Healthcare Providers' Knowledge of Clinical Coding and Clinical Documentation in Six Selected Tertiary Hospitals in South-West Nigeria: A Mixed-Methods Study

Obabiyi, Oluwafunmilayo Rasheedat;
Department of Health and Information Management,
Faculty of Public Health, Rivers State University,
Nkpolu Oroworukwo, Port Harcourt.
obabiyi.Oluwafunmilayo@rsu.edu.ng

Prof. Chukwu, Sancho Nwobuisi,
Department of Economics,
faculty of social sciences, Rivers State University,
Nkpolu Oroworukwo, Port Harcourt.
sancho.chukwu@rsu.edu.ng

Bademosi Adetomi PhD
Department of Health and Information Management,
Faculty of Public Health, Rivers State University,
Nkpolu Oroworukwo, Port Harcourt.

https://doi.org/10.56201/ijhpr.vol.11.no10.2026.pg105.118

Abstract

Accurate clinical coding depends on healthcare professionals' understanding of coding principles and the quality of clinical information documented in patients' health records. Although clinical coding is a specialised function of Health Information Management (HIM) professionals, clinicians and other healthcare providers generate much of the clinical information required for accurate coding. This study assessed the level of knowledge of healthcare providers regarding clinical coding and proper clinical documentation across six selected tertiary hospitals in South-West Nigeria. A descriptive cross-sectional mixed-methods research design was adopted. The quantitative component involved structured questionnaires administered to healthcare professionals across the six hospitals. Of the 108 questionnaires retrieved, five duplicate entries were excluded, leaving 103 responses for analysis. The qualitative component comprised 43 purposively selected interviews conducted across five hospitals. Quantitative data were analysed using descriptive statistics, while hospital differences and associations were examined using appropriate statistical tests. Qualitative data were analysed thematically following Braun and Clarke's approach, and both findings were integrated during interpretation. Results showed that 61 respondents (59.2%) had heard of clinical coding and indexing, while 83 of 97 respondents (85.6%) considered clinical coding important for healthcare delivery. However, only 36 (35.0%) reported having knowledge of clinical coding, 33 (32.0%) had received coding training, and 30 (29.1%) had worked in a coding or indexing unit. Overall, 60 respondents (58.3%) demonstrated poor knowledge, while 43 (41.7%) demonstrated good knowledge. The mean knowledge score was 47.38% (SD = 33.92), indicating a generally low level of knowledge. There was no statistically significant difference in knowledge levels across the six hospitals ($\chi^2 = 5.788$, $p = .327$). Qualitative

findings revealed that accurate working knowledge was concentrated among HIM officers, technologists and coders, while other professional groups demonstrated limited understanding, lack of awareness or misconceptions about clinical coding. Furthermore, respondents rated all seven assessed aspects of clinical documentation below the criterion mean of 3.00, with an overall mean score of 2.22 (SD = 0.67). The study concluded that despite relatively high awareness of the importance of clinical coding, practical knowledge, formal training and direct work experience among healthcare providers were limited. The knowledge gap appeared more pronounced across professional groups than between institutions. The study recommends targeted, multidisciplinary and role-specific training on clinical coding and proper clinical documentation to strengthen documentation practices and improve the quality of coded health information across the participating tertiary hospitals.

Keywords: *Clinical coding, clinical documentation, healthcare providers, knowledge, Health Information Management, tertiary hospitals, South-West Nigeria.*

1. Introduction

Health information is an essential resource for the planning, delivery, monitoring and evaluation of healthcare services. Its usefulness depends on the quality of information generated during patient care and on the processes used to document, classify, store, retrieve and analyse that information. Clinical documentation and clinical coding are closely connected components of this process. Clinical documentation records the patient's history, presenting complaints, clinical findings, diagnoses, investigations, treatment, procedures and outcomes. Clinical coding translates documented clinical information into standardised numeric or alphanumeric codes for systematic recording, retrieval, analysis and reporting.

Clinical documentation supports communication among healthcare professionals, continuity of care, clinical decision-making, legal accountability, research and health information management. To serve these purposes, documentation should be accurate, complete, legible, consistent, timely and properly authenticated. Incomplete or ambiguous entries, illegible handwriting, unsupported diagnoses, inconsistent terminology and delayed recording can reduce the usefulness of the patient record and make it difficult for HIM professionals and clinical coders to assign appropriate codes. Clinical coding is the process of assigning standardised codes to diagnoses, health conditions, procedures and other relevant clinical information documented in a patient's record. The International Classification of Diseases (ICD), developed by the World Health Organization (WHO), provides a globally recognised framework for classifying diseases and other health conditions. Coded information supports morbidity and mortality statistics, service planning, research, quality monitoring, resource allocation and other administrative and public health functions. The reliability of coded information depends substantially on the quality and sufficiency of the clinical information documented by healthcare professionals. Although coding is a specialised HIM activity, its effectiveness depends on cooperation between the professionals who document patient care and those who translate the documented information into codes. Physicians, nurses, pharmacists, radiographers and other clinical professionals contribute information to the patient record, while HIM professionals and clinical coders apply classification rules to the documented diagnoses and procedures. Healthcare providers therefore need an appropriate understanding of what clinical coding is, why it is important, what information is required in the record and how documentation deficiencies can affect coding.

