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ORIGINAL ARTICLE

Physician's Knowledge and Skill to Complete the Certificate of Cause of Death According to who Guidelines A Survey Among the Doctors of A Tertiary Care Hospital at Lahore\

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ABSTRACT

Background: The medical document certifying the cause of death provides vital data to develop health policies. In spite of very comprehensive guidelines issued by the WHO for thecompletion of death certificates; very few certificate arefound errorfree which might be due to lack of knowledge and practice on the part of physicians issuing that certificate.Purpose of this study is to assess the knowledge and competencies of a doctor in completing a death certificate.

Methods: This study was cross-sectional. The population of this study was physicians of a tertiary care hospital of Lahore. A structured questionnaire along with a case scenario was given to 137 physicians having variable working experiences, performing in different clinical departments of a tertiary care hospital of Lahore.The participants were asked to complete the component of cause of death of the certificateonly. The percentage of omissions done by the doctors during the completion of said section was analyzed using the chi square test to establish the association between participant's characteristics and their relevant responses.

Results: Among 137participants working in different clinical departments of a Tertiary Care Hospital at Lahore, 89% were having less than 5 years' experience and 11% having more than 5 years' experience. 53% were qualified from public sector, 24% from private sector and 23% from foreign institutes. 77% doctors identified immediate cause of death incorrectly, 83 % did not identify and interpret underlying cause of death correctly; 90 % did notidentify contributory cause of death correctly. In46 % cases mechanism/mode of death was confused with the cause of death.

Practical Implication: The correct completion of death certificates would provide an accurate and genuine mortality index essential for framing a national health policy.

Conclusion: Physician's knowledge and skill of completing the death certificates is very deficient and alarming which necessitate periodical and regular training of the physicians on completing the death certificates as per guidelines of the WHO to get an appropriate and valid health statistics effective for future public national health policies and strategies.

Keywords (MeSH): Death certificate completion, Medical certification of cause of death, Physician's knowledge, skill to complete death certificate, Mortality index

INTRODUCTION

A death certificate prepared by a physician is a source of vital statistics of mortality and morbidity prevalent in a community, supportive formedical research and designing health care policies and decisions[1].This legal document is helpful in cases of inheritance and life insurance[2].Keeping in view the importance of this document, World Health Organization has prescribed a specific format of death certificate anddescribed certain guidelines to fill the deth certificate in a prescribed format. m As per format, the death certificate is containing two parts,Part Iand Part II. Part I has 3 lines labeled as (a),(b) and (c). Line (a) is specified for mentioning immediate cause of death(final disease or condition responsible for death, present close to the time of death); Line (b),(c) are used to record antecedent or under lying cause of death (the disease or injury that triggered the chain of events resulting in immediate cause of death, present close to state of health). In Part II, other significant conditions although contributing to death but not responsible for initiating underlying cause of death must be entered[3,4]. This sequence of events furnishes an order of relationship between the events leading to death both with reference to time and pathological or etiological association. The condition mentioned in the lowest column of Part I is labeled as underlying cause of death and coded to one of the 17 International Classification of Diseases (ICD) categories and then to disease–specific cause of death. If this sequence is recorded correctly, proper strategies can be adopted to target the chain at its most vulnerable point to prevent the death. Hence any wrong information of underlying cause of death will misinterpret and misguide the actual incidence of mortality and morbidity prevalent in a community [5].

Many countries report the detailed date regarding the cause of death on regular basis to the WHO, based on these guidelinesbut the evaluation of this data reflects a low quality of statistics[5]and different reasons have been described to justify these errors; although various measures have been adopted to overcome these fallacies from time to time with some positive results[6].

W.H.O statistics are deficient of such detain Pakistan as well which might be reflecting the lack of experience and training of the doctors regarding the filling of this important medical document as per WHO recommendations which results in an inaccurate death certification providing incomplete information about national pattern of mortality, morbidity and health which is essentially required for structuring a national health policy and planning[7]. A study conducted in Lahore aimed to determine the inaccuracy in the completion of this important medical document,has revealed that, no single death certificate was error free[8].

There is limited literature available on this topic. This study aims to gain an insight into the knowledge and skill of completing the death certificates by the physicians of a tertiary care hospital in Lahore to improve the quality of death certification.

METHODOLOGY AND DATA COLLECTION

A retrospective descriptive cross-sectional study was carried out to assess the knowledge and skill of medical practitioners on completion of the death certificate as per recommendations of W.H.O as a part of an educational activity. This study was conducted from 09th Jan 2018 to 29th Jan 2018 involving 137 physicians working in different departments of the tertiary care hospital of Lahore and willing to participate in Medical Certification

of Cause of DeathCertificate training session. Doctors working in OPD, Diagnostic laboratories and Dermatologydepartments were excluded from this study.Performa's left incomplete by the Doctors were not included in the study.

