

14th June 2021

Understanding the mortality impact of COVID-19 from a longitudinal surveillance study in Kilifi County

Policy Brief



Key Messages

- We conducted a survey among residents of Kilifi Health and Demographic Surveillance System to compare mortality in 2020 with historical data.
- Annual incidence of mortality among Kilifi Health and Demographic Surveillance System (KHDSS) residents was no higher in 2020 compared with previous years.
- Acute Respiratory Infection (ARI) increased between 2012 and 2016 (for reasons unknown) but no further increase was noted after 2016 and in particular no increase in 2020.
- The results do not exclude the possibility that COVID-19 caused more deaths in 2020 but if it did, a similar number of non-COVID-19 deaths must have been prevented, perhaps by COVID-19 response measures.

Introduction

- The primary means of monitoring the toll of the COVID-19 pandemic has been through counts of PCR positive cases and deaths among infected persons.
- Although Kenya has data on COVID-19 cases and deaths, limited testing capacity has led to an underestimate of case numbers and may also underestimated deaths.
- Unreliable Civil Registration data and the negative impact of pandemic control measures on utilisation of health services further limit the accuracy of routine data for monitoring deaths.
- Population-based surveillance provides an alternative source of data for determining mortality during the COVID-19 pandemic which is more likely to be accurate but is applicable only to the areas in which the surveys were conducted.
- Since 2000, KEMRI-Wellcome Trust Research Programme has supported a Health and Demographic and Surveillance System (KHDSS) with regular surveys to capture vital events among 300,000 residents of Kilifi County, linked to morbidity and mortality surveillance at Kilifi County Hospital.
- The KHDSS surveys are conducted in a predominantly rural area with only one town (Kilifi).
- We re-enumerated the residents of the KHDSS between January and April 2021.
- We have analyzed the trends in mortality and causes of death using verbal autopsy from community-based surveys in the KHDSS from 2003 to 2020 to understand the impact of the pandemic on mortality in the KHDSS community.

Findings

- The annual incidence of mortality among KHDSS residents did not increase discernably in 2020 compared with previous years (Figures 1 and 3).
- Acute Respiratory Infection (ARI) increased between 2012 and 2016 (for reasons unknown) but no further increase was noted after 2016 and in particular no increase in 2020.
- There was a reduction in the proportion of deaths attributable to acute respiratory illness in the 5-14 year age group in 2020, but the significance of this one variation among the many trends examined is unclear.
- There was no obvious change in pattern of the causes of death in any other age groups.

