RESEARCH

The Missing Pieces of the COVID-19 Puzzle

INTRODUCTION

When data, such as age and sex, are presented internationally in a consistent format, we identify patterns and make connections that may not have been anticipated. We focus here on laboratory-confirmed coronavirus disease 2019 (COVID-19) cases and fatalities by sex, age, and the intersection of the two, because these data are fundamental and routinely collected.

Findings suggest that men are more likely to die from COVID-19[1,2] and that older people had higher fatality rates.[2,3] Unfortunately, we do not fully know how sex and age intersect. By laying out this information and linking it to confirmed COVID-19 cases and deaths, patterns emerge to help put this COVID-19 puzzle together. We use publicly reported data from the 10 countries with the most reported COVID-19 cases to help understand patterns associated with sex and how they link to age, while considering gendered explanations.

METHODS

Data were obtained from the 10 countries with the most COVID-19 cases using the World Health Organization list[4] (on April 24, 2020). In decreasing order, they were the United States, Spain, Italy, United Kingdom, Germany, Russia, France, Turkey, Iran, and Brazil. Their respective government websites were explored to obtain confirmed COVID-19 cases and fatalities, disaggregated by sex and age.

RESULTS

Only 3 of the 10 countries—Italy, Spain, and Germany—report data on confirmed COVID-19 cases and fatalities disaggregated by sex and age in a usable format. For every 100 COVID-19 cases and fatalities in these countries, we described their respective sex distribution by age. Because the percentage of women in the population increases with age, we calculated COVID-19 deaths per 100,000 persons.

Using Italy as an example, Figure 1 shows that overall, there were more confirmed COVID-19 cases in women and that the sex distribution varied by age. More COVID-19 cases were women in the 0 to 59 years age group, more were men in the 60 to 79 years age group, and more were women in the 80 years and older age group. This pattern was consistent for all three countries.

Overall, more fatalities were in men. Population-adjusted fatality rates demonstrated that fatalities per 100,000 persons were again consistently higher in men and with older age (Figure 2).

Although the United States did not report national data disaggregated by sex and age, a study of hospitalized COVID-19 patients in New York City[5] also found that men were more likely to die in each age group.

DISCUSSION

This pandemic is one of the clearest illustrations of the importance of considering sex and age in research. Knowing about sex (biological differences) provides one piece of the puzzle, linking sex and age provides a second, and considering gender (social differences) adds a third piece. Most countries collect data disaggregated by sex and age, yet do not report in a way that utilizes their full value. Important differences between women and men become visible when data are reported by sex and age. Although more men are dying from COVID-19, more cases were identified in women. Yet, the data demonstrate that the distribution of cases differed by age group, with men having higher rates of cases in the 60- to 79-year age group and women having higher rates in the younger and advanced age groups.

This pattern could be due to gender-related differences in social circumstances. More confirmed COVID-19 cases among the oldest women could be due to more women living in nursing homes. This will inform the need for post-acute COVID-19 programs designed to care for vulnerable older women.

Thinking about age, sex, and the intersection of the two can help us identify why higher fatality rates were found in men. These differences could relate to biological sex differences. Evidence from previous coronavirus outbreaks, like severe acute respiratory syndrome, also found that men had higher mortality.[6] Men may simply experience more severe illness, bringing them to care settings and leading to more COVID-19 confirmed fatalities. These findings could also reflect gender differences. For example, men are more likely to smoke, increasing their risk for chronic conditions that make them more vulnerable to worse COVID-19 outcomes.[1] Among COVID-19 deaths in Italy, 70% were in men, most were approximately 80 years of age, and almost half had three or more underlying conditions.[2] These findings point to the need to expand geriatric medicine experts to manage high-risk older patients.

