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Original research

Risk factors associated with severe COVID-19 outcomes in Jamaica: a cross-sectional study of national surveillance data

Karen Webster-Kerr,[1] Andriene Grant,[1] Ardene Harris,[1] Romae Thorpe,[1] Daidre Rowe,[1] Deborah Henningham,[1] Tanielle Mullings,[1] Iyanna Wellington,[1] Jovan Wiggan,[1] Kelly Ann Gordon-Johnson,[1] Carol Lord,[1] Tonia Dawkins-Beharie,[2] Jemma Azille-Lewis,[3] and Jacqueline Duncan[4]

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ABSTRACT

Objectives. To describe the characteristics and outcomes of COVID-19 cases in Jamaica and to explore the risk factors associated with severe COVID-19 from 9 March to 31 December 2020.

Methods. A cross-sectional analysis of national surveillance data was conducted using confirmed COVID-19 cases in Jamaica. Definitions of a confirmed case, disease severity, and death were based on World Health Organization guidelines. Chi-square and Fisher exact tests were used to determine association with outcomes. Logistic regression models were used to determine predictors of severe COVID-19.

Results. This analysis included 12 169 cases of COVID-19 (median age, 36 years; 6 744 females [55.4%]) of which 512 cases (4.2%) presented with severe disease, and of those, 318 patients (62.1%) died (median age at death, 71.5 years). Severe disease was associated with being male (OR 1.4; 95% CI, 1.2-1.7) and 40 years or older (OR, 6.5; 95% CI, 5.1-8.2). COVID-19 death was also associated with being male (OR, 1.4; 95% CI, 1.1-1.7), age 40 years or older (OR, 17.9; 95% CI, 11.6-27.7), and in the Western versus South East Health Region (OR 1.7; 95% CI, 1.2-2.3).

Conclusions. The findings of this cross-sectional analysis indicate that confirmed cases of COVID-19 in Jamaica were more likely to be female and younger individuals, whereas COVID-19 deaths occurred more frequently in males and older individuals. There is increased risk of poor COVID-19 outcomes beginning at age 40, with males disproportionately affected. COVID-19 death also varied by geographic region. This evidence could be useful to other countries with similar settings and to policymakers charged with managing outbreaks and health.

Keywords COVID-19; SARS-COV-2; communicable diseases, emerging; epidemiological monitoring; diagnosis of health situation; Caribbean region.

Coronavirus Disease 2019 (COVID-19) came to clinical attention as a "pneumonia of unknown cause" that was first reported in the Wuhan province of China in December 2019 (1). The disease, caused by the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was declared a pandemic on 11 March 2020 by the World Health Organization (WHO). The pandemic was an unprecedented challenge to health, economy, and society (2), with epidemic waves across the globe due to the sequential emergence of viral variants. As of 5 May 2023, when the pandemic was downgraded from a global health

[1] Ministry of Health and Wellness, Kingston, Jamaica. ✉Andriene Grant, andriene.grant@moh.gov.jm.
[2] Southern Regional Health Authority, Ministry of Health and Wellness, Mandeville, Jamaica.
[3] Youth at Risk, Gender Affairs, Seniors Security, and Dominicans with Disabilities, Ministry of Youth Development and Empowerment, Roseau, Commonwealth of Dominica.
[4] Department of Community Health and Psychiatry, University of the West Indies, Mona, Jamaica.

emergency, confirmed cases had exceeded 760 million, with close to 7 million reported deaths (3).

The first cases of COVID-19 in the Caribbean were reported on 1 March 2020 in the Dominican Republic and St. Maarten (4). The Caribbean Public Health Agency published its final situation report on 5 June 2023 stating that the Caribbean had confirmed 4 624 893 cases and 37 227 deaths (5). The first case of COVID-19 in Jamaica was reported on 10 March 2020. As of 3 January 2024, there have been 156 722 confirmed cases and 3738 deaths reported to the Jamaican National Surveillance Unit (NSU) (6). Government health agencies had initially managed the pandemic by imposing non-pharmaceutical interventions as well as restrictions on travel, businesses, schools, and recreation. No widely effective treatments for COVID-19 became available (7) prior to the emergency use authorization for the first vaccines in December 2020 (8). Vaccination programs, which started in the high-income countries, were then initiated, with priority being given to high-risk groups (9).

