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Research Article

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Knowledge, Training Needs and Barriers in the Medical Certification of the Cause Of Death Among Medical Doctors: A Qualitative Study at China-Uganda Friendship Hospital Naguru

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Abstract

Background: *Accurate medical certification of cause of Death (MCCOD) is crucial for mortality surveillance. However, in many low resource setting, challenges persist in practice. The study assessed the knowledge, training needs, and perceived barriers among medical doctors involved in cause of death certification at CUFH-N.*

Methods: *We conducted in-depth interviews with key medical personnel at CUFH-N. Participants were purposively selected. The data were analyzed using content analysis and the findings were presented using themes/sub-themes along with participant quotes.*

Results: *We interviewed 12 medical doctors with median age of 35 years (IQR: 30--39); most (67%; (8/12)) were female. Three major themes emerged; (1) knowledge gaps in completing certificates; (2) lack of training and institutional support; (3) systemic and structural barriers, including time constraints and absence of tools.*

Conclusion: *This study highlights substantial MCCOD knowledge and training gaps, compounded by individual and institutional barriers. Strengthening MCCOD practices requires targeted training programs, improved interdepartmental coordination, and emotional support for medical officers.*

Keywords: Medical Certification of Cause of Death, Knowledge, Training Gaps, Barriers, Uganda

List of Abbreviations

MCCOD	:Medical Certification of Cause of Death
ID	:Respondent identification number
WHO	:World Health Organization
ICU	:Intensive Care Unit
COVID-19	:Coronavirus Disease 2019
KI	:Key Informant

1. Introduction

The death certificate is a fundamental medical-legal document that serves as a permanent legal record of an individual's death [1]. It is critical for multiple stakeholders; families depend on it for inheritance and insurance claims, whereas health authorities use it to generate reliable mortality statistics essential for public health planning, epidemiological research and resource allocation. Accurate and reliable death certifications play a vital role in informing evidence-based health decisions and shaping effective public health policies [2].

Globally, nearly two-thirds of the 56 million annual deaths are unregistered, with the majority occurring in low- and middle-income countries (LMICs) and outside healthcare settings [3].

Several factors contribute to this challenge, including evolving medical concepts, such as the complex relationship between diabetes and cardiovascular diseases, which complicates the identification of the primary cause of death [4]. Additionally, clinical uncertainties in cases with multiple comorbidities often lead to misclassification and errors, further compromising the collection and accuracy of death certification data [5].

The knowledge and competency of medical professionals in medical certification of cause of death (MCCOD) vary widely, with only approximately 60% of physicians familiar with international guidelines [6]. The contributing factors include the lack of standardized training on International Classification of Diseases (ICD) rules, which hinders medical officers' ability to differentiate between mechanisms of death and underlying causes, as well as limited opportunities for ongoing professional development [7]. A study in Sri Lanka noted that 76.1% of doctors recognize the importance of accurate cause-of-death certification, but their practical performance remains subpar, with an average score of only 33.7% [8]. Structured training programs and interventions, such as hands-on workshops and tailored educational strategies, have proven effective in improving the accuracy of cause-of-death certification [9].

In Uganda, similar to global trends, there are significant gaps in MCCOD practices at health facilities. At the China Uganda Friendship Hospital Naguru (CUFH-N), only 16% (37 out of 228) of deaths reported in 2022 were medically certified by medical officers, raising concerns about the reasons behind this low certification rate [10]. This study aimed to explore medicals' understanding, training needs and perceived challenges in completing medical certificates of cause of death at a tertiary hospital in Uganda.

1.1 Specific Objectives of the Study

To establish the level of knowledge and training of MCCOD among medical officers at CUFH-N.
To explore individual barriers to MCCOD among medical officers at CUFH-N.
To identify institutional barriers to MCCOD by medical officers at CUFH-N.

2. Materials and Methods

2.1 Study Design

This was a qualitative exploratory study using semi-structured in-depth interviews.

2.2 Study Setting

The study was conducted at China Uganda Friendship Hospital Naguru (CUFH-N), a national referral hospital in Kampala, Uganda. The hospital serves a large and diverse population and records hundreds of death annually.

