Poster MSR80

Economic Burden of Premature Mortality of COVID-19 in Kuwait:

A Comparative Analysis of Three Methodological Approaches

Mohammad Almari[1,2] ,Stephen O'Neill[2], Zia Sadique[2]

[1] Department of Health Policy & Management, College of Public Health, Kuwait University

[2] Health Services Research & Policy, London School of Hygiene & Tropical Medicine

ISPOR Improving healthcare decisions

ISPOR 2025

LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

1. Background & Study Objectives

Background

- Kuwait experienced 667,158 COVID-19 cases and 2895 deaths as of March 2024 [1], leading to considerable direct and indirect financial burdens on patients, healthcare systems, and government resources [2].
- Direct medical costs of COVID-19 are well-known and have been explored locally [3-5].
- The economic impact of premature mortality of COVID-19 on Kuwait's economy remains uncertain.
- There is debate regarding optimum methods for estimating productivity loss from premature mortality.

Study objectives

- To assess the economic burden of premature mortality from COVID-19 on Kuwait's economy from a societal perspective applying three key approaches:
  - **The Value of Statistical Life (VSL)**
  - **The Human Capital Approach (HCA)**
  - **The Friction Cost Approach (FCA)**

2. Methods

Study Design:

- Retrospective aggregated secondary published data for COVID-19 deaths during (**2020-2022**) using ICD-10 code (U07.1 – U07.2).

Data Sources:

- Kuwait Ministry of Health Annual Health reports.
- Kuwait **Central Statistics Bureau (CSB)** for annual earnings and consumption costs per capita **(2021)**.

Premature Cost Estimation:

- **Methods, data inputs, & calculations used for each economic approach are further detailed by scanning the QR link:**

Data analysis:

- Descriptive data were computed and visualised using (**MS 365-Excel**).
- **R Package** (version 4.3.1) was used for cost computations.
- **Costs** are presented in international dollars (**PPP$ - June 2021**).

