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The Relationship Between Coding Knowledge and Genitorinary Diagnosis Coding Accuracy: A Cross-Sectional Study at Drs. H. Amri Tambunan Hospital

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ABSTRACT

The accuracy of the genitourinary diagnosis code is considered precise and accurate and in accordance with ICD 10. The inaccuracy of the diagnosis code is influenced by the lack of knowledge of the coder to code specifically in genitourinary cases in medical records. Inaccurate coding impacts the quality of medical record data, financing claims, clinical decision-making in disease coding. The purpose of this study was to identify the relationship between coder knowledge and the accuracy of genitourinary diagnosis codes. The study design used a cross-sectional analytical approach. The study sample consisted of 35 coders, medical record officers, and polyclinic registration officers using a total sampling technique. The instruments used were a coder knowledge questionnaire and a genitourinary diagnosis code accuracy checklist. Data analysis used a chi-square test. The results of the study obtained high coder knowledge in 18 people (51.4%), and the accuracy of genitourinary diagnosis was correct in 25 people (71.4%). The Chi-square test results showed a p-value of 0.003 ($p < 0.05$). This indicates a significant relationship between coder knowledge and the accuracy of genitourinary diagnosis codes. Hospitals are expected to conduct disease coding training to improve the coding process, which is consistent with claims.

INTRODUCTION

The accuracy of diagnostic codes is determined by the classification in the ICD-10. These diagnostic codes are considered precise and accurate when providing patient care, with all procedures performed in accordance with the established rules. Regarding disease and health problem classification codes, diagnostic code accuracy can lead to decreased accuracy (Yelvita, 2022).

Coding errors can lead to inaccurate prevalence and incidence of genitourinary diseases (e.g., kidney failure, urinary tract infections, prostate cancer). Governments and international agencies such as the WHO rely on coded diagnostic data to determine health priorities, resource allocation, and prevention strategies. If the data is inaccurate, policies become less targeted. In claims-based systems (e.g., INA-CBG in Indonesia or DRGs in many countries), diagnostic codes determine financing rates. Inaccurate coding can lead to overpayment or underpayment.

Inaccurate diagnostic coding can have various negative impacts, particularly in healthcare and insurance systems. Coding errors can lead to claim denials, delayed payment, and even impact health statistics used for health program planning.

This study aims to analyze the relationship between coder knowledge and the accuracy of genitourinary diagnosis codes, using a questionnaire supported by medical record officers and registration polyclinic officers.

METHODS

The research design used was analytical with a cross-sectional approach. The inclusion criteria were coders, medical records officers, and registration officers aged 17 to 55, both male and female. The exclusion criteria I did not consider were officers who did not code diagnoses. The sampling technique used was total sampling with a population of 35 individuals, namely officers who coded diagnoses. The operational definition of coder knowledge is the person who codes a diagnosis and the measurement tool for coder knowledge is a questionnaire, a scale for nominal coder knowledge, and coder knowledge categories. 1. High 9-15 2. Low 0-8. The operational definition of genitourinary diagnosis code accuracy is the conformity of the diagnosis code with the ICD-10 textbook. Volume 3 and Volume 1, a measurement tool for genitourinary diagnosis code accuracy, a checklist, a scale for nominal genitourinary diagnosis code accuracy, and genitourinary diagnosis code accuracy categories. 1.1 = Accurate 2.0 = Not Accurate. The Chi-square test obtained a p-value of 0.003 ($p<0.05$), indicating a significant relationship between coder knowledge and diagnosis code accuracy. Genitourinary at Drs. H. Amri Tambunan Regional Hospital.

