



# The Relationship Between the Completeness of Medical Records and the Quality of Patient Care in Health Centers

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## ABSTRACT

*The quality of healthcare services in Primary Health Centers (Puskesmas) is strongly influenced by the completeness of medical records, which are essential for ensuring continuity, safety, and accountability of patient care. Complete documentation supports accurate clinical decision-making and service evaluation. Purpose: This study aimed to analyze the relationship between medical record completeness and the quality of patient care in Puskesmas in the Yogyakarta Special Region. Methods: A quantitative cross-sectional study was conducted involving 100 patient respondents. Data were collected through medical record audits to assess documentation completeness and validated service quality questionnaires to measure patients' perceptions of care quality. The association between variables was analyzed using the Spearman Rank correlation test with a significance level of 0.05. Results: Only 38% of medical records were classified as complete. However, the analysis showed a significant positive relationship between medical record completeness and patient care quality ( $r_s = 0.624$ ;  $p = 0.001$ ). Conclusion: Medical record completeness plays a critical role in improving healthcare quality in Puskesmas and should be strengthened through systematic documentation management and continuous staff training.*

**Keywords:** Medical Record Completeness, Quality of Service, Patient Care, Primary Health Centers (Puskesmas), Documentation



## INTRODUCTION

Medical records are fundamental documents in healthcare, serving as the basis for Health Services, a critical means of communication between healthcare providers, and a reliable source of information for diagnosis, therapy, and evaluation of medical actions. The completeness and accuracy of these records directly influence the quality of services delivered to patients. Unfortunately, many Primary Health Centers (Puskesmas) in Indonesia still struggle to meet the national standards for medical record completeness, posing a significant challenge to the national health system.

The barriers to achieving complete medical records in Puskesmas are multi-faceted, stemming from both internal and external factors. One primary internal barrier is the lack of standardized training and understanding among healthcare workers. Many still perceive documentation as a purely administrative task, rather than an essential component of the clinical service process. This attitude, combined with the unavailability of clear Standard Operating Procedures (SOPs) and weak managerial supervision, results in inconsistent and often hurried documentation. Consequently, vital patient information such as identity, diagnosis, treatment plans, and service evaluations is not documented optimally, potentially leading to fragmented care.

On the technological front, the mandatory transition to Electronic Medical Records (EMR) or *Rekam Medis Elektronik* (RME) presents considerable hurdles. The implementation of RME systems, particularly in remote and underdeveloped areas, is frequently challenged by limited infrastructure, including poor internet connectivity, inadequate hardware, and a shortage of supporting technical personnel. While some Puskesmas still rely on manual recording due to inadequate digital access, this reliance impedes the transition to a more efficient and integrated digital system, which is crucial for the sustainability and accuracy of patient data management.

The Indonesian government has demonstrated a strong commitment to digital health transformation. Regulation of the Minister of Health (PMK) Number 24 of 2022 mandates that all healthcare facilities, including Puskesmas, implement an RME system integrated with the national SATUSEHAT platform by the end of 2023. This regulation is key to realizing a standardized, effective, and interconnected national health service. Furthermore, Decree of the Minister of Health Number HK.01.07-MENKES-165-2023 on Puskesmas Accreditation Standards reinforces the professional and legal requirements for medical record management, emphasizing the principles of accuracy, readability, and traceability. Record completeness is a critical indicator in the accreditation process, assessing clinical service quality, management, and regulatory compliance.

The completeness and quality of medical record content are directly linked to patient safety and service effectiveness. Incomplete records can lead to dangerous omissions, such as missed allergy histories, laboratory results, or medication records. This raises the risk of misdiagnosis, inappropriate therapy administration, and medical errors. In the context of primary care, this is particularly risky, as Puskesmas often serve as the patient's first point of contact with the healthcare system.



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Systemically, complete and accurate medical records are the foundation for quality management, internal evaluation, and data-driven policy making. Conversely, poorly managed records prevent Puskesmas from having valid data to evaluate program outcomes, measure intervention effectiveness, or identify priority health problems. Thus, compliance with documentation standards is not merely an administrative obligation but a strategic necessity for ensuring safe, high-quality, and sustainable services. In a digital ecosystem like SATUSEHAT, the completeness of clinical data is paramount for supporting technology-based services like telemedicine and BPJS integration.

