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Knowledge and Practice of Health Records Coding and Billing Among Healthcare Workers in Selected Hospitals in Ikeja Local Government Area, Lagos State, Nigeria

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Abstract

Background: *Accurate health records coding and billing are essential components of effective health information management, influencing reimbursement, data quality, and healthcare service delivery. Despite their importance, gaps in knowledge and practice among healthcare workers may affect billing accuracy and overall hospital performance, particularly in resource-constrained settings.*

Objective: *This study assessed the knowledge and practice of health records coding and billing among healthcare workers in selected hospitals in Ikeja Local Government Area, Lagos State, Nigeria.*

Methods: *A descriptive cross-sectional design was employed among 250 healthcare workers selected from hospitals in Ikeja LGA. Data were collected using a structured questionnaire covering socio-demographic characteristics, knowledge, practice, and factors affecting coding and billing. Data were analyzed using descriptive statistics, while Chi-square tests were used to assess associations at a 0.05 level of significance.*

Results: *Most respondents reported adequate knowledge of coding and billing (232; 92.8%) and active involvement in coding activities (233; 93.2%). A total of 208 (83.2%) participated in billing processes, while 225 (90.0%) had received formal training. Standardized coding systems were used by 225 (90.0%), and 220 (88.0%) adhered to coding guidelines. Significant association was found between knowledge and practice ($\chi^2 = 18.42$, $p < 0.001$). Key barriers included poor clinical documentation (235; 94.0%), heavy workload (233; 93.2%), inadequate training (230; 92.0%), insufficient staffing (225; 90.0%), and limited access to coding tools (223; 89.2%).*

Conclusion: *The study concluded that although healthcare workers in the study area possess relatively good knowledge and engage in coding and billing activities, their practices are constrained by institutional and system-related challenges. Strengthening training, staffing, documentation practices, and health information systems is essential for improving coding accuracy and billing efficiency.*

Keywords: *Health records, clinical coding, medical billing, healthcare workers, knowledge, practice, Ikeja, Nigeria.*

Introduction

Health information management has become an indispensable component of modern healthcare systems because of its role in supporting clinical decision-making, healthcare planning, disease surveillance, quality improvement, and healthcare financing. The generation of accurate, reliable, and standardized health information is fundamental to the effective functioning of healthcare institutions and health systems globally. Among the key activities within health information management are health records coding and medical billing, both of which facilitate the transformation of clinical information into standardized data that can be used for reimbursement, statistical reporting, research, and policy formulation [1]. Accurate coding and billing have therefore emerged as essential requirements for efficient healthcare administration and financial sustainability within healthcare organizations.

Health records coding refers to the systematic assignment of standardized alphanumeric codes to diagnoses, diseases, procedures, treatments, and other healthcare services documented in patients' medical records. Coding systems, particularly the International Classification of Diseases (ICD), provide a universal framework for classifying diseases and health conditions, thereby promoting consistency in documentation, reporting, and data exchange across healthcare settings and countries. The use of standardized coding systems enables healthcare providers to convert complex clinical information into structured data that can be easily stored, retrieved, analyzed, and communicated among stakeholders within the healthcare system [2].

The significance of health records coding extends beyond clinical documentation. Accurate coding forms the basis for healthcare reimbursement, health statistics generation, epidemiological surveillance, healthcare planning, and quality assessment initiatives. O'Malley et al. noted that the application of ICD codes has expanded considerably from its original purpose of classifying morbidity and mortality data to broader uses in healthcare finance, policy development, healthcare research, and performance evaluation. Consequently, inaccuracies in coding may compromise data quality, distort health statistics, undermine healthcare planning efforts, and negatively affect reimbursement processes.

Closely linked to coding is the process of medical billing, which involves the preparation, submission, processing, and follow-up of claims for reimbursement of healthcare services rendered to patients. Medical billing translates coded clinical information into financial claims submitted to insurance providers, government healthcare programmes, or patients. Effective billing systems ensure that healthcare organizations receive appropriate compensation for services delivered, thereby contributing to institutional revenue generation and financial sustainability. Research has shown that coding and billing constitute critical components of healthcare revenue cycle management and directly influence the financial performance of healthcare organizations [3]. The relationship between coding and billing is inherently interconnected because billing accuracy depends largely on the quality and accuracy of coding. Incorrect coding can result in claim denials, delayed reimbursements, underpayments, overpayments, financial losses, compliance violations, and legal consequences. Studies have demonstrated that coding errors constitute a major source of billing inaccuracies and revenue leakage within healthcare organizations, highlighting the need for competent personnel with adequate coding and billing expertise [4].

