



Pacific
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Making Death Count

***Tonga: Cause of
Death Analysis from
the Regional Coding
Service
(July 2024 to June 2025)***



WORLD BANK GROUP

OVERVIEW

This report summarises the main causes of death (COD) from Medical Certificates Cause of Death (MCCDs) coded for Tonga between July 2024 and June 2025. It aims to inform policy development and provide feedback to medical professionals.

METHODOLOGY

SPC acknowledges the support of the Bloomberg Data for Health Initiative.

De-identified data were collected through the Regional Coding Service, where Tonga and Tuvalu submitted monthly cause-of-death data for coding by Fiji's mortality coder using Iris software. Iris coded and selected the underlying cause of death (UCOD). After coding, datasets were made available for both countries to update their records.

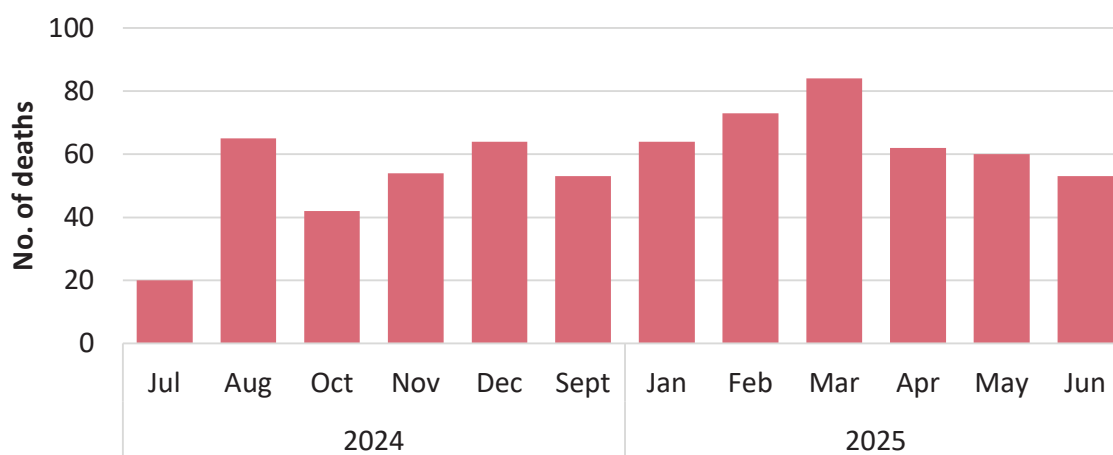
A total of 694 MCCDs were received from Tonga; 89.9% (n=624) were deaths certified in 2024–2025, and 10.1% (n=70) were from 2023 or earlier.

RESULTS

Death records received for each month

March 2025 recorded the highest number of MCCDs coded for Tonga, while July 2024 had the fewest. The low July figure reflects the start of the Regional Coding Service pilot, when only July deaths were submitted; later months (August 2024 to June 2025) included deaths certified from various months.

Figure 1. Number of MCCDs received from Tonga by month



Top 15 causes of death by ICD-10 three-character code level

The fifteen leading causes of death collectively account for 70.5% (n = 489) of all recorded deaths. Diabetes mellitus is the predominant cause, representing 24.9% (n = 173), followed by ischaemic heart disease at 11.8% (n = 82), cerebrovascular disease at 4.5% (n = 31), and hypertensive heart disease at 3.0% (n = 21).

Notably, several high-ranking categories (e.g., other bacterial diseases, other heart diseases (ranked 7th), general symptoms and signs, accidental exposure unspecified (ranked 10th)) are typically the result of poor certification, not actual leading causes of death. These indicate missing causal chains or inadequate detail on the MCCD.

