

Study of Underlying Causes of Death in the admitted cases in V. S. General Hospital during the year 2014

Mihir Dedun¹, D.V. Bala²

¹ Post Graduate student, ²Professor & Head, Department of Community Medicine, NHL Municipal Medical College, Ahmedabad-380006

Correspondence : Dr. Mihir Dedun, E mail:mihir.dedun@gmail.com

Abstract :

Introduction : Mortality statistics is essential for planning the health care delivery and welfare of the community. Medical Certification of Cause of Death (MCCD) in the hospital provides the trend and changing mortality pattern of various diseases. **Objectives :** (1) To study age wise distribution of total deaths of all patients admitted in Vadilal Sarabhai General Hospital (VSGH) during the year 2014. (2) To study the underlying cause of death in each case. **Method :** Retrospective study of Medical Records was carried out from the medical Record Section of the hospital from which all the 3262 recorded deaths during the year 2014 were included. **Results :** Mortality in males was 61% as compared to 39% female mortality. Commonest cause of death was the diseases of Circulatory system (18.6%) followed by Respiratory diseases(13.1%)and morbidity and mortality due to external causes(12.2%). Deaths due to infectious and parasitic diseases contributed 11.7% of total deaths. Amongst these, 55% of deaths were due to tuberculosis. Infant deaths were 351(10.8%)out of which 71% were observed in early neonatal period, followed by 8% in late neonatal period. Thus 79% of total infant deaths were in the neonatal period. Respiratory Distress of newborn (41.7%) and Birth Asphyxia (33.6%) were the leading causes of death in the early neonatal period. Low Birth Weight was attributable to 45(25.9%) of total neonatal deaths. **Conclusion :** Mortality statistics of the hospital would give us changing trend of the leading causes of deaths over the years and planning for the treatment of these diseases in the hospital.

Key words : Underlying Cause of death, Medical Records

Introduction :

Mortality statistics is quite essential for welfare of the community and health planning. ^[1] It also helps in building up a scientific base for medical research as well as mortality status for medical professionals. Death certification is a public health surveillance tool and is very important because morbidity and mortality statistics often come from death certificate data ^[2]. Cause specific mortality rates are the key indicators of the health trends in the population and are provided on scientific basis by the system of Medical Certification of Cause of Death (MCCD). The MCCD scheme is basically a part of International Statistical Classification of Diseases and Related Health Problems (ICD) formulated by World Health Organization. It helps in assessing the effectiveness of public health programmes and provides a feedback for future policy and implementation. They are essential for better health planning and management

for deciding priorities of health and medical research programmes. ^[1]

Aims and objectives :

- 1) To study age wise distribution of total deaths of all patients admitted in Vadilal Sarabhai General Hospital (VSGH) during the year 2014,
- 2) To study the underlying cause of death in each case

Method :

- ◆ **Study design :** Secondary Data Analysis (Retrospective study of Medical Records)
- ◆ **Period of Study :** May 2015 to September 2015
- ◆ **Sample size :** 3262 (all deaths)
- ◆ **Data Collection :** From Medical Record Section of VSGH

◆ **Inclusion criteria :** All deaths recorded at VSGH during the year 2014

International Classification of Diseases and Health Related Problems – 10th revision (ICD-10) has been used to classify the Underlying causes of death.

Results :

Table 1 : Distribution of Mortality according to different Age groups (n=3262)

| Age Group (Years) | Number of deaths | Percentage (%) |
|-------------------|------------------|----------------|
| 0 to 1 | 351 | 10.8 |
| 1 to 4 | 50 | 1.5 |
| 5 to 14 | 51 | 1.5 |
| 15 to 24 | 252 | 7.7 |
| 25 to 34 | 332 | 10.1 |
| 35 to 44 | 330 | 10.1 |
| 45 to 54 | 519 | 15.9 |
| 55 to 64 | 561 | 17.2 |
| 65 to 74 | 488 | 15 |
| More than 74 | 328 | 10.1 |
| Total | 3262 | 100 |

As observed in table 1, during year 2014, total 3262 deaths were observed in VSGH, out of which 351(10.8%) were infant deaths and 1896(58.2 %)deaths were observed in the age group 45years and above. Highest number of deaths 561(17.2%) were seen in the age group of 55 years to 64 years.

Mortality in males was 1995(61)% as compared to 1267(39%) female mortality. The higher mortality in males is due to higher admissions of the males in the hospital.

Table 2: Month wise distribution of deaths in year 2014(n=3262)

| Month | Numbers of deaths | Percentage (%) |
|-----------|-------------------|----------------|
| January | 319 | 9.8 |
| February | 231 | 7.1 |
| March | 238 | 7.3 |
| April | 297 | 9.1 |
| May | 299 | 9.2 |
| June | 283 | 8.7 |
| July | 224 | 6.9 |
| August | 281 | 8.6 |
| September | 295 | 9.1 |
| October | 276 | 8.5 |
| November | 241 | 7.4 |
| December | 278 | 8.5 |
| Total | 3262 | 100 |

As seen in table 2, Maximum deaths were observed in month of January (9.8%), followed by deaths in the months of May (9.2%), April (9.1%) and September (9.1%)of year 2014. Small seasonal variations were observed due to some variations in the disease patterns and related mortality.