By providing data disaggregated by sex, age, and the intersection of these considerations, patterns emerge that help us piece together the biological and social circumstances and age factors that contribute to COVID-19. The lack of
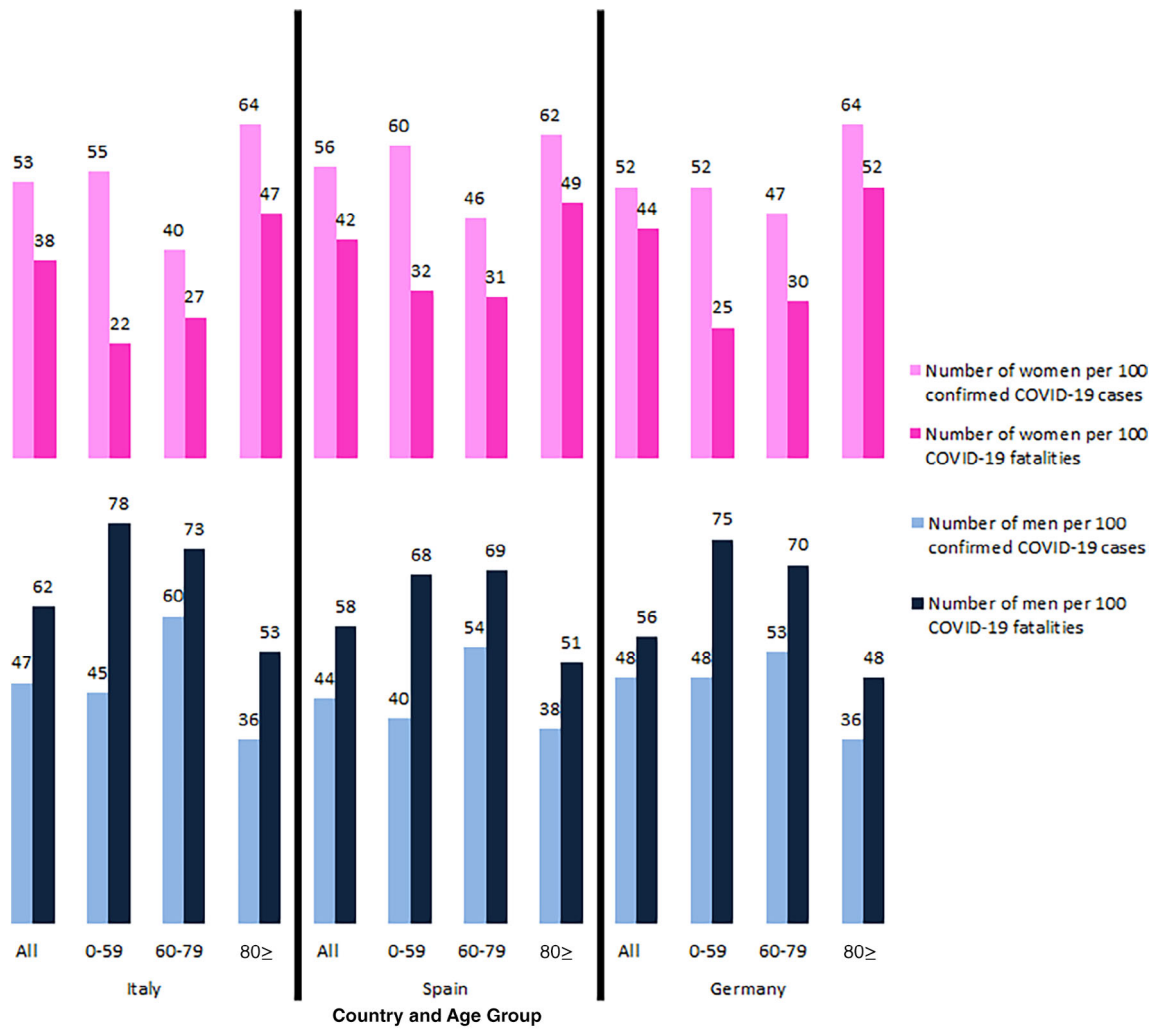
Figure 1. Number of men and women per 100 confirmed coronavirus disease 2019 (COVID-19) cases and per 100 COVID-19 fatalities. These data were derived from reports obtained from Italy on April 28, 2020 (including 199,470 cases and 25,215 deaths),[7] Spain on May 4, 2020 (including 216,848 cases and 17,178 deaths),[8] and Germany on May 4, 2020 (including 162,554 cases and 6,682 deaths).[9,10]
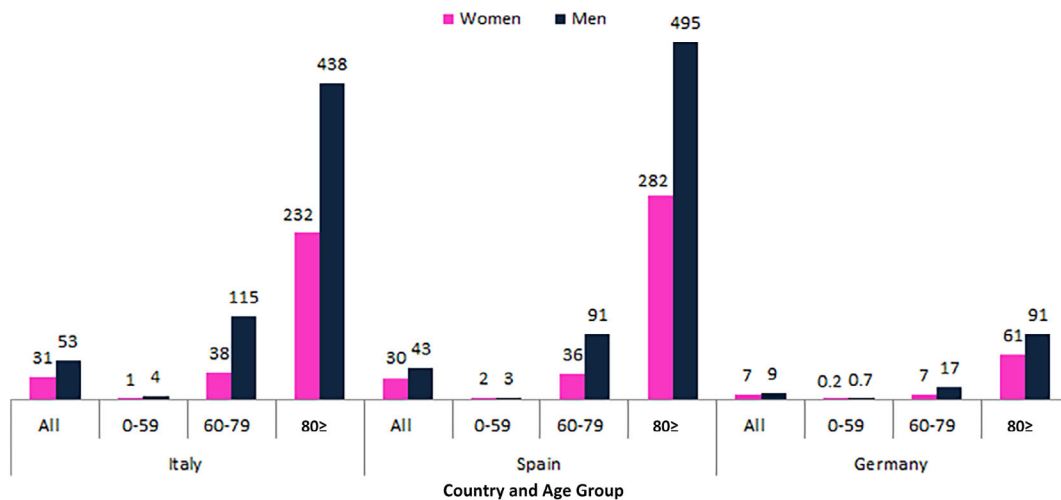

Figure 2. Number of coronavirus disease 2019 fatalities per 100,000 people. Proportion based on age-sex–specific counts of the general population. The general population numbers were derived from World Population Prospects 2019, United Nations.[11] [Color figure can be viewed at wileyonlinelibrary.com]

valuable age and sex information is an important piece preventing us from seeing the whole picture. Collectively, we must bridge the current data gap to help solve this COVID-19 puzzle.

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Facing Dementia During the COVID-19 Outbreak

INTRODUCTION

The ongoing coronavirus disease 2019 (COVID-19) pandemic is having a profound impact on people with dementia. A relevant proportion of COVID-19–related deaths have probably occurred in patients with dementia.[1] Dramatically high fatality rates have been observed worldwide among residents of long-term facilities,[2] many of them likely experiencing dementia. In addition, the restrictive measures implemented to tackle the spread of the outbreak still adversely affect patients and their caregivers because they