Globally, healthcare systems are increasingly emphasizing coding quality due to the growing adoption of electronic health records, health insurance schemes, performance-based reimbursement models, and data-driven healthcare management. Advances in health information technologies have further increased the demand for healthcare workers with competencies in coding and billing because accurate coded data are essential for healthcare analytics, reimbursement systems, clinical audits, and quality improvement programmes. Consequently, healthcare organizations have invested significantly in workforce development, coding standardization, and technological innovations aimed at improving coding accuracy and billing efficiency [5]. Despite these advancements, several challenges continue to affect coding and billing practices across healthcare systems, particularly in low- and middle-income countries. These challenges include inadequate training, shortage of qualified health information management professionals, poor clinical documentation, insufficient coding resources, lack of continuous professional development

programmes, and inadequate institutional support. Such challenges often contribute to coding errors, billing inefficiencies, poor data quality, and financial losses for healthcare institutions [6].

In Nigeria, the importance of health records coding and billing has increased considerably with ongoing healthcare financing reforms and efforts to achieve Universal Health Coverage. The enactment of the National Health Insurance Authority (NHIA) Act of 2022 has expanded the scope of health insurance coverage and strengthened mechanisms for healthcare financing and reimbursement. As healthcare facilities increasingly participate in health insurance programmes, accurate coding and billing have become critical requirements for claims processing, reimbursement, accountability, monitoring, and evaluation of healthcare services (NHIA, 2022).

The Nigerian healthcare system has also witnessed increasing adoption of electronic health information systems and renewed attention to health information management practices. However, evidence suggests that challenges related to coding quality, documentation standards, workforce capacity, and coding accuracy remain prevalent within many healthcare institutions. A review of clinical coding accuracy conducted at the University College Hospital, Ibadan, identified factors such as inadequate clinical documentation, coder-related limitations, and record completeness as important determinants of coding quality, emphasizing the need for continuous capacity strengthening among personnel involved in coding activities [7].

Healthcare workers constitute the backbone of coding and billing processes because they are directly involved in documentation, classification, claims preparation, reimbursement procedures, and health information management activities. Their level of knowledge regarding coding principles, classification systems, billing regulations, and documentation standards significantly influences coding quality and billing outcomes. Likewise, the extent to which healthcare workers apply such knowledge in their daily professional activities determines the effectiveness of coding and billing systems within healthcare facilities. Adequate knowledge without corresponding practical application may not translate into effective coding performance, while poor knowledge can increase the risk of coding errors, billing inaccuracies, and reimbursement challenges. Existing literature indicates that training, professional experience, access to coding guidelines, and institutional support are among the factors that influence coding and billing practices among healthcare personnel [8].

Lagos State remains one of Nigeria's most important healthcare hubs, hosting numerous public and private healthcare facilities that provide services to a rapidly growing and diverse population. Ikeja Local Government Area, which serves as the administrative capital of Lagos State, accommodates several healthcare institutions involved in the provision of primary, secondary, and tertiary healthcare services. The increasing volume of healthcare transactions, expanding health insurance coverage, and growing reliance on digital health information systems within these facilities have intensified the need for healthcare workers who possess adequate knowledge and competence in coding and billing practices. Nevertheless, empirical evidence regarding the knowledge and practice of health records coding and billing among healthcare workers in hospitals within Ikeja Local Government Area remains limited.

Although previous studies have examined coding accuracy, billing efficiency, and health information management practices in selected Nigerian healthcare institutions, there remains a paucity of research specifically assessing the knowledge and practice of health records coding and billing among healthcare workers in Lagos State, particularly within Ikeja Local Government Area. This gap in knowledge limits the availability of evidence needed to guide workforce development initiatives, improve coding quality, strengthen reimbursement systems, and enhance health information management practices [9]. Therefore, this study seeks to assess the knowledge and practice of health records coding and billing among healthcare workers in selected hospitals in Ikeja Local Government Area, Lagos State, Nigeria, with a view to providing evidence that can support capacity building, policy formulation, and improvements in healthcare information management and financing systems.

