ASSESMENT OF MEDICAL CERTIFICATE OF CAUSE OF DEATH (MCCD) IN VADODARA MUNICIPAL CORPORATION, GUJARAT, INDIA

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ABSTRACT

Background: Death certificates are an important source of population-based mortality statistics . This information derived from death certificates has many important uses right from development of public health programs to allocation of health care resources. There is no adequate training received by the physicians for filling up of death certificates correctly. The resulting inaccuracies in completion of this information undermines the quality of the data derived from death certificates.

Aim & Objective: To assess the completeness of Medical Certificate of Cause of Death (MCCD) and the knowledge, attitude and practices (KAP) of health personnel involved in registration system.

Methods: A total of 1947 consecutive death certificates issued by community physicians were collected from 12 administrative wards of 4 zones of Vadodara Municipal Corporation (VMC) during June 2012 to November 2013. Different variables like personal information of deceased, information regarding sequence of the death event (medical part) and medico-legal portion were assessed for its completeness. Simultaneously, knowledge, attitude and practices of Registration of birth and death (RBD) staff related to filling up of the MCCD forms was assessed in different wards of VMC.

Results: Out of 1947 MCCD forms only 21 (1.1%) MCCD certificates in the study were completely filled, while 1877 (97%) were notably incomplete, 4 (0.2%) slightly incomplete and 45 (2.3%) grossly incomplete. On assessing KAP of RBD staff, none of them had been imparted the training related to registration system. Almost 87% of them were dissatisfied with the completeness of MCCD-form 4A filled up by private practitioners. Majority of them (68.8%) felt that they were overburdened due to paucity of staff.

Conclusion: In conclusion, the combined effort of physicians and RBD staff is required to improve the quality of diagnostic information in death certificates. Thus, more accurate cause-of-death statistics derived from death certificates will lead to better health planning.

Key Words: Death Certificate, KAP, VMC

INTRODUCTION

A Death certificate is the formal document in which a physician records the time, cause and circumstances of death of an individual. Studies providing morbidity and mortality statistics are mainly based on the analysis of these certificates [1-3] Consequently, inaccuracies in the completion of death certificates may lead to biased estimation of several epidemiological parameters [4,5].

Almost every physician has to fillat least one death certificate in his/her career. However, teaching the precise wording and formulation of causes of death is not usually included either in undergraduate or in postgraduate medical education [6-9]. Myers and Farguhar examined the impact of an interactive learning method on error rates in the completion of death certificates, reporting a statistically significant decrease in errors[10].

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Inaccuracies in the completion of death certificates present a problem, not onlyfrom the legal standpointbut also in collecting relevant vital statistics data from which to draw conclusions. Accordingly, every effort must be made to ensure that the completion of death certificates is performed in the most specific, accurate and complete fashion.

Considering all these issues regarding the incomplete and inaccurate documentation of cause of death, the aim of the present study was to assess the MCCD certificates in 12 administrative wards Of Vadodara Municipal Corporation (VMC) in terms of their completeness and accuracy. MCCD certificates filled by clinicians as well as frequency and types of errors committed by the physicians were assessed. The results of the study may prove to be useful for VMC and for Government of Gujarat in general to plan remedial actions for improving filling up of MCCD certificates.

MATERIALS & METHODS

Study Design: Descriptive cross-sectional and Knowledge, Attitude and Practice study.

Study period: April 2013 to September 2013.

Study site: Vadodara Municipal Corporation; consistingof Four zones and twelve administrative wards in Vadodara, Gujarat.

Study population: Based on available data, a total of 9710 forms (Form-4A) were filled up in the previous year 2012. A sample size consisting 20% of these forms i.e. 1942 forms were included in the study. To enable equal representation of each of the 12 wards, 231 forms per ward were taken. Therefore, 250 forms from each ward were studied for completeness. All the forms submitted between April 2013 to September 2013 were included in the study, which satisfied the sample size requirement .

Out of 16 RBD staff, 4 local registrars and 12 clerks were involved in the Registration of birth and death (RBD). Informed verbal consent was taken from the participants before administering the questionnaire. Staff was interviewed for their knowledge, attitude and practice (KAP) using a pretested semi-structured study instrument.

Data Management and Analysis

Data was entered into MS Excel analysis was carried out using Epi Info (version 1.1.67, developed by WHO CDC[11]. Proportions were computed for easy interpretation of the data.

To evaluate the overall completeness of MCCD certificates, a scoring system was developed. In this system a score of one was given for entry of each variable in the certificate.