Table 3 : Underlying Cause of Death according to the ICD -10 Codes during year 2014

| Sr. No. | Disease Chapters /Blocks | ICD-10 code | Number of cases | Percentage (%) |
|---------|--|-------------|-----------------|----------------|
| 1 | Certain Infectious and parasitic diseases | A00-B99 | 380 | 11.7 |
| 2 | Neoplasms | C00-D48 | 42 | 1.3 |
| 3 | Diseases of blood & Blood forming organs | D50-D89 | 90 | 2.8 |
| 4 | Endocrine , nutritional and metabolic diseases | E00-E90 | 233 | 7.1 |
| 5 | Diseases of Nervous system | G00-G99 | 208 | 6.4 |
| 6 | Diseases of Circulatory system | I00-I99 | 605 | 18.6 |
| 7 | Diseases of Respiratory system | J00-J99 | 428 | 13.1 |

| | | | | |
|----|--|---------------|------|------|
| 8 | Diseases of Digestive system | K00-K93 | 289 | 8.9 |
| 9 | Diseases of musculoskeletal system and Connective tissue | M00-M99 | 09 | 0.3 |
| 10 | Diseases of Genitounrinary system | N00-N99 | 128 | 3.9 |
| 11 | Pregnancy , Childbirth and puerperium | O00-O99 | 25 | 0.7 |
| 12 | Certain conditions originating in Perinatal period | P00-P96 | 173 | 5.3 |
| 13 | Congenital malformations, Deformations and Chromosomal Abnormalities | Q00-Q99 | 21 | 0.6 |
| 14 | External causes of Morbidity and Mortality | V01-Y98 | 399 | 12.2 |
| 15 | Cause of Death pending | Not available | 232 | 7.1 |
| | Total | A00 - Y98 | 3262 | 100 |

As per table 3, Diseases of Circulatory system (I00-I94) ranked first as the cause of death and were responsible for 605 deaths(18.6%) of total deaths. Respiratory system diseases(J00-J99) were second leading cause of death and contributed 428 deaths(13.1%) of total deaths. Deaths due to External causes of morbidity and mortality (V00-Y98) ranked third and were responsible for 399(12.2%) of all deaths. Out of these 399 cases, Road Traffic Accidents(V01 to V98) were 179(44.9%). This was followed by infectious and parasitic diseases(A00-B99) which constituted 380(11.7%) and were the fourth leading

cause of death. Diseases of digestive system (K00-K93) accounted for 289(8.9%) deaths and was the fifth leading cause. These five leading causes of death accounted for 2101(64.5%) of total deaths observed in the hospital in the year 2014.

Eventhough MCCD has been practised in the hospital since its inception, the cause of death was not recorded in the medical records of the deceased in 232deaths (7.1%) of the deaths. The reason for the same was that the cause of death was either ambiguous or was kept pending awaiting the Post Mortem (PM) report.

Table 4 : Deaths due to common Infectious & Parasitic diseases ICD-10 codes (A00-B99) (n=380)

| Sr. No. | Cause of death | ICD-10 code | Number of cases | Percentage (%) |
|---------|--|-------------|-----------------|----------------|
| 1 | Intestinal infectious diseases | A00-A09 | 07 | 1.9 |
| 2 | Tuberculosis | A15-A19 | 209 | 55.0 |
| 3 | Other Bacterial diseases | A30-A49 | 37 | 9.8 |
| 4 | Viral infections of central nervous system | A80-A89 | 29 | 7.6 |
| 5 | Dengue | A90-A91 | 11 | 2.9 |
| 6 | Viral Hepatitis | B15-B19 | 42 | 11.1 |
| 7 | HIV | B20-B24 | 08 | 2.2 |
| 8 | Mycoses | B35-B49 | 03 | 0.8 |
| 9 | Malaria | B50-B54 | 33 | 8.7 |
| | Total | A00 - B99 | 380 | 100 |

Table 4 shows the burden of the deaths due to infectious and parasitic diseases which accounted for 380(11.7%) of total deaths. Amongst these, tuberculosis mortality was 209 deaths (55%). This

was followed by viral hepatitis 42(11.1%) and other bacterial infections 37(9.8%). Malaria was attributable in 8.7% of all deaths due to infections.