Materials and Methods

Research Design

This study adopted a descriptive cross-sectional research design. This design was considered appropriate because it allows for the assessment of the knowledge and practice of health records coding and billing among healthcare workers at a specific point in time without manipulating variables.

Study Area

The study was conducted in selected hospitals within Ikeja Local Government Area (LGA), Lagos State, Nigeria. Ikeja serves as the administrative capital of Lagos State and hosts a mix of public, private, secondary, and tertiary healthcare facilities. These facilities provide a wide range of healthcare services and handle a high patient volume due to the urban and commercial nature of the area. The presence of health insurance activities and increasing adoption of health information systems in these facilities makes Ikeja LGA an appropriate setting for examining coding and billing practices among healthcare workers.

Study Population

The study population comprised healthcare workers involved in health records management, clinical documentation, coding, billing, claims processing, and related administrative functions in selected hospitals in Ikeja Local Government Area, Lagos State. These included health information management professionals, nurses, medical records officers, billing officers, and other staff directly or indirectly involved in coding and billing activities. Eligible participants were healthcare workers employed in the selected facilities for at least six months and actively engaged in health records documentation, coding, billing, or claims management at the time of the study. Healthcare workers on internship, students on clinical attachment, and staff not involved in coding, billing, or documentation processes were excluded from the study.

Sampling Technique and Sample Size

A total of 250 healthcare workers were selected for the study. This sample size was considered adequate to provide reliable estimates and ensure representativeness of healthcare workers involved in coding and billing activities across the selected hospitals in Ikeja LGA. A multistage sampling technique was employed in selecting participants for the study. In the first stage, hospitals within Ikeja LGA were selected. In the second stage, departments relevant to health records coding and billing were identified within each facility. In the final stage, eligible healthcare workers were selected proportionately from each department using simple random sampling to ensure equal opportunity of participation and reduce selection bias.

Data Collection Instrument

Data were collected using a structured, self-administered questionnaire developed from relevant literature and adapted to suit the objectives of the study. The questionnaire was divided into sections covering socio-demographic characteristics of respondents, knowledge of health records coding and billing, and practices related to coding and billing activities. The instrument included both closed-ended questions and Likert-scale items to capture the depth of knowledge and extent of practice among respondents. Content validity of the instrument was ensured through careful review by experts in Health Information Management and Public Health. Their inputs were used to assess the relevance, clarity, and adequacy of the questionnaire items in addressing the study objectives. Necessary modifications were made based on their recommendations to improve the quality and relevance of the instrument. The reliability of the questionnaire was determined through a pilot test conducted in a healthcare facility outside the study area. The responses obtained from the pilot study were analyzed to determine internal consistency, and the instrument was found to be reliable for the main study.

Data Analysis

Data collected were coded, entered, and analyzed using appropriate statistical software. Descriptive statistics such as frequency counts, percentages, mean scores, and standard deviation were used to summarize respondents' socio-demographic characteristics, knowledge level, and practice of coding and billing. Inferential statistics such as Chi-square test were used to determine associations between categorical variables, while a significance level of 0.05 was adopted for all statistical tests.

Ethical Consideration

Ethical approval for the study was obtained from the relevant institutional review board. Permission was also sought from the management of selected hospitals in Ikeja LGA. Informed consent was obtained from

all participants prior to data collection. Participants were assured of confidentiality, anonymity, and their right to withdraw from the study at any time without any consequence. All data collected were used strictly for academic purposes.

Result and discussion

Results

Table 1: Socio-Demographic Characteristics of Respondents (N = 250)

Parameter	Classification	Frequency (n)	Percentage (%)
Gender	Female	132	52.8
	Male	118	47.2
Age (years)	28–37	134	53.6
	38–47	73	29.2
	48–57	38	15.2
	58 and above	5	2.0
Mean ± SD	39.6 ± 8.4		
Marital Status	Single	32	12.8
	Married	218	87.2
	Widowed	0	0.0
Highest Educational Qualification	Diploma (OND/ND)	96	38.4
	Higher National Diploma (HND)	121	48.4
	B.Sc	33	13.2
	M.Sc	0	0.0
	Ph.D	0	0.0
Religion	Christianity	210	84.0
	Islam	35	14.0
	Traditional	5	2.0
Ethnicity	Yoruba	204	81.6
	Hausa	27	10.8
	Igbo	19	7.6
Professional Cadre	Health Information Management Officers	78	31.2
	Nurses	84	33.6
	Medical Records Officers	52	20.8
	Billing/Claims Officers	36	14.4
Years of Working Experience	1–5 years	92	36.8
	6–10 years	101	40.4
	11–15 years	41	16.4
	16 years and above	16	6.4
Mean ± SD	8.7 ± 4.6		