Thus, maximum score for completeness in MCCD certificate was 19. On the basis of total score of each form they were divided into four different categories. These categories are described in Table-1.

- Each variable was categorised into one of the TWO status. These TWO categories of the variables were as follows:
1. Left blank and was correct (they were rightly left blank so they were considered as qualified for completeness)
2. Left blank but was incorrect. The columns, which were left blank in MCCD forms, were considered as incomplete.

Ethical clearance:

Ethical clearances and written permissions were obtained from concerned authority including Institutional Ethics Committee for Human Research (IECHR) prior to data collection. The process of data collection did not pose any potential risk or harm to the participants. Data safety and confidentiality was also given due consideration.

RESULTS

Total 1947 MCCD certificates filled up by private practitioners from 12 wards of Vadodara Municipal Corporation were included in the study. Different variables like personal information of deceased, information about sequence of death event (medical part) and medico-legal portion were assessed for its completeness.

COMPLETENESS OF MCCD FORMS

Completeness in terms of filling up of name and age was 95.1% and 91.2% respectively, while gender was mentioned only in 54.3% of the forms. Date and time of death was mentioned in almost all the forms.(Percentage??)

Immediate cause of death was noted in 95.9%, while the time interval between immediate cause and death was noted only in 2.6% of forms. Antecedent cause was filled in 27 % and underlying cause was filled in only 0.8%. Time interval between antecedent and underlying cause and death decreased to 1.4 % and 1.1 % respectively. Though other significant conditions were mentioned in 12.9%, time interval between other conditions and death was filled in only 2.6% of the forms. There was no form mentioning death associated with pregnancy.

Manner of death was written in 88%. The forms were completed with name and signature in almost 99.5% while date of verification was present in only 34%.(Table-2)

The analysis revealed that 21(1.1%) MCCDs were found completely filled. But, on lowering the criteria of completeness to a condition (slightly incomplete) where less than

15% columns were left blank; such slightly incomplete data were found in only 4 (0.2%) MCCD certificates. Most of MCCD forms were found notably incomplete (96.19%) and 45 (2.3%) MCCD forms were grossly incomplete (Table- 3, Figure-1).

Out of 12 clerks, 3 were Graduates, while 9 of them had passed HSC examination. SI had completed Sanitary Inspector course after Higher Secondary Education. Majority of them (62.6%) had more than 5 years experience. Rest of them 43% (n=7) had more than 10 years experience of working in the registration system. Though no training was given to registration staff related to registration system,knowledge about rules for birth and death was satisfactory. Almost 87% of them were not satisfied with the completeness of MCCD-form 4A which is filled up by private practitioners. In all ward offices, death certificates were available in computerised format. They all felt that there was lack of supervision of their work by higher authority. Majority of them (68.8%) felt that they were overburdened due to lack of sufficient staff.

DISCUSSION

Death certificate has been used as a health indicator and as a monitoring tool for public health policy. It enables us to describe disease patterns within a specified population. Moreover, the absence of reliable data on causes of death impedes the structuring of health-related activities and can thus result in misleading appraisals of research and improper decisions regarding health care. To meet this need, medical students and interns are taught about Death Certificate all over the globe [4]. However, despite repeated instructions and training workshops for clinicians, frequency of error remains more or less static . Hence this study included evaluation of death certificate, assessment incompleteness found in medical and non-medical part of certificate KAP???.

Although name and age were mentioned in most cases, sex was not filled up in 106 (5.4%) cases. This may be due to 'doctor being in a hurry' or 'lazy attitude of doctor'. This finding of our study is consistent with the study by G. Maudsley & EMI Williams of University of Liverpool in Journal of Public Health Medicine[13]., this picture points towards 'attitude' of certifier. They have further also stated that the major factors deficient in death certification is lack of 'routinized orientation' and Proper attitude of certifier i.e,the doctor .Apart from these causes , other errors of Non-medical part of certificate seems beyond the scope of this study [13]. Other investigators have derived similar [12]. Although there is a need to change this mindset, it cannot be done by a single individual. Strict action against erring doctor needs amendments in law. Citing an example from the Texas law, there are fines and penalties to physician for delaying death certification [13].