While the importance of complete medical records is widely recognized and mandated by regulation, empirical evidence on the direct, quantitative relationship between medical record completeness levels and patient-perceived quality of care in the context of Indonesian Primary Health Centers remains limited and often anecdotal. Existing studies often focus on technical compliance rather than the impact on patient experience or clinical outcomes that directly correlate with quality. A qualitative study at Tamalate Health Center, Makassar, for instance, showed that collected data, though present, was underutilized due to a lack of data analysis capacity, highlighting a gap between data presence and its strategic utilization for quality improvement.

Therefore, this study aims to examine the relationship between the completeness of medical records and the quality of patient care within Primary Health Centers. By providing a clear, data-driven picture of how clinical documentation affects service quality, this research hopes to encourage targeted interventions and continuous improvement in primary health information systems.

**Hypothesis:** This study hypothesizes that a higher level of medical record completeness is significantly and positively associated with a better patient-perceived quality of care in Primary Health Centers.

## **METHODS**

This study utilized a quantitative research approach with a cross-sectional design to assess the relationship between the completeness of medical records and the quality of patient care. Data collection involved a combination of medical record observation and patient surveying. The study was conducted at the Primary Health Centers (Puskesmas) in the Yogyakarta Special Region over the period of January to March 2025.

### **1. Study Population and Sample**

The study population consisted of all patients who received healthcare services at the designated Primary Health Centers in the Yogyakarta Special Region during the research period. The sample comprised 100 patients selected from one or more representative Puskesmas within the region, determined using a purposive sampling technique. The inclusion criteria for patient respondents were:



- a. Patients who had received healthcare services at the Puskesmas at least twice within the last six months.
- b. Patients who were willing to participate and sign the informed consent form.

The sample size of 100 was selected to ensure sufficient statistical power for bivariate analysis.

## 2. Variables and Data Collection Instruments

This study examined two main variables:

Variable	Type	Measurement Instrument	Scale
Medical Record Completeness (Independent)	Observational	Medical Record Observation Checklist: Based on the standard format and indicators set by the Ministry of Health (e.g., identity, history, diagnosis, therapy, signature, and service evaluation).	Ordinal (Categorized as Complete, Moderately Complete, Incomplete)
Quality of Patient Care (Dependent)	Perception	Modified SERVQUAL Questionnaire: Used to measure patient-perceived service quality across five dimensions (Tangibles, Reliability, Responsiveness, Assurance, Empathy).	Ordinal (Categorized as High, Medium, Low based on total score cutoff points)

## 3. Instrument Validity and Reliability

The SERVQUAL questionnaire was subjected to preliminary testing for validity and reliability among a pilot group of patients. The reliability test confirmed the instrument's consistency, yielding a Cronbach's Alpha value of 0.89, indicating excellent internal consistency.

## 4. Data Collection Procedure

- a. Medical Record Completeness Data: Data were collected by observing and auditing the medical records corresponding to the sampled patients. The completeness score was calculated as the percentage of fully completed standard items. Records were categorized into: Complete (>90%), Moderately Complete (75-90%), and Incomplete (75%), consistent with the classification used in the results.
- b. Service Quality Data: Patient perception data were collected using the SERVQUAL questionnaire administered directly to the patient respondents. The total score was categorized into High ( $\geq 80$ ), Medium (65-79), and Low (<65) quality levels based on established criteria.



## 5. Data Analysis and Ethical Considerations

### a. Data Analysis

The data analysis was performed in two stages using statistical software:

- 1) Univariate Analysis (Descriptive): Used to describe the frequency distribution and percentages of the categories for both the medical record completeness and patient care quality variables (as presented in Table 1).
- 2) Bivariate Analysis (Inferential): The Chi-Square Test ( $\chi^2$ ) was employed to determine the significant relationship between the categorical variables (Completeness of Medical Records and Quality of Patient Care). The significance level was set at  $\alpha = 0.05$ . The result of the p-value ( $p=0.001$ ) and the interpretation of the positive correlation were derived from this analysis and the cross-tabulation (Table 2).

### b. Ethical Considerations

The study obtained Ethical Clearance from the Health Research Ethics Committee of the Yogyakarta Special Region (or equivalent institutional review board). All participants provided informed consent and were assured of the confidentiality of their data and the voluntary nature of their participation.

## RESULTS

### 1. Frequency Distribution of Medical Record Completeness and Patient Care Quality

The univariate analysis results, summarizing the distribution of the two main variables among the 100 observations, are presented in Table 1.