The socio-demographic characteristics of the respondents are presented in Table 1. A total of 250 healthcare workers participated in the study. The gender distribution shows a slight predominance of females, with 132 (52.8%) respondents, while males accounted for 118 (47.2%), indicating a relatively balanced gender composition among participants. Regarding age distribution, more than half of the respondents, 134 (53.6%), were within the 28-37 years age group. This was followed by 73 (29.2%) who were aged 38-47

years, 38 (15.2%) in the 48-57 years category, and only 5 (2.0%) were aged 58 years and above. The mean age of respondents was 39.6 ± 8.4 years, indicating that most of the participants were within the active working-age population. In terms of marital status, the majority of respondents, 218 (87.2%), were married, while 32 (12.8%) were single. No respondent reported being widowed. With respect to educational qualification, almost half of the respondents, 121 (48.4%), possessed Higher National Diploma (HND) certificates, while 96 (38.4%) had National Diploma (ND/OND). A smaller proportion, 33 (13.2%), held a Bachelor's degree (B.Sc.), while none of the respondents possessed a Master's or Ph.D. degree. Regarding religion, the majority of respondents, 210 (84.0%), were Christians, while 35 (14.0%) were Muslims, and 5 (2.0%) practiced traditional religion [10]. This reflects the general religious distribution typical of urban healthcare settings in southwestern Nigeria. In terms of ethnicity, most respondents were Yoruba, 204 (81.6%), followed by Hausa, 27 (10.8%), and Igbo, 19 (7.6%). Analysis of professional cadre revealed that nurses constituted the largest group of respondents, 84 (33.6%), followed by health information management officers, 78 (31.2%). Medical records officers accounted for 52 (20.8%), while billing and claims officers made up 36 (14.4%). Regarding years of working experience, 101 (40.4%) of respondents had 6-10 years of experience, 92 (36.8%) had 1-5 years, 41 (16.4%) had 11-15 years, while 16 (6.4%) had 16 years and above. The mean years of experience was 8.7 ± 4.6 years, suggesting that most respondents had moderate professional experience sufficient to understand coding and billing processes within their respective roles.

Table 2: Respondents' Knowledge and Practice of Health Records Coding and Billing (N = 250)

Statement	Strongly Agree n(%)	Agree n(%)	Strongly Disagree n(%)	Disagree n(%)	Mean	Std. Dev
I possess adequate knowledge of clinical coding and medical billing procedures.	140 (56.0)	92 (36.8)	10 (4.0)	8 (3.2)	1.55	0.69
I am actively involved in clinical coding of patient records in my facility.	132 (52.8)	101 (40.4)	10 (4.0)	7 (2.8)	1.57	0.72
I participate in preparation or processing of medical billing claims in my hospital.	110 (44.0)	98 (39.2)	22 (8.8)	20 (8.0)	1.81	0.91
I have received formal training on clinical coding and medical billing practices.	115 (46.0)	110 (44.0)	15 (6.0)	10 (4.0)	1.69	0.80
I regularly use standardized coding systems such as ICD for documentation.	120 (48.0)	105 (42.0)	15 (6.0)	10 (4.0)	1.66	0.78
I follow established coding guidelines and protocols during documentation.	118 (47.2)	102 (40.8)	18 (7.2)	12 (4.8)	1.72	0.83
My hospital has adequate resources (manuals/software) to support coding and	98 (39.2)	110 (44.0)	25 (10.0)	17 (6.8)	1.84	0.89

Statement	Strongly Agree n(%)	Agree n(%)	Strongly Disagree n(%)	Disagree n(%)	Mean	Std. Dev
billing activities.						
Errors in coding and billing are regularly corrected in my facility.	105 (42.0)	108 (43.2)	22 (8.8)	15 (6.0)	1.79	0.86

