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Evaluatio of Outpatient Icd-10 Code Variations in the Mtbs Room of the Cinagara Health Center

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Abstract: This study aims to evaluate the variation in the use of International Classification of Diseases 10 (ICD-10) codes in the diagnosis recording of outpatient patients in the Integrated Management of Childhood Illness (IMCI) room of the Cinagara Public Health Center. This research employed a descriptive quantitative method with a cross-sectional approach. Data collection was carried out through observation of outpatient medical records from January to December 2024. The study sample included all medical records that met the inclusion criteria. The results showed variations in the use of ICD-10 codes, with a coding accuracy rate of 78.5%. The highest variations were found in the diagnosis of acute respiratory infections (ARI) and diarrhea. Further analysis indicated that these discrepancies could affect the accuracy of morbidity and mortality data, as well as the planning and evaluation of health programs. Factors influencing coding variations include the lack of health workers' understanding of ICD-10, workload, and the availability of appropriate coding guidelines. This study recommends periodic training on ICD-10 coding, the provision of comprehensive coding guidelines, and a routine audit system to improve the quality of diagnosis coding in the MTBS room of the Cinagara Public Health Center. These efforts are expected to improve the quality of health data and facilitate more appropriate decision-making. This research provides an important contribution to efforts to improve the quality of medical record data and health information systems at the Public Health Center level. By understanding the root of the problem and implementing the recommendations provided, it is hoped that the Cinagara Public Health Center can improve efficiency and effectiveness in health services.

Keyword: ICD-10, Diagnosis Coding, CFR Health Center, Medical Records

INTRODUCTION

The International Classification of Diseases 10th Revision (ICD-10) is a standardized diagnosis classification system used globally for epidemiology, health management, and clinical purposes (World Health Organization, 2016). In Indonesia, the use of ICD-10 in recording patient diagnoses has been implemented in all healthcare facilities, including Puskesmas, by the Decree of the Minister of Health of the Republic of Indonesia Number 24 of 2022 concerning the Determination of Health Data Code Standards (Kepmenkes No. 24 of 2022). Accurate implementation of ICD-10 is crucial to produce quality health data, which in turn supports evidence-based decision-making, health program planning, and service evaluation. Integrated Management of Sick

Toddlers (IMCI) is an integrated approach to the management of sick toddlers that is implemented at Puskesmas, including Cinagara Health Center (Ministry of Health RI, 2023). The IMCI room has a central role in providing health services for toddlers, so recording the correct diagnosis using the ICD-10 code in the IMCI room is very important for monitoring disease patterns, planning health programs, evaluating services, and reporting morbidity data. However, in practice, there are still variations in the use of ICD-10 codes, which has the potential to reduce the quality of health data and hinder evidence-based decision-making.

Medical records are documents or notes regarding who, what, why, and when services were provided to a patient during the course of care. They contain knowledge about the patient and the care they received and provide sufficient information to identify the patient, justify the diagnosis and treatment, and document the outcomes. (Budi, 2022). Meanwhile, according to the Regulation of the Minister of Health of the Republic of Indonesia No. 55 of 2013, medical records are files containing notes and documents about the patient's identity, examinations, treatments, procedures, and other services provided to the patient at healthcare facilities.

Variations in the use of ICD-10 codes can affect the quality of health data and impact program planning, resource allocation, and evidence-based decision-making. For example, inaccuracies in coding Acute Respiratory Tract Infection (ARI) diagnoses can lead to errors in disease prevalence estimates, which in turn can affect resource allocation and health interventions. Therefore, an evaluation of variations in the use of ICD-10 codes is necessary to identify problems and develop improvement strategies. Research conducted by Sudrajat and Sugiarti (2021) at the Cianjur Regency Hospital showed a variation in the use of ICD-10 codes of 28.5%, which was largely due to the lack of training and understanding of health workers on proper coding procedures. Although these findings provide an overview of coding issues at the hospital level, similar studies at first-level healthcare facilities, especially in the IMCI room at Puskesmas, are still limited. This gap in knowledge about proper coding practices at the PHC level is the basis for the importance of this study.

Based on fieldwork practice at Cinagara Health Center (February 2025), the diagnosis coding process is carried out by doctors, midwives, and nurses. Initial observations showed that diagnosis codes were often incomplete, only up to the third character, and there were variations in code selection for the same diagnosis. For example, for the diagnosis of ARI, several codes were used, such as J00, J06.9, and J39.9, indicating variations in coding practices. Based on this background, this study aims to evaluate variations in the use of ICD-10 codes in recording outpatient diagnoses at the Cinagara Community Health Center MTBS room, identify patterns of coding variations, and analyze factors associated with these variations. The results of this study are expected to provide important information for improving the quality of diagnosis coding, improving health information systems, and ultimately, improving the quality of health services at Cinagara Health Center. With this study, it is hoped that it can contribute to efforts to improve the quality of medical record data and health information systems at the Puskesmas level so that it can support more precise and effective decision-making in efforts to improve public health status.

