Estimating Excess Mortality during the COVID-19 pandemic in Bangladesh

Ahmed Ehsanur Rahman
Aniqa Tasnim Hossain
Shams El Arifeen
Trend in COVID-19 cases in Bangladesh (# of cases)

Cumulative cases: 1,861,532
Cumulative deaths: 28,589
“Know your epidemic; Know your response”

Challenges in Bangladesh

• Coverage of civil registration of deaths is low

• Hospitals, as the main source of cause-of-death data, are not all integrated into the CRVS and often of poor quality data

• Deaths happen without testing

01 Demographic Surveillance

02 Household survey

03 Data from burial grounds
Matlab-Demographic Surveillance Data

- Matlab HDSS data from January-April from 2015 to 2020 was used.
- 276,868 people were followed until migration or death, whichever occurred first.

Hanifi and colleagues
Frontiers in Public Health, 2021
Mortality per 1,000 person-years according to age and year
Household Survey, Sitakundu, Chattogram

25,669 Households selected using PPS

- Village mapping
- Member listing and listing of deceased in last three years
- Quality control data collection using social enquiry model
- Verbal autopsy of the identified deaths

Study Site: Sitakundu, Chattogram
We used p-score as the primary approach to measure excess mortality

\[ P \text{ score} = \frac{\text{Deaths}_{2020} - \text{Average Deaths}_{2018-2019}}{\text{Average Deaths}_{2018-2019}} \times 100 \]

For example, if a country had a P-score of 100% in a given week in 2020, that would mean the death count for that week was 100% higher than – that is, double – the average death count in the same week over the previous five years.
Deaths by age from Sitakundu Household Survey

P-Score (comparing average of 2019 and 2018 with 2020) for death among 40 years and above: 55%
Other analysis approaches (ongoing)

- Survival Analysis:
  - Kaplan Meier Curve
  - Cox Proportional Hazards Model
- Interrupted Time Series Analysis
- Structural break analysis
Cox proportional hazards model for age more than 40 years (Hazard Ratio)

- Year (2020) reference 2018 and 2019
- Sex (Male) reference female
- Religion (Islam) reference others
- Education (No) reference yes
- Wealth (Middle) reference Low
- Wealth (High) reference Low
- Age: 50-59 reference 40-49 years
- Age: 60-95 reference 40-49 years
Burial grounds records

- Explored the basic characteristics, burial practices and record keeping system of the six burial grounds of DNCC
- Extracted death records from registers
- Reported the excess mortality during 2020
P-score (red circles) from burial site data (comparing 2020 with 2019) in different graveyards at Dhaka North? How to interpret?
Burials by year without Rayer Bazar graveyard (n=8,350)

P-Score for burial (40 years and above) 32%

Burial for age 40 years and above
Burial for age below 40 years
Assumptions and issues with data analysis and interpretations

- The household information obtained from living people
- Migration of population may have occurred in both directions. We assumed that the proportion of this migration is constant over the period
- Lack of data from crematorium and cemeteries
- Lack of good cause of death information from burial site
- Attribution to COVID-19 is difficult
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