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Correlation between Medical Record Filing Retrieval Time and INA-CBG Claim Verification Delay: A Study at Awal Bros Sudirman Hospital Pekanbaru

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ABSTRACT

Timeliness of INA-CBG claim verification is essential for maintaining hospital financial sustainability and ensuring continuity of healthcare services. Delays in claim verification may be influenced by several factors, including prolonged medical record retrieval time from the filing unit, which can affect administrative and reimbursement processes. This study aimed to determine the correlation between medical record filing retrieval time and INA-CBG claim verification delay at Awal Bros Sudirman Hospital Pekanbaru. This study employed a quantitative analytical design with a cross-sectional approach. The study was conducted in the Medical Record Unit of Awal Bros Sudirman Hospital Pekanbaru in 2026. The population consisted of inpatient medical records used for BPJS claims, with a sample of 150 records selected by simple random sampling. Data were collected using observation sheets to measure retrieval time and claim verification completion time. Data were analyzed using univariate analysis and Spearman Rank correlation. The results showed that 58.0% of medical records experienced retrieval delays (>10 minutes), while 54.7% of claims experienced verification delays (>14 days). Spearman correlation analysis showed a significant relationship between medical record retrieval time and INA-CBG claim verification delay (p=0.001) with a correlation coefficient (r=0.621), indicating a strong positive correlation. It can be concluded that longer retrieval times are associated with increased claim verification delays. Therefore, improvements in filing management and record accessibility are necessary immediately.

Keywords: *Medical Record Retrieval, Filing Unit, INA-CBG, Claim Verification Delay, BPJS*

INTRODUCTION

Medical records are one of the essential components in hospital management because they support clinical, legal, administrative, research, and financial functions. Accurate and complete medical records provide reliable information for patient care continuity, quality improvement, health statistics, and reimbursement activities (Hatta, 2017; Permenkes RI No. 24 Tahun 2022). In the era of the National Health Insurance (JKN) program, the role of medical records has become increasingly important because reimbursement through the Indonesian Case Base Groups (INA-CBG) system requires complete and accurate documentation to ensure timely claim processing.

Hospitals collaborating with BPJS Kesehatan are required to submit claims accurately and promptly. Delays in claim verification can negatively affect hospital cash flow, operational efficiency, and the sustainability of healthcare services. According to the guidelines for INA-CBG implementation, claim processing involves several interconnected stages, including assembling, coding, completeness analysis, and claim verification (Permenkes RI No. 76 Tahun 2016). Therefore, the availability of medical records is crucial for ensuring that coding and claim submission activities can be completed within the required time frame.

Previous studies have shown that delays in BPJS claim verification are still frequently encountered in hospitals. Nugroho and Pamungkas (2022) reported that claim verification delays are associated with incomplete documents, inadequate coordination among health personnel, and weaknesses in claim administration systems. Similarly, Handayani and Wulandari (2023) found that claim verification delays are influenced by document completeness and inefficiencies in administrative processes. Delayed claim reimbursement may disrupt hospital financial management and affect the continuity of healthcare services.

The filing unit plays an important role in maintaining the accessibility and availability of medical records. According to Rustiyanto (2011), filing management aims to ensure that medical records can be retrieved quickly and accurately whenever needed. However, the increasing number of patient visits, storage density, misfiled documents, and limitations in human resources often contribute to delays in medical record retrieval. Wirajaya and Nuraini (2019) also reported that delayed return and retrieval of inpatient medical records remain common problems in hospitals and may affect the continuity of health information services.

The quality and completeness of medical record documentation are important factors influencing the accuracy of coding and claim reimbursement. Opitasari and Nurwahyuni (2018) demonstrated that complete and accurate diagnosis and procedure coding significantly affect INA-CBG claim amounts. Furthermore, Yuliani et al. (2024) reported that high-quality medical record documentation contributes to more accurate diagnosis coding and supports smooth claim processing. Likewise, Purwanti and Aditya (2025) emphasized that incomplete documentation in electronic medical records can lead to reimbursement problems and delayed claims.

In addition to documentation quality, coding accuracy is another important factor in claim processing. Setiatin et al. (2025) found that accurate coding facilitates BPJS claim submission and

reduces the risk of claim rejection. Similarly, Mandia (2023) reported that pending claims are frequently associated with inaccurate diagnosis codes and incomplete supporting documents. Zamzami and Suryani (2025) also highlighted that coding accuracy according to ICD-10 standards is essential to ensure successful claim verification.

