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Analysis of the Accuracy of INA-CBG's Coding for Medical Rehabilitation Outpatients to Facilitate BPJS Claims at Hospital X

Sali Setiatin[1], Hesti Puspita Sari[2], Shinta Elvira[3]
[1]Politeknik Piksi Ganesha, Bandung, Indonesia, salisetiatin@gmail.com
[2]Politeknik Piksi Ganesha, Bandung, Indonesia, puspitasarihesti336@gmail.com
[3]Politeknik Piksi Ganesha, Bandung, Indonesia, Shintaelvira4@gmail.com

Corresponding Author: puspitasarihesti336@gmail.com[2]

Abstract: The accuracy of diagnosis and procedure coding in the INA-CBG's system is a key factor in the smooth submission of BPJS claims at hospitals. This study aims to analyze the relationship between the accuracy of coding and the validity of BPJS claims in medical rehabilitation outpatients at Hospital X. The method used is mixed methods with a sequential explanatory approach. The quantitative stage analyzed 2,216 patient claim files for January 2025 using the Chi-square test. Next, in-depth interviews were conducted with those responsible for managing outpatient claims to explore the causes of coding inaccuracies. The results show that 96.2% of files were coded correctly, 3.8% were coded incorrectly, and all are pending claims. The Chi-square test shows a significant relationship between coding accuracy and claim eligibility ($p = 0.000$). Qualitative findings revealed major obstacles in the form of differences in interpretation of coding, limited training in coding, and suboptimal hospital information systems. Regular training, improved coordination between units, and development of an electronic recording system in line with medical rehabilitation service needs are recommended. This study is expected to contribute to improving the quality of medical documentation and the effectiveness of health care financing through the INA-CBG's claims system.

Keywords: Accuracy of Codification, INA-CBG's, Medical Rehabilitation, BPJS Claim

INTRODUCTION

According to (Peraturan Presiden, 2018), The Social Security Administration Agency (BPJS) for Health is a legal entity established to administer health insurance programs. In implementing this program, hospitals are one of the health care facilities that collaborate with BPJS Health in providing services to participants of the National Health Insurance (JKN) program. Hospitals, as healthcare institutions, provide promotive, preventive, curative, and rehabilitative services in accordance with (Kemenkes RI, 2020). One of the units that plays an important role in the provision of rehabilitative services is the medical rehabilitation clinic. According to the national guidelines for medical rehabilitation services issued by the Ministry

of Health of the Republic of Indonesia, medical rehabilitation is defined as a form of healthcare that includes medical interventions, physical therapy, occupational therapy, speech therapy, clinical psychological services, and medical social services. All these services aim to restore the physical, mental, social, and vocational functions of patients with impaired bodily functions (Kementerian Kesehatan Republik Indonesia, 2019).

To ensure the quality and continuity of services, every medical action must be documented completely and accurately in medical records, both in written and electronic form as regulated in (Permenkes No. 24, 2022). The information in medical records is then coded using international classification systems, such as the *International Classification of Diseases, 10th Revision* (ICD-10) for diagnoses and the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM) for procedures, which form the basis for clinical data management, health statistics, and claims for reimbursement from the BPJS Kesehatan (Centers for Disease Control and Prevention, 2011; Organization, 2019) Adequate knowledge for health workers is essential to minimize errors in diagnosis coding, which can hinder the BPJS claim process in the INA-CBG's application system (Ramadhiane & Sari, 2021). In addition, this system not only facilitates integrated access and management of patient data, but also plays a role in improving the efficiency and transparency of the BPJS claim process (Fadilah et al., 2024).

However, in practice, there are still various obstacles that cause claims to be pending. Several main factors, such as incomplete documents and errors in the codification process, contribute to the pending BPJS Health claims (Dewi & Setiatin, 2024). In the JKN system, health service claims are submitted using the *Indonesia Case Based Groups* (INA-CBG) method, which is a payment system based on package rates according to specific diagnosis and medical procedures (Kementerian Kesehatan Republik Indonesia, 2016). If the claim file does not meet the specified requirements, the document will be returned to the hospital for revision so that the reimbursement process by BPJS Kesehatan can continue (Widaningtyas et al., 2024). Therefore, hospitals are expected to be able to manage costs effectively in every health service provided to patients (Happy, 2018).

However, inaccuracies in the diagnosis and procedure coding process still frequently occur, negatively impacting the quality of clinical data and causing discrepancies in claim values between hospitals and BPJS. A study at Haji Surabaya General Hospital revealed that pending BPJS claims are triggered by difficulties in reading medical records, incomplete documentation, the absence of standard operating procedures (SOP), and issues with equipment and network infrastructure, which disrupt cash flow and pose potential financial losses for the hospital (Triatmaja et al., 2022). Therefore, periodic evaluation of the accuracy of coding is very important to ensure the smooth running of the claims process and the continuity of hospital services.

