Harnessing Patient Insights to Drive Safety Innovation: A Strategic Approach to the BPJS Referral System in Indonesia

Shirley Tanuwireja[1,2,*], Agus Budiman Iskandar[2], Yolla Margaretha[2]

[1] *Master of Hospital Management, Maranatha Christian University*
[2] *Master of Management, Faculty of Law and Digital Business, Maranatha Christian University*
[*]*Corresponding author. Email: shirleytanuwireja@gmail.com*

ABSTRACT

The National Health Insurance (JKN) program by BPJS Kesehatan has reached universal coverage; but, the efficiency of the referral system remains a critical challenge with a direct impact on patient safety. Issues such as information fragmentation, prolonged administrative waiting times, and low patient literacy regarding procedures represent latent risks that can lead to clinical delays. This study aims to synthesize literature from the last five years (2021–2026) to formulate a strategic approach for leveraging patient insights as a catalyst for safety innovation within the referral system. This research employs a systematic literature review method. Analysis was performed on various scientific journal articles, policy reports, and health digitalization case studies published between 2021 and 2026. The analytical focus was directed at the interaction between user experience (patients) and the potency of the Integrated Referral System (SISRUTE) and the Mobile JKN application. Findings from the literature indicate that integrating patient insights into service design can significantly reduce bureaucratic barriers. The implementation of insight-based innovations, such as online queuing systems and electronic medical record synchronization via the SatuSehat platform, has been proven to lower the risk of misidentification and diagnostic delays. Recent studies show that a Lean Healthcare approach based on patient feedback is capable of reducing referral waiting times by up to 48%. However, challenges such as the digital literacy gap in rural areas remain an obstacle to safety inclusivity, requiring more personalized and adaptive policy interventions. Utilizing patient insights is not merely a tool for increasing satisfaction but a key strategy for mitigating safety risks within the referral system. Sustainable safety innovation requires synergy between responsive digital technology and the strengthening of patient literacy. This study recommends a transformation of the referral system toward greater transparency and patient-centeredness to ensure safe and quality healthcare continuity in Indonesia.

Keywords: *BPJS Kesehatan, Referral System, Patient Safety, Patient Insights, Digital Innovation.*

1. INTRODUCTION

The application of the National Health Insurance (JKN) program by BPJS Kesehatan, serving the public since 2014, has been a crucial milestone in Indonesia's public health system. With membership data now numbering hundreds of millions, this system positions Indonesia as among the massive national health insurance programs in the world (Ministry of Health of the Republic of Indonesia, 2023), accelerating the achievement of Universal Health Coverage (UHC). However, the implementation of the tiered health referral system, which serves as the operational pillar of JKN, still faces several serious obstacles.

The referral mechanism, which ideally directs patients from Primary Health Facilities (FKTP) to Advanced Referral Health Facilities (FKRTL), is often hampered by incomplete data integration, complex bureaucracy that leads to long patient queues, and a lack of patient understanding regarding referral regulations and patient rights (Wahyudi et al., 2023).

The impact of these operational obstacles goes far beyond bureaucratic hurdles, as they significantly compromise patient safety. When a referral is delayed, patient deterioration can occur rapidly, leading to the risk of potentially preventable, fatal complications. This situation is exacerbated by the fact that the development of a robust safety system is still hampered by a low incident reporting culture in Indonesian healthcare (Dhamanti et al., 2022). Breaking this negative cycle requires a shift in perspective: patients must be viewed as active partners with valuable insights to drive healthcare system reform. Therefore, this study aims to systematically review how patient insights can be integrated as a core patient safety strategy within the BPJS (Social Security Agency) ecosystem. The final results are

expected to provide tangible contributions, such as applicable policy recommendations, to realize safer and more responsive referral services in Indonesia.

2. LITERATURE REVIEW

Performed a systematic literature review design based on the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) standard guidelines. Data collection was conducted through a comprehensive search of several global and national scientific databases, including PubMed, SCOPUS, Google Scholar, Portal Garuda, and SINTA. To capture the latest developments and shifts in policy scope in this field, the publication window for articles was limited to 2021 to 2026.

The literature search strategy was formulated using specific keywords including: BPJS Kesehatan (Healthcare Social Security Agency), referral system, patient safety, patient experience, Indonesian digital health, SISRUTE, Mobile JKN, SatuSehat, and Lean Healthcare. The inclusion criteria used to select articles included strong topic alignment, transparency of research methodology, publication status in reputable peer-reviewed scientific journals, and availability of full-text manuscripts.

