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ANALYSIS OF COMPLIANCE WITH THE INA- CBGS CLAIM PROCESS AT RACHMA HUSADA HOSPITAL: A MIXED-METHODS STUDY

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ABSTRACT

Background: The implementation of Indonesia's National Health Insurance (JKN) utilizes the Indonesian Case-Based Groups (INA-CBGs) prospective payment system, presenting significant challenges for hospital claim process compliance. RSU Rachma Husada, a Type C private hospital, has experienced issues including claim rejections and delays, potentially impacting financial stability. Objective: This study aimed to analyze the compliance of the INA-CBGs claim process at RSU Rachma Husada and identify factors influencing compliance levels.

Methods: An explanatory sequential mixed-methods design was employed. The quantitative phase utilized a quasi-experimental one-group pretest-posttest design with 85 hospital staff. The qualitative phase involved in-depth interviews and focus group discussions with 9 Casemix team members.

Results: The educational intervention significantly increased staff knowledge ($Z = -6.824$, $p < 0.001$) and compliance ($Z = -5.973$, $p < 0.001$). However, the correlation between knowledge improvement and compliance enhancement was positive but weak (Spearman's $r = 0.296$, $p = 0.006$). Qualitative findings revealed key themes influencing compliance: varying staff reliability, inconsistent attending physician (DPJP) commitment to documentation, effectiveness of regulatory socialization, and challenges in coordinating complex cases.

Conclusion: While enhancing staff knowledge improves INA-CBG claim process compliance at RSU Rachma Husada, its impact is limited. Systemic factors, particularly DPJP commitment, documentation quality, communication effectiveness, and workload management, significantly influence overall adherence. A multifaceted approach addressing both knowledge gaps and contextual factors is necessary to optimize the
INA-CBG claim process, reduce errors, and ensure the hospital's operational and financial sustainability within the JKN framework.

Keywords: INA-CBGs; Claim Compliance; National Health Insurance; Mixed Methods; Hospital Management; Healthcare Policy Implementation; Indonesia

1. INTRODUCTION

The global shift toward universal health coverage has necessitated robust and efficient payment mechanisms to ensure both financial sustainability for healthcare providers and equitable access for patients (Mathauer & Wittenbecher, 2013; Langenbrunner et al., 2009). In Indonesia, the launch of the Jaminan Kesehatan Nasional (JKN), or National Health Insurance program on January 1, 2014, marked a significant step toward universal health coverage (Mboi, 2015; Agustina et al., 2019). Managed by the Badan Penyelenggara Jaminan Sosial (BPJS) Kesehatan, the JKN program fundamentally altered the healthcare financing landscape, shifting from predominantly fee-for-service models to prospective payment systems.

A cornerstone of the JKN payment system is the Indonesian Case-Based Groups (INA- CBGs) tariff structure (Peraturan Menteri Kesehatan Republik Indonesia Nomor 27 Tahun 2014). This system classifies patient episodes into groups with similar clinical characteristics and resource consumption, assigning a predetermined tariff for each group. The INA-CBGs system, adapted from international Diagnosis-Related Group (DRG) models, aims to enhance transparency, control escalating healthcare costs, improve hospital efficiency, and ultimately, ensure the quality of care (Peraturan Menteri Kesehatan Nomor 76 Tahun 2016; Busse et al., 2011). By setting tariffs prospectively, INA- CBGs incentivize hospitals to manage resources effectively, covering all aspects of care from admission to discharge, including medications, procedures, consumables, and accommodation, under a single code (Peraturan Menteri Kesehatan Nomor 71 Tahun 2013).

Despite the intended benefits, the implementation of INA-CBGs has presented significant operational challenges for healthcare facilities, particularly concerning the accuracy and timeliness of the claim submission process (Widyastuti et al., 2020).

Compliance with the intricate coding requirements (based on ICD-10 for diagnoses and ICD-9-CM for procedures) and administrative procedures is paramount. Errors or deviations in the claim process can lead to claim rejections, pending claims, payment delays, and substantial financial losses for hospitals, potentially

jeopardizing their operational stability and capacity to deliver quality care (Sari et al., 2018; Prabowo et al., 2019).

