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NCD Mortality indicator

UNITED NATIONS ESCAP
Economic and Social Commission for Asia and the Pacific

Indicator definition

- Unconditional probability of dying between ages 30 and 70 from 4 major NCDs – CVDs, cancers, diabetes, and chronic respiratory diseases
- This indicator excludes potential for confounding across countries due to death from competing causes or different population age-structures
- Allows within country comparison over time to monitor 25% reduction, without confounding as mentioned above
- Age interval chosen because
  - NCD mortality starts rising at age 30
  - Mortality below 70 years is premature death in all populations aged 30 years
  - Cause-specific attribution above age 70 is riddled with uncertainty

Computation

- Step 1: calculate 5 year age-sp death rate – ${}_5M_x$

$$ {}_5M_x = \frac{Total\ deaths\ from\ four\ NCD\ causes\ between\ exact\ age\ x\ and\ exact\ age\ x+5}{Total\ population\ between\ exact\ age\ x\ and\ exact\ age\ x+5} $$

- Step 2: convert into probability of dying – ${}_5q_x$

$$ {}_5q_x = \frac{{}_5M_x * 5}{1 + \quad {}_5M_x * 2.5} $$

- Step 3: compound across target age interval

$$ {}_{40}q_{30} = 1 - \prod_{x=30}^{65} (1 - \quad {}_5q_x) $$

Data requirements

- Numerators and denominators from same and well-defined populations
- Adequate population under surveillance to yield robust indicators at national / sub national state level, depending on policy requirements
- Continuous recording of mortality with high completeness of death recording
- Accuracy of cause-of-death ascertainment as close as possible to death registration in the form of multiple causes of death, given known potential for co-morbidities across NCDs

HYPOTHETICAL EXAMPLE TO CALCULATE NCD MORTALITY INDICATOR

Age	Dths	Pop	Dth rate nMx	nqx	1 - nqx	Product of 1-nqx	NCD mortality indicator 40q30
30 to 34	50	10000	0.005	0.024691358	0.975309	0.645522143	0.354478
35 to 39	60	10000	0.006	0.02955665	0.970443		
40 to 44	65	10000	0.0065	0.03198032	0.96802		
45 to 49	75	10000	0.0075	0.036809816	0.96319		
50 to 54	100	10000	0.01	0.048780488	0.95122		
55 to 59	150	10000	0.015	0.072289157	0.927711		
60 to 64	175	10000	0.0175	0.083832335	0.916168		
65 to 69	200	10000	0.02	0.095238095	0.904762		

Outline

- *Indicator definition and computation*
- *Is baseline information available for the target?*
- *Is there a reliable system for data collection in the Member countries?*
- *What is the current capacity of Member countries to collect and report on the target every 5 years?*
- *What additional data collection mechanisms are needed to enable reporting on the mortality target?*