A Lesson from COVID 19 in the Importance of Sex Disaggregated Data:

Sex/Gender differences in SARS-CoV-2 infection and mortality rates

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SEX AND GENDER HEALTH EDUCATION SUMMIT

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Disclosures

None
Background

• Sex and gender have important influences on disease prevalence, pathophysiology, clinical presentation, treatment and prognosis.

• It is essential to collect sex-disaggregated data to understand susceptibility to disease and health outcomes.

• Preliminary data from the 2020 COVID-19 pandemic caused by the coronavirus SARS CoV-2 suggest that women with COVID-19 have significantly lower mortality rates compared to men globally.

• The objective of this study is to evaluate sex differences in SARS-CoV-2 infection rates and mortality at a country level.
Methods

• Data source: Global Health 5050 website
  o Housed University College London
  o Collects government reported national surveillance data for COVID-19
  o https://globalhealth5050.org/covid19

• These data lag behind figures for infections & deaths because only sex disaggregated data are collected

• Analysis of country data to determine the proportion of men and women with COVID-19 infection and associated deaths.

• Inclusion: Data from countries with completely sex disaggregated data

• Exclusion: Data from countries with incomplete sex disaggregation of data and from countries with no sex disaggregation of data

Global Health 5050 data tracker
https://globalhealth5050.org/covid19
accessed May 8, 2020

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Snapshot of Global Health 5050 database May 8, 2020

- 3,044,513 cases of COVID-19 and 181,742 deaths in 78 countries
- Sex disaggregated data
  - Complete disaggregation in 36 countries
  - Partial disaggregation in 26 countries
  - No disaggregation in 16 countries

Global Health 5050 data tracker [https://globalhealth5050.org/covid19](https://globalhealth5050.org/covid19) accessed May 8, 2020
Cases and deaths in 36 countries

1,140,803 cases
83,388 deaths

Global Health 5050 data tracker [https://globalhealth5050.org/covid19](https://globalhealth5050.org/covid19) accessed May 8, 2020
COVID-19: Cases and mortality in women, 36 countries

Global Health 5050 data tracker [https://globalhealth5050.org/covid19](https://globalhealth5050.org/covid19) accessed May 8, 2020

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## COVID 19: Sex disaggregated cases and deaths May and August 2020

<table>
<thead>
<tr>
<th>Date</th>
<th>No countries</th>
<th>Total</th>
<th>% Women (range)</th>
<th>% Men (range)</th>
<th>Male to Female ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cases</strong></td>
<td>5/8/2020</td>
<td>36</td>
<td>1,140,803</td>
<td>50.3% (22-63)</td>
<td>49.7%</td>
</tr>
<tr>
<td><strong>Deaths</strong></td>
<td>5/8/2020</td>
<td>36</td>
<td>83,388</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td><strong>Cases</strong></td>
<td>8/7/2020</td>
<td>72</td>
<td>8,163,457</td>
<td>46.6% (15-53)</td>
<td>53.4% (39-85)</td>
</tr>
<tr>
<td><strong>Deaths</strong></td>
<td>8/7/2020</td>
<td>72</td>
<td>394,288</td>
<td>-----</td>
<td>-----</td>
</tr>
</tbody>
</table>

Global Health 5050 data tracker [https://globalhealth5050.org/covid19](https://globalhealth5050.org/covid19) accessed August 12, 2020

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USA deaths (per 100,000) by age and sex
Data July 29, 2020

Deaths per 100,000

0-14 15-24 25-34 35-44 45-54 55-64 65-74 75-84 85+

Females
Males

Global Health 5050 data tracker https://globalhealth5050.org/covid19 accessed August 12, 2020

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Discussion

• Sex difference in mortality, with higher deaths in men

• Possible explanations
  • Sex (biologically based) differences in the immune system
  • Gender differences in environmental exposures, access to health care, desire to seek health care
  • Sex/gender differences in co-morbid conditions
Conclusions

- Higher mortality rates in men with COVID-19, despite equivalent infection rates by sex are suggested by preliminary country data.

- The mechanisms of this difference in mortality may be related to sex (biological differences), comorbidities or gender related factors.

- These data highlight the importance of disaggregating data by sex and gender:
  - To understand disease susceptibility, prevalence and outcomes.
  - To develop safe and effective treatments and preventive measures (vaccines) in men and women.
New Medical Textbook Published by Elsevier in September 2020

How Sex and Gender Impact Clinical Practice
An Evidence-Based Guide to Patient Care

Marjorie Jenkins and Connie B. Newman
Thank you.

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