The implementation of provider payment systems has also been shown to influence medical record completeness. Kasra et al. (2022) reported that the casemix system encourages better medical record documentation because reimbursement depends heavily on the accuracy and completeness of patient records. Furthermore, recent evidence from Rasid and Listiowati (2026) showed that inaccurate claim documentation is strongly associated with reimbursement delays, emphasizing the importance of effective medical record management in supporting hospital financial sustainability.

Although several studies in Indonesia have investigated factors affecting INA-CBG claim delays, pending claims, and medical record completeness, these studies have mainly focused on documentation completeness, coding accuracy, and administrative factors influencing claim processing. Limited evidence is available regarding operational factors in the medical record filing unit, particularly in private referral hospitals. Furthermore, to the best of current knowledge, no study in Indonesia has quantitatively examined the relationship between medical record filing retrieval time and INA-CBG claim verification delay. This represents an important research gap, as filing activities constitute the initial stage of the claim preparation process, and inefficiencies at this stage may create bottlenecks that affect coding, claim submission, claim verification, and reimbursement processes. Therefore, understanding the relationship between medical record retrieval time and claim verification delay is essential to identify operational barriers and improve the effectiveness of hospital claim management systems.

Therefore, this study aimed to determine the correlation between medical record filing retrieval time and INA-CBG claim verification delay at Awal Bros Sudirman Hospital Pekanbaru, Indonesia. The findings are expected to provide evidence-based recommendations for improving filing management systems, accelerating claim verification processes, and supporting hospital financial sustainability and the quality of health information management services.

METHODS

This study employed a quantitative analytic design with a cross-sectional approach. The study was conducted at Awal Bros Sudirman Hospital Pekanbaru from January to March 2026. Data collection was performed retrospectively by reviewing medical record retrieval logs and INA-CBG claim verification records available in the Medical Record Unit and Hospital Claim Unit.

The population consisted of all inpatient medical records and INA-CBG claims processed at Awal Bros Sudirman Hospital Pekanbaru during the study period, totaling 245 claims. The study sample included 150 inpatient medical records and corresponding INA-CBG claims, determined using the Slovin formula with a 5% margin of error and selected through simple random sampling.

The inclusion criteria were inpatient medical records with completed INA-CBG claim submission processes, complete medical record documentation, and claim verification data available during the study period. The exclusion criteria included claims categorized as pending, rejected, incomplete, duplicate claims, follow-up (resubmitted) claims, or records with incomplete administrative data.

The independent variable was medical record retrieval time in the filing unit, categorized into ≤10 minutes and >10 minutes according to the hospital operational standard. The dependent variable was INA-CBG claim verification delay, categorized into ≤14 days and >14 days based on BPJS claim verification standards.

Data were analyzed using univariate analysis to describe the distribution of retrieval time and claim verification delay. The relationship between medical record retrieval time and INA-CBG claim verification delay was analyzed using the Spearman Rank correlation test with a significance level of 0.05.

RESULTS

A total of 150 inpatient medical records and corresponding INA-CBG claim documents were included in this study. Descriptive analysis was performed to determine the distribution of medical record retrieval time and claim verification delay, followed by cross-tabulation and correlation analysis to examine the relationship between the two variables.

1. Distribution of Medical Record Retrieval Time

Table 1 presents the distribution of medical record retrieval time. Of the 150 medical records observed, 63 records (42.0%) were retrieved within the standard time of ≤10 minutes, while 87 records (58.0%) required more than 10 minutes. These findings indicate that the majority of inpatient medical records experienced delays in retrieval, exceeding the minimum service standard for medical record provision.

Table 1. Distribution of Medical Record Retrieval Time (n = 150)

Retrieval Time	Frequency	Percentage (%)
≤10 minutes	63	42.0
>10 minutes	87	58.0
Total	150	100

These results indicate that delayed retrieval was more frequent than timely retrieval. More than half of the medical records (58.0%) required retrieval times beyond the standard of ≤10 minutes, while only 42.0% were retrieved within the expected time. The difference of 16.0 percentage points shows that delays were more common during the study period, indicating that filing unit efficiency had not yet fully met the required standard.

