

DISABILITY-ADJUSTED LIFE YEARS (DALYs) DUE TO ACUTE COVID-19 IN MALAYSIA IN 2022

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BACKGROUND

Burden of disease measures, such as **disability-adjusted life years (DALYs)**, offer a more appropriate metric for assessing the burden of COVID-19 than absolute death or case counts by combining both mortality and morbidity data which allows for a comprehensive and comparable evaluation of the disease's population health impact.

This study is part of a **continued effort to estimate the annual burden of COVID-19** to determine potential losses averted by vaccination and other mitigation efforts.

OBJECTIVES

To estimate the total disease burden of acute COVID-19 in Malaysia in 2022 as measured by DALYs, and to compare the direct impact of COVID-19 relative to other leading causes of disease and injury in the country.

METHODS

1 Data on individual COVID-19 deaths and daily case counts in Malaysia during 2022 were obtained from a public repository provided by the Ministry of Health [1].



Figure 1 : Components of Disability-Adjusted Life Years (DALYs)

DALYs are the sum of years lived with disability (YLD) and years of life lost to premature mortality (YLL).

Health state	Disability weight
Asymptomatic	Nil
Moderate (community, seeking healthcare assistance)	0.051
Severe (hospitalized, non-intensive care)	0.133
Critical (hospitalized, intensive care)	0.655

Table 1 : COVID-19 health state descriptions and disability weights

2 Calculation of years lived with disability (YLD)
To calculate YLD, person-years for each COVID-19 category or health state (derived from the sum of active cases daily scaled by a factor of 1/(365.25) to reflect the contribution of individual days to a complete year, since DALYs use year as the unit of time) were multiplied by the corresponding disability weight (representing severity; scale of 0 to 1 with 0 indicating no disability) for that health state. Disability weights were adapted from the COVID-19 consensus model and methods outlined by the European Burden of Disease Network [3].

3 Calculation of years of life lost to premature death (YLL)

YLL directly attributable to COVID-19 were derived by multiplying the number of deaths in each age-group by the age- and sex-conditional life expectancy as defined in the national life table for 2022(e) published by the Department of Statistics Malaysia (DOSM).

$$YLL = \sum_{a=1}^n \text{Number of deaths}_a \times \text{Remaining life expectancy}_a$$

where a = age-group, e.g. 1-year or 5-years group, n = number of age-groups

DISCUSSION / CONCLUSION

- A main limitation of this study is the exclusion of post-acute consequences (i.e. 'long-COVID'). As more data becomes available on transition probabilities, severity, and duration, the current estimates can be revised to include the burden attributable to the long-term sequelae of SARS-CoV-2 infection.
- These DALY estimates highlight that the COVID-19 pandemic continues to cause a substantial burden on the Malaysian population, although the burden has reduced significantly compared to previous years.