Various studies reveal that the accuracy of diagnostic coding has a significant impact on the validity of health service data, tariff calculations, and data-driven decision-making (Maryati et al., 2023). Research by (Sitorus et al., 2023) At Sultan Sulaiman Serdang Bedagai General Hospital, there was a significant correlation between diagnostic coding inaccuracy and pending claim status, caused by incomplete medical records and coding errors. Similar findings at Dr. Soeradji Tirtonegoro General Hospital in Klaten indicate that the accuracy of diagnosis coding significantly contributes to claims approved by BPJS ($p = 0.005$), and recommend coding training and improved collaboration with medical staff (Hapsari et al., 2024).

According to research by (Rizki et al., 2025) revealed that the main factors causing BPJS claim files to be returned were generally due to inaccurate diagnosis coding, incomplete documentation, and a lack of coordination and understanding of claim guidelines. Efforts to improve this situation include training officers, improving coordination, and optimizing electronic medical records to streamline the claim process.

Based on this background, this study aims to analyze the relationship between the accuracy of diagnosis and procedure coding using (ICD-10), (ICD-9-CM), and INA-CBG's on the smoothness of BPJS claims submission for medical rehabilitation outpatient patients at Hospital X. This study analyzed 2,216 patient claim files from January 2025, with coding accuracy as the independent variable and claim status (eligible or pending) as the dependent variable. The focus on the medical rehabilitation outpatient clinic is expected to provide tangible contributions to improving the quality of claim submissions and supporting the sustainability of the hospital financing system.

METHOD

This study uses a mixed methods design with a sequential explanatory approach, namely the collection and analysis of quantitative data followed by the collection and analysis of qualitative data to deepen understanding of the quantitative findings (Creswell, 2014). A quantitative approach was conducted by analyzing all data from medical records and BPJS claims of outpatient rehabilitation patients at Hospital X during the period of January 2025, totaling 2,216 records, using the *total sampling* technique. Claim data were classified based on BPJS claim status, namely eligible and pending. An evaluation of the accuracy of diagnosis coding (ICD-10) and medical procedure coding (ICD-9-CM) was conducted based on verification results from BPJS Health as the primary reference, to avoid discrepancies in interpretation between the hospital and BPJS. Of the total 404 pending files, the hospital made coding corrections, and the results showed that 238 files were approved as eligible for claims, while 166 files remained ineligible or failed to claim. Quantitative analysis was conducted using Microsoft Excel and IBM SPSS Statistics version 25, through descriptive analysis in the form of frequency and percentage, as well as a *Chi-square* test to examine the relationship between coding accuracy and BPJS claim status.

A qualitative approach was used to gain a deeper understanding of the causes of coding inaccuracies and obstacles in the claims process. Data collection techniques were carried out through in-depth interviews with those responsible for managing outpatient claims at Hospital X, which was selected using purposive sampling. The interviews were conducted face-to-face, lasting approximately 30 minutes, recorded, and transcribed verbatim. Data analysis was performed using inductive thematic analysis, grouping information into main themes related to the causes of coding inaccuracies and claim processing challenges.

This study has obtained permission from the head of the medical records unit at Hospital X to use medical records and claim documents. The main data sources in this study include patient medical records, BPJS claim data, and interview transcripts. This mixed methods approach is expected to provide a comprehensive overview of the challenges and strategies in improving accuracy and coding based on INA-CBG's to support the smooth submission of BPJS claims in medical rehabilitation services.

RESULTS AND DISCUSSION

1. Accuracy of Patient Coding

The results of the study related to the accuracy of coding of 2,216 medical records of patients at the medical rehabilitation clinic during the period of January 2025 are as follows.

Table 1. Accuracy of Patient Classification in the Medical Rehabilitation Outpatient Clinic at Hospital X

Accuracy of Codification	Frequency	Total %
Exact	2.132	96,2%
Inappropriate	84	3,8%

Total	2.216	100%

Source: Research data, Medical Rehabilitation Clinic, Hospital X, 2025

Based on Table 1, of the total 2,216 patient files in the medical rehabilitation clinic, 2,132 files (96.2%) showed accurate coding, while 84 files (3.8%) had inaccurate coding. The accuracy of coding was assessed based on the consistency between the diagnosis and procedures in the medical record and the coding standards (ICD-10) and (ICD-9-CM).