The predominance of retrieval times exceeding 10 minutes suggests inconsistencies in filing performance and limited accessibility of medical records. Such conditions may disrupt the

continuity of administrative processes, particularly coding and claim preparation, as delayed access to patient information can slow down downstream activities in the hospital workflow.

Table 1 illustrates that out of 150 inpatient medical records, 63 records (42.0%) were retrieved within the standard time, while 87 records (58.0%) experienced delays. This pattern indicates that inefficiencies in the filing unit were not isolated incidents but occurred consistently across the observation period.

The retrieval process is essential for ensuring timely availability of patient information for coding and claim verification. When retrieval is delayed, it can hinder the performance of coding officers and claim administrators, ultimately extending processing time. Contributing factors may include misfiling, dense storage systems, workload imbalance, and inadequate tracking mechanisms.

From an operational perspective, these findings indicate that the minimum service standard for medical record retrieval has not been fully achieved. Although a portion of records met the standard, the majority exceeded the acceptable time frame, highlighting the need for continuous monitoring and improvement.

Overall, the findings demonstrate that delayed medical record retrieval remains a key issue in the filing unit. Improving filing system organization, enhancing accessibility, and strengthening human resources are necessary to increase efficiency and support timely hospital administrative processes.

2. Distribution of INA-CBG Claim Verification Delay

Table 2 presents the distribution of claim verification time. Among the 150 claim documents analyzed, 68 claims (45.3%) were verified within 14 days, whereas 82 claims (54.7%) required more than 14 days to complete the verification process.

Table 2. Distribution of INA-CBG Claim Verification Delay (n = 150)

Verification Time	Frequency	Percentage (%)
≤14 days	68	45.3
>14 days	82	54.7
Total	150	100

Table 2 shows that out of 150 INA-CBG claim documents, 68 claims (45.3%) were verified within ≤14 days, while 82 claims (54.7%) required more than 14 days. This indicates that delayed claim verification occurred slightly more frequently than timely verification, with a difference of 9.4 percentage points. The majority of claims did not meet the expected verification timeframe, suggesting that claim processing efficiency was not yet optimal.

Delayed verification may affect hospital reimbursement timeliness and financial flow. Variations in verification time indicate differences in administrative efficiency, which may be influenced by documentation completeness, coding accuracy, claim workload, and supporting administrative processes.

Table 3. Cross-tabulation of Medical Record Retrieval Time and INA-CBG Claim Verification Delay (n = 150)

Medical Record Retrieval Time	Claim Verification ≤14 Days n (%)	Claim Verification >14 Days n (%)	Total n (%)
≤10 minutes	45 (71.4)	18 (28.6)	63 (42.0)
>10 minutes	23 (26.4)	64 (73.6)	87 (58.0)
Total	**68 (45.3)**	**82 (54.7)**	**150 (100.0)**

Table 3 presents the cross-tabulation between medical record retrieval time and claim verification delay. Among records retrieved within ≤10 minutes, 71.4% were verified within 14 days, while 28.6% experienced delays. In contrast, among records retrieved in >10 minutes, 73.6% experienced delayed verification, while only 26.4% were completed within 14 days.

These findings show a clear pattern: faster medical record retrieval is associated with more timely claim verification, while delayed retrieval is predominantly linked to delayed claim processing. A large proportion of delayed verifications originated from records with longer retrieval times, indicating that filing efficiency contributes to claim processing performance.

Overall, the results indicate that both medical record retrieval and claim verification delays remain common, and that improving filing efficiency may help reduce delays in INA-CBG claim processing.

4. Correlation Between Medical Record Retrieval Time and INA-CBG Claim Verification Delay

Correlation analysis using the Spearman Rank test demonstrated a statistically significant association between medical record retrieval time and INA-CBG claim verification delay ($p = 0.001$). The correlation coefficient ($r = 0.621$) indicated a strong positive relationship between the two variables

Table 4. Correlation Between Medical Record Retrieval Time and INA-CBG Claim Verification Delay

Variables	r-value	p-value
Medical Record Retrieval Time and INA-CBG Claim Verification Delay	0.621	0.001

The positive direction of the correlation indicates that longer retrieval times tended to be accompanied by longer claim verification periods. The magnitude of the coefficient suggests that the relationship between the variables was relatively strong.