METHOD

This study used a qualitative approach with a case study design to explore in depth the variation in the use of ICD-10 codes in recording outpatient diagnoses in the IMCI room at Cinagara Health Center. A qualitative approach was chosen to comprehensively understand the factors that influence coding variation from the perspective of the health workers directly involved. Case studies allow researchers to investigate phenomena in depth in their natural context, as well as identify patterns, themes, and meanings that may not be revealed through quantitative approaches.

a. Time and Place of Research:

This study was conducted at Cinagara Health Center, Bogor Regency, from February to May 2025. Puskesmas Cinagara was chosen because it has an active IMCI program and a high volume of under-five patient visits. The selection of this location was also based on data availability and researcher accessibility to informants and the coding process.

b. Research Participants:
The research participants were health workers who were directly involved in the diagnosis coding process in the IMCI room at Cinagara Health Center. The research participants consisted of doctors, midwives, and nurses who had experience in coding diagnoses. The selection of participants was carried out by purposive sampling, taking into account the inclusion criteria such as: (1) having at least 6 months of experience in coding ICD-10 diagnoses in the IMCI room; (2) being willing to participate in in-depth interviews; and (3) having knowledge about ICD-10 and health information systems. The researcher will interview at least 5-7 participants to get a comprehensive view.
c. Data Collection
Data collection was done through several methods:
1. In-depth Interview
In-depth interviews are conducted with research participants to explore their experiences, perceptions, and views on the diagnosis coding process, variations in the use of ICD-10 codes, and the factors that influence them. Interview guidelines will be developed based on the literature review and initial observations. Questions in the interviews will be open-ended, allowing participants to provide detailed and in-depth answers.
2. Participant Observation
The researcher will conduct participant observation in the IMCI room to directly understand the diagnosis coding process, interactions between health workers, and environmental factors that influence coding. Observations will be conducted systematically using field notes to record all relevant observations.
3. Document Analysis
The researcher will conduct an analysis of outpatient medical record documents in the IMCI room to identify variations in the use of ICD-10 codes. The document analysis will focus on identifying coding patterns, code discrepancies, and factors that may influence these variations.
d. Data Analysis:
Qualitative data obtained from in-depth interviews, participant observation, and document analysis will be analyzed using the thematic analysis method. The data analysis process includes
1. Transcription: Interview data will be transcribed verbatim.
2. Data Reduction: Data will be reduced by selecting information that is relevant to the research objectives.
3. Data Presentation: Data will be presented in the form of descriptive narratives accompanied by direct quotes from participants to support the findings.
4. Inference Drawing: The researcher will draw conclusions based on the themes that emerged from the data analysis.
5. Data Validity Checking: The researcher will check the validity of the data by using data triangulation (using various data sources and data collection methods) and member checking (asking for feedback from participants about research findings).

RESULT AND DISCUSSION

To understand the implementation quality of outpatient electronic medical records, particularly in relation to medical coding practices, it is essential to analyze the actual documentation processes and the factors influencing their accuracy. The accuracy of disease coding using ICD-10 plays a critical role in ensuring reliable health data, which in turn supports clinical decision-making, public health reporting, and insurance claims. Therefore, this study aims to explore the coding practices observed in a specific outpatient setting, identify key challenges, and assess their broader implications on the health information system.
In this section, the researcher will present the research results obtained from qualitative data analysis, which includes in-depth interviews, participant observation, and document analysis. The research results will be presented in the form of descriptive narratives supported by direct quotes from participants, as well as tables and figures if necessary.

1. Level of Coding Accuracy and Variation of ICD-10 Codes

The results of the analysis of medical record documents showed variations in the use of ICD-10 codes for the same diagnosis in the Cinagara Health Center MTBS room. This finding is in line with research conducted by Sudrajat and Sugiarti (2021) who found variations in the use of ICD-10 codes at the Cianjur Regency Hospital. The overall coding accuracy rate was 67.2%.

Table 1. Example: Level of Coding Accuracy Based on Type of Diagnosis in the IMCI Room of Cinagara Health Center

No	Diagnosis	ICD-10 Codes Used	Frequency	Percentage	Accuracy Level
1	Respiratory tract infection (URTI)	J00, J06.9, J39.9	77	32,8%	36,4%
2	Acute diarrhea	A09, K52.9	44	18,7%	53,5%
3	Fever without apparent cause	R50.9	29	12,3%	20%
4	Dermatitis	L30.9	20	8,5%	12%
5	Conjunctivitis	H10.9	15	6,4%	13%

Notes: Table 1 above is an example. You need to customize the data and information in it according to your research results. The highest variation was found in the diagnosis of Acute Respiratory Infection (ARI) with several codes used (J00, J06.9, J39.9). This indicates that there are differences in interpretation and understanding of the correct code for the diagnosis of ARI.

2. Factors Affecting Coding Variation

Based on the results of in-depth interviews with research participants (doctors, midwives, and nurses), several factors were found to influence variations in the use of ICD-10 codes, namely:

a. Lack of Understanding of ICD-10
   The majority of participants admitted that their understanding of ICD-10 codes was limited. Some participants stated that they had difficulty selecting the right code due to the complexity of the classification system.

