Coverage of death registration in a rural district of Sri Lanka

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Abstract

Objective: To assess the coverage of death registration in a rural district of Sri Lanka.

Methodology: All deaths that occurred during the year preceding the study were identified through a household survey. The status of registration of death was assessed and other relevant data obtained using an interviewer-administered questionnaire.

Results: Of the 519 deaths identified, 72.5% were registered. Coverage of registration increased with increasing age with the lowest proportion of registrations being among infant deaths (28.6%). A higher coverage was observed among those who lived in the area for a longer duration, for deaths among males and for the deaths that occurred at home.

Conclusions: Findings suggest geographical variations in the completeness of death registration. Lack of knowledge and inconsistency of registration laws in rural and urban sectors are among the major influencing factors. Modifications in the death registration system and increasing public awareness would be vital in improving the present status.

Key words: Deaths, Death registration, Coverage

Introduction

Completeness in the coverage of death registration is a vital issue in the assessment of quality of mortality statistics. Generally, cause-of-death statistics are considered sufficiently accurate when the coverage of death registration is over 90% (1). According to United Nations estimates, out of 193 countries (or areas) in the world, only 85 countries had sufficiently complete mortality statistics by the nineteen eighties (2). Depending on the level of social and economic development, countries adopt

different procedures to collect data on causes-of-death statistics, which could vary from highly sophisticated systems using computer linked databases, to traditional manually processed data transmitted by post.

The earliest enactment on registration of vital events was implemented in Sri Lanka (then Ceylon) in 1815 under the British rule even though there had been informal systems of collecting data on births and deaths during the Dutch rule in the late eighteenth century. With the establishment of Department of Registration of Births and Deaths in 1867 and the formulation of the Birth and Death Registration Act of Ceylon, collection of data on vital events was formally made compulsory in 1897. The present law titled "Birth and Death Registration Act of Ceylon" was passed in 1951 and came into force in 1954 (3,4).

The registration system is implemented through Registrars of Births, Deaths and Marriages, each being responsible for registration of vital events in a geographically defined area, referred to as a Registration Division. At present there are 771 registration divisions in Sri Lanka each in charge of a Registrar. About 10% of these registrars are medically qualified personnel, while the others are lay persons with varying levels of education. The medically qualified registrars are generally appointed to urban areas, which have been 'proclaimed' under the Birth and Death Registration Act (4,5). In the proclaimed areas, strict regulations are enforced under the Act to ensure better quality and coverage of registration procedures. In addition, information on stillbirths is also collected.

According to most official reports, coverage of registration of births has been reported to be almost complete (3,5,6). This is mostly due to the fact that the birth certificate is an essential document in many important events in life, such as at school entrance, when claiming social benefits and seeking employment. The same value may not be attached to the death certificate, since registration of a death may not bring any personal benefit or advantage. According to three islandwide surveys conducted by the Department of Census and Statistics, coverage of death registration was reported to be satisfactory i.e. 88.6% in 1953, 94.5% in 1967 and 94.0% in 1980 (6,7,8). Studies done in the Jaffna district on the coverage of death registration and other circumstantial evidence suggest that there could be a variation in the coverage in different areas (9,10). A comparatively low literacy level, non-availability (or lack) of designated burial areas and rapid migration are some of the factors considered to be

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associated with the completeness of death registration coverage in rural areas

This article presents the findings of a study on the coverage of death registration in the Polonnaruwa district.

Methodology

Polonnaruwa district with a population of approximately 365,000 is one of the districts in Sri Lanka which includes only rural areas (11). The district is divided into six Divisional Secretary (DS) areas, two of which were randomly selected for the study i.e. Hingurakgoda division and Medirigiriya division.

Information on all deaths that occurred in the study areas during a one year period was obtained through a house-to-house survey and the status of registration of each death was assessed. Public Health Midwives (PHMM), field level health workers mainly responsible for maternal and child health activities carried out the data collection, since they were familiar with the area and the location of households.

