



Analysis Of The Effectiveness Of Outpatient Registration In Supporting The Achievement Of Minimum Service Standards At Bandung City Regional Public Hospital

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Abstract

Outpatient services are among the healthcare services with high activity levels; therefore, the effectiveness of registration and medical record provision plays an important role in supporting the achievement of Minimum Service Standards (SPM). This study aimed to analyze the effectiveness of outpatient registration based on a comparison of medical record provision time in March, April, and May 2026 at Bandung City Regional Public Hospital. The study used an embedded mixed methods design, with a qualitative approach as the primary method and a quantitative approach as supporting data. Quantitative data included registration time, retrieval time for existing medical records, delivery time of medical records to the destination clinic, total provision time, and clinic. The sample was selected using a total sampling technique, consisting of 300 records, with 100 records from each month. Qualitative data were obtained through interviews, observations, and documentation. Descriptive analysis was conducted by comparing medical record provision time across months. The results showed variations in medical record provision time during the study period. These findings can serve as a basis for evaluating and improving the effectiveness of registration and medical record provision to support the achievement of SPM.

Keywords: Outpatient Registration, Minimum Service Standards, Medical Records, Provision Time, Effectiveness

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1. Introduction

Outpatient services constitute a high-volume service unit and are also the first point of contact between patients and the healthcare delivery system. When patient arrivals are massive and poorly distributed, congestion may occur in the registration area, resulting in longer waiting times and decreased patient satisfaction (Subagja & Rosyidah, 2023). This condition indicates that the effectiveness of the registration process is an important aspect in supporting the smooth delivery of outpatient services and the achievement of Minimum Service Standards (SPM). The development of information technology in healthcare services has also driven changes in patient registration processes. The World Health Organization (2021) emphasizes that the digitalization of health services is a strategy to improve effectiveness, efficiency, and equitable access to services. In Indonesia, the implementation of Hospital Management Information Systems (SIMRS) has encouraged hospitals to adopt information technology in service delivery (Widya Primadhani et al., 2023).

One application is app-based online registration. This system allows patients to register, select a clinic and schedule, and obtain an electronic queue number before arriving at the hospital, thereby enabling patient arrivals to be distributed in a more planned manner (Anindya, 2026). The implementation of patient registration information systems also requires adequate socialization, user training, and resource readiness to ensure optimal utilization (Yunengsih & Gesta, 2025). In practice, registration effectiveness should be assessed not only from the use of the system but also from its ability to support service continuity and the achievement of SPM, particularly compliance with outpatient waiting-time standards. Therefore, analyzing the effectiveness of outpatient registration in relation to SPM achievement is important to determine the extent to which the registration process supports compliance with service standards at Bandung City Regional Public Hospital. The hospital has implemented online registration since 2023 through three platforms: Mobile JKN, Pangestu, and Transmedic. Mobile JKN is used for BPJS Health patients, while Pangestu and Transmedic are used in other patient registration processes. The implementation of online registration is part of the hospital's effort to manage patient arrivals and support a smooth outpatient service process.

However, its implementation still encounters various technical and non-technical obstacles that may affect service effectiveness. Technical constraints include network disruptions, delays in BPJS verification, limited clinic quotas, membership data errors, and system downtime. Non-technical constraints include low digital literacy among elderly patients, uneven socialization, and non-compliance by some patients with registration schedules. These conditions demonstrate that successful registration is determined not only by system availability but also by user readiness and supporting service conditions. Based on medical record provision data for March-May 2026, 300 sample records were available, consisting of 100 records in March, 100 in April, and 100 in May. These data were used to compare registration time, retrieval time for existing medical records, delivery time of medical records to the destination clinic, and total provision time in supporting the





achievement of SPM. Nevertheless, high system utilization does not directly indicate that all patients receive services in accordance with waiting-time standards. Therefore, analysis of registration time, retrieval time for existing medical records, medical record delivery time, and total provision time is required to determine SPM achievement while assessing the effectiveness of outpatient registration in supporting service delivery. Based on this rationale, this study aimed to analyze the effectiveness of outpatient registration in supporting the achievement of Minimum Service Standards at Bandung City Regional Public Hospital, identify barriers affecting registration implementation, and evaluate the achievement of outpatient waiting-time SPM during March-May 2026.

2. Research Methods

This study employed an embedded mixed methods design, with a qualitative approach as the primary method and quantitative data as supporting evidence (Kusumawati et al., 2026). The study was conducted at the Outpatient Installation of Bandung City Regional Public Hospital from March to May 2026. Qualitative data were collected through semi-structured in-depth interviews, structured observation, and documentation review. Six informants were purposively selected based on their direct involvement and experience in outpatient registration and service processes, consisting of outpatient registration officers, medical record officers, outpatient administrative officers, and active patient users, including elderly patients.

Quantitative data consisted of 300 medical record provision records collected using total sampling, comprising 100 records from each month. The variables included registration time, retrieval time of existing medical records, delivery time to the destination clinic, total provision time, and clinic. Qualitative data were analyzed thematically through coding, categorization, and theme development (Naeem et al., 2023; Sitasari, 2022), while quantitative data were analyzed using descriptive statistics to assess waiting times and Minimum Service Standard (SPM) achievement. Data validity was established through source and method triangulation, while integration was performed through confirmatory triangulation, in which qualitative findings were verified through observation and supported by quantitative waiting-time data.