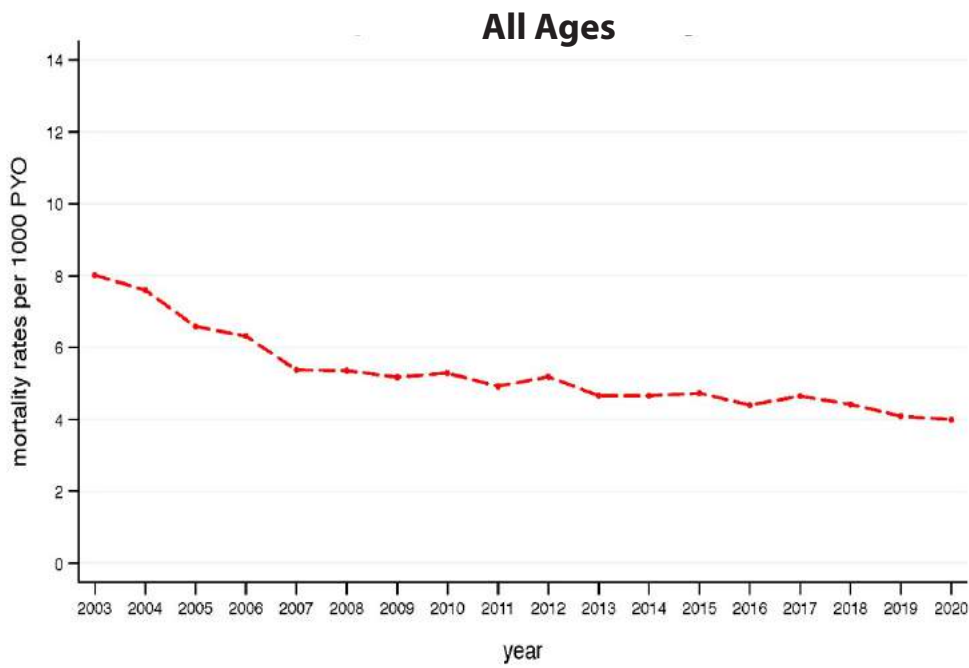
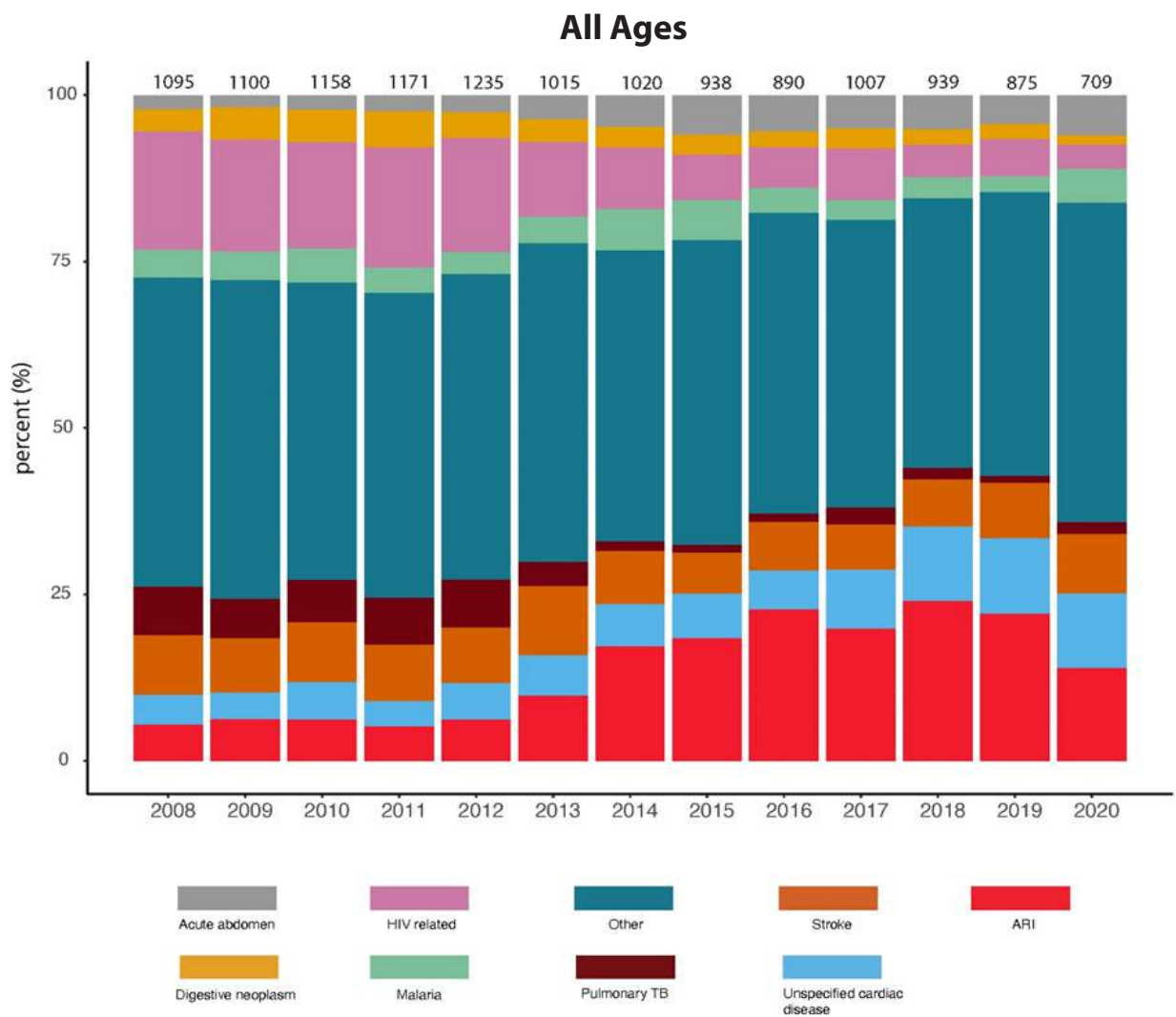


Figure 1. Annual mortality rates in KHDSS from 2003 – 2020 (all ages).