Mudatsir et al (10) reported over 30 risk factors for severe COVID-19, including older age, male sex, and comorbidities, along with the clinical features of dyspnea, fatigue, and dizziness. Additionally, compared with people of white ethnicity, Black and minority ethnic groups were at higher risk for adverse outcomes, even after adjustment for other factors (11). The predominant variant of SARS-CoV-2 in circulation was also linked to infection risk and adverse outcomes. Specifically, the omicron variant, although being highly transmissible, was associated with lower morbidity and mortality by a systematic review and meta-analysis that included more than 6 million cases (12). Health system structure and administration were also linked to COVID-19 outcomes, with publicly funded well-resourced health systems being associated with improved outcomes (13).

Our study is concerned with the epidemiologic situation during the pre-vaccination period of the COVID-19 pandemic in Jamaica. Although there are numerous scientific epidemiologic studies of COVID-19 risk factors and disease outcomes in high-income countries, publications from the Caribbean region have been limited. Those available include situation reports (4, 14), case series of hospitalized patients (15-17), surveillance of COVID-19 deaths (18), and oral presentations (19). In Latin America, pre-existing economic and social disparities produced poor outcomes for the most vulnerable persons (20). Moreover, there was limited information on COVID-19 risk factors and outcomes to inform the public health response in the English-speaking Caribbean. In Jamaica, a national research agenda was formulated as part of the pandemic response to inform public health policy and practice.

This study sought to describe the characteristics and outcomes of COVID-19 cases in Jamaica and explore risk factors associated with severe COVID-19 cases reported from 9 March through 31 December 2020. This study is among the first to explore this topic in the English-speaking Caribbean.

METHODS

Study design

A cross-sectional analysis using NSU data was conducted. We assessed the potentially predictive variables of age, sex, comorbidities, health region, and urban or rural residence on COVID-19 severity (moderate, severe, or critically ill) and death.

Study setting

Jamaica is divided into 14 parishes, with health surveillance information routed through 13 Parish Health Departments (PHD). COVID-19 was designated a Class 1 Notifiable Disease, which mandates that all suspected and confirmed cases be reported to the PHD and the NSU within 24 hours of diagnosis. The cross-sectional analysis was conducted using data on all confirmed COVID-19 cases in the national database with date of onset or sample date through 31 December 2020.

Participants

Confirmed COVID-19 cases with date of symptom onset and/or a sample date from 9 March 2020 through 31 December 2020 were included in the dataset (21). Imported cases, non-COVID deaths, deaths under investigation, and cases with missing age or sex were excluded. From the NSU database, we identified 13 226 cases of COVID-19 with symptom onset, sampling date, and/or COVID-19 positive test (polymerase chain reaction) from March through December 2020. After further eligibility assessment, 404 cases that were missing data on age (3.00%); 2 missing sex data (0.01%); 56 cases of coincidental or non–COVID-19 death (0.40%); 13 deaths under investigation (0.09%); and 582 imported cases (4.40%) were excluded. A total of 12 169 cases were used in the analyses.

Variables

Case definitions. A confirmed case was defined as a person with laboratory confirmed COVID-19 infection, irrespective of clinical signs and symptoms (21). The WHO COVID-19 Disease Severity Case Categorization was used to define mild, moderate, severe, and critical disease (22). A COVID-19 death was defined per the *WHO International Guidelines for Certification and Classification (coding) of COVID-19 as Cause of Death*, 16 April 2020 (23).

Health region. The public health system in Jamaica comprises the Ministry of Health and Wellness (MOHW) and four semi-autonomous Regional Health Authorities (24): the South East Regional Health Authority (SERHA), the North East Regional Health Authority (NERHA), the Southern Regional Health Authority (SRHA), and the Western Regional Health Authority (WRHA) (24). Each RHA comprises three or four of the 14 parishes in Jamaica.

Urban or rural residence. A residential area was classified as urban if it had a population of 2000 or more persons and provided amenities and utilities indicative of modern living. Rural was defined as any area not defined as urban (25).