Knowledge should be distinguished from simple awareness. A healthcare professional may have heard the term clinical coding without understanding that it involves assigning standardised codes to documented diagnoses and procedures using a recognised classification system. Likewise, respondents may recognise the importance of coding without having

received formal training or practical experience. This distinction is important because a simple awareness question may overestimate actual working knowledge.

Knowledge of proper clinical documentation is similarly important. Documentation should accurately represent the care provided and include sufficient clinical detail to support diagnosis, treatment, continuity of care and coding. Clear diagnostic statements, complete treatment information, legible entries, appropriate abbreviations, properly documented investigations and complete discharge summaries provide the information required for accurate coding. Deficiencies in these areas may create ambiguity, delay coding or result in incomplete coded data. The relationship between coding and documentation is particularly important in tertiary hospitals. These institutions manage complex conditions, multiple diagnoses, specialist investigations, multidisciplinary treatment and referrals across departments. Their records are generated by different professional groups and may be maintained in paper-based, electronic or hybrid systems. Effective documentation and coding therefore require professional knowledge, institutional standards, adequate staffing, appropriate resources and collaboration between clinical departments and HIM services.

Electronic health records and digital health technologies can improve the accessibility, storage and retrieval of patient information, but electronic systems do not automatically guarantee high-quality documentation. Information quality still depends on what healthcare professionals enter, system design and usability, staff training and institutional data-quality processes. Paper-based and electronic records may both contain omissions, inaccuracies, inconsistencies or delays when documentation standards and monitoring mechanisms are weak. Previous Nigerian studies cited in the thesis identify suboptimal documentation, workforce constraints, limited coding education and technology-related barriers as concerns in clinical coding practice (Adeleke et al., 2015; Adebayo et al., 2021). These challenges may be compounded by workload pressures, limited continuing professional development and inadequate collaboration between clinicians and HIM professionals. However, the extent to which healthcare providers understand clinical coding and the extent of their practical exposure may vary across professional groups and institutions. A knowledge gap has practical implications. Healthcare professionals who do not understand the purpose and requirements of clinical coding may not appreciate the importance of complete, legible and timely documentation. Misconceptions may also lead respondents to report familiarity with coding when they are referring to unrelated activities such as triage colour-coding, statistical data coding or prescription abbreviations. Without evidence on actual awareness, claimed knowledge, training and practical experience, hospitals may be unable to design appropriate educational interventions.

The present study addresses this gap by evaluating healthcare providers' knowledge of clinical coding and proper clinical documentation in six selected tertiary hospitals in South-West Nigeria. The study uses questionnaire data to describe awareness, claimed knowledge, training and experience, and interview data to explore the depth and nature of respondents' understanding. The objective addressed in this manuscript was: To evaluate the level of knowledge of healthcare providers on clinical coding and proper clinical documentation across the six selected institutions. Research question: What is the level of knowledge of healthcare providers on clinical coding and proper clinical documentation across the six selected institutions? The findings are relevant to hospital management, clinical departments, HIM professionals, professional training institutions and health policymakers. They identify the extent of the knowledge and training gap and can inform role-specific education, continuing professional development, documentation-improvement programmes and stronger collaboration between clinicians and HIM professionals.

2. Methods

2.1 Study design and setting

The study adopted a descriptive cross-sectional research design using a mixed-methods approach. The quantitative component assessed healthcare professionals' knowledge and awareness through a structured questionnaire. The qualitative component explored healthcare professionals' understanding and experiences through in-depth interviews. The findings were integrated during interpretation. The study was conducted in six selected tertiary hospitals in South-West Nigeria: University College Hospital (UCH), Ibadan; Lagos University Teaching Hospital (LUTH), Lagos; Federal Teaching Hospital (FTH), Ido-Ekiti; Federal Medical Centre (FMC), Abeokuta; FMC Owo; and Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC), Ile-Ife.

2.2 Study population and participants

The questionnaire component targeted healthcare professionals involved in patient care and health information activities. The thesis describes a planned distribution of 18 healthcare professionals per institution, comprising doctors, nurses, pharmacists, radiologists and coders. A total of 108 questionnaires were retrieved and entered; five duplicate entries were removed, leaving 103 questionnaires for analysis. The final hospital distribution was UCH (18), LUTH (18), FTH Ido-Ekiti (18), FMC Abeokuta (13), FMC Owo (18) and OAUTH (18).

