

ORIGINAL ARTICLE

Knowledge and Awareness of Medical Certificate of Cause of Death in Medical Undergraduate Students at a Tertiary Care Hospital

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ABSTRACT

Background: The Medical Certificate of Cause of Death is not just a legal formality but the backbone of accurate public health surveillance and policy, yet error rates as high as 50–60% threaten the integrity of national health data and decision-making. Addressing persistent gaps in knowledge and practice among medical undergraduates is crucial to ensure reliable mortality statistics and effective healthcare planning for the nation's future.

Objectives: To evaluate medical undergraduates' knowledge, awareness, and practical competence regarding the purpose, legal significance, correct completion, guidelines, and common errors of the Medical Certificate of Cause of Death, and to identify gaps in these areas.

Materials and Methods: This cross-sectional study was conducted among third year, final year, and Compulsory Rotatory Medical Internship (CRMI) students, at Chettinad Hospital and Research Institute using a structured, self-administered online questionnaire to assess knowledge and awareness regarding the Medical Certificate of Cause of Death. Data were analyzed with SPSS version 29, and ethical approval was obtained from the Institutional Ethics Committee.

Results: While all surveyed medical undergraduates correctly identified the expansion and legal importance of the MCCD, significant knowledge gaps persisted

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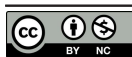
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only about 80% knew when not to issue an MCCD, and just 70–80% consistently applied the correct sequencing of causes of death, especially in complex cases. These findings highlight persistent deficiencies in both the practical and legal aspects of MCCD completion among future certifiers.

Conclusion: Precise and diligent death certification forms the bedrock of reliable health data and effective public health policy. Strengthening this competency among medical professionals is essential to uphold the integrity of healthcare systems and ensure informed decision-making at every level.

KEYWORDS

• Medical Certificate of Cause of Death (MCCD) • Death Certification • Knowledge among Medical Undergraduate Students • Mortality Statistics

INTRODUCTION

The Medical Certificate of Cause of Death (MCCD) is not merely a legal document; it is a cornerstone of public health surveillance and healthcare planning. Accurate and complete death certification provides essential data for epidemiological research, resource allocation, and the formulation of national health policies.^{1,2} In India, the Registration of Births and Deaths Act, 1969, mandates the systematic recording of deaths and their causes, underscoring the role of medical professionals in ensuring the reliability of mortality statistics.³ However, studies have consistently shown that a significant proportion of MCCDs are incorrectly completed, with error rates as high as 50–60%, often due to insufficient training, lack of awareness, or a casual approach to this critical responsibility.^{1,5}

Medical officers, including those in training, are tasked with not only diagnosing death but also certifying its cause, a process that demands clinical acumen, legal understanding, and ethical integrity. The World Health Organization (WHO) emphasizes that the cause of death must be documented in a precise sequence immediate, antecedent, and corresponding causes to facilitate accurate mortality surveillance and international comparability.⁴ Errors in this process can lead to misclassification of deaths, undermining the validity of health data and potentially skewing public health interventions.⁵ Furthermore, improper certification can have legal ramifications, especially in cases of unnatural or suspicious deaths, where medico-legal procedures must be meticulously followed.¹

Despite the inclusion of death certification in medical curricula, research reveals persistent gaps in knowledge and practice among medical undergraduates, who represent the next generation of certifiers.^{2,6} Addressing these gaps is vital, particularly in tertiary care hospitals where complex cases are managed and the accuracy of documentation is paramount. This study aims to assess the knowledge and awareness of MCCD among medical undergraduate students at a tertiary care hospital, with the goal of identifying educational deficits and informing targeted interventions. By strengthening competency in death certification, we can enhance the quality of mortality data, support evidence-based policy-making, and ultimately improve healthcare outcomes.^{5,6}

AIMS AND OBJECTIVES

1. To evaluate the level of theoretical knowledge of medical undergraduate students about the purpose, legal importance, and correct completion of the Medical Certificate of Cause of Death (MCCD).
2. To assess the awareness among students
3. Regarding the practical aspects, guidelines, and common errors associated with MCCD documentation.
4. To identify gaps in knowledge and practice related to MCCD among medical undergraduates.
5. To recommend educational interventions or curriculum modifications to improve competency in death certification and enhance the quality of mortality data.