RESULTS

Table 1. Characteristics of Medical Records Officers at Drs. H. Amri Tambunan Regional Hospital

Characteristics		n	%
Gender	Male	7	20,0
	Female	28	80,0
Education	Bachelor of Medicine	1	2,9
	Graduate in Medical Records	14	40,0
	Bachelor of Applied Medical Records	16	45,7
	Specialist in Medical Records	4	11,4
Age	17–25 years (Late adolescence)	10	28,6
	26–35 years (Early adulthood)	14	40,0
	36–45 years (Late adulthood)	7	20,0
	46–55 years (Early elderly)	4	11,4
	Total	**35**	**100**

Source: Primary Data, 2025

Based on Table 1, which presents data from 35 respondents, the majority were female, accounting for 28 individuals (80%), while the minority were male, comprising 7 individuals

(20%). In terms of educational background, one respondent (2.9%) was enrolled in an undergraduate medical education program, 14 respondents (40.0%) were at the undergraduate level of medical records, 16 respondents (45.7%) were at the D-IV medical records level, and 4 respondents (11.4%) were at the D-III medical records level.

With respect to age distribution, the majority of respondents were between 26–35 years (early adulthood), totaling 14 individuals (40.0%). This was followed by 10 respondents (28.6%) aged 17–25 years (late adolescence), 7 respondents (20.0%) aged 36–45 years (late adulthood), and 4 respondents (11.4%) aged 46–55 years (early elderly).

Table 2. Knowledge of Coders at Drs. H. Amri Tambunan Regional Hospital

No	Question Know	Answer Choices							
		A		B		C		Total	
		n	%	n	%	n	%	n	%
1	The main duties of a coder or medical records officer.	1	2,9	34	97,1	0	0	35	100
2	The coder or medical records officer has a good understanding.	15	42,9	1	2,9	19	54,3	35	100
3	What does ICD – 10 stand for?	1	2,9	34	97,1	0	0	35	100
4	What is known about the specific diagnosis.	35	100	0	0	0	0	35	100

Source: Primary Data, 2025

Based on the results obtained, the highest value for the tofu indicator in A was 35 people (100%), and the lowest was in B was 1 person (2.9%).

Table 3. Frequency and Percentage Distribution of Indicators of Understanding of Coders at Drs. H. Amri Tambunan Regional Hospital

No	Question Understand	Answer Choices							
		A		B		C		Total	
		n	%	n	%	n	%	n	%
1	The influence of coder knowledge not being mastered	35	100	0	0	0	0	35	100
2	Causes of differences in diagnostic writing	0	0	1	2,9	34	97,1	35	100
3	Factors influencing coder knowledge in genitourinary patients	18	51,4	8	22,9	2	5,7	35	100

Source: Primary Data, 2025

Based on the results obtained, the highest value for the understanding indicator in A was 35 people (100%), and the lowest was B was 1 person (2.9%).

Based on the results obtained in table 4, the highest value for the implementation indicator was in A, namely 33 people (94.3%), and the lowest value was in C, namely 1 person (2.9%).

Table 4. Frequency and Percentage Distribution of Coder Application Indicators at Drs. H. Amri Tambunan Regional Hospital

No	Question Understand	Answer Choices							
		A		B		C		Total	
		n	%	n	%	n	%	n	%
1	Equipment for genitourinary code.	33	94,3	2	5,7	0	0	35	100
2	Clinical data for determining genitourinary codes.	6	17,1	29	82,9	0	0	35	100
3	Clinical data in the coding process.	2	5,7	32	91,4	1	2,9	35	100
4	Responsible for coding the disease.	0	0	1	2,9	34	97,1	35	100
5	The first step to take.	8	22,9	7	20	20	57,1	35	100
6	Determination of disease code is inaccurate.	19	54,3	3	8,6	13	37,1	35	100
7	Purpose of using ICD 10 in coding genitourinary diseases.	11	31,4	22	62,9	2	5,7	35	100
8	Factors influencing genitourinary disease codes	4	11,4	2	5,7	29	82,9	35	100

Source: Primary Data, 2025

Table 5. Frequency Distribution and Percentage of Coder Knowledge at Drs. H. Amri Tambunan Regional Hospital

Coder Knowledge	n	%
High	18	51,4
Low	17	48,6
Total	**35**	**100**

Source: Primary Data, 2025

Based on table 5, the research results show that 18 respondents (51.4%) have high knowledge and 17 people (48.6%) have low knowledge.