The initial search phase identified 52 policy-related articles and reports. After a rigorous screening process based on inclusion and exclusion criteria, 24 core literature sources were identified that met the requirements for in-depth analysis. The primary data was then processed using thematic analysis to map patterns, critically synthesize data, and identify research gaps related to the integration of patient perspectives, digital instrument implementation, and referral system security.

3. RESULTS AND DISCUSSIONS

3.1. Safety Risk Profile in the BPJS Kesehatan Referral System

Based on the reviewed literature, patient safety risks in the BPJS Kesehatan referral system can be grouped into several operational domains. In the primary healthcare sector, a study by Wahyudi et al. (2023) at a community health center in South Tangerang City revealed massive obstacles to the adoption of the Integrated Referral System (SISRUTE). The main obstacles identified included staff's lack of familiarity with digital platforms, the absence of clear Standard Operating Procedures (SOPs), and suboptimal implementation quality. The accumulation of these operational deficits leads to a high risk of fragmented care, which directly threatens patient safety on the front lines.

In addition to the problems identified at the primary care level, communication failures during transfers between healthcare facilities are another critical vulnerability indicator, particularly driven by the lack of standardized clinical data exchange formats. In this regard, Christian Susanto et al. (2023) evaluated the efficiency of SISRUTE use in the Emergency Department (ER) of a hospital in Yogyakarta. Test results showed a System Usability Scale (SUS) score of only 52.3, categorizing the system as "marginal." This low score reflects that the current digital interface is too rigid to facilitate the rapid and accurate exchange of clinical data in emergency situations, which can impact patient safety.

At a macro level, the root of this fragile clinical safety problem stems from systemic aspects. Dhamanti et al. (2022) emphasized that the culture of reporting patient safety incidents (PSI) in Indonesia remains relatively low. This stagnation is exacerbated by weak institutional policies, minimal health training programs, and the absence of constructive feedback from central authorities to regional health facilities. Clear evidence of this weak safety oversight is reflected in 2019 national data, which showed that only 12% of hospitals in Indonesia actively reported patient safety incidents to the central level.

Cosmetic interventions such as simply updating applications or issuing new circulars will not address the root of the problem. A radical paradigm reconstruction is needed, moving from Administrative Compliance to a Safety Culture. Health authorities must boldly shift the medical ecosystem toward a Just Culture—an environment that ensures the psychological safety of staff reporting, redefines digital systems to adapt to the speed of clinical thinking, and restores the referral system to its true nature as a life-saving bridge, not simply a cost-control tool.

3.2 Patient Insights as a Risk Detection Instrument

The urgency of implementing a patient perspective into healthcare design is firmly rooted in the philosophy of patient-centered care, a key framework mandated by the WHO (2021). Beyond simply measuring superficial patient satisfaction or formal complaint handling, the essence of patient insight encompasses individuals' empirical experiences when accessing the healthcare system. This reflects patients' in-depth understanding of their own clinical conditions and their concrete expectations regarding the quality of healthcare they receive.

However, implementing this philosophy in Indonesia still faces significant challenges. In a qualitative study published in the journal Heliyon, Listiowati et al. (2023) revealed that active patient participation in patient safety risk mitigation efforts remains very limited. Frontline healthcare practitioners identified a number of systemic structural barriers, such as excessively short consultations, gaps in patient education, and low levels of patient health literacy. These factors cumulatively hinder patients from taking on an active role in their healing process.

In the National Health Insurance (JKN) referral process, the urgency of patient involvement becomes even more crucial. Research conducted by Alfarizi et al. (2024) emphasized that the JKN-KIS referral network is a key pathway in the management of chronic and catastrophic diseases. Given that this group of long-term patients requires tightly coordinated care, their medical information needs are significantly more complex. Therefore, exploring authentic patient experiences can serve as a valuable diagnostic tool for detecting hidden operational vulnerabilities (friction points) within Indonesia's current health referral system.

The integration of patient perspectives into the JKN-KIS referral system is no longer merely an administrative complement to meet the WHO's patient-centered care principles, but rather an urgent need to detect operational vulnerabilities that remain unnoticed by management. While patient engagement is crucial—especially for those with chronic and catastrophic illnesses that require complex, long-term care coordination—the reality on the ground reveals significant structural barriers. Excessively short consultations, minimal education, and low health literacy (Listiowati et al., 2023) have cumulatively diminished patients' active role, transforming them into passive objects within the health system.