MATERIAL AND METHODS

Study Design and Setting:

This cross-sectional study was conducted at Chettinad Hospital and Research Institute, a tertiary care teaching hospital in South India. The study spanned a period of three months from 12th October 2024 to 12th January 2025.

Study Population and Sample Size:

The study population comprised medical undergraduate students enrolled in the third year, final year, and those undertaking compulsory rotatory medical internship (CRMI). A total of approximately 284 participants were targeted for inclusion, ensuring adequate representation from each academic group.

Inclusion Criteria:

Medical undergraduate students currently in their third year, final year, or internship (CRMI) at Chettinad Hospital and Research Institute and students who provided informed consent to participate in the study.

Exclusion Criteria:

Students in the first and second years of the MBBS program and students who did not provide consent to participate.

Data Collection Procedure:

After obtaining informed consent, eligible participants were invited to complete a structured, self-administered online questionnaire via Google Forms. The questionnaire was designed to evaluate

knowledge and awareness regarding the Medical Certificate of Cause of Death (MCCD) and included multiple-choice questions and open-ended responses. The instrument was pilot-tested for clarity and relevance prior to administration.

Data Management and Analysis:

All responses were securely compiled in Microsoft Excel for data entry and cleaning. Statistical analysis was performed using the SPSS version 29 software. Descriptive statistics such as frequencies and percentages were used to summarize categorical variables. Inferential statistics, including chi-square tests, were applied to examine associations between academic year and levels of knowledge or awareness.

Ethical Considerations:

The study protocol was reviewed and approved by the Institutional Ethics Committee of Chettinad Hospital and Research Institute (Ref no: IHEC-I/3180/24). Participation was voluntary and confidentiality of all participants was strictly maintained throughout the study.

RESULT

A comprehensive analysis was conducted on 306 cases documented in the Casualty Department of Chettinad Hospital and Research Institute from 1st January 2024 to 30th June 2024. Of these, 143 (50.4%) were CRMIs, while 72 (25.4%) were phase 3 students and 69 (24.3%) were phase 4 students. The data has been tabulated and analyzed across various parameters.

Table 1: Questionnaire to assess the participants' knowledge about medical certificate of cause of death tabulated with the correct answers

Questions	CRMI	Phase-3	Phase-4	Chi-Square
What is the expansion of MCCD? (Medical Certification of cause of death)	147	72	69	-
What does a doctor issue? (Medical Certificate of cause of death)	136	71	69	4.792
What is the application of form 4 & 4a, respectively? (Institutional and non institutional death)	136	64	63	2.928
Does stillbirth have a separate form? (Yes)	136	69	60	5.934
What is the data to be entered in column Ia, IIb and IIIC, respectively? (Immediate, Antecedent and Contributory cause of death)	143	72	69	-
Mention a case in which doctor should not issue MCCD? (Brought dead / MLC / Cause of death unknown)	130	68	67	3.058

Questions	CRMI	Phase-3	Phase-4	Chi-Square
Is it important to issue the register number of death certifying doctor? (Yes)	137	67	67	1.416
Can a doctor charge for issuing MCCD? (No)	138	63	62	6.676
Is it allowed to give heart failure and respiratory failure as a cause of death? (No)	124	62	56	1.201
A 65 year old male, whose a known case of hepatocellular carcinoma (a) for 4 months and developed sudden decrease of liver function and deep vein thrombosis of right leg (b) and was admitted in the hospital. On the second day, patient developed pulmonary embolism (c) and died. Identify and arrange the causes of death in the correct order: Immediate, Antecedent and Contributory cause of death? (CBA)	121	58	57	0.578
A 34 year old female met with a road traffic accident (a) and had crush injury in the thorax (b) and was admitted in the hospital. Later developed hemorrhagic shock (c) and died after half an hour. Identify and arrange the causes of death in the correct order: Immediate, Antecedent and Contributory cause of death? (CBA)	128	58	60	3.322

DISCUSSION

The Medical Certificate of Cause of Death (MCCD) is not merely a bureaucratic formality but a linchpin in the machinery of public health surveillance, epidemiological research, and legal documentation. Accurate completion of the MCCD ensures that mortality data reflect true disease patterns, enabling policymakers to allocate resources effectively and monitor health interventions with precision.⁷ Furthermore, the MCCD serves as a legal document, providing families with closure and supporting administrative processes like inheritance and insurance claims⁴.