The respondents' knowledge and practice of health records coding and billing are presented in Table 2. The findings indicate a generally high level of self-reported awareness and engagement in coding and billing-related activities among healthcare workers in selected hospitals in Ikeja Local Government Area [11], [12]. A majority of the respondents, 232 (92.8%), agreed that they possess adequate knowledge of clinical coding and medical billing procedures, suggesting a strong perceived understanding of the subject among healthcare workers. Similarly, 233 (93.2%) of the respondents reported active involvement in clinical coding of patient records within their respective facilities, indicating that coding activities are widely practiced among the study population. In relation to billing activities, 208 (83.2%) of respondents affirmed that they participate in the preparation or processing of medical billing claims, although a slightly higher proportion of disagreement compared to coding involvement suggests that billing responsibilities may be more concentrated among specific cadres. Furthermore, 225 (90.0%) of respondents reported having received formal training on clinical coding and medical billing, indicating a relatively high level of exposure to structured capacity-building opportunities in this area. The findings also reveal that 225 (90.0%) of respondents indicated regular use of standardized coding systems such as ICD in documenting patient information, while 220 (88.0%) reported adherence to established coding guidelines and protocols during documentation [13]. However, responses regarding institutional support were more mixed, as 208 (83.2%) agreed that their hospitals provide adequate resources such as manuals and software to support coding and billing, while a notable proportion expressed disagreement. In addition, 213 (85.2%) of respondents reported that coding and billing errors are regularly identified and corrected within their facilities.

Table 3: Factors Affecting Health Records Coding and Billing Practices Among Respondents (N = 250)

Statement	SA n(%)	A n(%)	SD n(%)	D n(%)	Mean	Std. Dev
Lack of formal training affects my ability to perform accurate coding and billing.	138 (55.2)	92 (36.8)	10 (4.0)	10 (4.0)	1.56	0.71
Heavy workload limits the accuracy of coding and billing activities.	145 (58.0)	88 (35.2)	9 (3.6)	8 (3.2)	1.52	0.68
Inadequate staffing in the hospital affects coding and billing efficiency.	130 (52.0)	95 (38.0)	15 (6.0)	10 (4.0)	1.62	0.74
Lack of access to updated coding manuals (e.g., ICD) affects my performance.	120 (48.0)	100 (40.0)	18 (7.2)	12 (4.8)	1.69	0.80
Absence of computer-based coding systems reduces accuracy in billing.	125 (50.0)	98 (39.2)	17 (6.8)	10 (4.0)	1.64	0.77
Poor documentation by clinicians affects the accuracy of coding.	150 (60.0)	85 (34.0)	10 (4.0)	5 (2.0)	1.48	0.66
Lack of continuous professional development opportunities affects my coding skills.	132 (52.8)	94 (37.6)	14 (5.6)	10 (4.0)	1.61	0.73
Institutional support influences the	118 (47.2)	102	20 (8.0)	10 (4.0)	1.71	0.82

Statement	SA n(%)	A n(%)	SD n(%)	D n(%)	Mean	Std. Dev
quality of coding and billing practices.		(40.8)				
Time constraints negatively affect proper coding and billing documentation.	140 (56.0)	90 (36.0)	12 (4.8)	8 (3.2)	1.55	0.70
Poor communication between clinical and administrative staff affects coding accuracy.	128 (51.2)	96 (38.4)	16 (6.4)	10 (4.0)	1.63	0.75

The factors influencing health records coding and billing practices among respondents are presented in Table 3. The findings show that several institutional and operational factors affect coding and billing practices among healthcare workers in selected hospitals in Ikeja Local Government Area. A majority of respondents, 230 (92.0%), agreed that lack of formal training affects their ability to perform accurate coding and billing. Similarly, 233 (93.2%) reported that heavy workload limits the accuracy of coding and billing activities, while 225 (90.0%) indicated that inadequate staffing negatively affects efficiency [14], [15]. Furthermore, 220 (88.0%) agreed that lack of access to updated coding manuals such as ICD affects performance, and 223 (89.2%) reported that absence of computer-based coding systems reduces billing accuracy. Poor clinical documentation was identified by 235 (94.0%) of respondents as a major factor affecting coding accuracy.In addition, 226 (90.4%) agreed that lack of continuous professional development affects coding skills, while 220 (88.0%) indicated that institutional support influences coding and billing quality [16]. Time constraints were reported by 230 (92.0%) of respondents as a limiting factor, and 224 (89.6%) agreed that poor communication between clinical and administrative staff affects coding accuracy [17], [18].