KEY POINTS

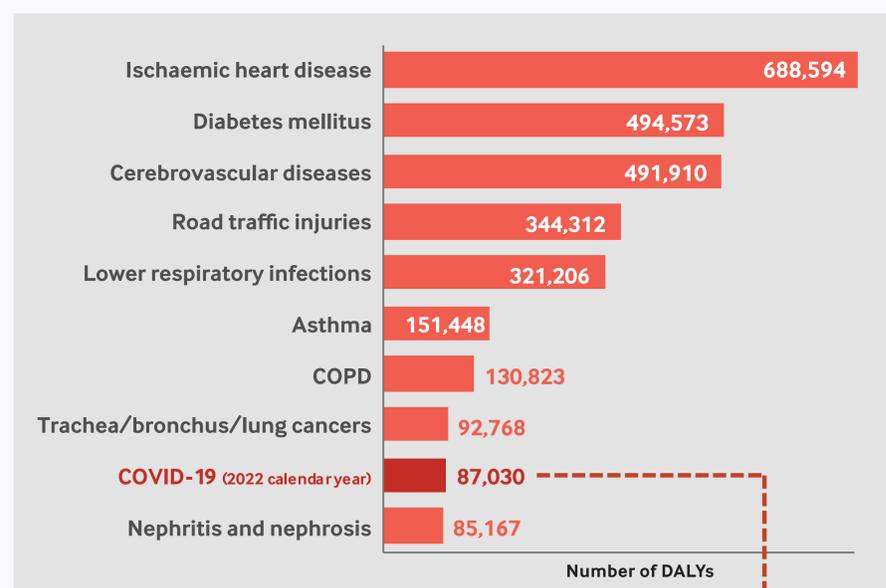
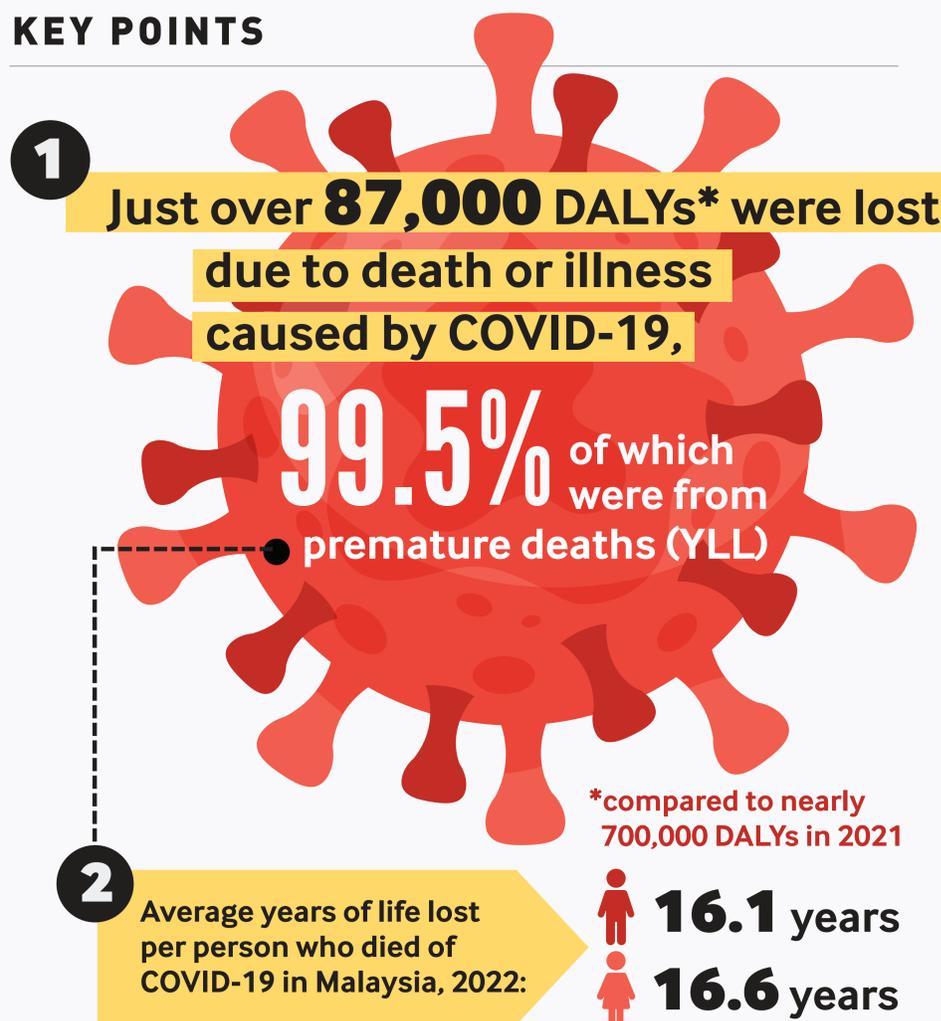


Figure 2 : Comparison of overall estimated DALYs due to COVID-19 in calendar year 2022 with DALYs from the top five leading causes of fatal burden in Malaysia in 2017 (as reported by the Malaysian Burden of Disease and Injury Study 2017) [3]

3 Although the burden of disease from COVID-19 has reduced drastically compared to the previous year, it still ranked among the top 10 leading contributors to total disease burden in Malaysia during pre-pandemic times.

REFERENCES

- Official data on the COVID-19 epidemic in Malaysia. Powered by CPRC, CPRC Hospital System, MKAK, and MySejahtera. GitHub. <https://github.com/MoH-Malaysia/covid19-public>
- Wyper GM, Assunção RM, Colzani E, Grant I, Haagsma JA, Lagerweij G, et al. Burden of Disease Methods: A Guide to Calculate COVID-19 Disability-Adjusted Life Years. *Int J Public Health*. 2021;66:619011.
- Centre for Burden of Disease Research (CBODR). *Malaysian Burden of Disease and Injury Study 2015-2017*. Institute for Public Health (IKU); 2020.