The fieldwork aimed at identifying all deaths that occurred during the specified period from 1st January to 31st December 1995, in the two study areas. Data collection commenced in early April 1996, to ensure that at least three months were made available for the registration of a death that may have occurred during the study period. The PHMM were instructed to visit all households in the area systematically and identify households in which a death has occurred during the given period. The closest relative of the decedent was interviewed after obtaining verbal consent. Information on the decedent and details regarding the registration of death was obtained using a pre-tested interviewer administered questionnaire. The status of registration of the death was established using two criteria i.e. producing the death certificate, the respondent's certainty of death registration and the date of registration. This latter criterion was included because in some instances, the death certificate has to be produced for legal or administrative procedures, for example in proceedings related to inheritance of property, claiming welfare benefits etc.

The PHMM were trained to administer the questionnaire and special emphasis was paid to ensure that the interview did not cause undue emotional disturbance.

Data collection was done during routine field visits by the PHMM and was completed within a period of approximately two months. The completeness of the survey was assessed by comparing the number of households visited by PHMM with that provided by the official figures in reports by the DS for the study areas. It was observed that 95 % of the households were visited by the PHMM during the survey. The inability to visit 5 % of the households may have been due to the fact that one PHM area with a population approximately 3000 was in close proximity to the areas with civil disturbance.

A total of 519 deaths that occurred in the given year were identified during the survey. To assess the reliability of data collected by the PHMM, a 10% sub sample of households reporting deaths (52) was visited by one author (AF) after about two weeks, and the questionnaire was re-administered. This assessment indicated that the quality of data was satisfactory.

Results

In a majority (89%) of the interviews, the respondent was an immediate family member of the decedent (spouse-37%, son or daughter-19%, parent-17%, sibling-16%). Other relatives provided the information in respect of 11% of the deaths identified. This indicates that the quality of information could be considered as reliable, since a death of a close relative is a distinct event with a good recall within a period of one year.

Of the 519 deaths investigated, 356 (68.6%) were identified as being registered, while 135 (26.0%) deaths were unregistered. In 28 (5.4%) deaths, it was not possible to establish the status of death registration accurately. Socio demographic characteristics of the group where there was uncertainty regarding the registration of deaths were comparable to the group where deaths were registered. Hence it was decided to exclude this group from further analysis. After the exclusion, coverage of death registration was calculated to be 72.5%.

Characteristics of decedents: The age of the decedents varied widely with a mean age of 49.3 (± 25.6) years (Table 1) with 32.4% of the decedents being in the age group above 65 years. Twenty nine of the deaths reported had occurred during the first year of life. More of the deaths were among males (68.6%). Information on the duration of residence in the area varied widely with a mean duration of 25.2 (± 14.4) years.

Table 1. Distribution of socio-demographic characteristics of the decedents (n=519).

Characteristic	No.	%
Age (in years)		
< 1	29	5.6
1 – 5	9	1.7
6 – 15	13	2.5
16 – 44	162	31.2
45 – 64	138	26.6
> 65	168	32.4
Mean age: 49.32 ($\pm$ 25.59)		
Sex		
Male	356	68.6
Female	163	31.4
Duration of residence (in years)		
0 – 5	54	10.4
6 – 15	99	19.1
16 – 30	188	36.2
> 30	178	34.3
Mean duration: 25.2 ($\pm$ 14.4)		

Table 2. Distribution of status of death registration by selected variables

Variable	Status of death registration						Test of significance
	Registered		Un-registered		Total		
	No.	%	No.	%	No.	%	
Age of the decedent (in years)							
<1	08	28.6	20	71.4	28	100	χ^2 for linear trend = 16.46 p <0.00005
1-5	04	44.4	05	55.6	09	100	
6-15	09	75.0	03	25.0	12	100	
16 – 44	102	69.9	44	30.1	146	100	
45 – 64	111	82.8	23	17.2	134	100	
>=65	122	75.3	40	24.7	162	100	
Sex of the decedent							
Males	257	76.7	78	22.3	335	100	Z = 4.49 p < 0.001
Females	99	63.5	57	36.5	156	100	
Duration of residence in the area							
0 – 5	31	59.6	21	40.4	52	100	χ^2 for linear trend = 7.62 p <0.005
6 – 15	60	66.7	30	33.3	90	100	
16 – 30	133	74.3	46	25.7	179	100	
>30	132	77.6	38	22.4	170	100	
Place of death							
Home	153	77.3	45	22.7	198	100	
Hospital	188	68.9	85	31.1	273	100	
Elsewhere	15	75.0	05	25.0	20	100	