Table 1. Top 15 causes of death by ICD-10 three-character code level

Rank	ICD-10 Code	Diseases	No. of deaths	Percentage (%)
1	E10-E14	Diabetes mellitus	173	24.9
2	I20-I25	Ischaemic heart diseases	82	11.8
3	I60-I69	Cerebrovascular diseases	31	4.5
4	I10-I15	Hypertensive heart diseases	21	3.0
5	J40-J47	Chronic lower respiratory diseases	20	2.9
6	C50	Breast cancer	19	2.7
7=	C15-C26	Malignant neoplasms of digestive organs	18	2.6
	A30-A49	Other bacterial diseases	18	2.6
	I30-I52	Other forms of heart diseases	18	2.6
8=	J09-J18	Influenza and pneumonia	17	2.4
	E70-E90	Metabolic disorders	17	2.4
	N17-N19	Renal failure	17	2.4
9	C30-C39	Malignant neoplasms of respiratory and intrathoracic organs	14	2.0
10=	R50-R69	General symptoms and signs	12	1.7
	X58-X59	Accidental exposure to other and unspecified factors	12	1.7
		Total	489	70.5

Key insights: It is imperative that certifying physicians ensure accurate and comprehensive documentation of the sequence of events leading to death in the Medical Certificate of Cause of Death (MCCD). Such precision is essential for improving data quality and informing preventive health measures.

Top 5 causes of death by sex (three-character code level)

Table 2 highlights notable differences in causes of death between males and females in Tonga. For both sexes, diabetes mellitus is the leading cause, accounting for 22.1% of male deaths (n=85) and an even higher 28.5% among females (n=88). This confirms how dominant diabetes is in Tonga's mortality profile, especially among women.

Ischaemic heart disease ranks second for both groups but is more prevalent in males (15.1%, n=58) compared to females (7.8%, n=24). It implies that men have more than double the number of deaths from heart diseases compared to women, showing a clear difference in cardiovascular risk.

Among females, cancers feature prominently, with breast cancer (5.2%, n=16) and malignant neoplasms of female genital organs (3.6%, n=11) appearing in the top five causes. In contrast, males show higher mortality from chronic lower respiratory diseases (4.2%, n=16) and other forms of heart disease (3.6%, n=14).

Table 2. Top 5 causes of mortality by sex

ICD-10 Code	Female			ICD-10 Code	Male		
	Diseases	No. of deaths	Percentage (%)		Diseases	No. of deaths	Percentage (%)
E10-E14	Diabetes mellitus	88	28.5	E10-E14	Diabetes mellitus	85	22.1
I20-I25	Ischaemic heart disease	24	7.8	I20-I25	Ischaemic heart disease	58	15.1
C50	Breast cancer	16	5.2	I60-I69	Cerebrovascular diseases	17	4.4
I60-I69	Cerebrovascular diseases	14	4.5	J40-J47	Chronic lower respiratory diseases	16	4.2
C51-C58	Malignant neoplasms of female genital organs	11	3.6	I30-I52	Other forms of heart diseases	14	3.6
	Total (top 5 causes)	153	49.5		Total (top 5 causes)	190	49.5

Key insight: These patterns underscore the need for gender-sensitive health strategies, that recognise that men and women experience NCD risks differently. This includes including targeted programs that address women's higher burden of diabetes and men's greater vulnerability to heart diseases, alongside tailored screening, counselling and outreach designed to meet the specific health behaviours and needs to each sex.