This study shows that only 21 out of 1947 (1.1%) MCCD certificates were completely written. EL-Nour et al found 1.8% certificates incompletely filled in a study conducted in paediatric hospitals of Khartoun state of Sudan during 2007[14].Another study by Venu states that the Overall completeness after giving score to each variable showed that, only 20(1.2%) MCCD forms were found completely filled [15]. During 1993, Hanzlick [16] reviewed 56 death certificates, and observed that 63% of certificates showed either omission or error in Cause of death This study found lower frequency of incompletely written death certificates., may be because death certificate were obtained from a teaching hospital.

The accuracy of the death certificate could be audited and confirmed from a complete medical record. The best certifier should be the treating physician of the deceased who recorded all details of his/her condition on the medical record so as to put them in proper sequence in the death certificate. Most of the doctors do not refer to the corresponding diagnoses in the medical record to identify the underlying cause of death, the antecedent cause(s) and the direct cause of death . In our study 570(30.1%) certificates were not followed by proper underlying cause of death. The reason behind this may be inadequate knowledge of the certifying doctor to the illness of the deceased as the doctors are called in after death of the patient, just to fill up the Death Certificate.

In this study, most of MCCD forms were found notably incomplete 1877 (96.19%) and 45 (2.3%) MCCD certificates were grossly incomplete in non-medical part of 1947 D.C. This simply suggests that doctors do not write death certificates scrupulously.

This study observed that 99% have legible signature or name of doctor mentioned, but 55.7% of certificates did not have mentioned date of verification at the bottom of certificate. Pediatric hospitals of Sudan had observed 18% of certificates were not signed by doctors [14]. In Beirut, almost 50% of certificates did not contain signature of certifier [12]. 'Omission' in writing details of 'Identity' of deceased was found in 5% of certificates. 5 % and 10% of certificate did not mention sex and age of deceased respectively. B Swift and K West of Dept. of Histopathology from UK observed 10% of certificates were of very poor standard, illogical & inappropriately completed [12].

Also the RBD staff in our KAP study stated that birth certificate details are filled with caution by majority of institutions, but this is not so in case of death certificates. The reason being, that most of the births occur in hospitals wherein the medical records and date of birth are readily available, which is not the case in the occurrence of deaths.

Bloor recognised that there were frequent and infrequent certifiers [12]. He described the completion of death certificates

as 'unsupervised, unreported, invisible and unconsidered'. In our KAP study,RBD staff expressed their worry about lack of enough supervision by higher authority.

The staff expressed that they were not satisfied with present status of completeness in MCCD (form 4 A) and felt the need to verify death certificate. Finding reasons for incompleteness in form 4A provides scope for further research in this study.

CONCLUSION

- Only 21 (1.1%) MCCD certificates in the study were found completely filled, while 97% were notably incomplete. Forms were almost complete in terms of date and time, immediate cause and manner of death. They were incomplete in terms of antecedent cause and time interval between cause-both immediate and antecedent and death.
- The knowledge and skill of RBD staff was found to be adequate. They had a felt need of supervision of their work and training.

RECOMMENDATION

- There is a pressing need for appropriate interventions to improve and enhance the accuracy of physicians' death certificate and completion skills.
- Emphasis on time interval between the onset of the condition and death for each condition viz. immediate cause, antecedent cause and underlying cause in future trainings and the impact of refresher trainings needs to be evaluated.
- Workload of RBD staff can be reduced by filling up the vacant posts in RBD system.
- Public private partnerships (with IMA, UNICEF, NGOs like PRIA for advocacy and training) would help to create political will and ensure speedier implementation of more universal death certification.

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Table 1: Categories of forms according to their score of completeness.

Categories	Score (%)	Range of score (Max. 19)
Completely filled	100	19
Slightly incomplete	85-99	16-18
Notably incomplete	51-84	10-15
Grossly incomplete	<50	<10

Table 2: Completeness of MCCD forms in terms of different variables. (n=1947)

Variables	Completeness found in MCCD certificates	
	No.	%
Name of deceased	1852	95.1
Sex	1058	54.3
Age	1775	91.2
Date of death	1947	100.0
Time of death	1946	99.9
Immediate cause	1867	95.9
Interval between immediate cause and death	51	2.6
Antecedent cause	525	27.0
Interval between antecedent cause and death	28	1.4
Underlying cause	21	1.1
Interval between underlying cause and death	21	1.1
Other significant condition	251	12.9
Interval between other condition and death	3	2.6
Death associated with pregnancy	1947	100
Manner of death	1728	88.8
How did injury occur	1947	100
Doctor's signature	1936	99.5
Name of Doctor	1936	99.5
Date of verification	663	34.1