3.3 Patient Insight-Based Digital Innovation

Based on the dynamics of patient needs documented in various recent studies, digital transformation within the National Health Insurance (JKN) ecosystem has experienced significant acceleration. This effort centers on the use of the Integrated Referral Information System (SISRUTE), a leading digital platform designed to address communication gaps between levels of healthcare facilities in Indonesia. However, the implementation of this platform in the field still faces various complex challenges. In a systemic review of SISRUTE implementation in Indonesia, Riyanti (2023) identified that technical and structural constraints remain the main factors hindering progress, particularly the instability of internet network infrastructure in peripheral areas and the resistance of clinical staff to using new digital tools.

Despite these limitations, the system's effectiveness has proven crucial in crisis situations with high workloads. Pratiwi et al. (2023) evaluated the performance of SISRUTE during the COVID-19 pandemic at Semen Padang Hospital and found that the digital platform successfully accelerated referral times during critical periods of emergency case coordination. The case study confirms that SISRUTE has strong operational capacity to become a pillar of the national referral network, but with the caveat that the government must address user interface inefficiencies and system stability issues that frequently occur in the field.

Other empirical validation in the field also supports the urgency of this digital platform. In an analysis of SISRUTE utilization in the Infectious Diseases Emergency Department (IGD) at Dr. Sardjito General Hospital, Astiti et al. (2023) found a significant positive correlation between the intensity of digital platform use and the acuity of clinical coordination between medical units. To achieve more comprehensive integration, the SatuSehat platform, created by the Ministry of Health, presents a positive solution to the classic challenge of national health data interoperability (Ministry of Health of the Republic of Indonesia, 2023). By integrating previously fragmented Electronic Medical Records (ERDs) across various healthcare facilities, SatuSehat is designed to provide integrated, real-time access to clinical data for authorized medical personnel, ensuring continuity of care throughout the healthcare referral pathway.

The future of JKN referral integration cannot rest solely on the pride of data interconnection on paper. The Ministry of Health and the BPJS Kesehatan (Social Security Agency) must recognize that SatuSehat and SISRUTE are merely tools, not cures. If the government does not immediately improve system stability, simplify the clinical input flow in the emergency department, and expand digital infrastructure to remote areas, this digitalization will only widen the gap in service quality between large cities and their surrounding areas. A humanistic digital transformation must prioritize the ease of work of medical personnel and patient safety above the mere pursuit of administrative compliance.

3.4 Patient Feedback-Based Lean Healthcare Approach

Combining patient knowledge data with a Lean Healthcare approach, which focuses on eliminating non-value-added activities (waste) in operational workflow processes, has shown very promising results. A concrete example is a systematic review by Waiman et al. (2023) in the Indonesian Journal of Health Administration, which concluded that implementing Lean Six Sigma methods can significantly reduce patient waiting times in hospital outpatient settings. Various studies in the review documented a reduction in patient delay durations ranging from 25% to 50% after implementing the method.

The applicability of this approach is evident in optimizing the operations of healthcare facilities in Indonesia. In a study of Lean Management in the outpatient polyclinic at Jember Hospital, Hanesya et al. (2024) observed a massive increase in waiting time efficiency after implementing value stream mapping based on the patient's perspective. Speculating on bottlenecks, the team used these insights to initiate measurable interventions: standardizing patient registration protocols, adjusting doctor practice schedules, and implementing a digital queuing system to streamline patient service flow within healthcare facilities.

This review of continuous improvement based on patient feedback also successfully improved areas with high operational vulnerabilities, such as the pharmacy. Using a two-cycle action research design to address medication delays, Tohaga et al. (2025) found that Value Stream Mapping, systematically rooted in patient feedback, resulted in measurable and sustainable process improvements. These empirical findings, in turn, confirm a key conclusion: active engagement and integration of patient perspectives into workflow redesign are not merely complementary tools, but key factors in the success of Lean Healthcare at scale in Indonesian hospitals.

3.5 Challenges in Digital Inclusivity and Health Literacy

Despite the enormous potential offered by these digital platform instruments, the reality on the ground shows that unequal access and low digital literacy remain massive structural barriers, particularly outside of Indonesia's major cities. Unstable telecommunications infrastructure and widespread technological illiteracy threaten to lead to social exclusion for the most vulnerable group of JKN participants: individuals whose healthcare needs are highly dependent on the timeliness and quality of healthcare services.

This gap is starkly confirmed by data. An analysis of referral trends based on JKN claims data from 2017 to 2024 (Scholarhub UI, 2025) reveals a wide gap between regions and demographic clusters. Socioeconomic status and the patient's geographic proximity to healthcare facilities ultimately determine the effectiveness of their referral pathways. For populations in marginalized areas, these barriers are no longer merely administrative obstacles but a direct threat to their clinical safety.