NCDs, CDs and injuries deaths

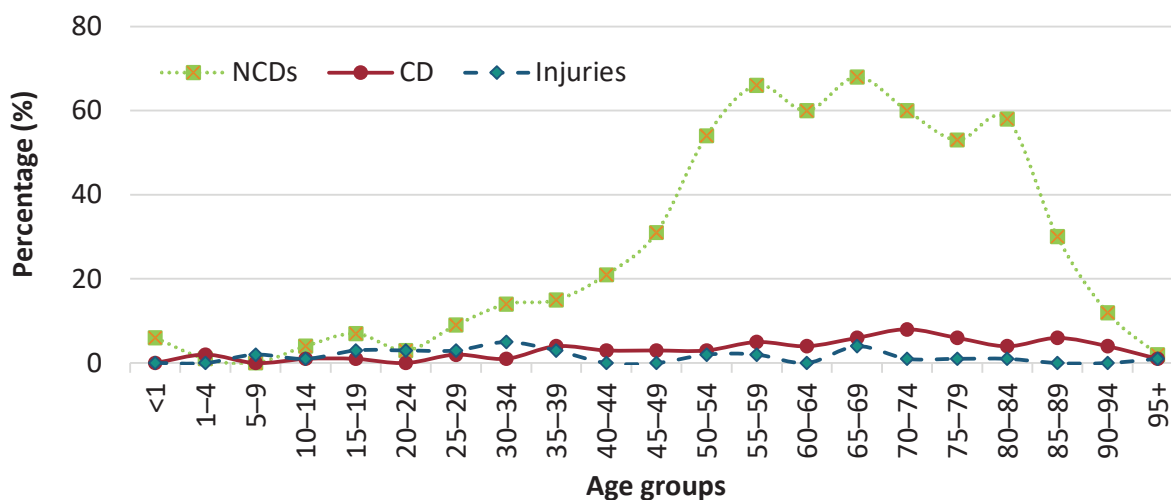
Figure 2 shows the percentage of deaths due to Non-Communicable Diseases (NCDs), Communicable Diseases (CDs), and Injuries across different age groups in Tonga.

NCDs dominate adult mortality and start increasing noticeably from ages 25–29, peak between 50–69 years, and then gradually decline in older age groups. This pattern reflects the burden of chronic conditions like diabetes, heart disease, and stroke among middle-aged and older adults.

Communicable Diseases (CDs) remain below 10% across all age groups and slightly higher in older age brackets (65+) and in early childhood, but still relatively low compared to NCDs.

Injuries also under 10% throughout, with small spikes in teenage and young adult groups (likely due to accidents or external causes).

Figure 2. Percentage of deaths due to NCD, CD and Injuries by age groups



Key insights: NCDs are the leading cause of death for adults, especially from mid-life onward. The rise in NCD deaths beginning around age 25 shows that health risks linked to possibly poor lifestyle such as poor diets and low physical activity. This highlights the need for NCD prevention and management strategies in Tonga, particularly targeting adults aged 18–69.

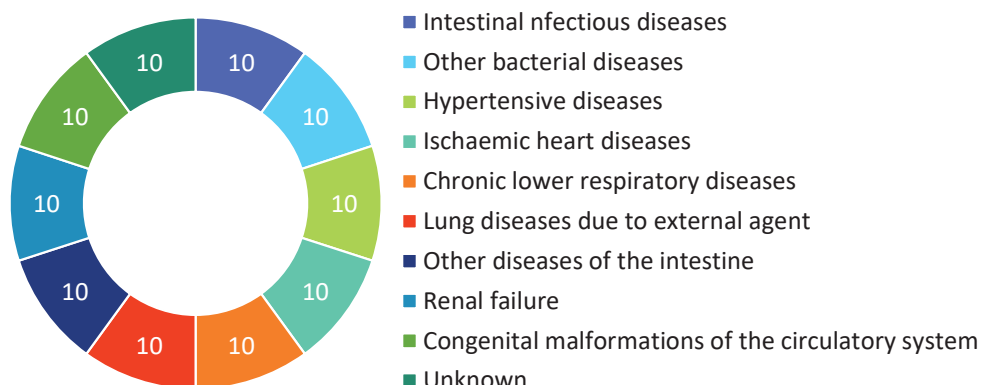
CDs and injuries contribute minimally across all age groups, while slightly higher in a very young children and adults aged 65 years and over, however, still fewer than chronic diseases. This suggests that infectious diseases may not be the main public health challenge for most of the population.

The pattern highlight that Tonga’s main challenge is NCDs. Preventing and managing these conditions through healthier diets, more physical activity, early screening and better long-term care will have the greater impact on improving wellbeing.