Table 5 : Agewise distribution of total Infant Deaths (n=351)

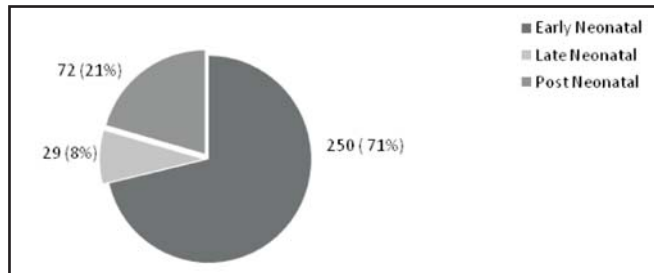
| Infant Mortality | Frequency | Percentage (%) |
|---------------------|-----------|----------------|
| Less Than 1 day | 196 | 55.8 |
| 1 to 2 days | 15 | 4.3 |
| 2 to 7 days | 39 | 11.1 |
| 8 to 28 days | 29 | 8.3 |
| 29 days to 1 Year | 72 | 20.5 |
| Total Infant Deaths | 351 | 100 |

As observed in Table 5, Infant deaths constituted about 11% (351deaths) of total deaths and also have many determinants according to various phases of infancy; these deaths are classified in more details.

Higher mortality was bserved in Early Neonatal Period (upto 7 days) which accounted for

250 deaths (71%) of all infant deaths. Nearly 56%(196 deaths) of infant deaths were on the first day of life.

Figure 1: Mortality in Infancy (Early, Late and Post Neonatal Period) (n=351)



There were 351 infant deaths out of which 71% were observed in early neonatal period, followed by 8% in late neonatal period. Thus 79% of total infant deaths were in the neonatal period. The rest 21% deaths were seen in the post neonatal period. (Chart no.1)

Table 6 : Common causes of Deaths in Early and Late Neonatal Period. (n=174)

| Neonatal period | Deaths occurring in 0 to 7 days (n=158) | Deaths occurring in 8 to 28 days(n= 16) |
|-----------------------|---|---|
| Respiratory Distress | 66 (41.7%) | 0 |
| Birth asphyxia | 53 (33.6%) | 0 |
| Respiratory infection | 0 | 10 (62.5%) |
| Low Birth Weight | 39 (24.7%) | 6 (37.5%) |
| Total | 158 (100%) | 16(100%) |

Table 6 shows, In the Early neonatal period, Respiratory Distress of newborn 66 deaths(41.7%) and Birth Asphyxia 53deaths (33.6%) were the leading causes of death, whereas Low Birth Weight (LBW) was the cause in 39 deaths(24.7%). In the Late neonatal period, Respiratory infections were the cause of death in 10(62.5%) cases and LBW was attributable to 6(37.5%) of deaths.

Discussion :

MCCD report of 2012 shows gives the report of census 2011. This gives the leading causes of death (in groups) as follows: Diseases of Circulatory System constitute the maximum i.e. 30.3% of total medically certified deaths, followed by 'Certain Infectious and Parasitic Diseases (12.3%). The diseases of

respiratory system have contributed to 8.4% of total medically certified deaths. The group of Injury, Poisoning and Certain other Consequences of External Causes constitute 7.7% of total medically certified deaths, followed by 6.9% due to Certain Conditions Originating in Perinatal Period. Neoplasms constitute 5.0% and Diseases of the Digestive System constitute 4.3%^[3]. In the current study also the five leading causes of death were Circulatory system 605(18.6%) followed by Respiratory diseases 428(0%), External causes of morbidities and mortality 399(12.2%), certain infectious and parasitic infections 380(11.7%) and 289(8.9%). Sexwise distribution of medically certified deaths shows that the percentages of male deaths (M V/s F=62.1 : 37.9)to total medically

certified deaths are on a higher side^[3]. Similarly, in the present study also there were 1995(61%) deaths in males and 1267(39%) in females recorded in this study also.

Among the Certain Infectious and Parasitic Diseases, Tuberculosis and Septicaemia constitute 34.7 per cent and 35.4 percent respectively as per the census data of 2011.^[3] Tuberculosis, while no longer among the 10 leading causes of death in 2012, was still among the 15 leading causes, killing over 900 000 people in 2012.^[4] In this study also Tuberculosis constituted about 55% of total deaths caused by Certain Infectious and parasitic Diseases.

Registrar General of India had carried out survey over all infant deaths that occurred in India during year 2001-2003. Three causes accounted for 78% of all neonatal deaths: prematurity and low birth weight, neonatal infections and birth asphyxia and birth trauma.^[5] About 44% of deaths in children younger than 5 years in 2012 occurred within 28 days of birth – the neonatal period.^[4] Similar results were seen in the present study also. There were 10.7% infant deaths out of which 71 % deaths were in early neonatal period and 8% in late neonatal period. The three common causes of these were Respiratory Distress, Birth asphyxia and LBW.

Summary:

A total of 3262 deaths were registered in VSGH during the year 2014. Higher percentage of mortality was observed in males (61%). Maximum number of deaths occurred in 55-64 year age group (19%).

Diseases of circulatory system were the leading cause of death accounting for 18.6% of all deaths followed by respiratory diseases(13.1%). Deaths due to external causes of morbidity and mortality were 399(12.2%). Infectious and parasitic diseases mortality ranked fourth with 11.7% of total deaths. Amongst all infectious diseases, mortality due to Tuberculosis was 55% , followed by Viral hepatitis(11.1%).

Neonatal deaths accounted for 79% of total infant deaths and majority of them (71%) were in the early neonatal period. The common causes of death were Respiratory Distress, Birth asphyxia and LBW.

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