2.3 Sampling and Participants

Purposive sampling was used to recruit participants with involvement or oversight roles in MCCOD process. A total of 12 key informants were selected interviewed including senior house officers and consultants. The participants were chosen for their experience, knowledge, and engagement in either certifying or managing certification process.

The study included clinical or administrative personnel with active roles in MCCOD, with sound mind, willing to participate and provide informed consent.

The staff without involvement in death certification were not included in the study.
Saturation was used a guiding principle to determine the adequacy of the sample size. Interviews continued until no new themes emerged.

Individuals not directly involved in the MCCOD process, such as nonclinical staff, general support staff, and healthcare workers without specific roles in death certification, were excluded from the study to maintain the relevance and accuracy of the findings.

2.4 Data Collection Procedures

Data were collected from March 2024 to April 2024 using an interviewer-administered interview guide. The guide was adapted from existing MCCOD tools and focused on; perception of MCCOD importance, Knowledge of underlying Vs immediate cause of death, institutional support and documentation system and emotional and systematic barriers to proper certification of cause of death [1-4].

Interviews were conducted in private settings with in the hospital premises, lasted for 30-60 minutes and were auto recorded with participant consent. Field notes were also taken to capture non-verbal cues and contextual information.

2.5 Bias and Quality Control

The study utilized a representative sample of medical officers and employed clear data collection protocols. The participant details were blinded, and active follow-up was conducted to avoid nonresponse bias.

2.6 Data Analysis

Audio recordings were transcribed verbatim and reviewed for accuracy. Transcripts were analysed using thematic analysis guided by Braun and Clarke's six approach.
1. Familiarization with data
2. Generating initial codes
3. Searching for themes
4. Reviewing themes
5. Defining and naming themes
6. Producing the report

Two independent coders analyzed the data manually to ensure inter-coder reliability. Discrepancies were resolved through consensus. Key messages were developed under two broad categories: individual-level barriers and institutional–level barriers.

2.7 Trustworthiness and Rigor

Too ensure credibility, member checking was used with selected participants to confirm the accuracy of interpretation. Transferability was enhanced by providing detailed descriptions of the setting and participants. Dependability was achieved

by maintaining an audit trail of all coding decisions, and confirmability were reinforced by multiple analysis in the interpretation process. independent coders analyzed the data manually to ensure inter-coder reliability.

2.8 Ethical Considerations

Ethical approval for the study was obtained from the Clarke International University Research Ethics Committee (CIU-REC), and the study was registered under number Clarke-2023-854. Informed written consent was obtained from all participants. Confidentiality was maintained by anonymizing transcripts, and all sata were stored securely and accessed only by the research team.

3. Results

A total of 12 key informants participated in the qualitative interviews. These participants were purposively sampled due to their direct involvement in the medical certification of cause of death (MCCOD) at CUFH-N. The sample included (senior house officers, medical officers and consultants. Participants had diverse experiences ranging from frontline death certification to oversight and records management. The median age of the medical doctors was 35 years (IQR: 30--39). The data revealed that 67% (8/12) of medical officers were female. The majority (33%, 4/12) were aged 30--39 years, and 17% (2/12) were aged 50 years and above. Intern doctors made up 33% (4/12), followed by medical doctors, 25% (3/12); consultants, 17% (2/12); senior house officers, 17% (2/12); and special grade officers, 8% (1/12). Fifty percent (6/12) of the doctors had 1--5 years of experience, whereas the other 50% (6/12) had 6--10 years of experience. The most significant representation was from the medical department (33%, 4/12), followed by the obstetrics and gynecology departments (25%, 3/12). **Table 1** shows the participant characteristics.