ARI – acute respiratory illness

Absolute numbers of deaths are given in figures over each bar

Figure 2. Stacked bar graphs of mortality fractions for leading causes of death (all ages)

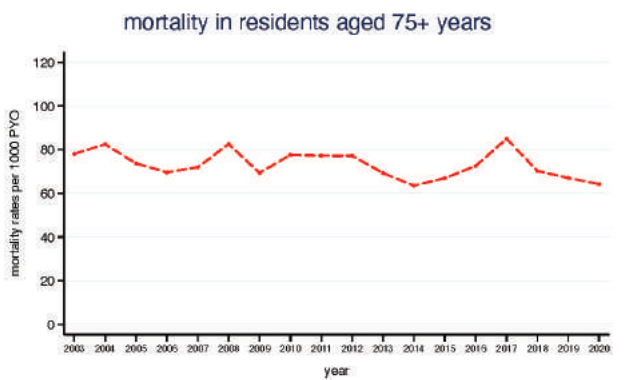
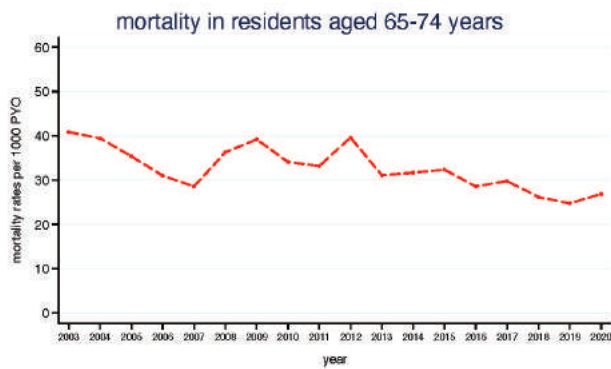
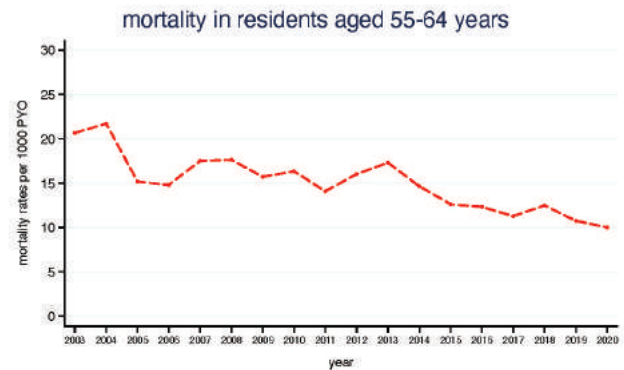
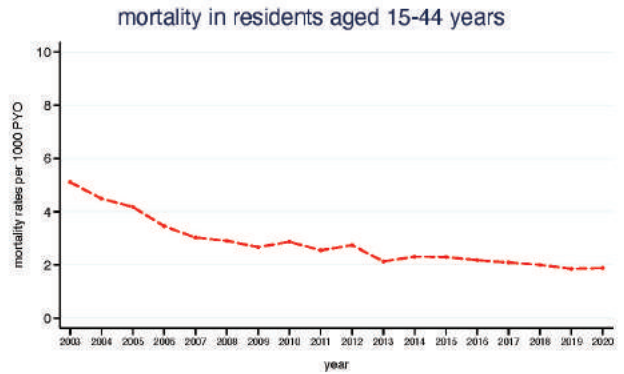
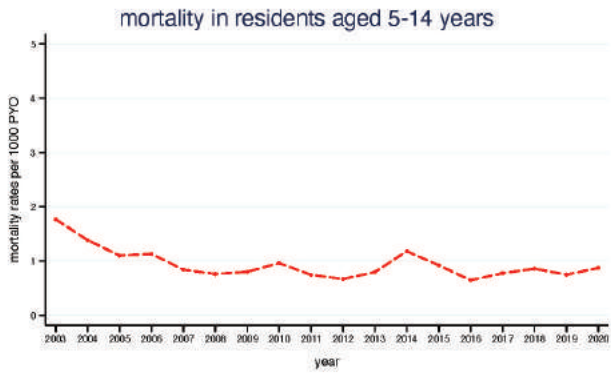
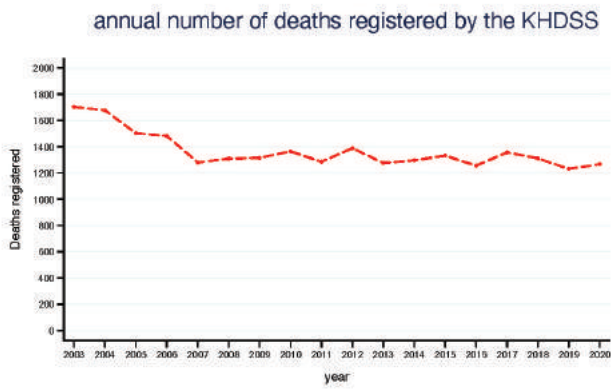
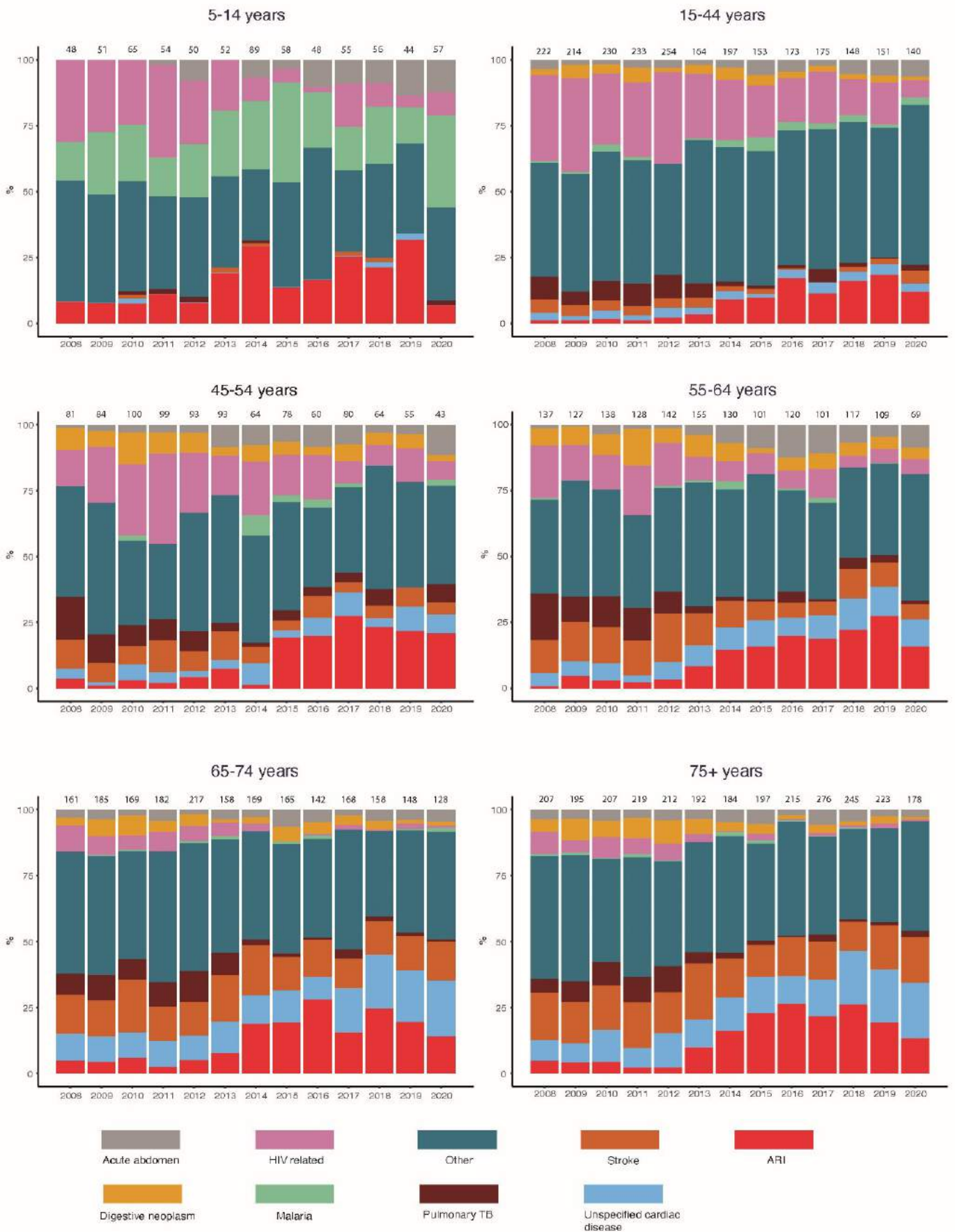


Figure 3. Annual mortality rates in KHDSS for seven age groups from 2003 – 2020.



ARI – acute respiratory illnesses

Absolute numbers of deaths are given in figures over each bar

Figure 4. Stacked bar graphs showing mortality fractions for leading causes of death by age group

Assumptions and Implications

- We have assumed that all 2020 deaths have been recorded. Based on previous observations, we anticipate a small percentage of all the deaths that occurred in 2020 will be captured in forthcoming survey rounds. However, this is not expected to alter the results that we have reported.
- Verbal Autopsies are typically obtained in approximately 80% of all deaths. However, in 2020 verbal autopsies were obtained in only 60% of deaths due to difficulties conducting fieldwork under COVID-19 restrictions. Because the deaths investigated were assigned by random selection, we do not think this affects the representativeness of the findings.
- The KHDSS community is predominantly rural. These results should therefore not be generalized to urban settings where the virus may have spread more extensively.
- Population-based surveys and results from other HDSSs will extend and modulate our understanding of the mortality impact of COVID-19 in Kenya.

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