



Ministry of Health
Republic of Maldives

Cause of Death Classification: Republic of Maldives

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Introduction

The Maldives is an archipelago of garland islands that are grouped into atolls and stretches across the Indian Ocean. It covers a distance of 753.6 kilometres in lengths and 118.1 kilometres in width. The total land area consists of 1190 islands with an area of 298 square kilometres. The approximate sea area of the Maldives is 107,500 square kilometres.

The population of the Maldives is 244,814 (Census 1995). Population growth averaged 3.2% between the 1977 - 1985 censuses. After peaking at 3.4% from 1985 to 1990, the population growth rate came down to 2.8% in 1995. Even at this slower rate of growth, the doubling time is 21 years. The population will reach 300,000 by the year 2002 and 500,000 by the year 2021 assuming the current mortality, reduction in fertility rates and no migration.

The age structure of the Maldivian population remains youthful with almost 47% under the age of 15 years. Only 4.8% of the population is over 60 years of age, and this situation will change rapidly over the next decade.

Over the past decade, crude death rate (CDR) has been declining. From 1978 to 1995, CDR declined from 14 per thousand to 5 per thousand as a result of a decline in deaths from communicable diseases. CDR has declined for both Male' and the atolls.

Life expectancy has significantly increased from 48 years in 1978 to 70 years in 1995. Although up to 1992, life expectancy for males was more than that for females, the 1995 statistics show this trend has changed, with life expectancy for females being higher than that for males.

Urbanisation has been increasing sharply in many countries, especially in the South East Asia Region, and the Maldives has experienced similar trends. The urban population living in Male' the capital island increased from 45,874 in 1985 to 62,519 in 1995, an increase of nearly 37%. This extremely congested situation on the small island of 1.8 sq. km. has placed tremendous pressure on housing and other basic services such as water supply and solid waste disposal. It has also increased the amount of air

pollution caused by the increasing number of motor vehicles. All these have a negative impact on the physical, social and mental well being of those in Male’.

Organisation of the Health System

Health services are organised into a four-tier system comprising the Central, Regional, Atoll and the Island levels. At the top of the pyramid is the MOH. Under the Ministry at the Central Level are the Department of Public Health (DPH), the Indira Gandhi Memorial Hospital (IGMH), the National Thalassaemia Centre (NTC), the Maldives Water and Sanitation Authority (MWSA) and the Institute of Health Sciences (IHS). In addition, the Male’ Health Centre (MHC) provides primary and secondary level health care to the island of Male’, and at present provides outreach care to the Villingili Health Centre.

The Ministry of Health is responsible for formulating overall health policy and health development plans of the country and for monitoring and evaluating the health situation. The Department of Public Health is responsible for delivering preventive health programmes for the prevention and control of communicable diseases and promotion of health and well being of mothers and children. The DPH is also responsible for delivering basic health care (preventive, promotive, curative and rehabilitative) to the islands and atolls.

The IGMH delivers tertiary curative care to the whole country. MWSA established in 1973 is responsible for the provision of safe drinking water and hygienic sanitation facilities throughout the country.

The IHS provides both pre and in service training for health care personnel in nursing paramedics and primary health care.

At the regional level are four regional hospitals situated throughout the country. Each hospital caters to one region, which comprises between 3 to 5 atolls. The hospitals are planned to provide outreach services to all the atolls within the region. The regional

hospitals provide secondary level curative services. Through the recently established Public Health Units they also implement preventive health programmes and supervise atoll level health services.

At the atoll level is the Atoll Health Centre. Since 1993, these centres have been staffed with doctors and community health workers (CHWs). They are also being upgraded to provide inpatient and labour room facilities.

The family health workers (FHWs) and the foolhumaas or TBAs provide island level health services.

The four levels of the health care system form a referral system with a hierarchy ascending from the FHWs to the super specialists at the IGMH.

Certification of Deaths

In the Maldives, the guidelines for certifying death are as follows: -

In the capital island, Malé, the Doctor who treated the deceased when he/she died or a doctor who is registered with the Maldivian Government are the only parties who are authorized to certify a death.

In all other islands, however, non-medical personnel may also certify a death. Following are the people who have the authority to certify a death in an island.