The qualitative component involved purposively selected healthcare professionals with relevant experience in patient care, clinical documentation and coding. Forty-three interviews were analysed across five hospitals: UCH, OAUTH, LUTH, FMC Owo and FMC Abeokuta. No interview dataset from FTH Ido-Ekiti was included in the qualitative results supplied in the thesis.

2.3 Sampling and data collection

The Research reports a multistage sampling procedure. The six tertiary hospitals were purposively selected. For the questionnaire, 18 healthcare professionals were planned from each institution and eligible participants were selected from relevant departments. For the qualitative phase, purposive sampling was used to recruit professionals with substantial knowledge or experience relevant to documentation and coding. Questionnaires were administered directly to eligible healthcare professionals. Interviews were conducted in a quiet hospital setting, audio-recorded with participants' consent and supplemented by field notes.

2.7 Ethical considerations

The thesis states that ethical approval was obtained from the appropriate Health Research Ethics Committees of the participating tertiary institutions before data collection. Institutional permission was also obtained. Participation was voluntary and informed consent was obtained. Respondent names were not recorded; identification codes were used to protect confidentiality. Patient-identifying information was not recorded during the separate case-record audit. The exact committee names, approval numbers and dates were not available in the extracted Objective One material and should be inserted from the approved ethics documentation before journal submission.

3. Results

3.1 Socio-demographic characteristics of respondents

A total of 103 respondents were included in the analysis. The distribution was 18 respondents each from UCH, LUTH, FTH Ido-Ekiti, FMC Owo and OAUTH, and 13 from FMC Abeokuta. Overall, 52 respondents (50.5%) were male and 51 (49.5%) were female. The mean age was 36.59 years (SD 8.93; range 23–59 years). Sixty-four respondents (62.1%) were aged 20–39

years, while 39 (37.9%) were aged 40 years or above. Most respondents were married (54.4%), Christian (81.6%), held an ND/NCE/HND/BSc qualification (83.5%), identified as Yoruba (70.9%) and had fewer than 10 years of work experience (58.0% of valid responses).

Characteristic	UCH n=18	LUTH n=18	FTH n=18	FMC Abeokuta n=13	FMC Owo n=18	OAUTH n=18	Total N=103
Male	9 (50.0)	7 (38.9)	8 (44.4)	8 (61.5)	8 (44.4)	12 (66.7)	52 (50.5)
Female	9 (50.0)	11 (61.1)	10 (55.6)	5 (38.5)	10 (55.6)	6 (33.3)	51 (49.5)
Age 20–39 years	17 (94.4)	12 (66.7)	15 (83.3)	4 (30.8)	12 (66.7)	4 (22.2)	64 (62.1)
Age ≥40 years	1 (5.6)	6 (33.3)	3 (16.7)	9 (69.2)	6 (33.3)	14 (77.8)	39 (37.9)
Mean age, years (SD)	31.61 (4.97)	34.83 (6.51)	32.28 (6.20)	44.46 (8.25)	33.56 (7.89)	45.00 (9.04)	36.59 (8.93)
Single	8 (44.4)	7 (38.9)	8 (44.4)	2 (15.4)	10 (55.6)	1 (5.6)	36 (35.0)
Married	10 (55.6)	10 (55.6)	10 (55.6)	8 (61.5)	7 (38.9)	11 (61.1)	56 (54.4)
Widowed	0 (0.0)	1 (5.6)	0 (0.0)	3 (23.1)	1 (5.6)	6 (33.3)	11 (10.7)
Christianity	13 (72.2)	16 (88.9)	15 (83.3)	10 (76.9)	14 (77.8)	16 (88.9)	84 (81.6)
Islam	5 (27.8)	2 (11.1)	3 (16.7)	3 (23.1)	4 (22.2)	2 (11.1)	19 (18.4)
ND/NCE/HND/BSc	17 (94.4)	17 (94.4)	15 (83.3)	7 (53.8)	17 (94.4)	13 (72.2)	86 (83.5)
Postgraduate (PGD/Masters)	1 (5.6)	1 (5.6)	3 (16.7)	6 (46.2)	1 (5.6)	5 (27.8)	17 (16.5)
Yoruba	10 (55.6)	12 (66.7)	8 (44.4)	11 (84.6)	14 (77.8)	18 (100.0)	73 (70.9)
Hausa	3 (16.7)	3 (16.7)	3 (16.7)	1 (7.7)	2 (11.1)	0 (0.0)	12 (11.7)
Igbo	5 (27.8)	3 (16.7)	7 (38.9)	1 (7.7)	2 (11.1)	0 (0.0)	18 (17.5)
Below 10 years' experience†	17 (94.4)	9 (50.0)	14 (77.8)	2 (18.2)	12 (66.7)	4 (23.5)	58 (58.0)
10 years and above†	1 (5.6)	9 (50.0)	4 (22.2)	9 (81.8)	6 (33.3)	13 (76.5)	42 (42.0)

ource: Field Survey, 2026. †Work-experience data were available for 100 respondents. The source table reports significant between-hospital differences in age, marital status, educational qualification, ethnicity and years of experience; gender and religion did not differ significantly. These are descriptive sample characteristics and should not be interpreted as evidence that demographics explain coding knowledge.