Furthermore, the coefficient of determination ($r^2 = 0.386$) indicated that approximately 38.6% of the variation in INA-CBG claim verification delay could be explained by differences in medical record retrieval time. The remaining 61.4% of the variation may be attributable to factors outside the scope of this study.

Overall, the findings demonstrated that delayed retrieval and delayed claim verification occurred in more than half of the observed cases. Cross-tabulation analysis consistently showed that records retrieved within the standard time were more likely to have claims verified within the expected period, whereas records requiring longer retrieval times were predominantly associated with delayed claim verification. The statistically significant and strong positive correlation identified in this study further highlighted the close relationship between filing unit performance and the timeliness of INA-CBG claim verification.

Correlation analysis using the Spearman Rank test demonstrated a statistically significant association between medical record retrieval time and INA-CBG claim verification delay ($p = 0.001$). The correlation coefficient ($r = 0.621$) indicated a strong positive relationship between the two variables.

The positive direction of the correlation indicates that longer retrieval times tended to be accompanied by longer claim verification periods. The magnitude of the coefficient suggests that the relationship between the variables was relatively strong, implying that changes in retrieval performance were closely associated with variations in claim verification timeliness.

Furthermore, the coefficient of determination ($r^2 = 0.386$) indicated that approximately 38.6% of the variation in INA-CBG claim verification delay could be explained by differences in medical record retrieval time. The remaining 61.4% of the variation may be attributable to factors outside the scope of this study.

The statistical significance obtained ($p = 0.001$) indicates that the observed relationship was unlikely to have occurred by chance. In addition, the distribution patterns observed in the cross-tabulation analysis were consistent with the correlation findings. Cases with retrieval times exceeding the standard limit of 10 minutes were predominantly associated with claim verification periods of more than 14 days, whereas records retrieved within the standard time were more likely to have claims verified within the expected period.

The relatively strong correlation coefficient obtained in this study suggests that the performance of the filing unit contributes substantially to claim verification timeliness. Overall, the findings demonstrated that delayed retrieval and delayed claim verification occurred in more than half of the observed cases. Cross-tabulation analysis consistently showed that records retrieved within the standard time were more likely to have claims verified within the expected period, whereas records requiring longer retrieval times were predominantly associated with delayed claim verification.

These findings provide quantitative evidence that the efficiency of medical record retrieval constitutes an important component of hospital claim management. A more efficient retrieval system may support faster claim verification processes and improve the timeliness of reimbursement, thereby contributing to better administrative and financial performance within the hospital.

DISCUSSION

1. Medical Record Retrieval Time in the Filing Unit

The results of this study showed that 58.0% of inpatient medical records required more than 10 minutes for retrieval, indicating that delays in the filing unit were still common at Awal Bros Sudirman Hospital Pekanbaru. Delayed retrieval of medical records may interfere with subsequent activities, including coding, claim preparation, and claim submission processes. Inefficiencies in the filing unit can reduce service effectiveness and affect the quality of hospital administration.

These findings are consistent with health information management theory, which states that medical record systems must ensure accessibility, accuracy, and timeliness to support clinical and administrative processes (World Health Organization, 2010). Delays in retrieval indicate weaknesses in filing organization and record management systems.

Several previous studies also reported similar findings, where inefficient filing systems were significantly associated with delays in coding and insurance claim processing (Nugroho & Pamungkas, 2021; Savitri & Yuliani, 2025). Hospitals that still rely on manual or paper-based systems tend to experience longer retrieval times compared to those using electronic systems.

From the researcher's perspective, it is assumed that the high proportion of delayed retrieval is influenced by misfiled records, delayed return of inpatient documents, limited storage capacity, and high workload in the filing unit. In addition, the absence of a barcode or tracer-based tracking system may contribute to difficulties in locating files efficiently.

Moreover, increasing patient volume without proportional human resource development may further worsen retrieval performance. These conditions indicate the need for system improvement and workforce optimization in the filing unit.

The implementation of electronic medical records, barcode tracking systems, and computerized filing systems has been widely recommended to improve efficiency and reduce retrieval time (BPJS Kesehatan, 2024). Strengthening human resources through training and workload balancing is also essential to improve filing performance.

Efficient medical record retrieval contributes not only to administrative performance but also to financial sustainability, as delays in retrieval may postpone coding and claim submission processes, ultimately affecting hospital reimbursement flow (Pangestu et al., 2024).