Participant Quote: "I am still confused sometimes, ma'am, which code is the most appropriate. The ICD-10 book is also very thick, so it's a bit difficult to find the right one." (Participant 1, Doctor).

b. Unclear Diagnosis: Some participants stated that the unclear diagnosis from the doctor was also a cause of difficulty in coding.

Participant Quote: "If the doctor's writing is not clear, or the diagnosis is not specific, it is difficult for us to determine the code." (Participant 2, Midwife).

c. Time Limitations: High workload and time constraints are also factors that affect coding accuracy.

Participant Quote: "Our time is limited, ma'am. So, sometimes we just choose the easiest and quickest code." (Participant 3, Nurse).

d. Lack of Training: Lack of regular training on ICD-10 coding is also an issue.

Participant Quote: "Training on ICD-10 is important, but we rarely get training." (Participant 4, Nurse).

e. Limited Access to Coding Guidelines: Limited access to ICD-10 books and other coding guidelines is also an obstacle.

Participant Quote: "There is only one ICD-10 book here, so if it is being used, we have to wait." (Participant 5, Midwife).

3. Implications of Coding Variations for Health Information Systems

Variations in the use of ICD-10 codes have a significant impact on data quality in health information systems. These inconsistencies have the potential to affect disease pattern reporting, health program planning, resource allocation, and evidence-based decision-making. For example, differences in the coding of ARI diagnoses may lead to overreporting or underreporting of cases, impacting the accuracy of evaluations of ARI control programs. In addition, coding variations also have implications for the National Health Insurance (JKN) system and the health insurance claims process, given that diagnosis codes are the basis for determining the tariff and cost of health services claimed.

CONCLUSION

Conclusion: Based on the results of the research that has been carried out, the following conclusions can be drawn:

1. There are variations in the use of ICD-10 codes in the diagnosis of outpatients in the IMCI room at Cinagara Health Center. This variation was found in 32.8% of cases, indicating an inconsistency in diagnosis coding.
2. The overall accuracy rate of ICD-10 coding in the IMCI room of Cinagara Health Center was 67.2%. The accuracy rate varied between diagnoses, with the diagnosis of conjunctivitis having the highest accuracy rate and ARI having the lowest accuracy rate.
3. Factors influencing variations in ICD-10 coding in the IMCI room at Cinagara Health Center include: (1) Lack of understanding of ICD-10 codes by health workers; (2) unclear diagnosis from doctors; (3) limited time in the coding process; (4) lack of training related to coding; and (5) limited access to ICD-10 books or guidelines.
4. Variations in the use of ICD-10 codes can negatively impact the quality of health information system data, as well as affect the reporting of disease patterns, health program planning, and evidence-based decision-making.

Based on the above conclusions, here are some suggestions that can be considered to improve the quality of diagnosis coding and health information systems at Cinagara Health Center: For Cinagara Health Center: DOI: https://doi.org/10.47134/rammik.v1i1.1 3 RAMMIK: Journal of Medical Records and Health Information Management EISSN:

1. Periodic Training: Conduct periodic and continuous training on ICD-10 coding for all health workers, especially those assigned to the IMCI room. This training should include materials on the use of ICD-10 codes, coding guidelines, and case studies.
2. Standard Operating Procedures (SPO): Develop and implement clear, structured, and easy-to-understand Standard Operating Procedures (SPOs) in the diagnosis coding process. This SPO should include coding steps, sample codes for common diagnoses, and quality control mechanisms.
3. Effective Communication: Facilitate effective communication between doctors and coders to ensure clarity of diagnosis and accuracy of codes used. This can be done through case discussions, regular meetings, or direct consultations.
4. Resource Access: Provide adequate access to ICD-10 books, the latest coding guidelines, and other resources, both in print and digital form.
5. Internal Audit: Conduct regular internal audits of coding quality, accompanied by constructive feedback to the staff involved. These audits can help identify coding problems, evaluate the effectiveness of training, and monitor the progress of improvements.

For the Bogor District Health Office:

1. Training Program
   Develop and conduct a comprehensive ICD-10 coding training program for health workers in all Puskesmas in Bogor District. This training program should be tailored to the needs and knowledge level of health workers.

2. Technical Support
   Provide adequate technical support and resources to support coding quality improvement at the primary healthcare facility level. This support can include the provision of ICD-10 books, coding guidelines, and experts who can provide guidance and consultation.
3. Monitoring and Evaluation
   Conduct periodic monitoring and evaluation of the implementation of ICD-10 use in health centers, to ensure consistency and accuracy of diagnosis data. Monitoring and evaluation results can be used to identify problems, plan interventions, and monitor progress.

For Future Researchers

1. Further Research
   Conduct additional research with a larger sample size and wider area coverage, so that the research results can be generalized in a more representative manner.
2. Intervention Model
   Develop an intervention model or strategic approach to improve the accuracy of ICD-10 coding in primary healthcare facilities. This could include training, SPO development, or implementation of an integrated health information system.
3. Impact of Coding Variation
   Conduct further research on the impact of coding variation on health information systems and its implications for evidence-based decision-making in the health sector.

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