Factors contributing to non-compliance are multifaceted, ranging from inadequate staff knowledge and training, insufficient resources and infrastructure, communication breakdowns between departments, lack of commitment from clinical staff, to complexities in interpreting and applying evolving regulations (Hidayah et al., 2023; Ambarriani, 2014; Maharani & Tampubolon, 2017). These challenges are not unique to Indonesia; similar issues have been documented in other countries implementing DRG- based payment systems, including Germany (Busse et al., 2013), Thailand (Tangcharoensathien et al., 2019), and the United States (Bowman, 2008).

RSU Rachma Husada, a private Type C general hospital located in Bantul, Special Region of Yogyakarta, serves as a crucial provider within the JKN network. Since becoming a BPJS provider in 2014, the hospital has faced persistent challenges in optimizing its INA- CBG claim process. Preliminary investigations and interviews conducted in September 2023 revealed that the implementation was perceived as not fully effective. Specific issues highlighted included infrastructural limitations, communication gaps between internal BPJS staff and other hospital units, inconsistent commitment from personnel regarding established procedures, discrepancies between clinical practices and documented clinical pathways, frequent instances of incomplete medical records leading to claim processing delays, and human resource constraints impacting workflow efficiency and target achievement.

For instance, in 2023, the hospital experienced a 10% claim rejection rate attributed primarily to diagnosis coding errors. Furthermore, delays in claim submission occurred twice between 2022 and 2023 due to coding discrepancies against ICD-10 standards, resulting in pending claims and an average payment disbursement delay of one month.

Such delays directly impact hospital liquidity, affecting cash flow for salaries, operational costs, and procurement of essential medical supplies. While the hospital showed positive net differences between INA-CBG tariffs and actual costs in 2022 and 2023, an incident requiring the return of IDR 54,913,100 in claims (related to 45 files from February-December 2023) underscores the financial risks associated with non-compliance.

Effective policy implementation is critical for achieving desired outcomes. Theoretical models, such as those proposed by Grindle (1980) and Van Meter and Van Horn (1975), provide frameworks for understanding the complexities of implementation. Grindle emphasizes the interplay between policy content (e.g., interests affected, type of benefits, extent of change desired) and context (e.g., power dynamics, institutional characteristics, compliance), while Van Meter and Van Horn highlight the influence of standards and objectives, resources, inter-organizational communication, characteristics of implementing agencies, the disposition of implementers, and the broader socio-economic and political environment. Analyzing the INA-CBG claim process compliance at RSU Rachma Husada through such lenses can illuminate the specific barriers and facilitators at play.

While previous studies have examined various aspects of INA-CBGs implementation in Indonesia (Sari et al., 2018; Prabowo et al., 2019; Hidayah et al., 2023), there remains a gap in understanding the complex interplay between staff knowledge, compliance behavior, and contextual factors within specific hospital settings. Most studies have employed either purely quantitative or qualitative approaches, limiting the depth and breadth of insights. Additionally, few studies have specifically examined the effectiveness of educational interventions in improving compliance with the INA-CBGs claim process.

Given the identified challenges and the critical importance of efficient claim processing for hospital sustainability under JKN, this study was undertaken to comprehensively analyze the compliance of the INA-CBGs claim process at RSU Rachma Husada. Utilizing an explanatory sequential mixed-methods approach, the research aimed to:

1. Quantitatively assess the baseline levels of knowledge and compliance among staff involved in the claim process
2. Evaluate the effectiveness of an educational intervention in improving staff knowledge and compliance
3. Determine the relationship between changes in knowledge and changes in compliance
4. Qualitatively explore the contextual factors, barriers, and facilitators influencing compliance from the perspective of key personnel within the Casemix team

By integrating quantitative measurements with in-depth qualitative insights, this study seeks to provide a nuanced understanding of the compliance landscape and offer evidence-based recommendations for improvement at RSU Rachma Husada and potentially other similar healthcare settings in Indonesia.

MATERIALS AND METHODS

1.1. Study Design and Setting

This study employed an explanatory sequential mixed-methods design (Creswell & Plano Clark, 2017), conducted between January and March 2024 at RSU Rachma Husada, Bantul, a Type C private general

hospital accredited paripurna (fully accredited) and serving as a key JKN provider in the region. The mixed-methods approach was selected to provide both breadth (quantitative assessment of knowledge and compliance levels) and depth (qualitative exploration of contextual factors) in understanding the INA-CBGs claim process compliance.