Therefore, timely retrieval of medical records should be considered a key performance indicator in medical record management.

2. Correlation Between Retrieval Time and Claim Verification Delay

The Spearman Rank test showed a significant relationship between medical record retrieval time and INA-CBG claim verification delay ($p = 0.001$; $r = 0.621$), indicating a strong positive correlation.

This means that longer retrieval times tend to be followed by longer claim verification periods. According to hospital information system theory, inefficiencies in early data processing stages will affect downstream processes such as coding and claim verification (WHO, 2010).

The coefficient of determination ($r^2 = 0.386$) indicates that 38.6% of claim verification delays are explained by retrieval time, while 61.4% are influenced by other factors such as coding accuracy, completeness of documentation, and administrative workload (Rasid & Listiowati, 2026).

Previous studies also confirm that delays in medical record availability significantly contribute to longer INA-CBG claim processing time (Kasmita & Nagaring, 2025; Yuliani et al., 2023).

From the researcher's assumption, the strong correlation found in this study is due to dependency between filing performance and administrative workflow continuity. When retrieval is delayed, coding and claim preparation are automatically postponed, creating a domino effect in the claim process.

Overall, these findings confirm that filing unit performance plays a significant role in determining claim verification timeliness and hospital financial efficiency.

3. INA-CBG Claim Verification Delay

The findings revealed that 54.7% of INA-CBG claims required more than 14 days for verification. This result indicates that claim verification delays remain a common issue in hospital reimbursement management at Awal Bros Sudirman Hospital Pekanbaru. Prolonged verification time reflects inefficiencies in the administrative claim process, which may hinder the timeliness of hospital reimbursement.

Delays in claim verification may affect reimbursement schedules and subsequently disrupt hospital financial performance. From a health system perspective, INA-CBG payment mechanisms require timely and accurate claim submission to ensure smooth cash flow and financial sustainability. According to hospital management and health information system theory, claim processing is highly dependent on the completeness, accuracy, and timeliness of medical record documentation, coding quality, and administrative coordination (World Health Organization, 2010).

Several previous studies support these findings, reporting that INA-CBG claim delays are commonly caused by incomplete medical documentation, coding errors, and delays in the submission of supporting diagnostic results (Nugroho & Pamungkas, 2021; Kasmita & Nagaring, 2025). Similar studies also indicate that higher workloads among coders and claim verification officers significantly contribute to longer processing times (Savitri & Yuliani, 2025).

In addition, the complexity of INA-CBG claim requirements demands standardized and comprehensive documentation from healthcare providers and medical record personnel. Any inconsistency or missing data in clinical documentation may lead to claim pending or rejection, thereby extending the verification process.

From the researcher's perspective, it is assumed that claim verification delays in this study are influenced by the dependency of the verification process on upstream documentation quality,

particularly medical record completeness and coding accuracy. It is also assumed that the coordination between clinical units, medical record officers, and claim verification teams is not yet fully optimal, resulting in repeated revisions and administrative back-and-forth during claim processing.

Furthermore, claim verification delays may affect hospital operational sustainability. Delayed reimbursement can disrupt cash flow, delay procurement processes, and limit the availability of resources required to maintain healthcare services. This is consistent with hospital financial management theory, which emphasizes that delays in revenue cycle processes can directly affect service continuity and operational efficiency.

Therefore, efficient claim management is essential not only for administrative compliance but also for maintaining financial stability and service quality in hospitals. Strengthening documentation completeness, improving coding accuracy, and optimizing coordination between units are necessary strategies to reduce INA-CBG claim verification delays.

4. Relationship Between Medical Record Retrieval Time and INA-CBG Claim Verification Delay

This study demonstrated a statistically significant relationship between medical record retrieval time and INA-CBG claim verification delay ($p = 0.001$), with a correlation coefficient of 0.621 indicating a strong positive relationship. These findings suggest that longer retrieval times are associated with increased duration of claim verification, meaning that inefficiencies at the filing stage may have a direct impact on downstream administrative processes.

These results are consistent with health information management theory, which emphasizes that the availability and accessibility of medical records are critical determinants of efficiency in clinical documentation, coding, and reimbursement processes (World Health Organization, 2010). Delays in early-stage information retrieval can create bottlenecks that affect the entire revenue cycle in hospital management.