Table 6. Frequency Distribution and Percentage of Genitourinary Diagnosis Codes at Drs. H. Amri Tambunan Regional Hospital

No	Diagnosis	ICD 10 Code	ICD 9 Code	Code Accuracy Diagnosis				Total
				Accurate		No Accurate		
				n	%	n	%	
1.	Chronic kidney disease stage 3	N18.9	90.59	2	5,71	0	0	2
2.	Chronic kidney disease stage 5	N18.5	90.59	1	2,85	0	0	1
3.	Hyperplasia of prostate	N40	60.91	1	2,85	0	0	1
4.	Acute renal failure with tubular necrosis	N17.0	39.95	0	0	1	2,85	1
5.	Acute renal failure with tubular cortical necrosis	N17.1	39.95	0	0	1	2,85	1

6.	Acute renal failure with medullary necrosis	N17.2	39.95	0	0	1	2,85	1
7.	Acute renal failure unspecified	N17.9	39.95	0	0	1	2,85	1
8.	Chronic kidney disease stage 1	N18.1	90.59	0	0	1	2,85	1
9.	Acute nephritic syndrome	N00	94.39	1	2,85	0	0	1
10.	Chronic nephritic syndrome	N03	90.5	0	0	1	2,85	1
11.	Unspecified nephritic syndrome	N05	94.39	1	2,85	0	0	1
12.	Acute tubule internuptial nephritis	N10	39.95	1	2,85	0	0	1
13.	Calculus of kidney and ureter	N20	56.31	0	0	1	2,85	1
14.	Calculus of kidney	N20.0	98.51	0	0	1	2,85	1
15.	Calculus of ureter	N20.1	98.51	1	2,85	0	0	1
16.	Urinary of kidney with calculus of ureter	N20.2	98.51	1	2,85	0	0	1
17.	Urinary calculus unspecified	N20.9	98.51	0	0	1	2,85	1
18.	Calculus in bladder	N21.0	98.51	0	0	1	2,85	1
19.	Calculus in urethra	N21.1	56.31	0	0	1	2.85	1
20.	Other lower urinary tract calculus	N21.8	60.29	0	0	1	2.85	1
21.	Unspecified renal colic	N23	88.01	1	2,85	0	0	1
22.	Cyst of kidney	N28.1	39.92	0	0	1	2.85	1
23.	Small kidney unspecified	N27.9	90.5	0	0	1	2,85	1
24.	Acute cystitis	N30.0	94.39	1	2,85	0	0	1
25.	Chronic prostatitis	N41.1	94.39	1	2,85	0	0	1
26.	Acute prostatitis	N41.0	94.39	1	2,85	0	0	1
27.	Calculus of prostate	N42.0	56.35	0	0	1	2,85	1
28.	Hydrocele unspecified	N43.3	56.35	0	0	1	2,85	1
29.	Spermatocele	N43.4	63.2	2	5,71	0	0	2
30.	Unspecified kidney failure	N19	39.95	1	2,85	0	0	1
31.	Small kidney bilateral	N27.1	98.51	1	2,85	0	0	1

Source: Primary Data, 2025

Table 7. Frequency Distribution and Accuracy Presentation of Genitourinary Diagnosis Codes at Drs. H. Amri Tambunan Regional Hospital

Coder Knowledge	n	%
Accurate	25	71,4
Inaccurate	10	28,6
Total	**35**	**100**

Source: Primary Data, 2025

Based on table 7, the research results show that the diagnostic codes for inpatients at Drs. H. Amri Tambunan Regional Hospital were accurate for 25 people (71.4%) and inaccurate for 10 people (28.6%).

Based on the analysis results of table 8 distribution of respondent data, the results of the analysis of the relationship between coder knowledge and the completeness of inpatient medical records at Drs. H. Amri Tambunan Regional General Hospital based on the chi-square

test results obtained that there were 17 out of 18 respondents (94.4%) who had high coder knowledge with accurate genitourinary diagnosis code accuracy, and 1 out of 18 respondents (5.6%) who had high knowledge with inaccurate diagnosis accuracy. while 9 out of 17 (52.9%) who had low knowledge with inaccurate diagnosis code accuracy and 8 out of 17 (47.1%) who had low knowledge with accurate diagnosis accuracy.