Under 5 causes of death

Ten deaths were recorded for Under 5 mortality. Each cause appeared as a single case (n=1), making proportional comparisons misleading. These deaths include a mixture of infectious, congenital, and unspecified categories.

Figure 3. Under 5 causes of death

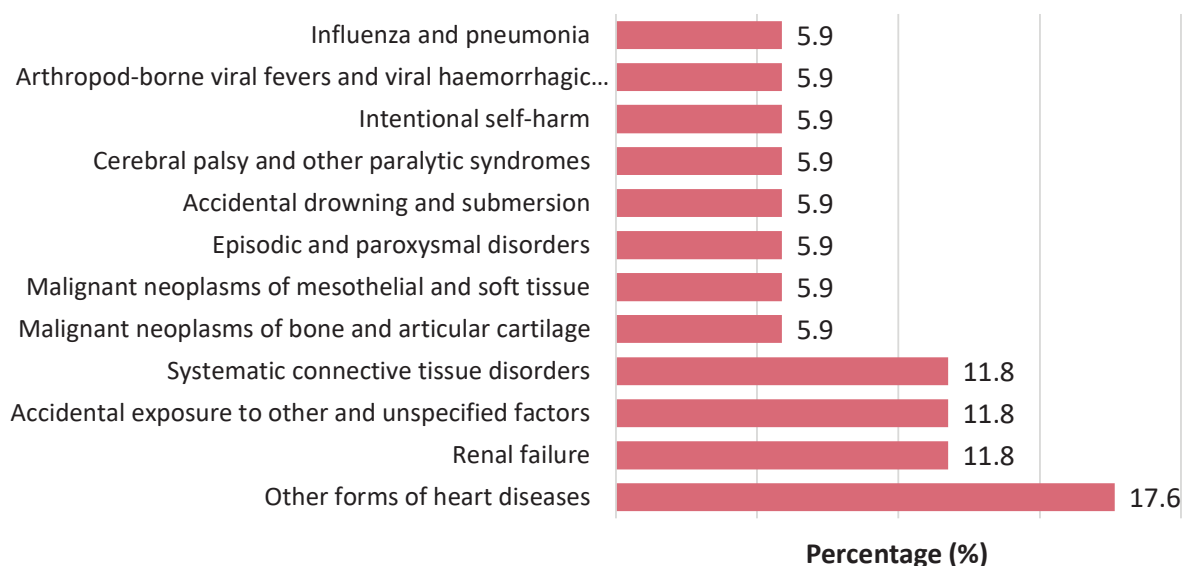


Key insights: Due to the different types of illnesses, some deaths are linked to conditions children are born with, such as congenital malformations and circulatory system disorders. These issues often require early detections and specialised treatment which may be challenging in small or remote communities.

Teenage deaths

Less than twenty deaths among adolescents were reported in the dataset. The leading cause was other forms of heart disease (17.6%), followed by renal failure, accidental exposure to other and unspecified factors, and systemic connective tissue disorders (each 11.8%). The remaining causes each accounted for 5.9%. The categories “other forms of heart disease” and “accidental exposure to other and unspecified factors” are red flags for poor quality certification in young people. This trigger re-examination of clinical notes or discussions with relatives. Greater specificity is required to identify the exact cardiac condition or type of injury involved, as this information is essential for implementing effective preventive measures.