Study was conducted amongst the attendees of this workshop. Objectives of the study were explained and a questionnaire was distributed amongst the participants. The questionnaire was containing questions to know the physician's knowledge about Medical Certification of Cause of Death(Annex-A).Scenario based death certificates (Annex-B) were given to the participants to assess their skill and practice in completing the cause of death section of the death certificates as per recommended guidelines of W.H.O. Their responses were assessed in terms of errors/fallacies in completing the death certificates.

Statistical Analysis: Data was added in Microsoft Excel and analyzed usingSPSS version 19.0.For categorical variables, frequency and proportions were calculated. Proportions were compared using chi square test. A score of significance was given if p value is <0.05.

ETHICS: Approval from the ethical committee of the institutional review board of SMDC was obtained. Participant's privacy and confidentiality of data was respected and assured.

Table 1: Correlation Betweenthe Participants and Knowledge About MCCD (n= 137)

		Participants n=137		CHARACTERISTICS													
				Designation				Experience				Institute of Graduation					
				MO (53) (39 %)		PG (84) (61%)		<5 Years (122) (89%)		> 5 Years (15) (11%)		Public (732 (53%)		Private (33) (24%)		Foreign (32) (23%)	
Sr. No.	Questions	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1	. Do you know about Death Certificate?	135	2	53	0	82	2	120	2	15	0	72	0	32	1	31	1
2	. . Is there any difference between Medical Certification of Cause of Death (MCCD)& death certificate?	74	63	33	20	41	43	66	59	8	4	43	29	16	17	15	17
3	. Do you know about Instructions of W.H.O to fill the MCCD?	67	70	27	20	40	50	60	66	7	4	39	33	14	19	14	18
4	. Do you know about Immediate cause of death?	125	12	50	4	75	8	111	11	14	1	66	6	29	3	30	3
5	.Do you know where to mention immediate cause of death onMedicalCertification of Cause of Death (MCCD) certificate?	91	46	33	18	58	28	81	41	10	5	51	25	20	11	20	10
6	. Do you know about Underlying cause of death?	125	12	49	8	76	4	112	10	13	2	69	7	30	4	26	1
7	. Do you know where to mention underlying cause of death on MedicalCertification of Cause of Death (MCCD) certificate?	84	53	33	19	51	34	73	49	11	4	48	28	16	15	20	10
8	. Do you know about Contributory cause of death?	114	23	45	9	69	14	103	19	11	4	65	11	25	7	24	5
9	. Do you know where to mentioncontributory cause of death onMedicalCertification of Cause of Death (MCCD) certificate?	81	56	35	18	46	38	73	51	8	5	52	20	13	20	16	16
10	. Do you know about Mechanism / Mode of death?	63	74	26	29	37	45	52	69	11	5	38	34	13	25	12	15
11	. Have yougot previous experience of completion of death certificate?	115	22	46	10	69	12	103	19	12	3	61	12	28	5	26	5
12	. Have you got training of completion of death certificate?	0	137	0	53	0	84	0	122	0	15	0	72	0	33	0	32

Table 2: Correlation Between Participants And Errors Observed In Scenario Based Mccd (N=137)

Sr. No.	Nature of Errors Observed in Mccd	Characteristics									
		Designation			Experience		Institute of Graduation				
		MO (53)	PG (84)	P-Value	<5 Years (122)	> 5 Years (15)	P-Value	Public (72)	Private (33)	Foreign (32)	P-Value
1	Immediate cause of death incorrectly placed / Not mentioned	42 (79%)	63 (75%)	0.57	99 (81%)	6 (40%)	< 0.01	59 (82%)	25 (76%)	21 (66%)	0.19
2	Underlying/ and antecedent cause of death incorrectly placed/ Not mentioned	44 (83%)	70 (83%)	0.96	105 (86%)	7 (47%)	< 0.01	62 (86%)	26 (79%)	26(81%)	0.61
3	Mechanism / Mode of death confused with cause of death	24 (45%)	39 (46%)	0.89	54 (44%)	9 (60%)	0.25	36 (50%)	20 (61%)	7 (22%)	< 0.01
4	Contributory cause of death not mentioned or misinterpreted	45 (85%)	78 (93%)	0.13	111 (91%)	12 (80%)	0.19	65 (90%)	30 (91%)	28 (88%)	0.88

RESULTS

Out of 137 participants who returned the questionnaire after due filling in the columns, 10participants did not show theidentity of their departments.Overall response rate was 100 %.