Cross-tabulation analysis further supported these findings, showing that records retrieved within the standard time were more likely to have claims verified within 14 days, whereas records requiring more than 10 minutes for retrieval were predominantly associated with delayed claim verification. This pattern indicates that inefficiencies in the filing unit do not only affect retrieval activities but also extend to coding, claim preparation, and claim verification processes.

Similar findings have been reported in previous studies, where delays in medical record availability were significantly associated with prolonged coding completion and claim processing time (Nugroho & Pamungkas, 2021; Kasmita & Nagaring, 2025). Other studies also highlight that hospitals with inefficient filing systems tend to experience higher rates of claim pending and longer reimbursement cycles due to delays in document flow and verification processes (Savitri & Yuliani, 2025).

The coefficient of determination ($r^2 = 0.386$) indicated that approximately 38.6% of claim verification delay could be explained by retrieval time, while the remaining 61.4% may be influenced

by other factors such as coding accuracy, completeness of physician documentation, timeliness of supporting diagnostic results, workload of claim officers, and BPJS administrative requirements. This finding suggests that claim verification delay is a multifactorial issue that cannot be attributed solely to filing performance.

From the researcher's perspective, it is assumed that the strong relationship between retrieval time and claim verification delay occurs due to dependency between administrative workflow stages. When medical records are not retrieved promptly, coding activities are automatically delayed, which subsequently postpones claim preparation and submission. It is also assumed that the absence of integrated tracking systems and limited coordination between filing and coding units contributes to inefficiencies in the overall claim processing flow.

Furthermore, the strong positive correlation found in this study emphasizes that filing unit performance plays an essential role in determining the efficiency of hospital claim management. Improving the speed and accuracy of medical record retrieval is expected to enhance coding timeliness, reduce administrative backlog, and ultimately accelerate INA-CBG claim verification.

Therefore, optimizing filing systems through digitalization, improving staff competency, and strengthening inter-unit coordination are essential strategies to minimize claim verification delays and improve overall hospital financial performance.

5. Comparison with Previous Studies

The findings of this study are consistent with previous research reporting that delays in medical record management contribute to delays in hospital claim processing. Alfiansyah et al. (2023) reported that delayed return and retrieval of inpatient medical records were caused by incomplete documentation, limited human resources, and ineffective filing systems. Similarly, Zainuddin and Prasetyo (2022) emphasized that effective health information systems play a crucial role in improving administrative performance and ensuring timely hospital services.

These findings are also in line with health information management theory, which states that the efficiency of hospital administrative processes is highly dependent on the accuracy, completeness, and accessibility of medical records. Any disruption in the availability of medical records may directly affect downstream processes such as coding, claim preparation, and reimbursement verification (World Health Organization, 2010).

Previous studies have further demonstrated that claim delays are commonly associated with incomplete medical records, coding inaccuracies, and poor coordination among healthcare personnel. Nugroho and Pamungkas (2021) found that inefficiencies in documentation flow significantly contribute to prolonged INA-CBG claim processing time. In addition, Kasmita and Nagaring (2025) reported that delays in claim verification are strongly influenced by administrative bottlenecks and workload imbalances among claim officers.

Delayed retrieval of medical records may postpone coding activities and subsequently affect the submission of INA-CBG claims, resulting in prolonged verification processes. Therefore, the

findings of the present study reinforce existing evidence regarding the importance of efficient medical record management in supporting hospital reimbursement systems and ensuring timely financial processes.

Although the findings are consistent with previous studies, the correlation coefficient observed in this study (r = 0.621) indicates a relatively strong association, suggesting that retrieval time has a substantial influence on claim verification performance. This implies that the filing unit plays a critical role in determining the efficiency of the overall revenue cycle management in hospitals.

From the researcher's perspective, it is assumed that the strong relationship between retrieval time and claim verification delay occurs due to the dependency between administrative processes. Delays in retrieving medical records are likely to cause delays in coding, which subsequently affects claim submission and verification timelines. It is also assumed that the lack of integrated information systems and suboptimal coordination between filing, coding, and claim units contributes significantly to process inefficiencies.