3. Results and Discussion

a. Results

Table 1. Distribution of Medical Record Provision Data by Month, March-May 2026

Month	Number of Records	Percentage (%)
March 2026	100	33.33
April 2026	100	33.33
May 2026	100	33.33
Total	300	100.00

Based on the research data for March-May 2026, 300 medical record provision data points were obtained and used as the study sample. These consisted of 100 records in March 2026, 100 in April 2026, and 100 in May 2026. Total sampling was applied so that all available data were included in the analysis. The research data covered registration





time, retrieval time for existing medical records, delivery time to the destination clinic, total provision time, and clinic. The data were subsequently analyzed descriptively by comparing the results for each month to describe implementation of the Minimum Service Standards (SPM) during the study period.

Table 2. Recapitulation of Outpatient Medical Record Provision Time by Month, March-May 2026

Month	Number of Data (n)	Total Provision Time (minutes)	Average Provision Time (minutes/data)
March 2026	100	234.23	2.3423
April 2026	100	230.75	2.3075
May 2026	100	219.74	2.1974
Total	300	684.72	2.2824

As shown in Table 3, the average medical record provision time decreased from March to May 2026. The average provision time was 2.3423 minutes per record in March, 2.3075 minutes per record in April, and 2.1974 minutes per record in May. This decline indicates that medical record provision time during the study period was relatively short. These provision-time data were used to compare implementation of the Minimum Service Standards (SPM) for each month during the study period.

Table 3. Distribution of Medical Record Provision Time by Time Interval, March-May 2026 (n=300)

Provision Time Interval	N	%	SPM Status
<60 minutes	300	100.0	Meets SPM
>60 minutes	0	0.0	Does Not Meet SPM
Total	300	100.0	-

All 300 analyzed records were within the SPM limit of ≤ 60 minutes. This indicates that, from the perspective of medical record provision time, SPM achievement during the study period was fulfilled.

Table 4. Qualitative Findings on the Effectiveness of Outpatient Registration

Theme	Main Finding	Data Source	Relevance
System Implementation	The system operates according to SOP: online registration -> select clinic/schedule -> queue number -> APM check-in -> service.	I-1, I-2, I-3; observation; SOP	Supports process continuity and orderly patient arrivals.
Distribution of Patient Arrivals	Patient arrivals are more orderly and predictable.	I-1, I-3, I-4a-c; waiting-time data	Helps reduce counter congestion and supports achievement of service waiting-time targets.
Technical Barriers	Network disruptions, delayed BPJS verification, rapidly filled clinic quotas, membership data errors, and system downtime were identified.	I-1, I-2, I-3; observation	Technical barriers may obstruct registration and affect patient waiting time.
Non-Technical Barriers	Low digital literacy among some elderly patients and uneven socialization.	I-1, I-3, I-4c; observation	User-related barriers may reduce registration effectiveness.





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SPM Achievement	All 300 records (100.0%) had medical record provision times within 0-60 minutes and the SPM limit of ≤ 60 minutes; no record exceeded the limit.	I-2, I-3; medical record provision-time data	The analyzed provision times for March-May 2026 were within the SPM limit used in the study.
Registration Evaluation	Evaluation is conducted monthly by management and IT teams. Identified problems are followed up, but evaluation documentation has not been standardized.	I-2, I-3; documentation	Periodic evaluation supports system improvement, but more structured documentation is required.

The qualitative findings showed that the implementation of the outpatient registration system was generally clear and orderly, with patients registering through the application able to scan the barcode at the APM upon arrival without queuing again at the registration counter. Online registration was also perceived to reduce congestion and provide greater convenience by allowing patients to obtain queue numbers before arriving at the hospital. One patient stated, *"I no longer need to arrive very early just to obtain a queue number. I can simply register from home and then come according to the schedule"* (I-4b). However, technical barriers were still encountered, particularly unstable network connections and delays in BPJS verification, which could interrupt the registration process (I-2). Non-technical barriers were mainly experienced by elderly patients who had difficulty operating the application and required assistance from staff or family members, as reflected in the statement, *"The difficulty is among elderly patients; they are confused about how to open the application and often ask us or their family members for help"* (I-1). System evaluation was conducted monthly with the IT team, although formal written documentation was not consistently prepared (I-3). In terms of service performance, informants perceived an improvement in the distribution of patient arrivals at the registration counter, although long queues remained at certain clinics (I-3).

b. Discussion

Effectiveness of Outpatient Registration in Achieving SPM

Outpatient registration at Bandung City Regional Public Hospital uses online systems through Mobile JKN, Pangestu, and Transmedic. Based on research data for March-May 2026, 300 medical record provision data points were analyzed using total sampling, consisting of 100 records in March, 100 in April, and 100 in May 2026. The analyzed data included registration time, retrieval time for existing medical records, delivery time to the destination clinic, and total provision time. The analysis showed that total provision time in March was 234.23 minutes, with an average of 2.3423 minutes per record; in April it was 230.75 minutes, with an average of 2.3075 minutes per record; and in May it was 219.74 minutes, with an average of 2.1974 minutes per record.