Table 3: Score for Completeness of the MCCD certificates

Completeness of MCCD certificates			Frequency of MCCD certificates	
Level of completeness	Range of score (Max. 19)	Percentage of completeness	No.	%
Completely filled form	19	100	21	1.1
Slightly incomplete	16-18	85-99	4	0.2
Notably incomplete	10-15	50-84	1877	96.19
Grossly incomplete	<10	<50	45	2.3
Total			1947	100.0

Table 4: Knowledge Attitude and Practice of RBD staff in registration system:

Special training imparted to the RBD staff	No training (100%)
Knowledge* about rules of RBD	Sufficient (100%)
Availability of computerised format in RBD	Available in All wards
Skill** of RBD staff in computer data entry	Sufficient (100%)
Preparation of monthly report by RBD staff	Regular basis
Work burden to RBD staff	Overburdened (68.8%)
Total staff of RBD	Insufficient

*Knowledge was assessed based on questions related to routine work, duration for submission of forms, giving certificates and penalties.

**Skill was assessed based on efficiency in data entry, understanding the requirements of data for filling complete forms and asking for documents, whenever there is a deficit.
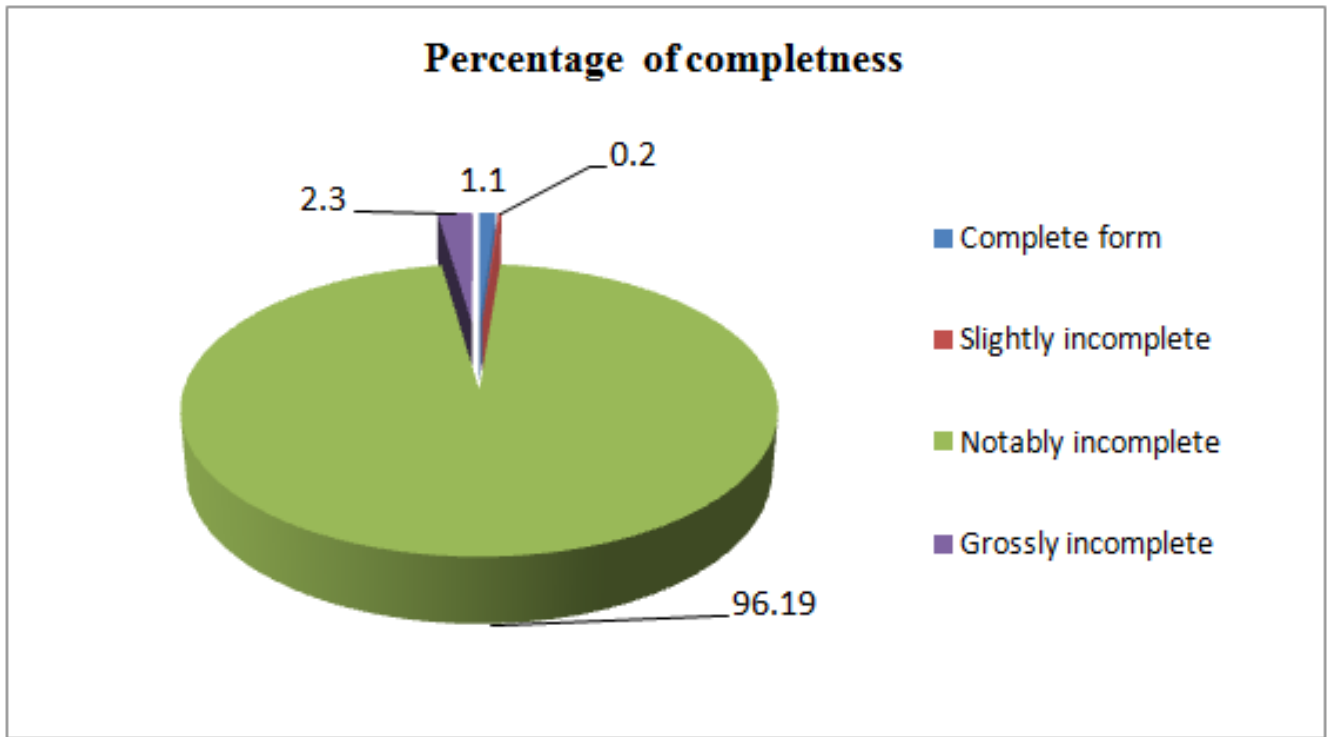
Percentage of completness

Figure 1: Completeness of the MCCD certificates