53 (39 %) were medical officers and 84 (61 %) were post graduate trainees in different departments. 122 (89 %) had working experience of less than 5 years and 15 (11 %) had more than 5 years' of working experience. 72 (53 %) did their graduation from public sector, 33 (24 %) from private sector and 32 (23%) were foreign medical graduates. (Table No. 01)

135 (98%) doctors knew about a death certificate. 63 (46 %) of the participants did not know the difference between death certificate and Medical Certification of Cause of Death (MCCD). 70 (51 %) did not know about the guide lines issued byW.H.O to fill in the death certificates. 33% did not know about immediate, underlying and contributory causes of death and their respective placements. 115 (84 %) had issued death certificates previously during their duties. None of the participants (100%) had got any formal guidance or training to fill all the columns of the certificate previously according to the instructions ofW.H.O. (Table No. 01)

The results on the case scenario based cause of death portion of death certificates were evaluated as under:

Immediate cause of death was erroneously written by 42 (79%) MOs and 63 (75%) PGs among which 99 (81 %) had less than five years of experience whereas 6 (40 %) had more than five years of experience; 59 (82%) being graduates of public sector, 25 (76%) from private sector medical colleges and 21 (66%) from foreign medical institutes.

Underlying cause of death was incorrectly mentioned by 44 (83%) MOs and 70 (83%) PGs among which 105 (86%) had less

than five years of experience whereas 7 (47%) had more than five years of experience; 62 (86%) being graduates of public sector, 26 (79%) from private sector medical colleges and 26 (81%) from foreign medical institutes.

Mechanism / Mode of death were confused with cause of death by 24 (45%) MOs and 39 (46%) PGs among which 54 (44%) had less than five years of experience whereas 9 (60%) had more than five years of experience; 36 (50%) being graduates of public sector, 20 (61%) from private sector medical colleges and 7 (22%) from foreign medical institutes.

Any disease or morbidity contributing in death was not mentioned or misinterpreted by 45 (85%) MOs and 78 (93%) PGs among which 111 (91%) had less than five years of experience whereas 12 (80%) had more than five years of experience; 65 (90%) being graduates of public sector, 30 (91%) from private sector medical colleges and 28 (88%) from foreign medical institutes. (Table No.2)

DISCUSSION

Information about death of a person issued by a municipal corporation is said to be death notification and certification of cause of death by a physician is said to be MCCD[2]. At personal level, a death certificate gives information about the time and cause of death,inheritance and insurance, any inherited risk of disease.At national level, it is a vital source of health statistics, prevalence of a disease and mortality and morbidity indices of a community which acts as a skeleton in developing national health policies[1]. In our study, 46% of the participants did not know the difference between a death certificate and Medical Certification of Cause of Death while in a study by Pokale[2]; 42% doctors did not know the difference.

The attending doctor not only certifies the death but also give the cause of death without any ambiguity. It is the duty of the certifying doctor not only to diagnose the occurrence of death but also to certify the cause of death without any ambiguity. It should not be confusedwith mechanism or mode of death. Erroneous death certificates are a common global problem evident from various hospital-based studies[6].Haqueet al[7] from Pakistan and Raje[9] from India reported 99% erroneous death certificates. Ganasva and co-workers mentioned 98.26% omissions in the death certification in a study from Gujrat, India[1].Maharjan and co-authors reported 78.4 % death certificates to be erroneous from Nepal[5].

Our study (51%) regarding knowledge of doctors about death certificate matches with that of Pakole[2]where 52 % doctors could not respond correctly.

In our study, none of theparticipants (100%) had got any formal training to fill in the columns of death certificates as per instructions of the W.H.O(Table No.1)butin a study by Qaddumi et al[10],done at North West Bank, Palestine, 21.3 % had received training of completion of certificates, while other studies[11, 12]carried out at Qatar, Bahrain and Nigeria, trained persons were 22.7%,19%, and 29% respectively. The low percentage of training indicates the less importance of this subject being perceived by the concerned authorities.Graduates from public sector did more mistakes (55%)as compared to non-government sectors perhaps due to more complicated cases being attended and workload. This finding is less than that of Qaddaumi (63%).[10]

The frequency of errors in the case-scenario based cause of death portion of death certificates was compared in relation to the characteristics of the participants revealing that immediate cause of death was not mentioned or incorrectly placed by77 % physicians (Table No. 02). In a study done by Qaddumiet al at Palestine, 51.3% participants identified the immediate cause of death incorrectly[10]. Haghighi et al, in his study in Iran, described 51.1% errors in proper sequencing and 59.1 % errors in immediate and underlying cause of death[13]. In a study by Maqsood et al[8], immediate cause of death was reported wrongly in 57.8%cases.Haque et al reported that in 62% of the cases, immediate cause of death was not mentioned[7]. Maharajan et al noticed that 29% cases were deficient in immediate cause of death[5].