Statistical analyses

Quality checks were done to remove duplicates, and missing or inconsistent information were updated with data from the RHAs. Descriptive statistics included frequencies and proportions. Chi-square and Fisher exact tests were used to determine associations between COVID-19 death and disease severity where appropriate. Univariate logistic regression models were used to explore individual associations between variables and outcomes. A confounding effect between predictors was defined as a greater than 10% change between crude and adjusted odds

ratios. Analyses determined that comorbidity status was a potential confounder of the association between outcomes and age; therefore, only age was included in the final model. Due to the high proportion of cases with missing symptomatic (9 000 cases; 74.0%) and comorbidity (11 085 cases; 91.1%) status, these variables were not included in the logistic regression analyses. Variables were entered into a Binary Logistic Regression Model. Likelihood ratio testing was also done to select the final model. Interaction terms were used and a $P < .05$ was considered statistically significant. Age and health region differences (using age as a continuous variable) were explored by testing for interaction. A significant interaction term between age (continuous) and health region in the model predicting severe COVID-19 resulted in a stratified analysis by region. Urban or rural residence and health region were considered in separate models. Cases with no identified area of residence (urban/rural classification) comprised 2 089 cases (17%). To account for the high levels of missingness and to prevent biases resulting from the exclusion of cases, a third category of "missing" was added to the urban or rural classification (i.e., urban, rural, or missing).

The final models were tested using the Hosmer-Lemeshow goodness of fit test, and to determine the presence of specification error, the specification link test for single-equation models was used. Statistical analyses were performed using STATA SE, version 16.1 (StataCorp LLC, Texas, United States).

Ethical approval

Ethical approval was not required because this analysis was conducted using data routinely collected as part of public health surveillance. Activities were part of the public health response by the MOHW to the outbreak of COVID-19 in Jamaica. Personal data were handled in a confidential manner in keeping with MOHW guidelines.

RESULTS

In all, 12 169 cases (92.0%) met the inclusion criteria. Most of the cases were females (55.4%), younger than 40 years of age (55.8%), and residents of the SEHRA (54.3%). The median (IQR) age was 36 (26) years. Of these, 512 cases (4.2%) were classified as moderate, severely, or critically ill; 318 of these patients (62.1%) died. Of the 10 080 cases for which urban or rural classification could be determined, 6 289 cases (62.4%) were residents of urban communities. Symptomatic status was recorded for 3 169 cases, 2 286 of which were symptomatic and 883, asymptomatic. COVID-19 deaths were associated with age, sex, health region, and residence; whereas severe disease was associated with age and sex (Table 1).

COVID-19 mortality was crudely associated with age (>40 years), male sex (odds ratio [OR], 1.6; 95% CI,1.3-2.0), rural residence (OR, 1.2; 95% CI, 0.9-1.4) and residing within the SRHA (OR, 1.6; 95% CI, 1.2-2.2) and WRHA (OR, 1.5; 95% CI, 1.2-2.0) relative to the SERHA. In the multivariate model, male sex (OR, 1.4; 95% CI, 1.1-1.7), residence within the WRHA (OR, 1.7; 95% CI, 1.2-2.3) versus the SERHA and older age, were significant predictors of death. Patients in the oldest cohort (≥80 years) were 57 times more likely to die (OR, 57.1; 95% CI, 31.9-102.2) than those in the 30- to 39-year cohort (Table 2).

Severe COVID-19 was crudely associated with age (>40 years; Figure 1), male sex (OR, 1.6; 95% CI, 1.3-1.9), and residence in the WRHA (OR, 1.1; 95% CI, 0.9-1.4) and the SRHA (OR, 1.1; 95% CI, 0.1-1.5) relative to the SERHA. In the multivariate model, male sex (OR, 1.4; 95% CI, 1.2-1.7) and older age were statistically significant predictors of disease severity, with the oldest age cohort (≥80 years) being 23 times more likely to develop severe disease (OR, 23.0; 95% CI, 15.5-34.3) relative to those aged 30 to 39 years (Table 3). Figure 2 shows the probabilities of severe COVID-19 and death by age group and health region.

An interaction term between age and health region was explored in the model predicting COVID-19 severity, and it revealed a significant interaction term (P <.01). Models stratified by region are shown in Figure 2.

TABLE 1. Baseline characteristics of confirmed COVID-19 cases, Jamaica, 9 March to 31 December 2020