Table 8. The Relationship Between Coder Knowledge and Genitourinary Diagnosis Code Accuracy at Drs. H. Amri Tambunan Regional Hospital

Coder Knowledge	Genitourinary Diagnostic Code Accuracy						*p-Value*
	Accurate		Inaccurate		Total		
	n	%	n	%	n	%	
High	17	94,4	1	5,6	18	100.0	0.003
Low	8	47,1	9	52,9	17	100.0	

Source: Primary Data, 2025

Based on the results of the Chi-square statistical test, a p-value of 0.003 (p <0.05) was obtained, so it was concluded that there was a significant relationship between coder knowledge and the accuracy of genitourinary diagnosis codes at Drs. H. Amri Tambunan Regional General Hospital.

DISCUSSION

The findings of this study indicate that the accuracy of diagnostic coding is significantly influenced by the knowledge and skills of medical coders. This result is consistent with the study conducted by Pramono (2012), which reported that among 385 medical records at Gondokusuman II Community Health Center in Yogyakarta City, 174 codes (45.2%) were accurate, whereas 211 codes (54.8%) were inaccurate. The inaccuracy was largely attributed to limited qualifications of the human resources performing the coding, as well as the improper use of medical terminology by physicians. Maimun (2020) emphasized that improving coding accuracy can be achieved through the standardization and consistency of abbreviations and medical terminology in accordance with the International Classification of Diseases (ICD-10).

A similar pattern was found in a study by Erawantini et al. (2022) at a hospital implementing the ICD-10 electronic system, which demonstrated a high error rate. Out of 59 medical records of genitourinary cases in 2016, 58 (98.31%) were miscoded, with only one record (1.98%) coded accurately. Comparable findings were also reported in the study conducted by Ostanda (Fauzia et al., 2023), which evaluated 20 diagnostic codes and found that only 29% were accurate, while 71% were incorrect due to errors in the fifth digit and other external factors that did not align with coding standards. These findings highlight that diagnostic coding accuracy remains a critical challenge across health care facilities, regardless of whether manual or electronic systems are applied.

The present study conducted at RSUD Drs. H. Amri Tambunan further strengthens this evidence. The Chi-square test revealed a significant association between coder knowledge and the accuracy of genitourinary diagnostic coding, with a p-value of 0.003 (p<0.05). Coders with a higher level of knowledge were more likely to assign accurate codes, as they adhered to

proper medical terminology standards. This underscores that coder competence and knowledge are key determinants of coding accuracy.

Moreover, research at Panti Waluyo Hospital in Surakarta also demonstrated a significant association between the precision of medical diagnoses written by physicians and the accuracy of diagnostic coding. The chi-square hypothesis test yielded a p-value of <0.001, confirming a strong relationship between these variables (Rahmawati & Utami, 2020). The inaccuracy was primarily driven by illegible physician handwriting, excessive use of abbreviations, and the introduction of new terms not yet standardized. This finding reinforces the need for stronger coordination between physicians, as providers of diagnoses, and coders, as those responsible for assigning codes, to minimize misinterpretation that could compromise the quality of medical record data.

Taken together, the evidence consistently demonstrates that low diagnostic coding accuracy is influenced by two main aspects: internal factors, namely the knowledge and skills of coders, and external factors, namely the clarity of diagnosis documentation by physicians. Therefore, strengthening human resource capacity through ICD-10-based coding training, along with the implementation of standardized medical terminology by physicians, represents essential strategies to improve the quality of medical records and the validity of health data.

CONCLUSION

Inaccuracy in diagnosing genitourinary diseases remains a significant issue that affects the overall quality of healthcare services, the effectiveness of therapeutic interventions, and the validity of epidemiological data. The underlying causes are multifactorial, encompassing clinical, technical, service system, human, and patient-related factors. These findings underscore the complexity of diagnostic coding processes and highlight the need for systemic improvements to ensure accuracy and consistency.

To address these challenges, structured training programs on disease coding should be implemented to strengthen coders' knowledge and skills. Furthermore, future research is recommended to explore the relationship between coders' level of knowledge and other contributing factors—such as accuracy in assigning diagnostic codes—in order to minimize coding errors and overcome barriers in claims processing.

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