3. Results

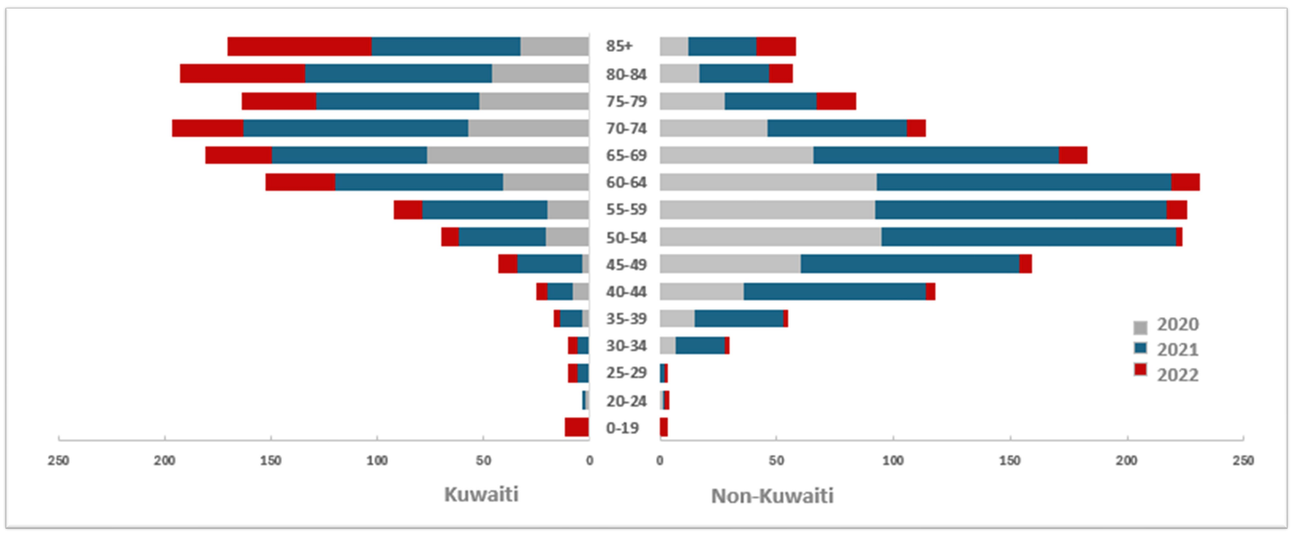

Figure 1. COVID-19 Deaths in three years by age group, gender & nationality

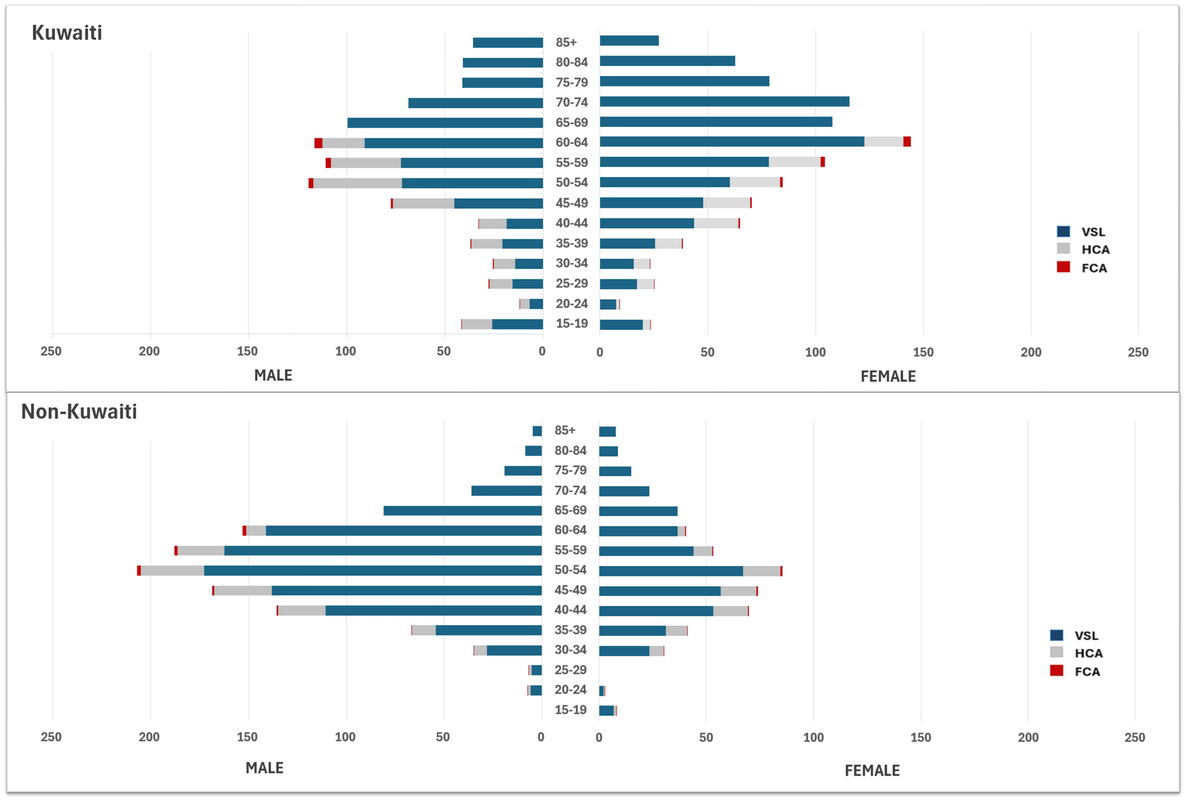

Figure 2. Costs for three methods by age group, gender & nationality in millions (PPP$)

4. Main findings

- Total costs were 2.8 billion VSL, 569 million HCA, and 33.6 million FCA.
- Disparities in mortality and costs between Kuwaitis and non-Kuwaitis.
- Non-Kuwaiti mortality costs accounted for a significant share, with males as the highest among non-Kuwaiti and females in Kuwaiti for VSL approach.
- Non-Kuwaiti males dominated costs in all approaches compared to other groups.
- The VSL approach showed the highest costs, followed by the HCA and FCA.
- VSL costs highlight the lifelong effect of the disease on the economy (2.9 billion).
- HCA and FCA are limited to the labour force dynamics and depict the burden from a narrower perspective (people below 65).
- FCA costs were minimal given the limiting the effects of death to (90 days).

5. Limitations

- Secondary aggregated data with limited granular data (e.g., vaccine status & comorbidities) using secondary published data from MOH.

6. Strengths

- Ascertained cause of death.
- National reference of costs and population consumption data using CSB.
- Costs converted to international dollars ($PPP) for across country comparisons.

6. References

1. https://covid19.who.int/region/emro/country/kw. (accessed 10th February 2024)
2. Gupta AG, Moyer CA, Stern DT. The economic impact of quarantine: SARS in Toronto as a case study. J Infect. 2005;50(5):386–393. doi: 10.
3. Nur AM, Aljunid SM, Almari M. Cost of in-patient management of COVID-19 patients in a general hospital in Kuwait. BMC Health Serv Res. 2023 Nov 28;23(1):1314.
4. Nur AM, Aljunid SM, Almari M. The Economic Burden of the COVID-19 Pandemic in State of Kuwait. Clinicoecon Outcomes Res. 2024 Mar 4;16:111-122.
5. AlManie SA, AlHazami MS, Ebrahim A, Attique MS. Assessment of Direct Medical Cost of Hospitalized COVID-19 Adult Patients in Kuwait During the First Wave of the Pandemic. Clinicoecon Outcomes Res. 2024 Jul 24;16:509-522.
6. Robinson LA, Hammitt JK, O'Keeffe L. Valuing Mortality Risk Reductions in Global Benefit-Cost Analysis. J Benefit Cost Anal. 2019;10(Suppl 1):15-50.
7. Tarricone R. Cost-of-illness analysis. What room in health economics? Health Policy. 2006 Jun;77(1):51-63. doi: 10.1016/j.healthpol.2005.07.016. Epub 2005 Sep 1. PMID: 16139925.
8. Pike J, Grosse SD. Friction Cost Estimates of Productivity Costs in Cost-of-Illness Studies in Comparison with Human Capital Estimates: A Review. Appl Health Econ Health Policy. 2018 Dec;16(6):765-778.