The status of registration of the death in relation to selected variables is presented in Table 2. The age of the decedent is an important factor influencing

the registration of death, as it is shown that the percentage of deaths registered increased with increasing age. Using the Chi square test for linear trend, it was shown that this association showed a significant linear relationship ($\chi^2=16.45$, $P=0.00005$). The highest proportion of registered deaths was in the age group 45-64 years (82.8%), while the lowest (28.6%) was in the age group below one year. Of the deaths among males, 76.7% had been registered, while this proportion for females (63.5) was significantly lower.

The duration of residence in the area and the coverage of death registration also showed a significant linear relationship ($\chi^2=7.62$, $P=0.0057$) indicating that the deaths of decedents who had lived in the area for a relatively long period have a higher likelihood of being registered compared to those who have lived in the area for a shorter period. Of the deaths among those who had lived in the area for more than 30 years, 77.6 % were registered compared to the deaths registered among those resident in the area for less than 5 years , which was only 59.6 % . In relation to the place of death, deaths that occurred at home showed the highest coverage (77.3%), with the lowest coverage for hospital deaths (68.9%). Of the few deaths (25) that occurred 'elsewhere' (outside the home/hospital), 75 % were registered.

Table 3. Reasons for not registering the death.

Reasons	No.
Did not know that the death has to be registered.	41
Did not consider death registration as an important matter.	32
Not enough time for the registration of the death.	10
Due to legal requirements	8
No reason given	41
Other reasons	3
Total	135

The reasons given by the respondents for not registering a death are presented in Table 3. Of the total of 135 deaths identified as not registered, 30.6 % of the respondents said that they were unaware of the need to register the death, with an equal proportion not giving any specific reason for not registering the death. Approximately one-fourth

(23.1%) said that they did not consider registration of death as important. A relatively small proportion of respondents had not registered the death as a result of on-going legal proceedings.

Table 4. Duration between death and death registration.

Duration (in days)	No.	%	Cum. %
0 - 5	35	13.5	13.5
6 - 31	128	49.2	62.7
32 - 92	74	28.5	91.2
93 - 365	13	5.0	96.2
> 365	10	3.8	100
Total	260	100	

The duration between the death and the registration of the death was determined based on the information provided by the respondents or availability of the death certificate or both (Table 4). According to the present legal requirements, a death should be registered within five days but it is possible to register a death within three months of its occurrence, without a penalty or a stamp fee. Thereafter the registration of a death becomes a cumbersome administrative procedure and the respondent will have to pay a nominal stamp fee for the service. Of those who registered deaths, only 13.5 % had registered them within five days, 62.7 % within thirty-one days, 91.2% within three months and 8.8% after a lapse of three months.

Discussion

Ideally, all deaths have to be registered. However, a coverage over 90% is considered sufficiently satisfactory for using such data in health planning and in epidemiological studies (1,12).

Coverage of death registration (72.5%) observed in this study is much lower than those reported in the island-wide surveys conducted by the Department of Census and Statistics, 88.6% in 1953, 94.5% in 1967 and 94% in 1980 (6,7,8). Sivarajah et al (1987) (9) reported that the coverage of registration of deaths in the Jaffna district was 46.3%, the percentage being even lower in deaths among pre-school children (35.5%) (10,13). These findings indicate geographic variations in the coverage of death registration in Sri Lanka. Such geographical differentials in coverage of registration of deaths contribute to a distorted epidemiological picture of

the mortality pattern in the country. The island-wide surveys were conducted with a relatively small sample size (n=159 in 1980) and the multi-stage stratified sampling technique used may have failed to identify the geographic variation in the coverage, especially in the rural sector. This may be attributed to the tendency of clustering of low coverage pockets in rural settings.

The significant linear relationship of registration coverage and the age of the decedents indicates that the registration of a death is more likely in older age than in younger age groups. The low coverage of infant deaths i.e. 28.6% though higher than that reported for the Jaffna district (9.1%)¹⁰ raises questions regarding the reliability of the infant mortality statistics at national level and at district level. It must be noted that even in the island-wide survey conducted in 1980, the coverage of death registration was lower for infant deaths (46.3%) compared to all age groups (94%)⁸.