The comparison indicates a decrease in average medical record provision time from March to May 2026. Based on the analyzed data, all provision times were within a range supporting the SPM limit used in the study. This finding indicates that registration and medical record provision processes during the study period were completed within relatively





short periods. It also shows that online registration supported orderly service flow during the study period. This finding is consistent with Latipah et al. (2021), who reported that implementation of electronic systems can support improved effectiveness of outpatient services. In the present study, registration effectiveness was reflected in the ability of the online system to help organize patient arrivals and reduce congestion at registration counters.

The findings are also consistent with Safira and Fitriyani (2024), who showed that online registration systems have a positive impact on the efficiency and convenience of patient registration. However, their study also emphasized the importance of system reliability and information availability in supporting continued use of online registration.

Effectiveness can further be assessed through achievement of the SPM for medical record provision time. Of the 300 analyzed records, all were within the 0-60-minute interval and therefore met the SPM limit of ≤ 60 minutes. Overall, these results indicate that medical record provision time during the study period met the standard used in this study. The finding is consistent with Denyka Kurniawati et al. (2021), who showed that implementation of online registration applications can support outpatient services, particularly by reducing patient waiting time. Arranging the registration process before patients arrive at the hospital can help make service flows more organized and support service efficiency.

Factors Affecting Registration Effectiveness and SPM Achievement

Interview and observation findings indicate that registration effectiveness continues to be influenced by technical and non-technical barriers. Technical barriers include network disruptions, delays in BPJS verification, system downtime, membership data errors, and limited clinic quotas. These barriers can obstruct the registration process and cause service delays.

These findings are consistent with Arnita and Yuyun Yunengsih (2024), who showed that online registration applications in outpatient services can facilitate patient access and reduce staff workload. However, implementation still faces barriers, particularly among elderly patients who experience difficulty using applications, uneven socialization, and non-compliance with reservation schedules. This condition indicates that registration effectiveness is determined not only by the system used but also by patients' readiness to use the system and their compliance with established schedules.

The findings are also consistent with Suhena et al. (2024), who reported that implementation of online queues through the Mobile JKN application in outpatient services still encounters barriers related to community understanding of digital devices and insufficient socialization. These conditions indicate that patient readiness and understanding are important factors in supporting the effectiveness of online registration.

Implications for Service Improvement

Based on the study findings, service improvement is related not only to the registration process but also to the medical record provision process. The research data show that all 300 records had provision times within the 0-60-minute interval and were therefore within the





SPM limit of ≤ 60 minutes. Nevertheless, evaluation of each stage remains necessary, including registration time, retrieval time for existing medical records, and delivery time of medical records to the destination clinic. Such evaluation is important to maintain the timeliness of medical record provision and continuously improve outpatient service effectiveness.

This condition requires attention because waiting time is one of the indicators of minimum service standards for outpatient care. Wijayanti and Rejeki (2024) explain that the outpatient waiting-time standard is less than 60 minutes and identified an association between waiting time and patient satisfaction. Evaluation of the service process is therefore needed to improve SPM achievement.

Accordingly, improving registration effectiveness should be accompanied by strengthening infrastructure, optimizing clinic service capacity, increasing patient socialization, and conducting periodic system evaluations. These efforts are needed so that the existing registration process can more consistently support achievement of the outpatient waiting-time SPM.

These improvement efforts are consistent with Tami and Jaka Sarwadamana (2021), who showed that online registration is one strategy for improving the quality of outpatient services. However, implementation of online registration still needs to be accompanied by evaluation of its operation and patient experience so that the benefits of the system can be obtained optimally.

4. Conclusion

Based on the study findings, outpatient registration and medical record provision processes at Bandung City Regional Public Hospital during March-May 2026 produced results that supported the achievement of Minimum Service Standards (SPM). The analysis included 300 records using total sampling, with 100 records from each month. Total medical record provision time in March 2026 was 234.23 minutes, with an average of 2.3423 minutes per record; in April 2026 it was 230.75 minutes, with an average of 2.3075 minutes per record; and in May 2026 it was 219.74 minutes, with an average of 2.1974 minutes per record. Overall, total provision time during the study period was 684.72 minutes, with an average of 2.2824 minutes per record. Based on the analyzed distribution of provision times, all records were within the 0-60-minute interval and therefore within the SPM limit of ≤ 60 minutes. These results indicate that medical record provision during the study period met the SPM time limit used in this study. Based on these findings, service improvement efforts should be directed toward maintaining consistency in registration time, retrieval time for existing medical records, and delivery time of medical records to the destination clinic. Periodic evaluation of each stage of service is required to maintain SPM achievement and improve the effectiveness of outpatient services.





5. Compliance with Ethical Standards

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Disclosure of Conflict of Interest

The source manuscript does not report any conflict of interest.

Statement of Informed Consent

All interviews were conducted with the consent of the informants, as stated in the source manuscript.

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