Variables	Confirmed cases, No. (%)	COVID-19 deaths, No. (%)		Severe illness (moderate, critical, or severe) No. (%)	
		Yes	No	Yes	No
Sex					
Male	5 425 (44.6)	178[a] (56.0)	5 247 (44.3)	286[a] (55.9)	5 139 (44.1)
Female	6 744 (55.4)	140[a] (44.0)	6 604 (55.7)	226[a] (44.1)	6 518 (55.9)
Total	12 169 (100)	318 (100)	11 851 (100)	512(100)	11 657 (100)
Health region					
SERHA	6 611 (54.3)	142[a] (44.6)	6 469 (54.6)	276 (53.9)	6 335 (54.4)
NERHA	1 470 (12.1)	40[a] (12.6)	1 430 (12.1)	47 (9.2)	1 423 (12.2)
WRHA	2 568 (21.1)	84[a] (26.4)	2 484 (20.9)	118 (23.0)	2 450 (21.0)
SRHA	1 520 (12.5)	52[a] (16.4)	1 468 (12.4)	71 (13.9)	1 449 (12.4)
Total	12 169 (100)	318 (100)	11 851 (100)	512 (100)	11 657 (100)
Residence					
Urban	6 289 (51.7)	167[a] (52.5)	6 122 (51.7)	267 (52.2)	6 022 (51.7)
Rural	3 791 (31.2)	117[a] (36.8)	3 674 (31.0)	166 (32.4)	3 625 (31.1)
Missing	2 089 (17.2)	34[a] (10.7)	2 055 (17.3)	79 (15.4)	2 010 (17.2)
Total	12 169 (100)	318 (100)	11 851 (100)	512 (100)	11 657 (100)
Age group, years					
0-9	570 (4.7)	1[a] (0.3)	569 (4.8)	6[a] (1.2)	564 (4.8)
10-19	874 (7.2)	4[a] (1.3)	870 (7.3)	13[a] (2.5)	861 (7.4)
20-29	2 873 (23.6)	3[a] (0.9)	2 870 (24.2)	29[a] (5.7)	2 844 (24.4)
30-39	2 477 (20.4)	14[a] (4.4)	2 463 (20.8)	39[a] (7.6)	2 438 (20.9)
Subtotal <40	6 794 (55.8)	22[a] (6.9)	6 772 (57.1)	87[a] (17.0)	6 707 (57.5)
40-49	1 844 (15.2)	23[a] (7.2)	1 821 (15.3)	47[a] (9.2)	1 797 (15.4)
50-59	1 613 (13.3)	43[a] (13.5)	1 570 (13.3)	74[a] (14.5)	1 539 (13.2)
60-69	951 (7.8)	55[a] (17.3)	896 (7.6)	88[a] (17.2)	863 (7.4)
70-79	586 (4.8)	88[a] (27.7)	498 (4.2)	115[a] (22.5)	471 (4.0)
≥80	381 (3.1)	87[a] (27.4)	294 (2.5)	101[a] (19.7)	280 (2.4)
Subtotal ≥40	5 375 (44.2)	296 (93.1)	5 079 (42.9)	425[a] (83.0)	4 950 (42.5)
Total	12 169 (100)	318 (100)	11 851 (100)	512 (100)	11 657 (100)
Age, median (IQR), years	36 (26.0)	71.5 (23.0)	36 (26.0)	65 (29.0)	35 (26.0)

[a] $P < .01$.
Abbreviations: IQR, interquartile range; NERHA, North East Regional Health Authority; SERHA, South East Regional Health Authority; SRHA, Southern Regional Health Authority; WRHA, Western Regional Health Authority.
Source: Jamaica Ministry of Health and Wellness, National Surveillance Unit

DISCUSSION

This study describes the epidemiologic aspects, clinical outcomes, and mortality risk of SARS-CoV-2 infection in Jamaica

TABLE 2. Multivariable analysis of demographic characteristics associated with COVID-19 deaths, Jamaica, 9 March to 31 December 2020

Variables	Crude OR (95% CI)	Adjusted OR (95% CI)
Sex		
Male	1.6 (1.3-2.0)	1.4[b] (1.1-1.7)
Female	1 [Reference]	1 [Reference]
Age group, years		
0-9	0.3 (0.0-2.4)	0.3 (0.0-2.1)
10-19	0.8 (0.3-2.5)	0.8 (0.3-2.4)
20-29	0.2 (0.1-0.6)	0.2[a] (0.1-0.6)
30-39	1 [Reference]	1 [Reference]
40-49	2.2 (1.1-4.3)	2.2[b] (1.1-4.3)
50-59	4.8 (2.6-8.8)	4.7[a] (2.6-8.7)
60-69	10.8 (6.0-19.5)	10.9[a] (6.0-19.8)
70-79	31.1 (17.5-55.1)	31.7[a] (17.8-56.3)
≥80	52.1 (29.2-92.7)	57.1[a] (31.9-102.2)
Health region		
SERHA	1 [Reference]	1 [Reference]
NERHA	1.3 (0.9-1.8)	1.2 (0.8-1.8)
WRHA	1.5 (1.2-2.0)	1.7[a] (1.2-2.3)
SRHA	1.6 (1.2-2.2)	1.1 (0.8-1.6)
Residence		
Urban	1 [Reference]	1 [Reference]
Rural	1.2 (0.9-1.4)	0.9 (0.7-1.2)
Missing data	0.6 (0.4-0.9)	0.4[a] (0.3-0.6)