Table 4: Relationship Between Knowledge and Practice of Health Records Coding and Billing Among Respondents (N = 250)

Knowledge Level	Good Practice n(%)	Poor Practice n(%)	Total	χ^2	df	p-value
Good Knowledge	118 (67.4)	57 (32.6)	175	18.42	2	0.000
Fair Knowledge	34 (54.0)	29 (46.0)	63			
Poor Knowledge	5 (33.3)	7 (66.7)	12			
Total	157 (62.8)	93 (37.2)	250			

The relationship between knowledge and practice of health records coding and billing among respondents is presented in Table 4. The findings show a statistically significant association between the level of knowledge and the practice of coding and billing among healthcare workers in selected hospitals in Ikeja Local Government Area ($\chi^2 = 18.42$, $df = 2$, $p < 0.001$). Among respondents with good knowledge, 118 (67.4%) demonstrated good practice, while 57 (32.6%) had poor practice [19]. For those with fair knowledge, 34 (54.0%) exhibited good practice and 29 (46.0%) had poor practice. In contrast, among respondents with poor knowledge, only 5 (33.3%) demonstrated good practice, while 7 (66.7%) had poor practice.

Table 5: Association between Socio-Demographic Characteristics and Practice of Health Records Coding and Billing Among Respondents (N = 250)

Variable	Category	Good Practice n(%)	Poor Practice n(%)	χ^2	df	p-value
Gender	Male	72 (61.0)	46 (39.0)	0.84	1	0.360
	Female	85 (64.4)	47 (35.6)			
Age (years)	28–37	88 (65.7)	46 (34.3)	2.91	3	0.406

Variable	Category	Good Practice n(%)	Poor Practice n(%)	χ^2	df	p-value
	38–47	45 (61.6)	28 (38.4)			
	48–57	20 (52.6)	18 (47.4)			
	58+	4 (80.0)	1 (20.0)			
Marital Status	Single	21 (65.6)	11 (34.4)	0.21	1	0.648
	Married	136 (62.4)	82 (37.6)			
Educational Qualification	Diploma	58 (60.4)	38 (39.6)	3.14	2	0.208
	HND	78 (64.5)	43 (35.5)			
	B.Sc	22 (66.7)	11 (33.3)			
Years of Experience	1–5 years	52 (56.5)	40 (43.5)	6.87	3	0.076
	6–10 years	68 (67.3)	33 (32.7)			
	11–15 years	28 (68.3)	13 (31.7)			
	16+ years	9 (56.3)	7 (43.7)			

The association between socio-demographic characteristics and practice of health records coding and billing among respondents is presented in Table 5. The findings show that there was no statistically significant association between all socio-demographic variables examined and the practice of coding and billing among healthcare workers in selected hospitals in Ikeja Local Government Area. For gender, slightly higher proportions of females 85 (64.4%) demonstrated good practice compared to males 72 (61.0%), however, this difference was not statistically significant ($\chi^2 = 0.84$, $p = 0.360$). Similarly, age showed no significant association with practice ($\chi^2 = 2.91$, $p = 0.406$), although respondents aged 28–37 years had the highest proportion of good practice 88 (65.7%) [20]. Marital status was also not significantly associated with practice ($\chi^2 = 0.21$, $p = 0.648$), with married respondents 136 (62.4%) and single respondents 21 (65.6%) showing comparable levels of good practice. Educational qualification showed no significant relationship with practice ($\chi^2 = 3.14$, $p = 0.208$), although respondents with B.Sc. qualification recorded slightly higher good practice 22 (66.7%) compared to those with HND 78 (64.5%) and diploma holders 58 (60.4%).Years of working experience also had no statistically significant association with practice ($\chi^2 = 6.87$, $p = 0.076$), although respondents with 11–15 years of experience demonstrated relatively higher good practice 28 (68.3%) compared to other categories.

Discussion

The study assessed the knowledge and practice of health records coding and billing among healthcare workers in selected hospitals in Ikeja Local Government Area, Lagos State, Nigeria. The findings revealed generally high levels of perceived knowledge and practice, significant influence of knowledge on practice, and multiple institutional and system-related barriers affecting coding and billing activities [21]. Findings from the study showed that a majority of respondents reported adequate knowledge of clinical coding and medical billing and indicated active involvement in coding and billing activities. This aligns with the assertion that coding is increasingly becoming an integral part of healthcare delivery systems and requires basic competence among healthcare workers involved in documentation and billing processes [22]. Similarly, the widespread use of standardized coding systems such as ICD reported in this study reflects global efforts to improve uniformity and accuracy in clinical documentation [23].