3.2 Awareness, knowledge, training and experience in clinical coding

Awareness of clinical coding was higher than reported practical knowledge. Sixty-one respondents (59.2%) had heard about clinical coding and indexing, and 83 of the 97

respondents who answered (85.6%) considered it important for healthcare. In contrast, 36 (35.0%) reported having knowledge of clinical coding, 33 (32.0%) had received training and 30 (29.1%) had worked in a clinical coding or indexing unit. Sixty-two of 101 respondents (61.4%) reported that their hospital had a coding and indexing unit. Only 22 respondents (21.4%) answered yes to the follow-up item on duration of work in a coding unit.

Indicator	Yes n (%)	No n (%)	Valid N
Heard of clinical coding/indexing	61 (59.2)	42 (40.8)	103
Reported hospital has coding/indexing unit	62 (61.4)	39 (38.6)	101
Reported having knowledge of coding/indexing	36 (35.0)	67 (65.0)	103
Received training in clinical coding	33 (32.0)	70 (68.0)	103
Ever worked in coding/indexing unit	30 (29.1)	73 (70.9)	103
Answered yes to follow-up on duration in unit	22 (21.4)	81 (78.6)	103
Considered clinical coding important for healthcare	83 (85.6)	14 (14.4)	97

Across hospitals, awareness was highest at FMC Abeokuta (84.6%) and UCH (66.7%). The proportion reporting personal knowledge ranged from 44.4% at UCH to 16.7% at OAUTH. Training ranged from 44.4% at FMC Owo to 7.7% at FMC Abeokuta. FMC Owo was the only hospital where more than half of respondents (55.6%) reported having worked in a coding or indexing unit. The perceived presence of a coding unit varied from 47.1% at LUTH to 92.3% at FMC Abeokuta, suggesting uneven awareness of institutional coding services among staff within the same hospital.

3.3 Overall level of knowledge of clinical coding and indexing

Forty-three respondents (41.7%) were classified as having good knowledge, while 60 (58.3%) had poor knowledge. The mean knowledge score was 47.38% (SD 33.92), slightly below the 50% benchmark. The median score was 40.0%, indicating that at least half of respondents answered yes to no more than two of the five knowledge items. The standard deviation indicates substantial variation in scores.

Knowledge category	Frequency	Percentage
Good knowledge	43	41.7
Poor knowledge	60	58.3
Total	103	100.0

The distribution by hospital showed the highest proportion of good knowledge at FMC Owo (55.6%), followed by UCH and FTH Ido-Ekiti (50.0% each). FMC Abeokuta had the lowest proportion of good knowledge (23.1%), followed by OAUTH (27.8%). The overall hospital comparison was not statistically significant (χ^2=5.788, p=.327).

Hospital	N	Good knowledge n (%)	Poor knowledge n (%)
UCH	18	9 (50.0)	9 (50.0)
LUTH	18	7 (38.9)	11 (61.1)
FTH Ido-Ekiti	18	9 (50.0)	9 (50.0)
FMC Abeokuta	13	3 (23.1)	10 (76.9)
FMC Owo	18	10 (55.6)	8 (44.4)
OAUTH	18	5 (27.8)	13 (72.2)
Total	103	43 (41.7)	60 (58.3)

3.4 Association between knowledge level and socio-demographic characteristics

The thesis examined knowledge category (good versus poor) against seven socio-demographic characteristics separately within each hospital. Of 42 possible comparisons, 41 could be tested because ethnicity was constant at OAUTH, where all respondents were Yoruba. Only two comparisons were nominally significant: religion at UCH (χ^2=6.92, p=.029) and gender at LUTH (χ^2=10.57, p=.002). Neither remained significant after Bonferroni correction for 41 comparisons (adjusted α approximately .001).

