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Original Article

Practice of Writing Death Certificates in Different Medical College Hospitals of Bangladesh

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Abstract

Background: Accurate death certification is essential for legal, administrative, and public health functions. However, errors in completing death certificates can undermine the reliability of mortality data. **Objectives:** This study aimed to assess the quality of death certificate completion in medical college hospitals across Bangladesh, identify common errors, and explore underlying causes and potential solutions. **Methods:** An observational cross-sectional study was conducted using two data sources: A review of 400 death, certificates from hospital records. Evaluation of 100 death certificates completed by physicians in response to a dummy case scenario. Additionally, in-depth interviews were conducted with senior faculty members to gain insights into existing practices and improvement strategies. **Results:** Among hospital records, 64% of certificates listed ill-defined conditions as the underlying cause of death, with cardiorespiratory failure being the most frequently cited. Sequence errors were present in 50% of hospital-record certificates and also prevalent in dummy case responses, though at a lower rate. Interviews revealed a lack of training, feedback, and standardized procedures as key contributors to errors. **Conclusion:** The study highlights substantial deficiencies in the accuracy of death certification practices in Bangladesh. Structured training, routine feedback, and the adoption of digital certification systems are recommended to improve the quality and reliability of mortality data.

Keywords: *Death certification, medical errors, Bangladesh, public health, training, digitalization.*

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Introduction:

Death certificates provide essential documentation for legal, administrative, and epidemiological purposes.[1] Accurate and complete certificates are crucial for mortality statistics, health policy planning, and resource allocation.[2] However, errors in the certification process can distort public health data and impact families and research outcomes. In Bangladesh, the use of the International Medical Certificate of Cause of Death (IMCOD) has been

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mandated based on the WHO death certificate,[3] but challenges persist. This study aims to evaluate the current practices of death certification in medical colleges, identify common errors, and propose interventions for improvement.

Methods

This cross-sectional descriptive study was carried out over a one-year period, from January to December 2022, in multiple medical college hospitals across Bangladesh. The primary aim was to evaluate the quality of death certificate completion among physicians working in these institutions.

The study utilized two main data sources. First, a total of 400 death certificates were collected retrospectively from hospital record archives. These certificates represented actual cases and were selected to reflect a range of departments and causes of death. Second, an additional 100 death certificates were completed by practicing physicians in response to a structured dummy case scenario. This simulated case was developed to assess physicians' ability to accurately certify cause of death in a controlled setting, minimizing variability due to case complexity.

For data collection and evaluation, we used a structured assessment tool developed by Bloomberg Philanthropies, which is widely recognized for assessing death certification quality.[4] This tool allowed us to systematically identify common errors, such as the use of ill-defined conditions, incorrect sequencing of causes, and improper terminology.

In addition to the quantitative assessment, qualitative data were obtained through in-depth interviews with 12 senior faculty members from various departments. These interviews explored the physicians' perspectives on the challenges of death certification, current training practices, and suggestions for improving the process. Interviews were conducted using a semi-structured guide and were transcribed and analyzed for thematic content.

All quantitative data were entered and analyzed using SPSS version 20. Descriptive statistics, including frequencies and percentages, were used to summarize the types and prevalence of errors found in the death certificates. The qualitative data from faculty interviews were manually coded and analyzed to identify recurring themes and recommendations.

Ethical approval for the study was obtained from the appropriate institutional review boards, and confidentiality of all patient and physician data was strictly maintained throughout the research process.

Results:

- **Hospital Records:** Among the 400 reviewed certificates, 64% contained ill-defined conditions as the underlying cause of death. Sequence errors were noted in 50% of the certificates, while 33% were correctly filled.

- **Dummy Scenarios:** In the 100 certificates completed by respondents, ill-defined conditions were noted in 40%, and sequence errors in 49%. Correctly filled certificates accounted for 49%.

Chart 1: Comparison of the Quality of Death Certificates by Presence of Clinically Incorrect Sequences of Events (Hospital Records vs. Dummy Scenarios)

Category	Hospital Records (n=400)	Dummy Scenarios (n=100)	Statistical Inference
Clinically Incorrect	54.5%	49%	$\chi^2 = 0.972, df = 1, p = 0.324$
Clinically Correct	45.5%	51%	

Key Findings

- **Clinically Incorrect Sequences**: Out of 400 death certificates reviewed from hospital records, 54.5% were found to have clinically incorrect sequences of events leading to death. Similarly, 49% of the 100 dummy scenarios were performed incorrectly by respondents.
- **Statistical Significance**: The chi-square test yielded with 1 degree of freedom and a p-value of 0.324, indicating no statistically significant difference between the two groups.