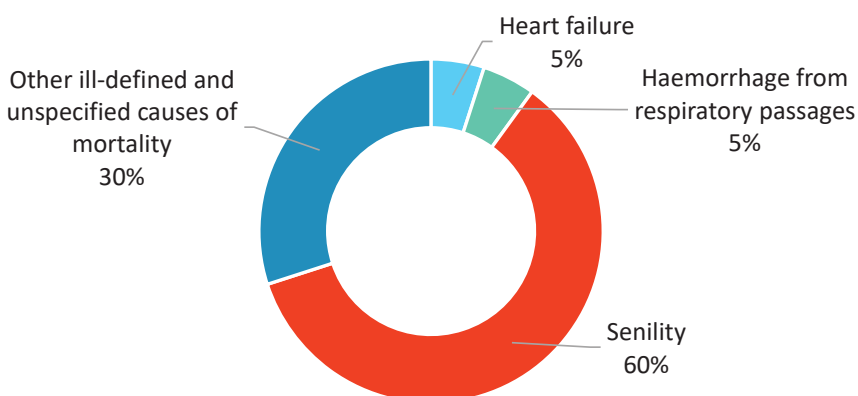
Figure 4. Teenage causes of death



Ill-defined causes of death

This dataset indicate that 13 deaths were classified as “ill-defined” causes i.e. information recorded was not detailed enough to identify a specific medical reason. Senility (60%, n = 12) which is someone who dies at a very old age without clearly documented illnesses. The remaining causes of “other unspecified causes” represented (30%, n = 6), and heart failure and respiratory haemorrhage (5% each, n = 1).

Figure 5. Ill-defined Causes of Death



Key insights: Ill-defined causes of death lack sufficient detail to determine an underlying cause and therefore provide no meaningful value for public health analysis. Physicians should ensure that the sequence of events leading to death is clearly documented, drawing on medical records or, where necessary, verbal autopsy information from relatives.

Causes of death by three character code level

Table 3 shows endocrine, nutritional, and metabolic diseases account for the largest share (28.4%), driven primarily by diabetes mellitus (87.8% of this category). Diseases of the circulatory system follow at 22.8%, with ischaemic heart disease and cerebrovascular disease comprising over 70% of these deaths. Neoplasms represent 14.8% of total deaths, with breast, digestive, and respiratory cancers most prevalent. Other notable contributors include respiratory diseases (6.8%), infectious and parasitic diseases (4.8%), external causes such as accidents (4.6%), and genitourinary diseases (4.3%). Minor categories—digestive, blood, nervous system, and musculoskeletal disorders—each account for less than 3%, while mental disorders, congenital malformations, and pregnancy-related causes are rare.

Table 3. Causes of death by three character code level

Rank	ICD-10 Chapter Code	Disease	Number of deaths	Percentage (%)
	E00-E90	Endocrine, nutritional and metabolic diseases	197	28.4
	E10-E14	Diabetes mellitus	173	87.8
	E70-E90	Metabolic disorders	17	8.6
	E65-E68	Obesity and other hyperalimentation	3	1.5
	E00-E07	Disorders of thyroid gland	2	1.0
	E20-E35	Disorders of other endocrine glands	1	0.5
	E15-E16	Other disorders of glucose regulation and pancreatic internal secretion	1	0.5
	I00-I99	Diseases of the circulatory system	158	22.8
	I20-I25	Ischaemic heart diseases	82	51.9
	I60-I69	Cerebrovascular diseases	31	19.6
	I10-I15	Hypertensive diseases	21	13.3
	I30-I52	Other forms of heart disease	18	11.4
	I70-I79	Diseases of the arteries, arterioles and capillaries	3	1.9
	I05-I09	Chronic rheumatic heart diseases	3	1.9
	C00-D48	Neoplasms	103	14.8
	C50	Malignant neoplasm of breast	19	18.4
	C15-C26	Malignant neoplasms of digestive organs	18	17.5
	C30-C39	Malignant neoplasms of respiratory and intrathoracic organs	14	13.6
	C51-C58	Malignant neoplasms of female genital organs	11	10.7
	C76-C80	Malignant neoplasms of ill-defined, secondary and unspecified sites	10	9.7
	C60-C63	Malignant neoplasms of male genital organs	8	7.8
	D37-D48	Neoplasms of uncertain or unknown behaviour	6	5.8
	C81-C96	Malignant neoplasms, stated or presumed to be primary, of lymphoid, haematopoietic and related tissue	4	3.9
	C00-C14	Malignant neoplasms of lip, oral cavity and pharynx	4	3.9
	C69-C72	Malignant neoplasms of eye, brain and other parts of central nervous system	3	2.9
	C40-C41	Malignant neoplasms of bone and articular cartilage	2	1.9
	C45-C49	Malignant neoplasms of mesothelial and soft tissue	2	1.9
	D10-D36	Benign neoplasms	1	1.0
	C64-C68	Malignant neoplasms of urinary tract	1	1.0
	J00-J99	Diseases of the respiratory system	47	6.8
	J40-J47	Chronic lower respiratory diseases	20	42.6
	J09-J18	Influenza and pneumonia	17	36.2
	J20-J22	Other acute lower respiratory infections	5	10.6
	J60-J70	Lung diseases due to external agents	2	4.3
	J85-J86	Suppurative and necrotic conditions of lower respiratory tract	1	2.1
	J90-J94	Other diseases of pleura	1	2.1
	J00-J06	Acute upper respiratory infections	1	2.1