Our study found that while a majority of medical undergraduates at Chettinad Hospital and Research Institute could correctly expand the acronym MCCD and identify its legal importance, deeper knowledge gaps persisted. For instance, although 100% of respondents answered the expansion of MCCD correctly, only about 80% could accurately identify when a doctor should refrain from issuing an MCCD (e.g., medico-legal cases, unknown cause of death). This aligns with national data indicating that, despite awareness of the certificate's existence, the finer points of its legal and practical application are often misunderstood which was evident from the study conducted by Patel *et al.*⁸

The World Health Organization (WHO) prescribes a clear sequence for recording the cause of death: immediate, antecedent,

and underlying causes, with contributory conditions listed separately.⁴ Our results reveal that while most students could identify the correct order in structured case scenarios, only about 70-80% consistently applied this knowledge, particularly in complex or multi-morbidity cases.

This mirrors findings from multi-center audits across India, where major errors such as incorrect identification of the underlying cause of death (8.5-99.2%) and improper sequencing (12-64.7%) were commonly seen in study done by Singh *et al.*⁷ Minor errors, including missing clerical details, use of abbreviations, and illegible handwriting, were also frequent, with some studies reporting rates as high as 100% in a study done by Agarwal *et al.*⁹

The high prevalence of errors in MCCD completion is not unique to our institution. A scoping review of 20 Indian studies found that only 1.2% of certificates were error-free in accordance with a study done by Shah *et al.*¹⁰ In another study done by Agarwal *et al.*⁹, 86% of certificates listed the mode of death (e.g., "cardiac arrest") rather than a specific disease as the immediate cause. These errors compromise the quality of mortality statistics, leading to misclassification and underreporting of key health issues as said by Dash *et al.*¹¹

Improper certification can have significant legal and ethical consequences. In cases of unnatural or suspicious deaths, incorrect documentation can hinder investigations and

delay justice.⁷ Ethically, physicians have a duty to ensure that every death certificate is completed with the same rigor as any other clinical task, as it impacts not only public health statistics but also the rights and dignity of the deceased and their families.¹²

Globally, the accuracy of death certification varies widely. Europe boasts nearly 100% coverage of mortality registration, while Asia-Pacific and Africa lag behind at 50% and less than 10%, respectively.⁷ India's low rate of registered and accurately certified deaths underscores the urgency of reform.

CONCLUSION

The findings of this study shine a spotlight on a critical yet often overlooked aspect of medical practice: the accuracy and integrity of the Medical Certificate of Cause of Death. In an era where data drives decision-making, the quality of mortality statistics hinges on the diligence and expertise of certifying doctors. Our results reveal that while foundational knowledge exists among medical undergraduates, persistent gaps remain especially in the nuanced, practical, and legal facets of death certification.

This is not just an academic concern; it is a national imperative. Inaccurate death certification distorts the true picture of our nation's health, misguides public health interventions, and, in the gravest cases, denies families the closure and legal clarity they deserve. The ripple effects extend from the hospital ward to the highest levels of policy-making, impacting resource allocation, disease surveillance, and the very fabric of public trust in healthcare systems.

But this challenge is also an opportunity. By reimagining how we teach, train, and audit death certification, we can transform a routine administrative task into a cornerstone of medical professionalism and public service. Integrating hands-on training, regular audits, and digital tools into the medical curriculum will not only elevate the competence of future doctors but also strengthen the backbone of our health data infrastructure. Ultimately, the way we certify death is a reflection of how we value life. By committing to excellence in this essential responsibility, we honor our patients, empower our public health system, and set a new standard for medical integrity. Let this

study be a catalyst for change one that inspires a culture of accuracy, accountability, and pride in every certificate we sign. The future of healthcare depends on it.

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Conflict of Interest: The authors declare that there is no conflict of interest.

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