1.2. Quantitative Phase

1.2.1. Design and Participants

A quasi-experimental one-group pretest-posttest design was utilized. The study population comprised all 108 employees directly involved in the INA-CBG claim process across various units (Specialist Doctors, General Practitioners, Nurses, Midwives, Pharmacy, Laboratory, Radiology, Cashiers, Casemix Team). A sample size of 85 participants was calculated using Slovin's formula ($n = N/(1+Ne^2)$, where N=108, e=0.05) and selected via purposive random sampling based on direct involvement in the claim process and tenure (≥1 year). Inclusion criteria were permanent employees with ≥1 year of service; exclusion criteria were non-permanent status or less than one year of service.

1.2.2. Intervention

The educational intervention consisted of a comprehensive 4-hour workshop on INA- CBGs claim processes, covering regulatory requirements, coding principles, documentation standards, common errors, and best practices. The workshop utilized multiple teaching methods including lectures, case studies, group discussions, and hands-on exercises. It was delivered by experienced facilitators from the hospital's Casemix team and external experts from BPJS Kesehatan. Participants received printed materials and access to online resources for continued reference.

1.2.3. Data Collection Instruments

Two structured questionnaires were developed based on literature review and expert consultation:

1. Knowledge Questionnaire: A 20-item instrument assessing understanding of INA- CBGs regulations, coding principles, documentation requirements, and claim procedures. Each item was scored 0 (incorrect) or 1 (correct), with a total possible score of 0-20.
2. Compliance Questionnaire: A 15-item instrument measuring self-reported adherence to INA-CBGs claim process requirements. Items were rated on a 5-point Likert scale (1=never comply to 5=always comply), with a total possible score of 15-75.

Both instruments underwent content validation by a panel of three experts in healthcare management and INA-CBGs implementation. Pilot testing was conducted with 20 staff members not included in the final sample, with subsequent refinements to improve clarity and relevance.

1.2.4. Data Collection Procedure

Pre-test data were collected one week before the intervention. The educational intervention was then delivered to all participants. Post-test data were collected two weeks after the intervention to allow time for knowledge application in daily practice. Both pre-test and post-test questionnaires were administered in controlled settings to ensure independent completion.

1.2.5. Data Analysis

Data were analyzed using SPSS version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics (frequencies, percentages, means, standard deviations, medians, and ranges) were calculated for demographic characteristics and questionnaire scores. The Kolmogorov-Smirnov test was used to assess the normality of data distribution. As the data were not normally distributed ($p < 0.05$), non-parametric tests were employed: the Wilcoxon Signed-Rank test was used to compare pre-test and post-test scores for knowledge and compliance, and Spearman's Rank Correlation Coefficient (rho or r) was used to assess the relationship between the change in knowledge and the change in compliance.

1.3. Qualitative Phase

1.3.1. Design and Participants

Following the quantitative phase, a qualitative case study approach was adopted to provide deeper insights into the context and factors influencing compliance. Participants were the 9 members of the RSU Rachma Husada Casemix team, selected purposively due to their central role in managing and overseeing the INA-CBG claim process. This included the Head of the Casemix Team, the Coordinator, Coders (including a Doctor Coder), Claim Processing Staff, an Internal Verifier, and IT/SIMRS staff.

1.3.2. Data Collection

Data were collected through semi-structured in-depth interviews (Wawancara Mendalam - WM) and Focus Group Discussions (FGD) with the 9 Casemix team members. Interview guides and FGD prompts focused on exploring their experiences, perceptions, and challenges related to INA-CBG claim process compliance, staff reliability, DPJP commitment, communication effectiveness, handling of complex cases, and the impact of regulations. Each interview lasted approximately 45-60 minutes, while the FGD session lasted 90 minutes. All sessions were audio-recorded with participants' consent and transcribed verbatim.

1.3.3. Data Analysis

Qualitative data from interviews and FGDs were analyzed using thematic analysis following Braun and Clarke's (2006) six-step approach: familiarization with data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. NVivo 12 software (QSR International, Melbourne, Australia) was used to facilitate the coding and analysis process. Data validation was performed using triangulation, comparing findings from interviews, FGDs, and researcher observations during the study period.

1.4. Integration of Quantitative and Qualitative Findings

Following the separate analysis of quantitative and qualitative data, an integration phase was conducted to synthesize findings and develop a comprehensive understanding of INA-CBGs claim process compliance. This involved comparing and contrasting quantitative results with qualitative themes to identify convergence, complementarity, or divergence (Fetters et al., 2013).