Characteristic	UCH χ^2	LUTH χ^2	FTH χ^2	FMC Abeokuta χ^2	FMC Owo χ^2	OAUTH χ^2
Gender	0.22	10.57*	0.00	1.31	2.20	0.55
Age group	1.06	0.47	0.40	0.01	0.11	0.02
Marital status	3.60	3.38	3.60	0.04	0.75	1.04
Religion	6.92*	0.12	3.60	0.23	1.94	0.55
Highest education	1.06	1.66	0.40	0.66	0.85	3.58
Ethnicity	3.60	5.73	0.48	3.78	2.96	Not testable
Years of work experience	1.06	2.10	1.29	6.52	0.11	5.24

*Nominal significance reported in the thesis: UCH religion, p=.029; LUTH gender, p=.002. Exact tests were used for sparse cells. Neither finding remained significant after Bonferroni adjustment (α≈.001). The source's detailed cross-tabulation contains percentage/denominator inconsistencies in some cells; the table above therefore presents the reported test statistics, while the full cell-level cross-tabulation should be checked against the original SPSS output before publication.

3.5 Respondents' assessment of clinical documentation practices

Because the stated objective also refers to proper clinical documentation, the questionnaire's seven documentation-practice statements are included as contextual evidence. These items measure respondents' assessments of documentation practices rather than a direct test of individual knowledge. All seven-item means were below the criterion mean of 3.00. The overall mean was 2.22 (SD 0.67), and only 18 respondents (17.5%) had an overall rating of 3.00 or above.

Documentation statement	Disagree/Strongly disagree n (%)	Undecided n (%)	Agree/Strongly agree n (%)	Mean (SD)
Physicians clearly document diagnoses	64 (62.1)	26 (25.2)	13 (12.6)	2.35 (1.07)
Patient records contain complete treatment information	79 (76.7)	19 (18.4)	5 (4.9)	2.13 (0.72)
Discharge summaries are complete and detailed	58 (56.3)	26 (25.2)	19 (18.4)	2.37 (1.06)
Clinical documentation is usually legible	68 (66.0)	22 (21.4)	13 (12.6)	2.25 (0.97)
Adequate information is available for accurate coding	74 (71.8)	23 (22.3)	6 (5.8)	2.23 (0.76)
Radiology reports are properly documented for coding	71 (68.9)	27 (26.2)	5 (4.9)	2.17 (0.83)
Medication records are clearly documented	80 (77.7)	15 (14.6)	8 (7.8)	2.08 (0.89)

The mean overall documentation rating by hospital ranged from 2.10 at OAUTH to 2.31 at FTH Ido-Ekiti. Only 17.5% of respondents scored 3.00 or above overall. A one-way ANOVA showed no significant difference in mean documentation ratings across the six hospitals ($F(5,97)=0.29$, $p=.917$).

Hospital	N	Mean	SD	Score ≥3.00 n (%)
UCH	18	2.29	0.57	3 (16.7)
LUTH	18	2.15	0.67	2 (11.1)
FTH Ido-Ekiti	18	2.31	0.57	3 (16.7)
FMC Abeokuta	13	2.19	0.85	2 (15.4)
FMC Owo	18	2.30	0.67	3 (16.7)
OAUTH	18	2.10	0.79	5 (27.8)
Total	103	2.22	0.67	18 (17.5)

3.6 Qualitative findings: Knowledge gap in clinical coding

The qualitative analysis identified five positions in respondents' understanding of clinical coding. First, some participants reported no knowledge of coding or had not heard of it. This position appeared among radiologists, dentists, junior doctors and some senior nurses. Second, some participants had partial or vague knowledge: they had encountered the term but could not provide a working definition. Third, accurate working knowledge was concentrated among HIM officers, HIM technologists and coders, with a small number of consultants and senior

nurses demonstrating informal understanding. Fourth, several participants expressed confident misconceptions, equating clinical coding with triage colour-coding, statistical data coding, pharmacy dosing abbreviations or software/app development. Fifth, some senior professionals were unaware that their own hospital had a coding or indexing unit.

The interviews included clear examples of lack of awareness. A radiologist at UCH stated, "Actually, I don't have an idea about it." A senior nursing administrator at LUTH responded, "I cannot explain it," and another senior nursing respondent stated, "I don't even know that this hospital has a coding department or something like that." These accounts indicate that the knowledge gap was not confined to junior staff.

In contrast, an HIM officer at UCH described clinical coding as assigning an alphanumeric number to a patient's diagnosis. HIM technologists and coders at LUTH and FMC Abeokuta also demonstrated accurate knowledge of diagnosis and procedure coding and the use of standard classification systems. A small number of non-HIM professionals, including a consultant paediatrician at FMC Abeokuta, also provided accurate definitions.

The confident-misconception pattern was particularly important. An experienced physician at FMC Owo initially described triage colour-coding; a radiologist at FMC Abeokuta associated coding with assigning numeric values for statistical software; a pharmacy technician equated coding with Latin prescription abbreviations; and a senior radiography manager associated it with app development. These examples show why self-reported awareness or a yes/no question alone may overstate actual knowledge.