The highest coverage of registration (82.8%) was observed in the age group 45-64 years. The linear association of the age and the registration coverage could mostly be attributed to ownership of property. The likelihood of ownership of property by a person is higher as age increases. Since the death certificate is an essential document for the next of kin of the decedent to claim ownership of property and other social benefits, such as the pension for the spouse, registration of the death is more likely. In contrast, registration of an infant death would appear to be only of administrative interest to parents and this is more likely to be the situation in a rural setting with poor knowledge about registration procedures.

The coverage of death registration was found to be significantly higher for male deaths (76.7%), than for female deaths (63.5%) as was shown in the island-wide survey⁸. This could also be attributed to the ownership of property, since in the Sri Lankan context males are more likely to inherit and have ownership of property.

With regard to the place of death the highest (77.3%) coverage was observed among deaths that occurred at home, while hospital deaths had a lower coverage (68.9%). It may be possible that the respondents have mistakenly identified the 'Declaration of Death' issued by the hospital as the final document of registration, thereby proper registration was not undertaken with the Registrar of Births, Marriages and Deaths. This is a more plausible explanation, since the death registration form is not an essential prerequisite for the disposal of the body in rural (non-proclaimed) areas. Sivarajah et al. 1987 (11) also observed that the

registration rate was poor among hospital deaths (44.9%) as against deaths that occurred at home (46.3%). Generally deaths that occur outside home or hospital are due to accidents, more likely to be subjected to a Coroners inquest. Therefore, these deaths also have a higher chance of getting registered, as shown in the Table 4.

There is a significant linear relationship between the coverage of death registration and the duration of residence in the area ($p=0.0057$), with coverage being higher for those who lived in the area for a longer duration. It is more likely for people to be acquainted with the registrar of the area. Those who live in the area for a long duration are more likely to own property, and have an extended family leading to higher registration coverage than those who have lived in the area for a shorter duration.

Approximately one fourth (23.1%) of those who did not register deaths said that they did not consider death registration as important matter, implying that although they were aware of the need for death registration, they did not do so. These findings indicate that the level of knowledge on the need for registration of deaths is poor amongst rural communities and personal benefits and/or legal requirements play an important role in the completeness of coverage of death registration.

Only 13.5% of the deaths were registered within five days, while more than 90 % had undertaken the registration before the end of three months. These findings are comparable to those of Sivarajah et al (1987) (10) and indicate the need for revision of regulations in the Birth and Death Registration Act, in order to make more realistic and practical amendments that could have a positive influence on the quality and coverage of death registration.

Inadequate legislative procedures relevant to death registration, poor knowledge on registration and low population density in rural areas are some of the factors that influence the geographical variations. The legal requirements that are applicable only to urban areas such as Cemeteries and Burial Ordinance, which prevent any unauthorized cremation or burial could also influence the urban rural differences (4,14).

According to the present law, a birth could be registered within forty two days, without a penalty or a stamp fee. Therefore, if an infant dies before the birth has been registered, it is unlikely that such a death will be registered, unless the disposal of the body requires a death certificate. This could be a reason for the very low coverage of infant deaths in

the study area, which is not proclaimed under the Birth and Death Registration Act.

It is not realistic to generalize the findings of this study across the country, since factors influencing death registration coverage vary from one district to another. However, available evidence suggests that the coverage could be lower than expected in many rural areas with similar characteristics.

A comprehensive program to evaluate and upgrade the knowledge among the general public on death registration, review and revision of legal formalities related to registration is a contemporary requirement for better quality mortality statistics in the country. Interpretation of mortality statistics in formulating health interventions needs to be based on probable under-reporting in different sectors, with special reference to the geographical variation.

Active collaboration between the collector of mortality data i.e. Registrar General's Department and the potential users such as the Department of Health Services will be necessary to identify necessary policy and program options required for improving the coverage and quality of mortality data in Sri Lanka. The low coverage of registration of infant deaths is of considerable importance in health planning. For example, the 'artificially' low infant mortality rates not only provide a false sense of security among service providers, but also distorts the age and cause specific mortality pattern. This could lead to implementation of inappropriate health interventions leading to waste of limited resources.

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