1.5. Ethical Considerations

The study protocol received ethical approval from the Ethics Committee of Universitas Muhammadiyah Yogyakarta (No. 023/EC-KEPK/FKIK/UMY/XII/2023). Informed consent was obtained from all participants prior to data collection. Respondent anonymity and confidentiality were maintained throughout the research process. Data were stored securely and used solely for research purposes.

RESULTS

1.6. Quantitative Findings

1.6.1. Respondent Characteristics

The 85 participants in the quantitative phase were predominantly female (74.1%, n=63). The largest age group was 26-35 years (52.9%, n=45), followed by 36-45 years (30.6%, n=26). The most represented unit was Nursing (37.6%, n=32), followed by Specialist Doctors (16.5%, n=14), Midwives (10.6%, n=9), and the Casemix team (10.6%, n=9). The majority held a Diploma (D3/D4) qualification (57.6%, n=49), with others holding Bachelor's/Professional degrees (22.4%, n=19) or Master's/Specialist degrees (16.5%, n=14). Most participants held staff-level positions (e.g., Nurse 30.6%, n=26; Casemix Staff 10.6%, n=9), with a smaller proportion in leadership roles (e.g., Head of Unit/ Coordinator 17.6%, n=15). The average length of service was 7.3 years (SD=4.2, range
1-18 years).

1.6.2. Instrument Quality

The questionnaires demonstrated acceptable validity and reliability. All items showed significant correlations with total scores (r-hitung > r-tabel = 0.444, $p < 0.05$), and Cronbach's Alpha coefficients exceeded the 0.7 threshold for both knowledge ($\alpha = 0.83$ pre-test, $\alpha = 0.85$ post-test) and compliance scales ($\alpha = 0.81$ pre-test, $\alpha = 0.84$ post-test).

1.6.3. Impact of Intervention

Descriptive statistics indicated an increase in both knowledge and compliance scores following the intervention (Table 1). The mean difference (post-test minus pre-test) for knowledge was 2.99 (SD 2.43), with a median difference of 3 (range -3 to 9). For compliance, the mean difference was 3.54 (SD 3.22), with a median difference of 4 (range
-4 to 9).

Table 1. Comparison of Pre-test and Post-test Scores for Knowledge and Compliance (N=85)

Variable	Pre- test		Post- test		Difference		Z-value	p- value
	Mean (SD)	Median (Range)	Mean (SD)	Median (Range)	Mean (SD)	Median (Range)		
Knowledge	13.42 (2.87)	13 (7-19)	16.41 (2.65)	16 (10-20)	2.99 (2.43)	3 (-3-9)	-6.824	<0.001*
Compliance	56.28 (6.54)	57 (40-69)	59.82 (6.12)	60 (45-72)	3.54 (3.22)	4 (-4-9)	-5.973	<0.001*

*Statistically significant at $p < 0.05$ (Wilcoxon Signed-Rank Test)

The Wilcoxon Signed-Rank test confirmed these increases were statistically significant (Z

= -6.824, $p < 0.001$ for knowledge difference; $Z = -5.973$, $p < 0.001$ for compliance difference).

1.6.4. Relationship between Knowledge and Compliance

The Kolmogorov-Smirnov test indicated that the difference scores for both knowledge ($p < 0.001$) and compliance ($p = 0.024$) were not normally distributed. Spearman's rank correlation analysis revealed a statistically significant, positive, but weak correlation between the change in knowledge and the change in compliance ($r = 0.296$, $p = 0.006$) (Figure 1).

Figure 1. Scatter plot showing the relationship between change in knowledge and change in compliance scores (N=85)

[Note: In the actual manuscript, a scatter plot would be inserted here showing the relationship between knowledge change (x-axis) and compliance change (y-axis) with a trend line and r=0.296, p=0.006]

1.7. Qualitative Findings

Thematic analysis of the in-depth interviews and FGDs with the 9 Casemix team members yielded four primary themes related to INA-CBG claim process compliance:

hematic analysis from in-depth interviews and FGDs with nine Casemix team members at RSU Rachma Husada revealed **three major themes** affecting compliance with the INA-CBGs claim process:

Theme 1: Human Resource Factors – Staff Reliability and Workload

Staff reliability—defined as thoroughness, consistency, and responsibility in executing claim processes—varied across units. Some units demonstrated excellent administrative performance, while others required frequent reminders or data clarification, leading to delays.