3.7 Integration of quantitative and qualitative findings

The two strands converged on a general knowledge gap that was not statistically different across hospitals. The questionnaire showed that 59.2% had heard of clinical coding, but only 35.0% reported knowledge, 32.0% had received training and 29.1% had worked in a coding unit. The qualitative data explained this gap: accurate knowledge was concentrated among HIM staff and coders, while other professional groups ranged from no knowledge to partial understanding or confident misconception. The qualitative evidence also qualifies the quantitative awareness result. Respondents who reported having heard of coding may not necessarily understand the formal coding process. Closed-ended questionnaire items cannot reliably distinguish accurate knowledge from confident misconception. Thus, the quantitative awareness estimate should not be interpreted as evidence that most respondents possess operational coding competence. The questionnaire's documentation-practice ratings were also consistently below the criterion mean, complementing the interview accounts of incomplete or unclear documentation. However, the documentation ratings represent respondents' perceptions and should not be treated as a direct record audit or objective measure of knowledge.

4. Discussion

4.1 Principal findings

This study evaluated healthcare providers' knowledge of clinical coding and proper clinical documentation in six selected tertiary hospitals in South-West Nigeria. The principal finding is a gap between awareness and working knowledge. Although more than half of respondents had heard of clinical coding and most considered it important, fewer than four in ten reported personal knowledge, approximately one-third had received training and fewer than one-third had worked in a coding or indexing unit. Overall, 58.3% were classified as having poor knowledge and the mean knowledge score was below the 50% benchmark.

4.2 Awareness does not necessarily indicate knowledge

The finding that 59.2% had heard of clinical coding while only 35.0% reported knowledge suggests that exposure to the term does not necessarily translate into understanding. The qualitative interviews strengthen this interpretation by identifying partial knowledge and confident misconceptions. Some respondents confused clinical coding with triage colour-coding, prescription abbreviations, statistical coding or software development. These distinctions matter because coding literacy requires an understanding of the translation of documented diagnoses and procedures into standardised classification codes, not merely familiarity with the word "coding."

4.3 Occupational concentration of accurate knowledge

The interviews showed that accurate working knowledge was concentrated among HIM officers, technologists and coders. This is consistent with the specialised nature of clinical coding as a core HIM function. Nevertheless, other healthcare professionals contribute the source documentation and therefore require sufficient knowledge of coding-related documentation requirements. The absence of accurate knowledge among some senior clinicians and administrators indicates that years of professional experience or seniority cannot be assumed to guarantee coding literacy.

4.4 Training and practical exposure

Only 32.0% of questionnaire respondents reported having received coding training, while 29.1% had worked in a coding or indexing unit. These results indicate limited formal training and practical exposure beyond the specialist HIM workforce. The pattern supports the need for role-specific training: clinicians need to understand how diagnostic clarity, completeness, legibility and timely documentation affect coding, while HIM professionals and coders require technical training in classification systems, coding conventions and quality assurance.

4.5 Similar knowledge levels across hospitals

The distribution of good and poor knowledge did not differ significantly across the six hospitals (χ^2=5.788, p=.327). This suggests that the knowledge gap is widespread rather than clearly confined to a particular institution. Although FMC Owo recorded the highest proportion of respondents with good knowledge and FMC Abeokuta the lowest, the hospital-level differences were not statistically significant. The small number of questionnaire respondents per institution (13–18) limits the power to detect modest differences.

4.6 Socio-demographic characteristics

Only two nominal associations emerged from 41 within-hospital tests: religion at UCH and gender at LUTH. Neither remained significant after Bonferroni adjustment. These findings should therefore be treated as exploratory rather than evidence of stable demographic determinants of knowledge. The small subgroup sizes and multiple testing increase the risk of chance findings. The data do not support a conclusion that knowledge is consistently determined by sex, age, marital status, religion, education, ethnicity or work experience.

4.7 Clinical documentation knowledge and perceived practice

Respondents rated all seven documentation-practice statements below the criterion mean of 3.00, with an overall mean of 2.22. The lowest mean was for clarity of medication records (2.08), followed by completeness of treatment information (2.13) and proper documentation of radiology reports (2.17). These perceptions suggest that respondents do not regard documentation practice as consistently meeting the requirements needed for reliable coding.

The findings should, however, be interpreted as self-reported assessments rather than objective evidence of the quality of individual patient records.