Rank	ICD-10 Chapter Code	Disease	Number of deaths	Percentage (%)
	A00-B99	Certain infectious and parasitic diseases	33	4.8
	A30-A49	Other bacterial diseases	18	54.5
	B15-B19	Viral hepatitis	11	33.3
	A00-A09	Intestinal infectious diseases	3	9.1
	A92-A99	Arthropod-borne viral fevers and viral haemorrhagic fevers	1	3.0
	V01-Y98	External causes of morbidity and mortality	32	4.6
	X58-X59	Accidental exposure to other and unspecified factors	12	37.5
	V01-V99	Transport accidents	5	15.6
	Y10-Y34	Events of undetermined intent	4	12.5
	W65-W74	Accidental drowning and submersion	4	12.5
	X60-X84	Intentional self-harm	2	6.3
	W00-W19	Falls	2	6.3
	W75-W84	Other accidental threats to breathing	2	6.3
	X85-Y09	Assault	1	3.1
	N00-N99	Diseases of the genitourinary system	30	4.3
	N17-N19	Renal failure	17	56.7
	N40-N51	Diseases of male genital organs	6	20.0
	N00-N08	Glomerular diseases	5	16.7
	N80-N98	Non-inflammatory disorders of female genital tract	1	3.3
	N70-N77	Inflammatory diseases of female pelvic organs	1	3.3
	R00-R99	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	19	2.7
	R50-R69	General symptoms and signs	12	63.2
	R95-R99	Ill-defined and unknown causes of mortality	6	31.6
	R00-R09	Symptoms and signs involving the circulatory and respiratory systems	1	5.3
	K00-K93	Diseases of the digestive system	16	2.3
	K70-K77	Diseases of liver	5	31.3
	K80-K87	Disorders of gallbladder, biliary tract and pancreas	3	18.8
	K90-K93	Other diseases of the digestive system	3	18.8
	K20-K31	Diseases of oesophagus, stomach and duodenum	2	12.5
	K55-K64	Other diseases of intestines	2	12.5
	K35-K38	Diseases of appendix	1	6.3
	D50-D89	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	13	1.9
	D60-D64	Aplastic and other anaemias	7	53.8
	D65-D69	Coagulation defects, purpura and other haemorrhagic conditions	3	23.1
	D50-D53	Nutritional anaemias	2	15.4
	D55-D59	Haemolytic anaemias	1	7.7
	G00-G99	Diseases of the nervous system	12	1.7
	G80-G83	Cerebral palsy and other paralytic syndromes	4	33.3
	G90-G99	Other disorders of the nervous system	3	25.0
	G40-G47	Episodic and paroxysmal disorders	3	25.0
	G00-G09	Inflammatory diseases of the central nervous system	1	8.3
	G20-G26	Extrapyramidal and movement disorders	1	8.3
	L00-L99	Diseases of the skin and subcutaneous tissue	12	1.7
	L00-L08	Infections of the skin and subcutaneous tissue	9	75.0
	L80-L99	Other disorders of the skin and subcutaneous tissue	3	25.0
	M00-M99	Diseases of the musculoskeletal system and connective tissue	12	1.7
	M00-M25	Arthropathies	5	41.7
	M30-M36	Systemic connective tissue disorders	3	25.0