"There are units whose administration is very neat; others often need reminders or help clarifying patient data or SEP completeness, which delays the process." *(Respondent 2)*

Contributing factors included high workload, time constraints, and multitasking roles that compromised focus and accuracy. Moreover, limited opportunities for technical skill updates (e.g., regarding new regulations or system updates) were seen to reduce staff reliability in the claim process.

Theme 2: Digital System Factors – SIMRS, Grouper, and VClaim Integration

Although the hospital employed digital systems such as SIMRS, Grouper, and VClaim, data quality from upstream units remained inconsistent. The effectiveness of the claim process depended heavily on the accuracy and timeliness of data input.

"Sometimes new regulation announcements require system adjustments in SIMRS or Grouper. We need that information quickly from management or the Casemix coordinator." *(Respondent 6)*

Delays in data entry, insufficient technical support, and the need for timely system updates were highlighted. The IT team's readiness to respond to real-time issues was critical to maintaining claim processing continuity.

Theme 3: Understanding of Operational Procedures – SOP and Documentation Compliance

Insufficient understanding of Standard Operating Procedures (SOPs) and documentation standards—particularly among attending physicians (DPJP)—was a key source of non-compliance. Documentation quality, completeness, and timeliness from DPJPs greatly influenced the verifiability of claims.

"If the medical record is complete, clear, and timely, my verification process is fast. If not, I must return the file to the relevant unit or coordinator." *(Respondent 9)*

The findings underscore the importance of enhancing DPJP awareness and commitment to timely and accurate documentation, which forms the backbone of successful claim submission.

DISCUSSION

This study provides a nuanced understanding of INA-CBG claim process compliance at RSU Rachma Husada by integrating quantitative assessment with qualitative exploration. The findings highlight that while targeted interventions can successfully enhance staff knowledge and subsequently improve compliance, the relationship is not straightforward, and the impact of knowledge alone is limited.

1.8. Knowledge, Compliance, and Their Relationship

The quantitative results demonstrated the effectiveness of the educational intervention, showing statistically significant improvements in both knowledge and compliance scores among staff involved in the claim process. This aligns with studies suggesting that training and education are essential components in improving adherence to complex healthcare administrative procedures (Mathauer & Wittenbecher, 2013; Bowman, 2008). The significant improvement in knowledge scores (mean increase of 2.99 points, $p < 0.001$) indicates that the intervention effectively addressed information gaps regarding INA-CBGs regulations, coding principles, and procedural requirements.

Similarly, the significant increase in compliance scores (mean increase of 3.54 points, $p < 0.001$) suggests that enhanced understanding translated into improved self-reported adherence to claim process requirements. However, the weak correlation ($r = 0.296$) between the increase in knowledge and the increase in compliance underscores that knowledge is a necessary but insufficient condition for optimal adherence. This finding is consistent with implementation science literature, which recognizes that knowledge transfer alone rarely results in sustained behavior change (Nilsen, 2015; Damschroder et al., 2009).

The modest correlation suggests that other contextual and systemic factors heavily influence day-to-day

compliance behavior, mitigating the direct impact of improved understanding. This finding aligns with Van Meter and Van Horn's (1975) implementation framework, which emphasizes that policy implementation is influenced not only by
understanding of standards and objectives but also by resources, inter-organizational communication, and implementer disposition.

1.9. Contextual Factors Influencing Compliance

The qualitative findings effectively illuminated these influential factors. The variability in DPJP commitment emerged as a particularly critical bottleneck. Inconsistent adherence to clinical pathways, delays in documentation, and incomplete records directly impede the workflow of the Casemix team, affecting coding accuracy, verification speed, and overall claim submission timeliness. This resonates with literature identifying physician engagement and documentation practices as key determinants of success in DRG-based payment systems (Busse et al., 2013; Mathauer & Wittenbecher, 2013).

The challenge lies in balancing clinical autonomy with the systemic requirements of the INA-CBG system, necessitating strong leadership from the Medical Committee and continuous engagement efforts. Similar challenges have been documented in other countries implementing DRG systems, where physician buy-in has been identified as a critical success factor (Busse et al., 2011; Mathauer & Wittenbecher, 2013).

Staff reliability and documentation quality emerged as another significant theme. While standardization efforts have improved overall reliability, workload pressures in high- intensity units continue to affect documentation completeness and quality. This finding aligns with research by Maharani and Tampubolon (2017), who identified workload as a significant barrier to effective JKN implementation in Indonesian hospitals.