4.8 Implications for health information management practice

The findings support a hospital-wide approach to coding literacy. Training should not be restricted to staff working in coding units. Doctors, nurses, pharmacists, radiographers, dentists and other professionals who generate clinical documentation should receive basic instruction on the purpose of clinical coding, the role of ICD classification, and the documentation elements required to support code assignment. HIM professionals should remain responsible for specialist coding functions while strengthening communication and feedback with clinical departments. Hospitals should also introduce regular orientation for new staff, continuing professional development, practical case-based sessions and multidisciplinary documentation-and-coding meetings. Training should address common misconceptions explicitly and assess understanding through scenario-based questions rather than relying solely on self-reported familiarity. Documentation guidance should cover clear diagnostic statements, complete treatment records, legibility, approved abbreviations, investigation reports and discharge summaries.

4.9 Strengths and limitations

A strength of the study is the use of both questionnaire and interview data across six tertiary hospitals. The qualitative interviews provide explanatory depth that a closed-ended questionnaire cannot supply, particularly regarding confident misconceptions and the occupational distribution of accurate knowledge.

Several limitations should be considered. First, the questionnaire knowledge measure included self-reported awareness, claimed knowledge, training and exposure; it was not an objectively validated test of coding competency. Second, five duplicate questionnaire entries were removed, leaving 103 responses from 108 retrieved. Third, the number of respondents per hospital was small and uneven (13–18), limiting statistical power for subgroup comparisons. Fourth, the qualitative interviews covered five hospitals, with no interview data from FTH Ido-Ekiti. Fifth, item-level missing responses meant that some percentages used valid denominators below 103. Finally, the detailed socio-demographic cross-tabulation in the source thesis contains apparent inconsistencies in some cell percentages; these should be checked against the original SPSS output before journal submission.

4.10 Recommendations for research and practice

Future studies should use an objectively scored knowledge assessment that tests respondents' ability to define clinical coding, distinguish coding from related activities, identify the role of ICD and recognise documentation elements required for code assignment. Larger samples should be used for hospital-level comparisons, and interview coverage should include all participating institutions. Intervention studies could assess whether structured multidisciplinary training improves coding literacy and documentation quality.

5. Conclusion

Healthcare providers in the six selected tertiary hospitals demonstrated relatively high awareness of clinical coding and recognised its importance, but practical knowledge, formal training and direct experience were limited. More than half of respondents were classified as having poor knowledge, and the mean knowledge score was below the study benchmark. Knowledge did not differ significantly across the hospitals. Qualitative findings showed that accurate working knowledge was concentrated among HIM professionals and coders, while other professional groups exhibited no knowledge, partial understanding or confident

misconceptions. Respondents also rated clinical documentation practices below the criterion mean. These findings indicate a need for hospital-wide, role-specific education on clinical coding and proper documentation, supported by stronger collaboration between clinical departments and HIM services.

References

Adebayo, T. T., Afolabi, S. A., Fajuyigbe, S. O., Adepoju, O. K., Omole, M. S., et al. (2021, November 10). Clinical coding and indexing as indispensable tools in health care, teaching and research. Obafemi Awolowo Teaching Hospitals Complex.

Adeleke, I. T., Adekanye, A. O., Onawola, K. A., et al. (2017). Data quality assessment in healthcare: A 365-day chart review of inpatients' health records at a Nigerian tertiary hospital. *Journal of the American Medical Informatics Association, 19*, 1039–1042. https://doi.org/10.1136/amiajnl-2017-00823

Ahern, D. K., Woods, S. S., Lightowler, M. C., Finley, S. W., & Houston, T. K. (2017). Promise of and potential for patient-facing technologies to enable meaningful use. *American Journal of Preventive Medicine, 40*(5 Suppl. 2), S162–S172. https://doi.org/10.1016/j.amepre.2017.01.005

American Health Information Management Association. (2017a). *Clinical coding.* https://www.ahima.org/coding

American Health Information Management Association. (2017b). Computer-assisted coding: e-HIM work group delving into computer-assisted coding. *Journal of AHIMA, 75*, 48A–48H.

Averill, R. F., Mullin, R. L., Steinbeck, B. A., et al. (2017). *Development of the ICD-10 Procedure Coding System.* Centers for Medicare & Medicaid Services.

Bachman, J. W. (2017). The patient-computer interview: A neglected tool that can aid the clinician. *Mayo Clinic Proceedings, 78*, 67–78.

Barr, M. S. (2017). The clinical record: A 200-year-old 21st-century challenge. *Annals of Internal Medicine, 153*, 682–683. https://doi.org/10.7326/0003-4819-153-10-201011160-00015

Bates, D. W., Kuperman, G. J., Wang, S., Gandhi, T., Kittler, A., Volk, L., et al. (2018). Ten commandments for effective clinical decision support: Making the practice of evidence-based medicine a reality. *Journal of the American Medical Informatics Association, 10*, 523–530.