[a] $P < .01$
[b] $P < .05$
Abbreviations: OR, odds ratio; CI, confidence interval; NERHA, North East Regional Health Authority; SERHA, South East Regional Health Authority; SRHA, Southern Regional Health Authority; WRHA, Western Regional Health Authority.
Note: Crude ORs from univariate logistic regression models. Adjusted ORs include adjustments by age, sex, and geographic locations (COVID-19 death); and age and sex (severe COVID-19).
Source: Jamaica Ministry of Health and Wellness, National Surveillance Unit.

TABLE 3. Multivariable analysis of demographic characteristics associated with severe COVID-19, Jamaica, 9 March to 31 December 2020

Variables	Crude OR (95% CI)	Adjusted OR (95% CI)
Sex		
Male	1.6 (1.3-1.9)	1.4[a] (1.2-1.7)
Female	1 [Reference]	1 [Reference]
Age group, years		
0-9	0.7 (0.3-1.6)	0.7 (0.3-1.6
10-19	1.0 (0.5-1.8)	0.9 (0.5-1.8)
20-29	0.7 (0.4-1.0)	0.7 (0.4-1.1)
30-39	1 [Reference]	1 [Reference]
40-49	1.6 (1.1, 2.5)	1.7[b] (1.1-2.6)
50-59	3.0 (2.0-4.5)	3.0[a] (2.0-4.5)
60-69	6.4 (4.3-9.4)	6.4[a] (4.3-9.4)
70-79	15.3 (10.5-22.2)	14.9[a] (10.2-21.8)
≥80	22.5 (15.3-33.3)	23.0[a] (15.5-34.3)

[a] $P < .01$
[b] $P < .05$
Abbreviations: OR, odds ratio; CI, confidence interval.
Note: Crude ORs from univariate logistic regression models. Adjusted ORs include adjustments by age, sex, and geographic location (COVID-19 death); and age and sex (severe COVID-19).
Source: Jamaica Ministry of Health and Wellness, National Surveillance Unit.

using national surveillance data. The findings highlight the clinical outcomes for incident COVID-19 cases during the first 9 months of the pandemic. We found that males had a higher risk of severe COVID-19, including death, compared with females, and the risk of severe COVID-19 increased after age 40 years. Compared to the 30- to 39-year age group, the odds of death increased by 2.2 times in the 40- to 49-year age group, and progressively increased to 57 times in the 80 years or older age group. Additionally, persons residing in the WRHA were approximately two times more likely to die of COVID-19 compared with those in the SERHA.

These findings are consistent with those of previous studies that found that more males than females had severe disease and fatal outcomes associated with SARS-CoV-2 infection (26). This may be due to women's inherent advantage in both innate and adaptive immune responses to infections. In addition, there is direct and indirect influence on immunity by the sex hormones and gene products of the X chromosome (27). Sex differences may also be influenced by social and behavioral factors, such as smoking (28) and health-seeking behaviors (29), that are associated with severe COVID-19 (30). In Jamaica, males are more likely to smoke than females (31), and are less likely than women to seek care (32), know their disease status, and manage their health conditions (31).