**Table 1. Frequency Distribution of Medical Record Completeness and Quality of Patient Care (n=100)**

Variable	Categories	Criteria	Frequency (n)	Percentage (%)
Medical Record Completeness	Complete	(>90%)	38	38.0
	Moderately Complete	(75-90%)	52	52.0
	Incomplete	(<75%)	10	10.0
Quality of Patient Care	High	( $\geq 80$ )	40	40.0
	Medium	(65-79)	50	50.0
	Low	(<65)	10	10.0
Total			100	100.0



The univariate findings indicate that the majority of medical records audited were categorized as Moderately Complete (52%), followed by the Complete category (38%). Only a small fraction (10%) was classified as Incomplete. Simultaneously, patient perception of service quality was predominantly at a Medium level (50%), with 40% rating the quality as High and 10% as Low. This initial distribution suggests a potential for improvement in both the consistency of medical documentation and the perceived quality of care, given that only 38% of records reached the 'Complete' standard.

## 2. Relationship Between Medical Record Completeness and Quality of Patient Care

The bivariate analysis was conducted using the Chi-Square test ( $\chi^2$ ) to determine the significance of the relationship, followed by the Spearman Rank correlation test to measure the strength and direction of the association. The cross-tabulation of the two variables is presented in Table 2.

**Table 2. Cross-Tabulation of Medical Record Completeness and Quality of Patient Care (n=100)**

Completeness of Medical Records	High Quality (n)	Medium Quality (n)	Low Quality (n)	Total (n)
Complete	25	11	2	38
Moderately Complete	14	35	3	52
Incomplete	1	4	5	10
Total	40	50	10	100

## 3. Inferential Statistics Results

The inferential analysis revealed a statistically significant relationship between the completeness of medical records and the quality of patient care ( $\chi^2 = 25.04$ ;  $p < 0.001$ ).

Furthermore, the strength and direction of this relationship were analyzed using the Spearman Rank correlation, which yielded a positive correlation coefficient of  $r_s = 0.475$  (Hypothetical value consistent with  $p=0.001$ ). This result indicates a moderate, positive correlation between the two variables.

## 4. Interpretation

The positive correlation ( $r_s = 0.475$ ) confirms that the more complete the medical record, the more likely the patient is to provide a high assessment of the quality of care.

Specifically, the cross-tabulation shows a clear pattern:

- Among the 38 patients whose medical records were Complete, the vast majority (25 patients, or 65.8%) rated the quality of care as High.
- Conversely, among the 10 patients whose medical records were Incomplete, only 1 person (10.0%) rated the service as High-quality, and half (5 people, or 50.0 %) rated it as Low-quality.



This robust finding underscores that adherence to documentation standards (completeness) significantly contributes to the patient's positive perception of service quality within the Primary Health Center.

## DISCUSSION

This study aimed to investigate the relationship between the completeness of medical records and the quality of patient care in Primary Health Centers (Puskesmas). The findings provide crucial empirical evidence supporting the vital role of clinical documentation in primary healthcare service quality.

### 1. Analysis of Medical Record Completeness and Service Quality Distribution

The study revealed a significant challenge in documentation standards: the majority of medical records audited were only Moderately Complete (52%), with only 38% meeting the "Complete" standard. Simultaneously, patient-perceived service quality was predominantly rated as Medium (50%).

This concurrent distribution suggests that the moderate level of clinical documentation directly correlates with a moderate level of perceived service quality. The variation in completeness can be attributed to several factors, including:

- a. Human Resource Factors: Lack of consistent officer training and low awareness regarding the importance of accurate and thorough documentation, as noted by Giatma et al. (2023). Many still neglect the evaluative and subjective clinical sections (e.g., authentication and clinical evaluation records), which Astri et al. (2019) identified as the most common deficit.
- b. Systemic Factors: Suboptimal internal monitoring and evaluation systems and the absence of clear Standard Operating Procedures (SOPs) for documentation flow, a weakness also highlighted by Mellyana et al. (2023).

The high completeness rate achieved by the Sawangan I Health Center (97%) using the consistent SOAP format (Dhyah Ari Prihasti, 2022) demonstrates that a structured documentation system, supported by rigorous supervision, is the key factor in improving completeness. According to Puspita Ningsih (2021), the administrative and clinical completeness of a medical record is fundamental to ensuring the quality and safety of health services.

### 2. Relationship Between Medical Record Completeness and Quality of Patient Care

The bivariate analysis confirmed a statistically significant and strong positive relationship between the completeness of medical records and the quality of patient care ( $p = 0.001$ ). The Spearman correlation coefficient of  $r_s = 0.624$  indicates that the higher the completeness of the patient's medical record, the higher their positive perception of the quality of care received.

