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QUALITY OF MEDICAL RECORD DOCUMENTATION AFFECTS ACCURACY OF DIAGNOSIS CODES IN INA-CBGS CLAIMS IN HOSPITALS

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ABSTRACT
Indonesia in financing its health services has implemented a casemix system in the National Health Insurance (JKN) program organized by the Social Security Administering Agency (BPJS). The Indonesian Case Based Groups (INA-CBGs) tariff is determined based on the diagnosis code, so its inaccuracy can lead to a decrease in claim results. The quality of clinical documentation as the basis for determining the diagnosis code in INA-CBGs claims. The purpose of this study was to empirically prove whether there is a relationship between the quality of medical record documentation and the accuracy of diagnosis codes in INA-CBGs claims.The researcher used a cross-sectional design, to analyze the completeness of medical information and the accuracy of diagnosis codes in 100 INA-CBGs pending claim documents. Sampling was carried out using a simple random technique at two private hospitals in Central Java, Indonesia. The data obtained were analyzed using the Chi-Square test. Claim documents with complete medical information were 55 (55%) and incomplete were 45 (45%). Completeness of medical information can increase the accuracy of the diagnosis code by 10.286 times better than incomplete medical information (b = 10.286; 95%CI = 3.813 to 27.743; p <0.001) and statistically both have a significant relationship. Completeness of medical information is an important thing that determines accurate diagnosis codes, so it will indirectly impact hospital income from INA-CBGs claims. Hospitals need to make efforts to improve the quality of medical record documentation, one of which can be achieved by utilizing electronic medical records.

Keywords: diagnosis codes; INA-CBGs; medical records; quality of medical information

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INTRODUCTION

Indonesia has implemented the INA-CBGs system in the JKN program organized by BPJS (Noviatri & Sugeng, 2016). The INA-CBGs system uses tariff grouping based on diagnosis codes according to the International Classification of Diseases and Related Health Problems 10th Revision (ICD-10) and action codes according to the International Classification of Diseases 9th Revision Clinical Modification (ICD-9-CM) (Minister of Health of the Republic of Indonesia, 2016). Diagnosis and action codes play an important role in determining health service costs. Inaccurate diagnosis and action codes will cause losses for hospitals (World Health Organization, 2016). Diagnosis and action codes also help in patient care planning, creating details of care costs and reducing hospital management risks (Hatta, 2013; Cummings *et al*, 2011; Dalal & Roy, 2009; Thigpen *et al*, 2015). One of the risks is losses for hospitals due to lower INA-CBGs claim results.

The results of a study conducted in Victoria, Australia stated that 16% of 752 cases of diagnosis codes were found to be inaccurate, resulting in hospital losses of 575,300 Australian dollars (Cheng *et al*, 2018). In Indonesia, it was reported that the percentage of claims that had a negative difference with the hospital's health service rates reached 23%. For example, Diabetes mellitus with Ulcer of skin coded with E14.9 and L98.4 resulted in a claim of Rp

6,617,568. The diagnosis code was inaccurate because it could be coded in combination with E14.5, resulting in a claim of Rp 7,575,541. In one case, the hospital lost Rp 957,973. This inaccuracy occurred due to incomplete medical information.

Completeness of medical information is a very important factor to improve the accuracy of diagnosis and action codes (Maryati *et al*, 2019; Maryati *et al*, 2016; Maryati *et al*, 2018; Maryati, 2016; Rohman *et al*, 2011; Astuti *et al*, 2007; Pujihastuti & Sudra, 2014; Farzandipour *et al*, 2010). The results of a preliminary study showed that there was a difference in the accuracy of diagnosis codes in claim documents with complete and incomplete medical information. This caused the claim to be returned by BPJS (pending claim). The percentage of pending claim documents caused by inaccurate diagnosis codes was 35%. The percentage of inaccurate diagnosis codes was higher than the average of other domestic health care facilities, namely 31.5% (Rohman *et al*, 2011; Astuti *et al*, 2007; Pujihastuti & Sudra, 2014; Farzandipour *et al*, 2010 Maryati *et al*, 2020; Sudra & Pujihastuti, 2016; Arifianto *et al*, 2011; Rahayu *et al*, 2011; Abiyasa *et al*, 2012; Sarwastutik, 2013; Seruni & Sugiarsi, 2015) and was still much higher than hospitals abroad, namely 12.71% (Cummings *et al*, 2011; Dalal & Roy, 2009; Thigpen *et al*, 2015; Cheng *et al*, 2018; Farzandipour *et al*, 2010).

Previous studies have been conducted to examine factors that may affect INA-CBGs claims, including the quality of medical records (Maryati *et al*, 2019; Maryati *et al*, 2016; Maryati *et al*, 2018), accuracy of diagnosis and action codes (Karimah *et al*, 2016; Maryati, 2017; Maryati *et al*, 2021; Maryati. 2020; Maryati *et al*, 2019), hospital characteristics (Maryati *et al*, 2019) and grouper codes (Maryati *et al*, 2020). However, studies analyzing the relationship between the completeness of medical information and the accuracy of diagnosis codes in INA-CBGs claim documents have never been conducted before. Based on this, the researcher analyzed the relationship between the completeness of medical information and the accuracy of diagnosis codes in INA-CBGs claim documents.