One example of coding accuracy can be found in the case of a patient diagnosed with communication disorders, postural control disorders, attention disorders, SPD, ASD, and suspected ADHD, which was coded as Z50.8 and R29.3 for diagnosis, and 98.83 and 93.17 for integrated multisensory therapy procedures combined with play therapy. Meanwhile, an example of coding inaccuracy was found in intelligence testing or psychological assessments, which were coded as 94.01 and 94.04, whereas according to BPJS guidelines, they should have been coded as 93.75.

2. Patient Claim File Eligibility

The results of the study on the eligibility of BPJS claims against 2,216 medical records of patients at the medical rehabilitation clinic in January 2025 are as follows.

Table 2. Eligibility of Medical Rehabilitation Outpatient Clinic Patient Files at Hospital X

Document Eligibility	Frequency	Total %
Worthy	1.812	81,8%
Pending	404	18,2%
Total	2.216	100%

Source: Research data, Medical Rehabilitation Clinic, Hospital X, 2025

Based on Table 2, of the total 2,216 files submitted for BPJS claims, 1,812 files (81.8%) were deemed eligible for claims, while 404 files (18.2%) were returned by BPJS verifiers with pending claim status. Of the 404 files with pending claim status, 84 files were pending due to inaccuracies in diagnosis and procedure coding. Seven files were due to administrative completeness issues (such as the absence of the patient's therapist's signature and the absence of an assessment form every two weeks), while 313 files were due to service standard issues, such as fragmentation or repeated visits, visits combined with previous outpatient clinic visits, and medical rehabilitation procedures in one episode with previous rehabilitation procedures.

3. The Relationship Between Code Accuracy and the Validity of BPJS Claims

The results of the study related to the relationship between the accuracy of coding and the eligibility of BPJS claims for 2,216 medical records of patients at the medical rehabilitation clinic in January 2025 are as follows.

Table 3. Results of the *Chi-square* Test for Medical Rehabilitation Outpatients at Hospital X

Accuracy of Codification	BPJS Claim				Total		P Value
	worthy		Pending				
	n	%	n	%	n	%	
Exact	1.812	81,8%	320	14,4%	2.132	96,2%	
inappropriate	0	0,0%	84	3,8%	84	3,8%	0,000

Total	1.812	81,8%	404	18,2%	2.216	100%

Source: Research data, Medical Rehabilitation Clinic, Hospital X, 2025

Statistical analysis using the Chi-square test showed that all files with coding inaccuracies, totaling 84 files (3.8%), were pending claims. Of the 2,132 files (96.2%) with accurate coding, 1,812 files (81.8%) were deemed eligible for claims by BPJS, while the remaining 320 files (14.4%) were pending due to fragmentation and administrative completeness issues.

The results of the *Chi-square* test showed a p-value of 0.000 ($p < 0.05$), indicating a significant relationship between the accuracy of coding and the eligibility of BPJS claims. Thus, accuracy in the diagnosis and procedure coding process has a statistically significant effect on the eligibility of claim files.

Quantitatively, the results of this study are in line with the results of previous studies (Maryati et al., 2023), which states that accuracy in diagnosis coding is a key factor in determining the eligibility of INA-CBG's claims. Incorrect coding not only leads to claim rejection, but also has the potential to reduce the value of claims paid. This is also reinforced by research (Rizki et al., 2025), which identified coding errors as one of the main causes of BPJS claim rejections, in addition to administrative obstacles and incomplete supporting documents. Therefore, coding accuracy is a quality indicator that cannot be ignored in the INA-CBG's claims system.

4. Qualitative Findings from Interviews

The quantitative findings described above indicate a significant relationship between coding accuracy and the smooth processing of BPJS claims. However, to further understand the context and causes behind coding inaccuracies, a qualitative approach is needed. Therefore, in-depth interviews were conducted with the responsible parties for outpatient claim management to explore the processes, challenges, and systemic factors influencing the coding process at the medical rehabilitation clinic.

The process of recording diagnoses and procedures at the medical rehabilitation clinic is carried out by a medical team consisting of doctors, nurses, and therapists. All information is recorded in medical records and special therapy program sheets. The person responsible for managing outpatient claims explains that the special therapy program sheet is an important document because it records the patient's initial condition, therapy plan, and schedule for follow-up actions. This document serves as the basis for the diagnosis and procedure coding process, which distinguishes the medical rehabilitation outpatient clinic from other outpatient services.

The team involved in the coding process consists of a clinical team, a JKN outpatient coding team, and an internal hospital verification team. Collaboration between these teams is important to minimize errors, although differences in perception remain a challenge. In the process, the hospital refers to (ICD-10) and (ICD-9-CM), and uses an internal coding dictionary developed through collaboration with other hospitals in the Bandung and West Java regions to ensure consistency in interpretation.