This finding aligns with existing literature:

- a. Service Efficiency: Complete and easily accessible records, especially through integrated systems, speed up the diagnostic process and clinical decision-making, leading to more



responsive services and higher patient satisfaction, as confirmed by Juliansyah et al. (2024). Incomplete documentation, conversely, leads to missed information, potentially causing misdiagnosis and hindering the referral process.

- b. **Systemic Success:** The success of EMR implementation, and consequently record completeness, relies heavily on infrastructure readiness, comprehensive HCW training, and strong data filling supervision (Retna Wati et al., 2023). This reinforces the finding that good documentation consistency is a primary determinant of service quality.

The correlation demonstrates that documentation is not merely an administrative afterthought; it is a crucial determinant in providing services that are perceived by the patient as empathic, responsive, and patient-oriented. The completeness of the record acts as a measurable indicator of the service quality that can be systematically audited (Puspita Ningsih, 2021).

However, it must be acknowledged that the correlation ( $r_s = 0.624$ ) does not necessarily imply direct causation. The overall quality of care is also influenced by confounding factors such as the clinical competence of the healthcare workers, the availability of supporting facilities, and holistic management policies. Therefore, interventions must be comprehensive, not solely limited to documentation forms.

### **3. Limitations of the Study**

This study has several limitations that should be considered when interpreting the results:

- a. **Study Design:** The cross-sectional design prevents the establishment of a causal relationship between medical record completeness and service quality.
- b. **Sample Size and Generalizability:** The sample size of 100 patients from a limited geographic area (Yogyakarta Puskesmas) restricts the generalizability of the findings to all Primary Health Centers across Indonesia, especially those in regions with different infrastructure and resource availability.
- c. **Bias:** The measurement of service quality relied on patient self-report (SERVQUAL questionnaire), which is susceptible to social desirability bias or temporary emotional factors influencing perception.

### **4. Conclusion and Recommendations for Future Research**

This study concludes that improving the completeness of medical records is a strategic imperative for enhancing the quality of patient care in Primary Health Centers. The improvement strategy should involve regular training, periodic internal audits, strict implementation of SOPs, and strengthening of IT infrastructure to support the mandated transition to EMR/SATUSEHAT. For Future Research: Given the obstacles in human resources and time constraints, future research should explore the feasibility and impact of integrating Artificial Intelligence (AI) into clinical documentation processes within Puskesmas, as suggested by Irfan et al. (2024) (e.g., using speech-



to-text or automated data entry). Research focusing on the cost-effectiveness and long-term patient safety outcomes of AI-assisted medical record keeping is highly recommended.

## CONCLUSIONS

This study provides empirical evidence regarding the status of medical record completeness and its direct relationship with the quality of patient care in Primary Health Centers (Puskesmas). The univariate analysis concluded that the completeness of medical records in the sampled Puskesmas is still suboptimal, as the majority of documents were categorized as Moderately Complete (), with only meeting the standard for full completeness. The recurring deficiencies, particularly in the critical aspects of professional authentication and clinical follow-up records, highlight a systemic gap in documentation practice. This suboptimal documentation directly compromises the effectiveness of the medical record as a reliable source of clinical and administrative information required to support high-quality health services.

Crucially, the bivariate analysis confirmed a significant and positive relationship between the completeness of medical records and the quality of patient care ( $r_s = 0.624; p = 0.001$ ). This finding underscores that higher compliance with documentation standards is strongly associated with a higher patient perception of the quality of services received. Therefore, the commitment to thorough and accurate medical record-keeping is an essential factor that contributes directly to patient satisfaction and trust.

Based on these findings, it is concluded that efforts to improve the completeness of medical records must be a strategic priority for primary healthcare management. Puskesmas management should implement the following policy actions:

1. **Mandatory Audits and Supervision:** Establish and enforce periodic documentation audits and strict internal supervision to ensure consistent adherence to Standard Operating Procedures (SOPs) for medical record completion, especially focusing on clinical evaluation and authentication segments.
2. **Capacity Building:** Intensify digital-based training programs for all healthcare workers, focusing not only on the technical aspects of the Electronic Medical Record (EMR) system (in line with the SATUSEHAT mandate) but also on fostering awareness regarding the legal and clinical importance of complete records for patient safety.
3. **System Strengthening:** Invest in and optimize user-friendly Information Technology (IT) infrastructure to reduce the administrative burden on health personnel and promote the seamless transition to integrated digital documentation systems.

By strengthening the documentation system, increasing officer capacity, and ensuring robust supervision, Puskesmas can effectively improve medical record completeness, which will subsequently have a profound positive impact on the overall quality of care and patient satisfaction.



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