- a) A Doctor who is registered with the Government of Maldives.
- b) A Community Health worker.
- c) If a CHW is not available and/or present in the island, a Family Health Worker (FHW) in the family health post of that island.
- d) If a FHW is not available and/or present in the island, a certified traditional medicine practitioner or the island chief of that island.

- e) If none of the above-mentioned parties are available and/or present, the person who is in charge of the island office at the time of the death can certify the death.
3. If there is any suspicion that the death occurred due to an action or negligence of another person, that matter should be reported to the Police Headquarters in Male'. In the islands, the matter should be reported to the island office and to the police if there is a Police Base in that region. This should be done before washing the body and an authority for burial should be obtained in writing from any one of the authorities mentioned above.
4. All deaths except in Hospitals, Health Care Centres and Clinics should be reported to the Police Headquarters in Male'. In the islands the matter should be reported to the island office. This should be done before washing the body and permission for burial should be obtained. A death form should be completed to obtain the burial permission.

A "Certificate of Death" form (annex 1) is issued by the person who certifies the death and has to be produced at the symmetry for burial of the body. This form has 4 main parts. The first part gathers identification information about the deceased. The informant on the side of the family usually fills in this part. The second part is the actual certification where the attending doctor or other authorized person writes in the cause of death. A field to put in the ICD-10 code is also provided. Further to this, tick boxes are provided to indicate abortions, stillbirths, infant deaths, under-five deaths, maternal deaths and a category for all other deaths. Time and place of death are also recorded in this section. The third section provides information about the person(s) who certified the death, and the fourth part is for official use where information about the people who authorized the burial and other administrative information are collected. This form has a number of fields that when completed are redundant and the data never used nor required.

This form is then routed to the Ministry of Health for compilation through the atoll office in the islands, and straight from the symmetry in the capital, Malé.

Classification of Deaths

Mortality statistics are considered reliable in most countries and are one of the principal sources of health information. There are two important items for classification when a death occur, namely the cause of death and the underlying cause of death. WHO defines the cause of death as “all those diseases, morbid conditions or injuries which either resulted in or contributed to death and the circumstances of the accident or violence which produced any such injuries” (WHO, 1993). The underlying cause has been defined as “(a) the disease or injury which initiated the train of morbid events leading directly to death, or (b) the circumstances of the accident or violence which produced the fatal injury” (WHO, 1993). This underlying cause of death is understood to be used for the primary tabulation of the cause of death. The international statistical classification of diseases and health related problems lays a number of rules in order to properly classify the cause of death.

In the Maldives, the process of death classification has been very weak throughout the past. There are many reasons for this. The main underlying reason for the matter is that a proper medical record system is not established in the country. Another reason for this is that in some instances the person who classifies the death is not a health care professional but an administrative person as can be seen from the above section.

Difficulties in classification also occur since there are many gaps in proper information flow throughout the 4 levels of the referral system. That is there is no proper continuity of care for the patients. In the current system, when a patient is referred from one level to the other, proper information and a case history of the patient does not flow accordingly. Instead at the next referral level, the referral is treated as totally new episode of care. Furthermore, apart from one hospital in the country, all other hospitals do not retrieve patient medical records. Each visit is considered a new episode of care. This produce a very large gap in communication between the health care professionals and thus many a time when death occurs, the underlying cause of death becomes hard to determine. Moreover, since no postmortems are carried out in the country, the underlying cause for a number of deaths are not determined. Instead all of these get classified as either “not stated” or “deaths due to old age.”

When completing the “Certificate of Death” form, the cause of death field is not detailed enough to determine the underlying cause of death. In many cases, this field will have responses such as “heart attack”, “drowning” and many other vague statements. Furthermore, the death category, although defined in the form, in many cases are not filled in correctly. Especially in cases of abortions/miscarriages. A number of miscarriages are categorized as stillbirths and hence distorting the abortion rate and the still birth rate. This also happens for maternal deaths, especially indirect maternal deaths. These are sometimes categorized as “other deaths.” A recent maternal death inquiry in the country (Aboobakuru, A. and Ali, G., 1998) indicated that the first source of information, i.e. the “Certificate of Death” forms were not found for all the maternal deaths that occurred in the country. In fact the forms were completed, but since the cause of death does not clearly indicate that it was a maternal death and the death category is incorrectly filled in, the forms were missed from the database as maternal deaths.