Furthermore, this finding highlights the importance of strengthening filing services as part of hospital revenue cycle management. Improving system integration, enhancing human resource capacity, and implementing standardized filing procedures are essential strategies to minimize delays and improve claim processing performance.

Overall, this study supports the notion that efficient medical record management is a key determinant of timely hospital claim processing and financial sustainability.

6. Implications for Hospital Management

The findings of this study have important implications for hospital management, particularly in improving the efficiency of health information and claim administration systems. Optimizing filing systems, increasing the number and competency of medical record personnel, implementing electronic medical records, and strengthening interdepartmental coordination may help reduce retrieval time and improve INA-CBG claim processing efficiency.

These findings are supported by health information management theory, which emphasizes that the effectiveness of hospital service delivery is highly dependent on the availability, accessibility, and integration of medical record information (World Health Organization, 2010). Efficient information systems are essential to ensure continuity of clinical documentation and administrative processes, including coding and claim verification.

Previous studies have also shown that hospitals with well-organized filing systems and integrated electronic medical record systems experience faster retrieval times and more efficient claim processing. Alfiansyah et al. (2023) reported that inefficient filing systems and limited human resources significantly contribute to delays in medical record retrieval. Similarly, Nugroho and Pamungkas (2021) found that improvements in health information system integration can reduce claim processing delays and improve reimbursement timeliness. Zainuddin and Prasetyo (2022) also

emphasized that digital transformation in hospital information systems contributes to better administrative performance and service efficiency.

Regular monitoring and evaluation of retrieval time performance should be implemented to identify operational barriers and improve service quality. Continuous assessment enables hospital management to detect inefficiencies in filing workflows and implement corrective actions in a timely manner. In addition, continuous training programs for medical record officers and coders are necessary to enhance accuracy, reduce documentation errors, and improve claim processing efficiency.

From the researcher's perspective, it is assumed that delays in retrieval time are primarily caused by reliance on manual filing systems, insufficient staffing levels, and suboptimal workflow coordination between filing and coding units. It is also assumed that the absence of real-time tracking systems for medical records contributes to difficulties in locating files promptly, thereby extending the overall claim processing time.

The implementation of Electronic Medical Records (EMR) may represent a long-term strategic solution to overcome delays associated with conventional filing systems. Digitalization of medical records enables faster access to patient information, reduces the risk of misplaced records, and improves coordination among healthcare professionals. Studies have shown that hospitals adopting EMR systems experience improved documentation efficiency and reduced administrative delays, particularly in claim-related processes.

Ultimately, effective medical record management plays a crucial role in supporting timely INA-CBG claim verification, maintaining hospital financial sustainability, and enhancing the quality of healthcare administration. Strengthening filing management, optimizing claim processes, and accelerating digital transformation are essential strategies for improving hospital operational performance and ensuring the continuity of healthcare services.

CONCLUSION

This study demonstrated that delays in medical record retrieval and INA-CBG claim verification remain common at Awal Bros Sudirman Hospital Pekanbaru. More than half of the medical records required retrieval times exceeding the recommended standard, and more than half of the INA-CBG claims experienced verification delays. Cross-tabulation analysis showed that records retrieved within the standard retrieval time were substantially more likely to be verified within 14 days, whereas records requiring longer retrieval times were predominantly associated with delayed claim verification.

The Spearman Rank analysis further confirmed a statistically significant and strong positive correlation between medical record retrieval time and INA-CBG claim verification delay ($r = 0.621$; $p = 0.001$). These findings indicate that inefficiencies in the filing unit contribute to delays in downstream processes, including coding, claim preparation, and claim verification. Although retrieval time explained 38.6% of the variation in claim verification delay, other operational factors

such as coding accuracy, completeness of clinical documentation, administrative workload, and interdepartmental coordination also play important roles.

The findings highlight the importance of strengthening filing management as an integral component of hospital revenue cycle management. Hospitals should prioritize optimizing filing workflows, implementing electronic medical record and document-tracking systems, improving staff competency, and strengthening coordination among filing, coding, and claim verification units to reduce claim processing delays and improve reimbursement timeliness.

This study contributes to the limited evidence from Indonesia by quantitatively demonstrating the relationship between medical record retrieval time and INA-CBG claim verification delay in a private referral hospital. Future studies involving multiple hospitals and additional operational variables are recommended to validate these findings and develop more comprehensive strategies for improving hospital claim management performance.

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