an official verification mechanism. The workflow implemented at AMC Hospital requires admission officers to submit a technical report together with evidence from the scan-problem form to the Team





Coordinator. The Team Coordinator then performs an initial administrative review and escalates the report hierarchically to the Head of Medical Records. After the Head of Medical Records provides an approval recommendation accompanied by an identity-verification statement from the DPJP, the admission officer is authorized to access the BPJS V-Claim application to process the manual submission until the SEP Approval Letter is issued. This hierarchical workflow functions as an administrative safeguard in the absence of automated biometric verification by the system.

3) **De-escalation Communication to Reduce Anxiety among Patients' Families**

The escalation reporting and manual verification process requires additional time and may trigger panic or negative assumptions among patients and their families. Observation and interview findings revealed that patients' families often worry that fingerprint or facial scanning failure will result in their BPJS Kesehatan coverage being restricted or rejected. In this psychologically vulnerable situation, admission officers perform a de-escalation communication function. Officers provide transparent explanations in a calm tone, emphasizing that scan failure is a systemic machine-related problem and does not invalidate the patient's membership rights. Officers also explain to patients' families that the manual V-Claim approval pathway is being processed through the official mechanism so that the patient can continue to receive inpatient care with full BPJS coverage.

4) **Service Waiting-Time Efficiency and Minimum Service Standards**

Despite the requirement to implement a hierarchical reporting procedure, admission officers are expected to maintain the speed of the registration service. Document review of inpatient registration time logs and interview confirmation showed that the mean total duration for registering patients with double biometric problems—from the initial scan attempt, reporting to the Head of Medical Records, and DPJP confirmation to SEP printing in V-Claim—was 15 minutes per patient. This 15-minute duration is exactly at the critical or marginal limit of the government-established Hospital Minimum Service Standard (≤ 15 minutes) [8]. Although the duration did not exceed the SPM threshold, it required a high level of concentration and rapid work by admission officers to prevent queue accumulation at the inpatient admission counter.

b. Discussion

From the perspective of the Information Systems Success Model developed by DeLone and McLean [6] and discussed in the context of health information systems by Hidayat et al. [7], successful implementation of information technology in hospitals depends strongly on the interaction among System Quality, Information Quality, and Service Quality. Findings at AMC Hospital show that when System Quality declines because of a high False Rejection Rate (FRR) in biometric sensors, Service Quality





does not automatically collapse. This is attributable to the high responsiveness and adaptive capacity of medical record admission officers, who promptly shift the procedure from the automated pathway to the hierarchical manual workflow.

Compared with previous studies, the findings reinforce those of Fadillah and Widyaningrum [13] and Sari and Wahab [4] at Bandung City Regional Hospital, which indicated that BPJS biometric system failures are predominantly triggered by degenerative skin conditions among older patients and limitations in supporting hospital infrastructure. However, the principal difference lies in the problem-solving strategy used in practice. The study by Sari and Wahab [4] reported that hospitals tend to repeat fingerprint scanning many times, resulting in increased registration waiting times beyond the SPM threshold (≤ 15 minutes). In contrast, at AMC Hospital, a structured escalation pathway from admission officers to the Team Coordinator and Head of Medical Records was more effective in reducing impasses at the counter, allowing service duration to be maintained precisely at the marginal SPM limit of 15 minutes, in line with the principle of medical service efficiency [15].

In addition to time efficiency, a critical in-depth finding of this study is the emergence of a data-security vulnerability in the manual V-Claim approval pathway. When automated biometric verification is bypassed because of technical problems, authentication based on biological identity effectively stops. Eligibility validation then relies entirely on physical-document verification, the subjective visual judgment of admission officers, and manual administrative approval. This condition is consistent with the warning by Pratama and Sari [16] regarding the potential risk of fraud or misuse of BPJS cards by unauthorized parties when automated controls are disabled.

In comparison with procedures at Dr. Hasan Sadikin General Hospital (RSHS) Bandung [16], RSHS applies a risk-mitigation protocol requiring officers to upload a real-time photograph of the patient's face to the internal log system when processing manual V-Claim approval as a digital audit trail. At AMC Hospital, by contrast, the manual BPJS V-Claim approval pathway has not been integrated with a secondary photo-upload feature; therefore, data-security control depends entirely on the visual accuracy and integrity of admission officers. This finding reinforces Yeovandi's analysis [14] that the digitalization of BPJS Kesehatan services requires a balance between service inclusiveness for marginal patients and stronger data-security protocols to eliminate opportunities for identity manipulation

4. Conclusion

This qualitative phenomenological study concludes that the management of BPJS Kesehatan biometric validation problems in the Inpatient Admission Unit of AMC Hospital





depends on the adaptability and active role of medical record admission officers. Scanning problems in practice were identified in three failure patterns: fingerprint-only failure with successful FRISTA verification, FRISTA-only failure with successful fingerprint verification, and double biometric failure. These problems predominantly affected marginal patient groups, including older adults with dermal ridge atrophy, patients with stroke, trauma patients, and patients with physical tissue disorders. In double-failure scenarios, admission officers addressed the problem through a hierarchical escalation reporting workflow beginning with technical reporting to the Team Coordinator, continuing to the Head of Medical Records, and culminating in the processing of a manual SEP Approval Letter in BPJS V-Claim based on the DPJP's medical recommendation. Limitations in system quality resulting from a high False Rejection Rate (FRR) were offset by service quality through effective de-escalation communication to reduce psychological anxiety among patients' families.

Based on these conclusions, practical improvements and hospital operational policies are recommended through several synergistic strategic measures. AMC Hospital management is advised to optimize admission-counter lighting and FRISTA camera optical devices to reduce the False Rejection Rate (FRR), while closing data-security gaps in the manual workflow by requiring the upload of a real-time photograph of the patient's face to the SIMRS/V-Claim log when manual approval is submitted. In addition, management should simplify and formalize the Standard Operating Procedure (SPO) so that service duration can be reduced well below the maximum SPM limit of 15 minutes. Medical record admission officers are advised to continue improving the responsiveness of initial technical triage between fingerprint and FRISTA scanning before initiating the manual escalation workflow, while maintaining and strengthening empathy-oriented de-escalation communication with patients' families to prevent panic and preserve the quality of inpatient admission services.

5. Compliance with ethical standards

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b. Disclosure of conflict of interest

The authors declare that there is no conflict of interest regarding the research, authorship, or publication of this manuscript.



**c. Statement of informed consent**

Informed consent was obtained from all informants prior to data collection. Participation was voluntary, and the informants were informed about the purpose and procedures of the study, the confidentiality of the information provided, and their right to withdraw from participation at any time without consequence.

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