Death coding, ICD-10

All deaths are coded using the ICD-10 classification system since 1995. The cause of death produced in the “Certificate of Death” form is manually coded using an adopted coding list from ICD-10 and entered into the database.

Before 1995 cause of death information produced had very vague classifications. Some examples of cause of death produced before 1995 are as follows: -

- Fever with rash
- Abdominal pain
- Heart disease
- Injury etc...

Today, although the ICD-10 system is used, a list of adopted codes that include the broad categories are extracted from the ICD-10 and this sheet called “Health problems/conditions” (annex 2) is used to classify and enter cause of death data. Thus, instead of a proper ICD-10 code, a particular broad category will get a number. For

example, all neoplasm, in the “Certification of Death” form will be manually coded and will go into the broad category of neoplasm, C00-D48. Since the adopted code list has neoplasm as number “50”, this is the number that is used to aggregate cause of death information for publication and other use (a thorough look at annex 2 will make this statement clearer).

The cause of death is even today classified vaguely. As a result, only three-digit level coding is used. Thus, when cause of death information is produced, deaths are classified in to broad categories of ICD-10 coding system. For instance, deaths due to infectious and parasitic diseases are not coded to the fifth digit to identify the organism, i.e. all such deaths will be reported as “Certain infectious and parasitic diseases, A00 – B99. Thus, the mortality statistics will not be able to determine the most common organism causing these types of diseases.

Other problems with death coding include abortions being coded as “201” which is “Pregnancy with abortive outcome, O00-O99” in the ICD-10 system. However, this code should be used only if the mother died as a result of an abortion, not the child which the present case. If the mother died due to an abortion, it will be coded as “205 maternal death” which is not a provision in the ICD-10 system.

Further to 205 maternal deaths, two other additional categories are used in this list. They are 270, old age into which all cause of death recorded as senility will be coded, and 999 not stated into which records that have missing cause of deaths and statements such as brought dead are coded.

Leading causes of death

In the Maldives, the leading cause of death is “undiagnosed deaths at old age”, i.e. code 270 in the list, which does not have an ICD-10 code. This accounts for about 22% of all deaths. Second come diseases of the circulatory system. A large percentage of deaths are classified as brought dead or not stated with a percentage of about 15%. Table 1, below shows the percentage cause of deaths for 1997 and 1998.

Table 1: Percentage cause of death 1997-1998, Maldives

Cause	1997	1998
Undiagnosed deaths at old age	22.04	21.05
Diseases of the circulatory system	22.38	20.96
Not stated	12.43	15.98
Respiratory diseases	9.02	8.30
Blood and blood forming organs and certain disorders involving the immune mechanism	3.57	2.53
Certain conditions originating in prenatal period	7.15	4.37
Parasitic infections	4.00	3.58
Diseases related to digestive system	2.55	3.06
External causes of morbidity and mortality	2.98	2.71
Clinical signs, symptoms not else where classified	0.34	0.17
Diarrhea and gastroenteritis of presumed infectious origin.	0.43	0.17
Diseases of nervous system	1.70	4.10
Tuberculosis	1.28	0.87
Endocrine, nutritional and metabolic diseases	0.94	0.96
Diseases of genito-urinary system	1.96	3.41
Septicemia	1.19	0.79
Neoplasm	3.66	4.10
Pregnancy and child birth and puerperium	1.02	0.70
Vaccine preventable diseases	0.26	0.35
Congenital malformations, deformations and chromosomal abnormalities	0.51	1.05
Mental and behavioral disorders	0.17	0.26
Meningococcal infection	0.17	0.00
Vector borne diseases	0.00	0.00
Diseases of the skin and subcutaneous tissue	0.00	0.26
Diseases of the musculoskeletal system & connective tissue	0.26	0.26

Source: Ministry of Health

Conclusion

As can be seen from the above description, there are many inherent causes in the overall certification and classification system in the Maldives. Interventions have to be made at the documentation level of patient information and record keeping to ensure proper continuity of care. The death certification process needs revision and the reporting forms also need revision. Implementation of the ICD-10 coding system in 1995 is a big achievement in that a number of vague classifications such as abdominal pain and so forth are eliminated from the cause of death classifications.

Overall, the process of death classification has to be reviewed and proper recording of the cause of death has to be established.

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