Category	Subcategory	Frequency (n=12)	Percent
Gender	Male	4	33%
	Female	8	67%
Age group	20-29	3	25%
	30-39	4	33%
	40-49	3	25%
	50 above	2	17%
Medical Specialty	Intern Doctors	4	33%
	Medical Doctors	3	25%
	Senior House Officer	2	17%
	Special grade Officer	1	8%
	Consultant	2	17%
Years of Practice	1-5	6	50%
	6-10	6	50%
Department of work	Obstetrics and gynecology	3	25%
	Medical	4	33%
	Pediatrics	2	17%
	Surgical	1	8%
	Pathology	1	8%
	ICU	1	8%

Table 1: Participant Characteristics of Medical Officers Who Participated in a Study to Assess Knowledge and Training Assessment of MCCOD at CUFH-N

4. Qualitative Findings

4.1 Individual Barriers

We identified six significant subthemes under this theme: lack of understanding of MCCOD procedures, workload and time constraints, emotional factors, skills gaps, divided medical opinions, and poor attitudes of medical workers. These are further described below:

4.2 Lack of Understanding of MCCOD Procedures

A key barrier identified was the lack of understanding regarding the MCCOD. The respondents highlighted challenges such as distinguishing between the actual and underlying causes of death. One respondent mentioned,

"In one case, a death was initially attributed to malaria, but further investigation revealed a different underlying condition" (KI 2, medical doctor).

Another respondent noted:

"We often face difficulties in accurately identifying the underlying causes because many conditions can be intertwined. For example, a patient may have multiple health issues that complicate the certification process."- (KI 6, Senior House Officer).

The use of non-standardized abbreviations and incorrect ICD codes led to frequent misclassifications, negatively impacting public health data and resource allocation.

Owing to time constraints, we often resort to abbreviations, leading to cause-and-death documentation errors. Without adequate training in ICD coding, misclassifications occur,

negatively affecting public health data and resource planning." (KI 3, Intern Doctor)

4.3 Workload and Time Constraints

High workloads and time constraints were also significant obstacles. Many respondents stated that the limited time and diagnostic resources made it difficult to accurately determine the cause of death.

"The pressure to manage a high volume of patients means we often have to make quick decisions without thorough investigations. This can lead to oversights in determining the true cause of death, ultimately affecting the possibility and quality of our documentation" (KI 7, medical officer).

4.4 Emotional Factors

Emotional challenges were another critical barrier, especially for young doctors and interns. Several respondents described how certifying deaths took an emotional toll.

"Repeated exposure to patient mortality has caused anxiety, depression, and burnout, making it difficult to perform death certification." (KI 3, Intern Doctor).

The lack of adequate emotional support and preparation in medical education has left many healthcare professionals struggling to manage the psychological demands of the process.

4.5 Skill Gaps

Skill gaps in the MCCOD process emerged as a recurrent theme. Insufficient training and a lack of advanced diagnostic tools were major contributors.

"In elderly patients with multiple comorbidities, such as hypertension and diabetes, or middle-aged patients presenting overlapping symptoms of respiratory distress, it was difficult to determine the primary cause of death without advanced diagnostic tools." (K11, Consultant).

4.6 Poor Attitudes of Medical Workers

The attitudes of medical staff toward the MCCOD process were another barrier. Some practitioners reported indifference, possibly due to burnout or a lack of training.

"Certain doctors are indifferent to the certification process, likely because of the emotional toll and pressure they face in their day-to-day work" (KI 12, senior house officer).

4.7 Institutional Barriers

4.7.1 Limited Access to Databases

Hospitals use digital systems such as DHIS2 for death registration, but inconsistencies in updating databases create gaps. This was a notable challenge.

"Some crucial information is often not recorded on hard copy forms, which results in gaps in the digital records." (KI 5 Medical Doctor).

4.7.2 Lack of Clear Protocol Adherence

Although protocols exist, they are not consistently followed. This was noted among several officers. Notably, one respondent said:

"At CUFH-N, there is a documented protocol that includes verifying the cause of death and completing the necessary forms. However, there are instances when steps are skipped, particularly during high-pressure situations or when there is a high volume of cases. This often results in incomplete records or delays updating the database, and the death certification is not done." (KI 4, medical doctor).