Berenson, R. A., Basch, P., & Sussex, A. (2019). Revisiting evaluation and management visit guidelines: A missing piece of payment reform. *New England Journal of Medicine, 364*, 1892–1895. https://doi.org/10.1056/NEJMp1102099

Blumenthal, D. (2017). Wiring the health system—Origins and provisions of a new federal program. *New England Journal of Medicine, 365*, 2323–2329. https://doi.org/10.1056/NEJMsr1110507

Borkar, J. (2020). *Clinical coding and billing errors and its management.* Institute of Health Management Research.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101.

Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health, 11*(4), 589–597.

Bryman, A. (2006). Integrating quantitative and qualitative research: How is it done? *Qualitative Research, 6*(1), 97–113.

De Groot, K., Triemstra, M., Paans, W., & Francke, A. L. (2019). Quality criteria, instruments and requirements for nursing documentation: A systematic review. *Journal of Advanced Nursing, 75*(7), 1379–1393.

Delbanco, T., Walker, J., Bell, S. K., Darer, J. D., Elmore, J. G., Farag, N., et al. (2018). Inviting patients to read their doctors' notes: A quasi-experimental study and a look ahead. *Annals of Internal Medicine, 157*(7), 461–470. https://doi.org/10.7326/0003-4819-157-7-201210020-00002

Delbanco, T., Walker, J., Darer, J. D., Elmore, J. G., Feldman, H. J., Leveille, S. G., et al. (2018). Open notes: Doctors and patients signing on. *Annals of Internal Medicine, 153,* 121–125. https://doi.org/10.7326/0003-4819-153-2-201007200-00008

Doktorchik, C., Lu, M., Quan, H., Ringham, C., & Eastwood, C. (2020). A qualitative evaluation of clinically coded data quality from health information manager perspectives. *Health Information Management Journal.*

Ekwueme, O. (2018). *Nigerian hospital-based interprofessional collaborative patterns and organizational implications* (Publication No. n/a) [Doctoral dissertation, Walden University].

Embi, P. J., Yackel, T. R., Logan, J. R., Bowen, J. L., Cooney, T. G., & Gorman, P. N. (2017). Impacts of computerized physician documentation in a teaching hospital: Perceptions of faculty and resident physicians. *Journal of the American Medical Informatics Association, 11,* 300–309.

Fetters, M. D., Curry, L. A., & Creswell, J. W. (2013). Achieving integration in mixed-methods designs: Principles and practices. *Health Services Research, 48*(6 Pt. 2), 2134–2156.

Foote, R. S. (2016). The challenge to the medical record. *JAMA Internal Medicine, 173*, 1171–1172.

Hirschtick, R. E. (2017). A piece of my mind: Copy-and-paste. *JAMA, 295*, 2335–2336.

Huffman, E. K. (2018). *Medical record management* (9th ed., rev. by AHIMA). Physicians' Record Company.

Kind, A. J. H., & Smith, M. A. (2017). Documentation of mandated discharge summary components in transitions from acute to sub-acute care. In K. Henriksen, J. B. Battles, M. A. Keyes, et al. (Eds.), *Advances in patient safety: New directions and alternative approaches* (Vol. 2). Agency for Healthcare Research and Quality.

Lobbestael, J., Leurgans, M., & Arntz, A. (2017). Inter-rater reliability of the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) and Axis II Disorders (SCID-II). *Clinical Psychology & Psychotherapy, 18*(1), 75–79.

Lorenzoni, L., Da Cas, R., & Aparo, U. (1999). The quality of abstracting medical information from the medical record: The impact of training programmes. *International Journal for Quality in Health Care, 11*(3), 209–213.

Lusignan, S. D. (2018). The barriers to clinical coding in general practice: A literature review. *Informatics for Health and Social Care, 30*(2), 89–97. https://doi.org/10.1080/14639230500298651

Lusignan, S. D., Wells, S. E., Hague, N. J., et al. (2017). Managers see the problems associated with coding clinical data as a technical issue while clinicians also see cultural barriers. *Methods of Information in Medicine, 42,* 416–422.

Mamykina, L., Vawdrey, D. K., Stetson, P. D., Zheng, K., & Hripcsak, G. (2018). Clinical documentation: Composition or synthesis? *Journal of the American Medical Informatics Association, 19*, 1025.

Mechanic, D. (2017). The uncertain future of primary medical care. *Annals of Internal Medicine, 151*, 66–67. https://doi.org/10.7326/0003-4819-151-1-200907070-00012

Medical Economics Staff. (2021, November 29). *Clinical coding and clinical documentation best practices.* Medical Economics.

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods, 16*(1), 1–13.

O'Cathain, A., Murphy, E., & Nicholl, J. (2010). Three techniques for integrating data in mixed-methods studies. *BMJ, 341*, c4587.

Ogbonna, C. (2020). *Challenges in electronic health records implementation at Obafemi Awolowo University Teaching Hospital, Osun State, Nigeria.*