Rank	ICD-10 Chapter Code	Disease	Number of deaths	Percentage (%)
	M40-M54	Dorsopathies	2	16.7
	M80-M94	Osteopathies and chondropathies	1	8.3
	M60-M79	Soft tissue disorders	1	8.3
	Unknown		5	0.7
	Unknown		5	100.0
	F00-F99	Mental and behavioural disorders	2	0.3
	F99	Unspecified mental disorder	1	50.0
	F20-F29	Schizophrenia, schizotypal and delusional disorders	1	50.0
	Q00-Q99	Congenital malformation, deformation and chromosomal abnormalities	1	0.1
	Q20-Q28	Congenital malformations of the circulatory system	1	100.0
	H60-H95	Diseases of the ear and mastoid process	1	0.1
	H60-H62	Diseases of external ear	1	100.0
	000-099	Pregnancy, childbirth and the puerperium	1	0.1
	080-84	Delivery	1	100.0
		Total	694	

Key insights: Mortality in Tonga is heavily dominated by Non-Communicable Diseases (NCDs). Overall, the top three chapters (endocrine, circulatory, and neoplasms) collectively represent two-thirds of all deaths, underscoring the urgent need for NCD-focused interventions.

KEY RECOMMENDATIONS

The analysis of mortality causes in this dataset highlights an overwhelming dominance of Non-Communicable Diseases (NCDs), particularly diabetes and cardiovascular conditions, alongside smaller contributors, cancers, respiratory diseases, and external causes.

Based on this dataset, the following strategic actions are recommended:

1. Strengthen Prevention and Care for NCD
 - Implement nationwide screening for diabetes, hypertension, and heart disease starting from age 18.
 - Strengthen primary health care for early detection and continuous management of chronic conditions.
 - Promote healthy lifestyle interventions such as diet, physical activity, and reduction of tobacco and alcohol use.
2. Target High-Risk Age Groups
 - Prioritise interventions for adults aged 18–69, where NCD mortality peaks, such as workplace and community wellness programs to reduce risk factors.
3. Maintain Control of Communicable Diseases
 - Continue robust childhood immunisation programs and infection prevention measures.
 - Enhance elderly care to mitigate infection risks in older populations.
4. Reduce Injury-Related Mortality
 - Enforce road safety laws and promote accident prevention campaigns.
 - Expand mental health services to address self-harm and risky behaviours among youth.
5. Improve Data Quality and Health Information Systems
 - Train certifying physicians on accurate completion of Medical Certificates of Cause of Death (MCCD).
 - Invest in systems for timely and reliable mortality data, such as digital Civil Registration and Vital Statistics (CRVS) systems.

CONCLUSION

The analysis of this dataset reveals a clear and pressing health challenge: Non-Communicable Diseases (NCDs) dominate the cause of death, accounting for nearly two-thirds of all recorded cases.

Diabetes mellitus alone represents almost one-quarter of total deaths, followed by cardiovascular conditions such as ischaemic heart disease and cerebrovascular disease. Neoplasms, particularly breast and digestive organ cancers are also a significant factor.

Communicable diseases and injuries remain relatively minor causes of mortality, though they persist in groups such as young children, adolescents, and the elderly.

Ill-defined causes and incomplete certification highlight gaps in data quality that must be addressed.

Key insights: These findings underscore the need for comprehensive NCD prevention and management strategies, targeted interventions for high-risk age groups, and continued efforts to strengthen health information systems for accurate and timely mortality reporting.

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