Regarding this regional disparity, Riyanti (2023) emphasized that resistance and operational obstacles to adopting the SISRUTE system vary across regions. Health facilities located in digital white spots face a much more complex set of problems, ranging from fluctuating internet network connectivity to a lack of technical training for frontline healthcare workers. This disparity indicates that the implementation of a rigid and uniform national policy (one-size-fits-all) is no longer relevant; instead, Indonesia requires highly localized policy interventions (tailored interventions) segmented according to the specific infrastructure capacity of each region.

3.6 Policy Recommendations

Based on the synthesis of empirical evidence, this study formulates four core strategic policy interventions to reform and strengthen the BPJS Kesehatan referral system in Indonesia:

- **Patient Safety Incident Reporting System (IKP) Reform:** Reflecting the findings of Dhamanti et al. (2022), the government must transform passive data collection methods into a structured and meaningful feedback loop for healthcare facilities reporting patient safety incidents. To foster a productive and non-discriminatory reporting culture (just culture), policymakers must integrate patient safety indicator achievements into a performance-based incentive scheme and ensure strong legal protection for reporters.

- **SISRUTE Optimization and SatuSehat Integration Acceleration:** To address operational gaps identified by Christian Susanto et al. (2023) and Wahyudi et al. (2023), the SISRUTE platform requires a user-centered interface reconstruction. This technical step must be aligned with a national-scale training program and standardization of clinical workflows at all levels of healthcare facilities. In addition, the synchronization of SISRUTE into the SatuSehat ecosystem must be accelerated to ensure seamless long-term interoperability of national health data.

- **Institutionalization of Patient-Based Lean Healthcare Practices:** Based on the successful implementations described by Waiman et al. (2023) and Hanesya et al. (2024), the Ministry of Health needs to initiate a formal Lean Healthcare training program for hospital and community health center executives. This program is aimed at training management to convert real-world patient experience data into a key instrument for continuous improvement.

- **Implementation of a Segmented Digital and Health Literacy Campaign:** Applying a one-size-fits-all approach, literacy education must be tailored to the specific socio-economic and geographic characteristics of local communities using the National Health Insurance (JKN). Bridging this digital divide requires active partnerships with local governments and grassroots organizations to ensure that vulnerable groups remain included in the digitalization of the referral system.

4. CONCLUSION

The conclusions of this systematic review strongly support the argument that leveraging patient perspectives is a critical and key strategy for identifying, mitigating, and preventing safety blind spots in the National Health Insurance (JKN) referral network in Indonesia. The synthesis of the collected evidence demonstrates that system innovations are firmly rooted in patient experience, whether through the optimization of SISRUTE, the expansion of SatuSehat application integration, or the application of Lean Healthcare principles. These instruments have the operational capacity to drive significant and measurable improvements in both time efficiency and safety of the national referral workflow of healthcare facilities in Indonesia.

On the other hand, the collected data provides a critical reflection that the achievements of this digital innovation will not be evenly distributed without integrated efforts to address digital inequality. If this phenomenon is ignored, the wide divide in digital literacy and infrastructure will continue to marginalize rural communities and vulnerable groups who actually need these services most. Therefore, transforming the health referral process in Indonesia into a transparent, responsive, and patient-centered ecosystem requires a consistent, long-term commitment from all relevant stakeholders.

Looking ahead, studies in this area need to move beyond a purely descriptive approach. Future research should apply experimental design principles or randomized controlled trials (RCTs) to isolate and validly measure the impact of these patient-centered interventions. Such evaluations are crucial for discerning the intervention's true impact on patient safety indicators across Indonesia's highly heterogeneous regions.

REFERENCES

Alfarizi, M., et al. (2024). Referral healthcare services and efficiency of Indonesian health insurance on patient satisfaction and life quality. Jurnal Jaminan Kesehatan Nasional, 4(2). https://jurnal-jkn.bpjs-kesehatan.go.id/index.php/jjkn/article/view/278

Astiti, N. K. A., Kusumawati, H. I., & Sutono. (2023). Analisis data sistem rujukan terintegrasi (SISRUTE) di instalasi gawat darurat (IGD) infeksi RSUP Dr. Sardjito [Data analysis of integrated referral information system (SISRUTE) in the infectious disease emergency department of Dr. Sardjito General Hospital]. Jurnal Manajemen Pelayanan Kesehatan, 26(1). https://doi.org/10.22146/jmpk.v26i1.7008

Christian Susanto, P. B. A., Kusumawati, H. I., & Aulawi, K. (2023). Evaluasi usability sistem rujukan terintegrasi (SISRUTE) di IGD rumah sakit Daerah Istimewa Yogyakarta [Usability evaluation of integrated referral information system (SISRUTE) in hospital emergency departments within the Special Region of Yogyakarta]. Jurnal Manajemen Pelayanan Kesehatan, 26(1). https://doi.org/10.22146/jmpk.v26i1.7019