Chart 2: Comparison of the Quality of Death Certificates: Presence of Ill-Defined Conditions as Underlying Causes of Death Hospital (Records vs. Dummy Scenarios) (n=500)

Mistakes	Review of Death Certificates (n=400)	Respondents' Performances (n=100)	Statistical Analysis
Yes	63.8%	40%	$\chi^2 = 18.654, p = 0.001$
No	36.3%	60%	

Key Findings

In the review of death certificates from hospital records, **63.8%** of the certificates included ill-defined conditions as the underlying cause of death (COD). Comparatively, in respondents' performances using dummy scenarios, **40%** of the performances had ill-defined conditions entered as the underlying COD. The statistical analysis revealed a chi-square value (χ2\chi^2χ2) of **18.654**, with a p-value of **0.001**, indicating a statistically significant difference between the two groups.

Chart 3: Comparison of the Quality of Death Certificates based on correctly filled-in medical certificates of the cause of death (COD) (Hospital Records vs. Dummy Scenarios) (n=500):

Category	Hospital Records (n=400)	Dummy Scenarios (n=100)	Statistical Inference
Correctly Filled In	33.3% (133/400)	49% (49/100)	$x^2 = 8.572, p = 0.0034$
Not Correctly Filled In	66.8% (267/400)	51% (51/100)	

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Key Findings:

Correctly Filled-in Certificates:

- **Hospital Records**: 33.3% of the death certificates were filled in correctly.
- **Dummy Scenarios**: 49% of the certificates were correctly completed.

Statistical Analysis:

- **Chi-Square Test** (x2x^2x2): The calculated value is 8.572.
- **P-value**: 0.0034.

Interpretation:

- The p-value (< 0.05) indicates a **statistically significant difference** between the two groups in terms of whether the certificates were correctly filled in.
- This suggests that respondents performed better under controlled dummy scenarios compared to the actual hospital records, possibly due to reduced pressure, clearer instructions, or a different context.

Key Findings from Interviews: Faculty highlighted inadequate training and lack of feedback systems as major contributors to errors. Recommendations included routine audits, electronic certification systems, and integrated training programs.

Discussion

This study highlights significant deficiencies in the accuracy of death certification across medical college hospitals in Bangladesh, with over half of the reviewed hospital records showing clinically incorrect sequences and a majority citing ill-defined conditions as the underlying cause of death. These findings suggest systemic challenges in how physicians understand and apply certification guidelines in real-world settings.

One of the key observations is the discrepancy between actual hospital records and the dummy scenarios. Physicians performed notably better in the controlled environment of the dummy cases, with fewer ill-defined conditions (40% vs. 64%) and more correctly completed certificates (49% vs. 33.3%).

This indicates that **knowledge of correct practices may exist** but is **not consistently applied** in the clinical context, possibly due to heavy workloads, time constraints, lack of accountability, or insufficient institutional emphasis on certification quality.

The high prevalence of ill-defined conditions, such as "cardiorespiratory failure," as terminal diagnoses undermines the utility of death certificates for public health surveillance. These findings are consistent with global literature, which also reports misuse of vague terminology and sequence errors in cause-of-death documentation. [5,6] However, the problem is especially acute in low- and middle-income countries, where such data is often the primary input for national health statistics and planning.

Importantly, the qualitative findings support the quantitative results. Senior faculty acknowledged that training in death certification is either absent or superficial in medical education. The lack of audit or feedback mechanisms further compounds the issue, allowing poor practices to persist uncorrected. As Arif's 2013–2014 study in Pakistan also suggested, without systematic interventions, even experienced clinicians may produce inaccurate certification. .[7]

From a policy standpoint, these findings point to a critical need for structured solutions. Integration of death certification training into the undergraduate curriculum and mandatory modules in postgraduate and continuing education could improve physician competency. Additionally,

electronic death certification systems with built-in validation logic could reduce common errors and ensure better data quality, as recommended in other international studies. [8,9]

Finally, while our study demonstrates potential for improved performance in ideal conditions, it also reveals that real-world practice falls short—implying that **knowledge alone is not enough**. Addressing the cultural, procedural, and logistical barriers within hospitals will be necessary to bring sustained improvements.

Conclusion:

Improving death certification practices requires a multifaceted approach, including training, feedback, and digitalization. These measures will enhance the reliability of public health data and facilitate better health policy decisions. Further research with larger sample sizes is recommended to explore underlying factors and evaluate the effectiveness of proposed interventions.

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