Underlying cause of death was not mentioned or incorrectly placed by 83% doctors (Table No. 02). Qaddumi et al at Palestine identified 29% incorrectly mentioned cases of underlying cause of death[10] whileQatriphysiciansfound42% wrongly mentioned underlying cause of death[12].Haghighiet al in his study in Iran described 59.1 % errors in underlying cause of death[13]. In a study by Maqsood et al[8], underlying cause of death was reported wrongly in 57.8%cases.Haque et al reported that in 87% cases, underlying cause of death were not mentioned[7]. Maharajan et al noticed 46.4% cases deficient in underlying cause of death[5].

Mechanism / Mode of death were confused by 46% physicians. The study done by Qaddumi et al at Palestine, mechanism of death was found confused with immediate cause of death in 49.3% cases.Doctors having less than 5 years' experience confused cause of death with mechanism of death in 45% cases, reported incorrect sequencing in 32.5 % cases[10]. Doctors from public sectors were ahead in committing major errors. A study by Maqsood et al[8], the cause of death was confused with mechanism/mode of death in 97.4% cases. Cardio-pulmonary arrest mentioned as a cause of death on the death certificates are not listed and accepted as disease or cause of death in ICD. So when data from such certificates is quoted to be incorporated into ICD, it looses its invalidity and incomprehensible giving inaccurate data of cause of death required for planning any disease /injury prevention program[5].

Contributory cause of death was not mentioned or misinterpreted by 90 % participants.

These inaccuracies stem from a lack of knowledge among doctors on how to identify and select the immediate cause, underlying cause/antecedent cause(s) of deathand training of the physicians who are involved in preparation of death certificates[13,14].In a study by Raje[9] at India, 72% of the errors identified in the completion of death certificates were due to lack of training of the certifiers.Keeping in view its importance,medical students and interns are taught this subject in the curriculum of under graduate levelall over the globe but the concept of underlying cause of death and sequence of events leading to death and proper completion of a medical certificate of cause of death is rarely introduced tothe future doctors[9,15].Additionally, theW.H.O has issued guidelines for completion of death certificates [3,4].

In spite of all training workshops,frequency of errors in completion of death certificates could not be improvedand it looks to be a universal problem[9]and more than half of the total registered deaths all over the world, cause of death have been reported inaccurately[16].Educational plans are required to address the issue of physician's knowledge and his skill to complete the death certificate to followthe guidelines of the W.H.O.Many countries are initiating programs on national level for correct completion of death certificatesandcontinuous monitoring of completion quality in its hospitals[17,18].

Several studies have pointed out a positive impact of various educational measures on a decrease in number of errors being observed duringthe completion of death certificates.Selinger[19] reported an improvement in the completion of death certificates certified by senior house officers from 85.7% to 97.6 % and of those certified by middle grade doctors from 75% to 96.5% after educational measures at the Airedale General Hospital.In Canada, educational strategies resulted in a decrease of major errors observed during the completion of death certificates from 32.9% to 15.7%[13].

Varioustraining strategies can exert beneficial impacts in the quality of death certificates. Hart et al[20] utilized interventional strategies in the form of directtraining and online system combined with basic training strategy in five countries of Myanmar,New Guinea, Philippines, Peru and Sri Lanka to improve death certification practice through education and training. Their study identified an improvement in completion of medical certificates

whereby proportion of73 % - 100 % incorrectly reported certificates prior to training was decreased to 44 % - 75 % after training**.**

CONCLUSION

- 51 % doctors did not have knowledge of filling the death certificates as per instructions of W.H.O.
- 33 % did not know about immediate, underlying and contributory causes of death and where these should be mentioned.
- 77 % doctors could not identify or mention immediate cause of death at specified columns of MCCD.
- 83% doctors could not identify or mention underlying cause of death at specified space of MCCD.
- 90 % doctors could not identify or mention contributory cause of death at proper place of MCCD.
- 46 % physicians confused mechanism/mode of death with cause of death.
- 100% doctors had no prior training on completion of death certificates.
- Skill to fill in the death certificates was deficient in majority of the PGs having less than 5 years' experience coming from public sectors.

Recommendations: Study findings require the need to enhance the awareness of the doctors about the importance of death certificates. Their skill and practice to complete the death certificates may be improved through periodic training workshops on death certificate completion as per guidelines instructed by the WHO. At undergraduate level, its practical implication should be highlighted. The correct completion of death certificates would provide an accurate and genuine mortality index essential for framing a national health policy.

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