Dhamanti, I., Leggat, S., Barraclough, S., & Rachman, T. (2022). Factors contributing to under-reporting of patient safety incidents in Indonesia: Leaders' perspectives. F1000Research, 10, 367. https://doi.org/10.12688/f1000research.51912.2

Hanesya, N. A. M. H., Bumi, C., & Prihatini, D. (2024). Application of lean management methods to the waiting time efficiency of outpatient services at Jember Hospital Clinic. Journal of Health Policy and Management, 9(2), 211-223. https://doi.org/10.26911/thejhpm.2024.09.02.07

Listiowati, E., Sjaaf, A. C., Achadi, A., Bachtiar, A., Arini, M., Rosa, E. M., & Pramayanti, Y. (2023). How to engage patients in achieving patient safety: A qualitative study from healthcare professionals' perspective. Heliyon, 9(2), e13447. https://doi.org/10.1016/j.heliyon.2023.e13447

Minister of Health of the Republic of Indonesia Regulation Number 001 of 2012 concerning the Referral System for Individual Health Services [Peraturan Menteri Kesehatan Republik Indonesia Nomor 001 Tahun 2012 tentang Sistem Rujukan Pelayanan Kesehatan Perorangan]. (2012). Jakarta: Kemenkes RI. https://peraturan.bpk.go.id/Details/110060

Ministry of Health of the Republic of Indonesia [Kementerian Kesehatan Republik Indonesia]. (2023). Roadmap transformasi digital kesehatan Indonesia 2023-2027: Menuju ekosistem kesehatan yang terintegrasi dan responsif [Roadmap for Indonesia's digital health transformation 2023-2027: Toward an integrated and responsive health ecosystem]. Jakarta: Kemenkes RI. https://e-renggar.kemkes.go.id

Pratiwi, Ilyas, J., & Darmawan, E. S. (2023). Analisis efektivitas sistem informasi rujukan terintegrasi (SISRUTE) dalam kasus Covid-19 di Semen Padang Hospital [Effectiveness analysis of integrated referral information system (SISRUTE) in Covid-19 cases at Semen Padang Hospital]. Media Publikasi Promosi Kesehatan Indonesia (MPPKI), 6(2), 321-335.

Presidential Regulation of the Republic of Indonesia Number 82 of 2018 concerning Health Insurance [Peraturan Presiden Republik Indonesia Nomor 82 Tahun 2018 tentang Jaminan Kesehatan]. (2018). Jakarta: Sekretariat Negara RI.

Rahmadani, S., Darwis, A. M., Hamka, N. A., HR, A. P., & Al Fajrin, M. (2021). Analisis penggunaan sistem rujukan terintegrasi (SISRUTE) di puskesmas kota Makassar [Analysis of integrated referral information system (SISRUTE) utilization in Makassar City community health centers]. Jurnal Manajemen Kesehatan Yayasan RS. Dr. Soetomo, 7(2), 321.

Riyanti, Y. (2023). Kendala implementasi sistem rujukan terintegrasi (SISRUTE) di Indonesia [Implementation barriers of integrated referral information system (SISRUTE) in Indonesia]. Jurnal Ilmu Kedokteran dan Kesehatan Indonesia, 3(2), 162-173.

Scholarhub UI. (2025). Referral patterns from primary care to referral care by ICD-10 codes in Indonesia: Cross-sectional analysis of national claims data (2017-2024). Indonesian Health Policy and Administration, 11(2).

Tohaga, E., Arini, M., & Widiatmoko, D. (2025). Effectiveness of lean management to reduce waiting time for medicines at hospital outpatient pharmacy. JMMR (Jurnal Medicoeticolegal dan Manajemen Rumah Sakit).

Wahyudi, E. S., Arso, S. P., & Wigati, P. A. (2023). Dinamika penggunaan sistem rujukan terintegrasi (SISRUTE) di puskesmas kota Tangerang Selatan [Dynamics of integrated referral information system (SISRUTE) utilization in South Tangerang City community health centers]. Jurnal Manajemen Kesehatan Indonesia, 11(2), 155-165.

Waiman, E., Achadi, A., & Agustina, R. (2023). Reducing hospital outpatient waiting time using lean six sigma: A systematic review. Indonesian Journal of Health Administration (Jurnal Administrasi Kesehatan Indonesia), 11(1).

World Health Organization. (2021). Global patient safety action plan 2021-2030: Towards eliminating avoidable harm in health care. Geneva: WHO.