5. Discussions

At the individual level, emotional stress and skill gaps emerged as primary barriers to effective MCCOD. Emotional challenges were frequently cited as major obstacles, particularly for younger medical officers and interns. The emotional toll of committing death, especially in cases involving multiple comorbidities or traumatic deaths, can lead to burnout, anxiety, and depression. This emotional burden compromises the capacity of medical officers to engage in the meticulous and objective process of identifying causes of death. Previous studies have echoed similar concerns, noting that exposure to patient mortality without adequate emotional support can contribute to psychological fatigue among healthcare professionals. Without the necessary emotional resilience or coping mechanisms, medical officers may make rushed decisions or experience cognitive overload, leading to errors in death certification.

Additionally, skill gaps related to MCCOD procedures constitute another significant barrier. Medical officers often report feeling underprepared to handle the complexities of death certification, especially in cases involving multiple or ambiguous causes of death. The lack of formal training in areas such as the ICD coding system, differentiating between immediate and underlying causes of death, and recognizing the various manners of death (natural, accidental, or intentional) contributes to these skill deficiencies. Inaccurate certifications due to skill gaps not only hinder effective public health data collection but also undermine the integrity of the certification process.

Institutional barriers were also found to play a significant role in limiting the effectiveness of MCCOD practices. Resource constraints, such as limited access to diagnostic tools and understaffing, were identified as significant challenges that impede thorough death investigations. In many cases, medical officers face pressure to manage high patient volumes, leading them to make quick decisions without the time or resources to investigate the cause of death thoroughly. This rush to complete death certifications often results in errors or incomplete documentation, distorting mortality data.

Poor coordination between departments and a lack of organizational support make death certification even more challenging. When pathology, radiology, and internal medicine departments do not communicate effectively, this leads to delays and conflicting information, resulting in medical officers with incomplete details to determine the cause of death. Without a clear and consistently followed MCCOD protocol, certification practices become inconsistent, adding to the problem.

6. Study Strengths and Limitations

Our study has several strengths and weaknesses. With respect to strengths, our study used a mixed methods approach, enabling it to provide relevant insights from the quantitative results accompanied in some instances by rich qualitative data. Second,

the use of respondents such as medical records personnel and hospital administrators in the qualitative study, personnel who are not mandated to perform MCCOD but play a supporting role, helped highlight a few aspects of the challenges faced by medical officers. One notable weakness of our study is the small sample size of medical officers interviewed, which may limit the generalizability of our results.

7. Conclusion

This study highlights several critical barriers to accurate medical certification of cause of death (MCCOD) in Uganda, ranging from confusion about events and death dates to emotional challenges faced by younger doctors and the impact of limited diagnostic tools. The findings emphasize the need for targeted interventions, including improved training, standardized coding practices, emotional support for medical professionals, and investment in diagnostic infrastructure. Addressing these barriers is crucial to improving the accuracy of death certification, which will enhance public health data, resource allocation, and overall healthcare planning in Uganda and similar low-resource settings.

Declarations

Ethical Approval and Consent for Participation

Ethical approval for this study was granted by the Clark International University Research Ethics Committee (CIU-REC) to ensure the protection of participant rights and privacy. The study adhered to all ethical guidelines set by the relevant authorities. Informed consent was obtained from all individual participants included in the study. The participants were fully informed of the purpose of the study, the procedures involved, and their right to withdraw at any time without consequence. Consent was obtained in writing before data collection commenced.

Helsinki Declaration

This study was conducted in compliance with the Declaration of Helsinki. Ethical approval was obtained from the Clark International University Research Ethics Committee (CIU-REC). Participation was voluntary, and informed consent was obtained from all participants. Confidentiality was maintained throughout the study, and participants were free to withdraw at any time without consequence.

Availability of Data and Materials

The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request. All data used in this study were anonymized to protect participants' privacy.

Consent for Publication

Not applicable

Author Contributions

CAT and AK conceptualized the study idea and performed the data analysis for this study. CAT, IA, GG, JBA, RCN, and AK guided the writing and review of the manuscript. All the authors were involved in editing and reviewing the manuscript. All the authors read and approved the final manuscript.

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Conflict of Interest

The authors declare no conflicts of interest regarding this study. No financial, personal, or institutional influences affected the research design, data collection, analysis, or interpretation of findings.

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