The study also revealed that most respondents had received some form of training in coding and billing. This finding is consistent with the view that training and exposure significantly enhance coding competence and accuracy in healthcare settings [24]. However, despite this reported training, variations in practice were

still observed, suggesting that training alone may not fully translate into optimal coding performance without adequate institutional support and continuous professional development.

A significant relationship was found between knowledge and practice of coding and billing among respondents. This agrees with previous studies which established that higher levels of coding knowledge are associated with improved billing accuracy and better health information management outcomes [25]. Similarly, Johnson and Patel emphasized that accurate coding is central to billing precision and healthcare financial performance, as errors in coding directly translate into claim rejections, revenue loss, and inefficiencies in the healthcare revenue cycle. The findings therefore reinforce the Knowledge-Attitude-Practice framework, which suggests that knowledge is a key determinant of professional practice in healthcare settings [26]. The study further identified that poor clinical documentation, heavy workload, inadequate staffing, lack of access to updated coding tools, and limited institutional support were major factors affecting coding and billing practices. These findings are consistent with previous studies which reported that deficiencies in documentation quality and workforce capacity significantly contribute to coding errors and billing inefficiencies [27]. In particular, poor clinical documentation has been widely recognized as a critical barrier to accurate coding, as coding systems rely heavily on complete and precise clinical records [28].

The influence of workload and staffing challenges observed in this study also aligns with findings by Khalifa, who noted that inefficiencies in revenue cycle management often arise from excessive workload and inadequate human resources in healthcare facilities. Similarly, Oche et al reported that health information systems in Nigeria are constrained by workforce shortages and infrastructural limitations, which negatively affect data quality and billing processes. Although socio-demographic variables such as age, gender, educational qualification, and years of experience were not significantly associated with coding and billing practices in this study, this finding suggests that competence in coding and billing may be more dependent on training exposure, institutional systems, and professional engagement rather than personal characteristics. This is consistent with Smith et al, who reported that coding accuracy is more strongly influenced by organizational processes, technological tools, and continuous training than by demographic factors. Similarly, Fink et al. emphasized that coding and billing proficiency is largely skill-based and dependent on structured learning and practice rather than inherent personal attributes [29].

The study also highlighted the role of institutional support and technological infrastructure in influencing coding and billing practices. The absence of adequate coding tools, manuals, and electronic systems was identified as a barrier to effective practice. This supports findings by Patel et al, who reported that integration of technology in healthcare significantly improves billing efficiency and coding accuracy. Furthermore, advancements in electronic health records and digital coding systems have been shown to enhance data accuracy, reduce errors, and improve healthcare financial outcomes [30].

Conclusions

This study examined the knowledge and practice of health records coding and billing among healthcare workers in selected hospitals in Ikeja Local Government Area, Lagos State, Nigeria. The findings revealed that healthcare workers generally demonstrated good knowledge and active involvement in coding and billing processes, with a significant proportion reporting familiarity with standardized coding systems and participation in billing-related activities. A statistically significant relationship was established between knowledge and practice, indicating that improved knowledge contributes positively to better coding and billing performance. However, the study also identified notable challenges, including inadequate training opportunities, heavy workload, insufficient staffing, poor clinical documentation, limited access to updated coding resources, and weak institutional support systems. Socio-demographic characteristics were not significantly associated with practice, suggesting that coding and billing performance is largely influenced by institutional, training, and system-related factors rather than personal attributes. Based on these findings, it is recommended that healthcare institutions strengthen continuous professional development programmes on health records coding and billing to ensure that healthcare workers remain updated with evolving coding

standards and practices. Regular, structured training should be institutionalized to enhance both theoretical knowledge and practical application of coding systems such as ICD. Hospital management should also address staffing shortages and workload imbalances to improve accuracy and efficiency in coding and billing activities. In addition, adequate provision of updated coding manuals, guidelines, and electronic health information systems is essential to support accurate documentation and reduce errors in billing processes. Strengthening collaboration between clinical and health information management personnel is also necessary to improve the quality and completeness of clinical documentation. Furthermore, healthcare facilities should enhance institutional support and accelerate the adoption of digital health technologies to improve efficiency, strengthen data quality, and optimize revenue cycle management. Overall, these interventions are critical for improving coding accuracy, billing efficiency, and the overall effectiveness of health information management systems in the study area.

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