The involvement of medical rehabilitation specialists is also important in matching and verifying codes, including in the compilation of code dictionaries. However, if there are discrepancies between the hospital and BPJS verifiers, the final decision rests with the specialist. Other challenges include delays in documentation, incomplete documents, and differences in interpretation with BPJS, which often result in claim rejections.

Coding in medical rehabilitation polyclinics is still done manually without the support of a special digital system. This increases the likelihood of differences in interpretation and slows down the claim submission process. Coding training is conducted two to three times a year, but

it is general in nature and not specifically tailored to the needs of medical rehabilitation polyclinics. Coding evaluations are also not conducted systematically, only when claims are rejected. The head of outpatient claim management stated that errors in coding can lead to claim rejections or reductions in the value of claims paid, which ultimately affects hospital revenue.

From a qualitative perspective, in-depth interviews with those responsible for managing outpatient claims revealed a number of factors that affect the accuracy of coding. Among these are the lack of specific training on coding in medical rehabilitation services, the absence of standard operating procedures (SOP) regarding the interpretation of coding between hospitals and BPJS. The responsible claim managers for outpatient care also noted that differences in perception between the hospital's internal team and BPJS verifiers often pose challenges in determining the appropriate coding.

These qualitative findings provide contextual explanations for the quantitative data, while highlighting the causes of coding inaccuracies. The *mixed methods* approach used in this study, according to (Sugiyono, 2022), enables the integration of numerical and narrative data, resulting in a more comprehensive picture of the relationship between the accuracy of coding and the smooth submission of BPJS claims.

Previous research supports this study (Dartini et al., 2024) emphasizing the importance of complete medical records in accordance with the International Classification of Diseases (ICD) standards to improve coding accuracy. (Oktamianiza. et al., 2024) also stated that incomplete diagnosis writing and inaccuracy in code selection are often the main causes of incorrect coding. In addition, research by (Hapsari et al., 2024), shows a significant correlation between routine training for medical personnel or coders and the success of BPJS claims. General training that is not specific to medical rehabilitation clinics, such as that found at Hospital X, is considered insufficiently effective in improving coding accuracy.

Considering all of these findings, it can be concluded that the challenges in managing BPJS claims are not only technical in nature, such as document completeness and code selection, but also involve systemic and structural issues. Issues such as the lack of clear standard operating procedures (SOP) and inadequate dissemination of information regarding INA-CBG coding rules, as well as the low frequency of practical and specific training, constitute obstacles that need to be addressed immediately.

As a solution, strategic steps that can be taken by hospitals include: Developing and disseminating SOP for specific coding for medical rehabilitation services involving BPJS and related units on a regular basis. Providing structured training for coders and medical personnel with a focus on medical rehabilitation cases and updates to INA-CBG's policies. Strengthening internal and external coordination through regular communication forums between units and with BPJS verifiers to align understanding of coding rules. The implementation of these steps is expected to improve coding accuracy, accelerate the claims process, and support the sustainability of medical rehabilitation services.

In addition to technical and systematic factors, it is also important to understand that medical rehabilitation services have different characteristics compared to other medical services. The primary focus of rehabilitation is on functional recovery, long-term rehabilitation, and continuity of care, which rely on continuous documentation and accurate coding systems. Without the support of an appropriate and standardized coding system, preventive and promotive rehabilitation services may be disrupted, potentially reducing patients' quality of life and increasing the long-term financial burden on the national health system. Therefore, this study emphasizes that strengthening the coding system in medical rehabilitation clinics is not only necessary to meet the administrative requirements for BPJS claims but also an integral part of a strategy for sustainable, high-quality healthcare services that are comprehensive and patient-centered.

CONCLUSION

Based on the results of this study, it can be concluded that there is a significant relationship between the accuracy of diagnosis coding and procedures with the smoothness of BPJS claim submissions in medical rehabilitation services at Hospital X, with a *Chi-square* test result showing p = 0.000 (p < 0.05). Accuracy of coding at 96.2% was correlated with eligible claims, while inaccuracy at 3.8% was entirely pending. Qualitative findings revealed that the main causes of inaccuracy included lack of specific training, absence of standard operating procedures (SOP), and differences in perception between the hospital and BPJS verifiers. The novelty of this study lies in the identification of the need for contextual training and specific SOP for medical rehabilitation service coding to improve the quality of BPJS claims. Therefore, it is recommended that hospitals develop an integrated electronic recording system, strengthen coordination among teams, and establish a coding dictionary as a common reference. Further research is expected to be conducted over a longer period with a broader data scope to strengthen the generalization and implementation of these findings.

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