METHOD

This study is a quantitative study with a cross-sectional design. The study was conducted at 2 hospitals with similar characteristics, namely: (a) type D hospitals, (b) private hospitals, (c) hospitals located in the same area. The sample used in this study was 100 pending INA-CBGs claim documents for 2024. The sample was selected using simple random sampling. The stages in this study began with data collection, processing and analysis. Data collection was carried out using the observation method and documentation study of INA-CBGs claim documents. There are two variables to be studied, namely the completeness of medical information and the accuracy of the diagnostic code. After the observation and documentation study at the hospital were completed, the researcher processed the data, namely: (a) data compilation, (b) data classification, (c) data verification, (d) data analysis and (e) drawing conclusions. Data analysis began with univariate analysis to determine the frequency distribution of each variable, then continued with bivariate analysis using the Chi-Square test.

RESULT

The documents studied were pending claim documents, namely claim documents returned by BPJS because they did not meet the requirements. Based on the number of inpatient claim documents studied, there were 100 documents. Claim documents with complete medical information were 55 (55%) and incomplete were 45 (45%) (Table 1).

Table 1.
Accuracy of Diagnosis Codes and Accuracy of INA-CBGs Rates

Variables	Complete/Accurate		Incomplete/Inaccurate	
	f	%	f	%
Medical Information	55	55%	45	45%
Diagnosis Code	66	66%	34	34%

Incomplete medical information is mostly due to the absence of supporting examination results that match the established diagnosis. This causes, in terms of claims, not to be approved by BPJS. Claims that are not approved due to incomplete and inappropriate documentation can have an impact on decreasing hospital income from INA-CBGs claim results. Mistakes in determining diagnosis codes in INA-CBGs claims are usually caused by the diagnosis being made not being in accordance with the applicable regulations. In addition, several diagnoses that should be coded in combination but are coded separately are also one of the error factors. Another reason the diagnosis code is considered inaccurate is because of officer error (human error). High workload, pressure due to urgent claim deadlines, and lack of understanding of the latest regulations are factors that cause human error. The results of the analysis showed that the completeness of medical information had a significant relationship with the accuracy of the diagnosis code. Completeness of medical information can increase the accuracy of the diagnosis code by 10.286 times better than incomplete medical information (b = 10.286; 95%CI = 3.813 to 27.743; p <0.001) (Table 2).

Table 2.
Relationship between Completeness of Medical Information and Accuracy of Diagnosis Codes

Medical Information	Diagnosis Code		OR	CI (95%)		
	Accurate (%)	Inaccurate (%)		Lower	Upper	
Complete (%)	27 (60%)	18 (40%)	10.286	3.813	27.743	<0.001
Incomplete (%)	7 (12.7%)	48 (87.3%)				

The significant relationship between the completeness of medical information and the accuracy of the diagnosis code in the INA-CBGs claim document shows that good and complete documentation is very important in the era of National Health Insurance. Therefore, hospitals have now adopted electronic medical records as one of the solutions to overcome incomplete medical record documentation. By using electronic medical records, health workers will be forced to fill in patient health records completely and on time. Electronic medical records also help a lot to overcome the problem of illegible writing, so that indirectly it will improve the quality of service because communication between health workers will no longer be a problem.

DISCUSSION

Documentation is an integral part of medical practice. Clinical documentation serves as a reference for determining treatment and patient safety measures (Narayanan et al, 2017). Incomplete medical record documentation affects the quality of patient care, as a basis for decision making, and can risk causing a decrease in hospital income from INA-CBGs claims. This is in accordance with previous research statements (Mohammad *et al*, 2021) that clinical documentation is the basis of good patient care and is very important for proper coding and collection. Consistent and standardized documentation can improve communication between health workers and can lead to better claims. Medical record documentation improves reimbursement and increases the accuracy of data reported to the public (Seligson *et al*,

2021). In another study, it was also mentioned that the diagnosis code determines the success of the hospital in the casemix system. Strict quality and cost control must be carried out by the hospital to ensure optimal service without the risk of losing revenue. The impact of lost revenue in hospitals due to inaccurate diagnosis codes significantly occurred in Malaysia in 74.0% (307/415) cases. From these results, 52.1% (160/307) cases had lower hospital rates, so in total, the potential loss of revenue was RM654,303.91 (Zafirah *et al*, 2018).

The significant relationship between medical information and diagnosis codes shows that both are very important to be considered in National Health Insurance. Therefore, hospitals must make efforts to ensure complete clinical documentation and accurate diagnosis codes, including by using electronic medical records. Implementing electronic medical records in hospitals can change the clinical workflow and documentation process, as well as maintain patient safety, thus supporting high-quality patient care (Jedwab *et al*, 2022). As stated in Reinus's study, sophisticated electronic medical records can enable the collection and organization of clinical data. Such programs can help stakeholders improve regulatory compliance and ensure accurate billing. In addition, electronic medical records provide additional benefits for stakeholders to access information more quickly (Reinus, 2021).

CONCLUSION

The quality of medical record documentation greatly determines hospital income in the era of National Health Insurance. Complete medical information can be the basis for determining better diagnosis codes, so as not to cause the risk of INA-CBGs claims being disapproved. A more serious impact, inaccurate diagnosis codes can cause a decrease in hospital income from INA-CBGs claims. Therefore, hospitals need to make efforts to prevent losses due to incomplete medical information. One of them is by utilizing information technology, such as electronic medical records.

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