The effectiveness of regulatory socialization represents a communication challenge that extends beyond simple information dissemination. The qualitative findings highlight the gap between receiving information and internalizing it into practice, reflecting the "knowledge-to-action gap" described in implementation science (Graham et al., 2006).

This suggests that traditional top-down communication approaches may be insufficient for complex regulatory changes, requiring more interactive and continuous learning approaches.

The theme of coordination for complex cases highlights the importance of clear workflows and communication channels for managing exceptions. This finding resonates with Grindle's (1980) emphasis on implementation context, particularly the importance of institutional characteristics and coordination mechanisms in policy implementation.

1.10. Integration with Theoretical Frameworks

When viewed through the lens of Van Meter and Van Horn's (1975) implementation framework, our findings suggest that while the educational intervention successfully
addressed the "standards and objectives" component by enhancing knowledge, other components such as "characteristics of implementing agencies" (e.g., workload, staffing), "disposition of implementers" (e.g., DPJP commitment), and "inter- organizational communication" (e.g., regulatory socialization effectiveness) continue to influence compliance outcomes.

Similarly, applying Grindle's (1980) framework, our findings highlight how both content factors (e.g., the complexity of INA-CBGs regulations) and contextual factors (e.g., power dynamics between different professional groups, institutional capacity) shape implementation outcomes. The variable commitment of DPJPs, in particular, reflects the power dynamics aspect of Grindle's framework, where the interests and power of key stakeholders significantly influence implementation success.

1.11. Practical Implications

The findings have several practical implications for improving INA-CBGs claim process compliance at RSU Rachma Husada and similar hospitals. First, while educational interventions are valuable, they should be part of a comprehensive strategy that addresses systemic and contextual factors. Second, targeted approaches to enhance DPJP engagement and commitment are essential, potentially through a combination of education, incentives, feedback mechanisms, and Medical Committee oversight. Third, workflow optimization and staffing adequacy in high-pressure units could help address documentation quality issues. Fourth, more interactive and continuous approaches to regulatory socialization, such as regular case discussions and practical workshops, may be more effective than traditional top-down communication methods.

1.12. Limitations

This study has several limitations. First, the one-group pretest-posttest design without a control group limits causal inferences about the intervention's effectiveness. Second, compliance was measured through self-report, which may be subject to social desirability bias. Third, the study was conducted in a single hospital, potentially limiting generalizability to other settings with different characteristics. Fourth, the relatively short follow-up period (two weeks post-intervention) may not capture long-term changes in knowledge retention and compliance behavior. Finally, while the qualitative phase provided valuable insights from the Casemix team's perspective, it did not include the perspectives of other stakeholders such as DPJPs and

hospital leadership, which could provide additional dimensions to understanding compliance challenges.

CONCLUSION

This study demonstrates that enhancing staff knowledge through targeted interventions leads to statistically significant improvements in INA-CBG claim process compliance at RSU Rachma Husada. However, the impact of knowledge alone is modest, as indicated by the weak correlation between knowledge gains and compliance improvements.

Compliance is significantly influenced by a complex interplay of factors, most notably the variable commitment and documentation practices of attending physicians (DPJPs), staff workload, the effectiveness of communicating regulatory changes, and the efficiency of coordinating complex cases.

Optimizing the INA-CBG claim process requires a multifaceted strategy that extends beyond staff education. Key recommendations include:

1. Implementing strategies to strengthen DPJP engagement and accountability for timely, accurate documentation and adherence to clinical pathways, potentially through enhanced Medical Committee oversight and feedback mechanisms
2. Continuously reviewing and optimizing workflows and staffing levels to mitigate the impact of workload on compliance
3. Improving communication strategies for regulatory updates, employing interactive methods alongside formal channels
4. Strengthening inter-departmental coordination protocols for managing complex or atypical cases
5. Leveraging the hospital information system (SIMRS) to support standardized documentation and compliance checks

By addressing these knowledge-based and systemic factors concurrently, RSU Rachma Husada can enhance the efficiency and accuracy of its INA-CBG claim process, thereby reducing claim rejections and delays, improving cash flow, and ultimately supporting the delivery of sustainable, high-quality healthcare services under the JKN program.

Future research should explore the long-term sustainability of improvements following educational interventions, investigate the perspectives of other stakeholders such as DPJPs, and evaluate the effectiveness of multifaceted interventions addressing both knowledge and systemic factors. Additionally, comparative studies across different hospital types and regions would enhance understanding of contextual variations in INA- CBGs implementation challenges.

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