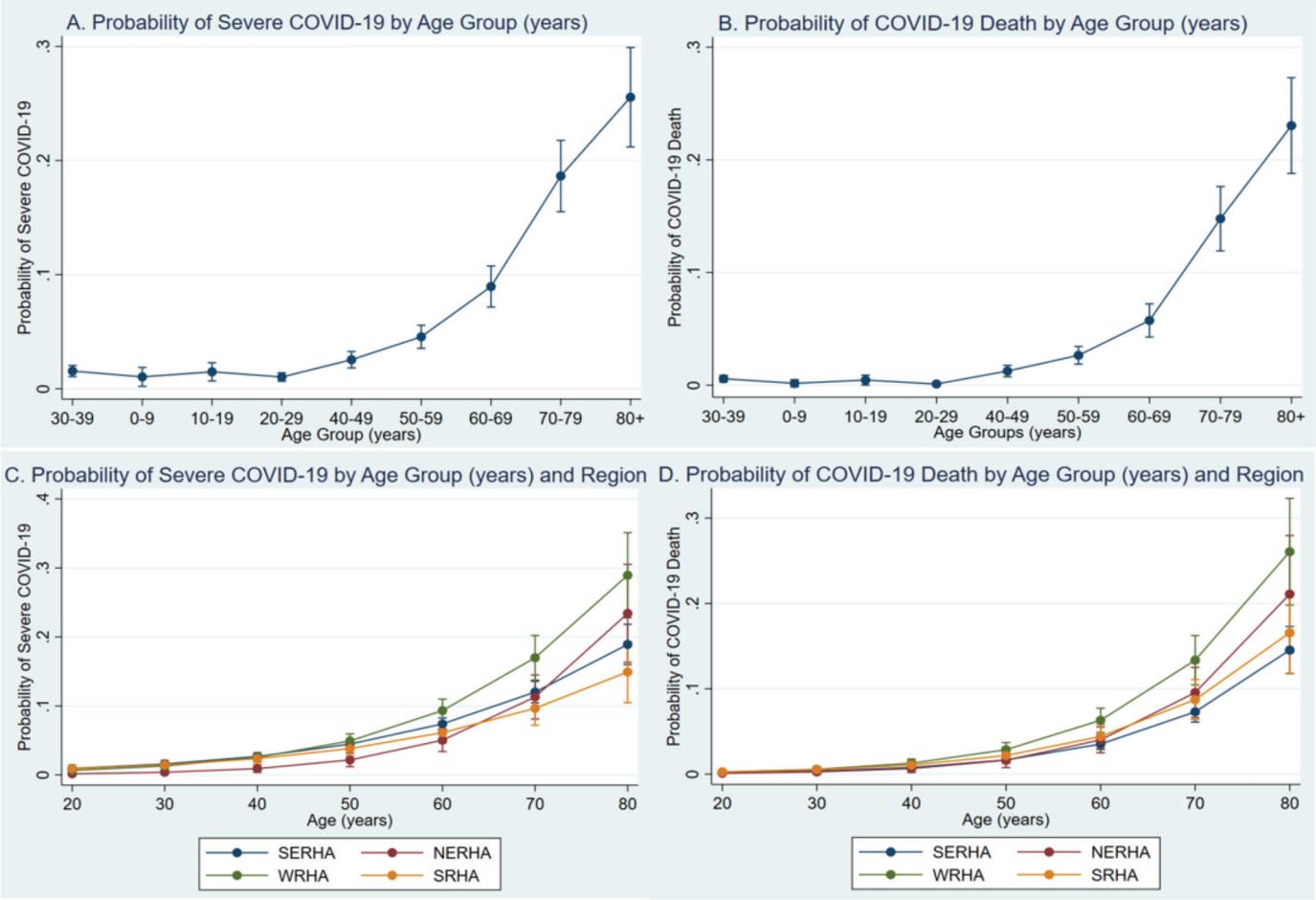
Our findings indicate that the odds of severe COVID-19 increased exponentially after age 40 years, which to our knowledge, has not been shown in previous studies. Other literature has shown that the risk of severe COVID-19 increased with older age, particularly after age 65 years (26). A greater risk among older persons may be due to weakened immune response and age-related chronic medical conditions (33).

This analysis demonstrated geographic differences in COVID-19 outcomes consistent with findings in other countries (34,35). Several factors, such as geographic variation in age distribution, incidence of cases, comorbidities, access to care, infrastructure, and differences in case reporting may have contributed to this observation. Geographic disparities have been shown to be associated with distribution of COVID-19 cases and deaths (34,35). Within the study period, the COVID-19 alpha variant, which caused more severe diseases, was observed in Jamaica (19). The incidence of COVID-19 was highest in the WRHA during the alpha period. Given that the alpha variant was more virulent, this is a possible explanation for the WRHA having poorer outcomes. Future analyses will focus on exploring the contribution of COVID-19 variants to these outcomes. Communities with greater social inequalities and vulnerabilities, i.e., rural (35) and low-income settings (36), experienced higher COVID-19 case and fatality rates (34-36). Monitoring geographic disparities in COVID-19 exposures and outcomes is critical to understanding community risk and informing public health and policy decisions.

The findings of this study are instructive for clinical practice and public health interventions. National public health policies have prioritized elder shielding and vaccination of persons aged 60 years and older. These findings suggest that middle-aged persons and males should be prioritized in clinical management. Our analysis provides important information for identifying priorities for the national research agenda.

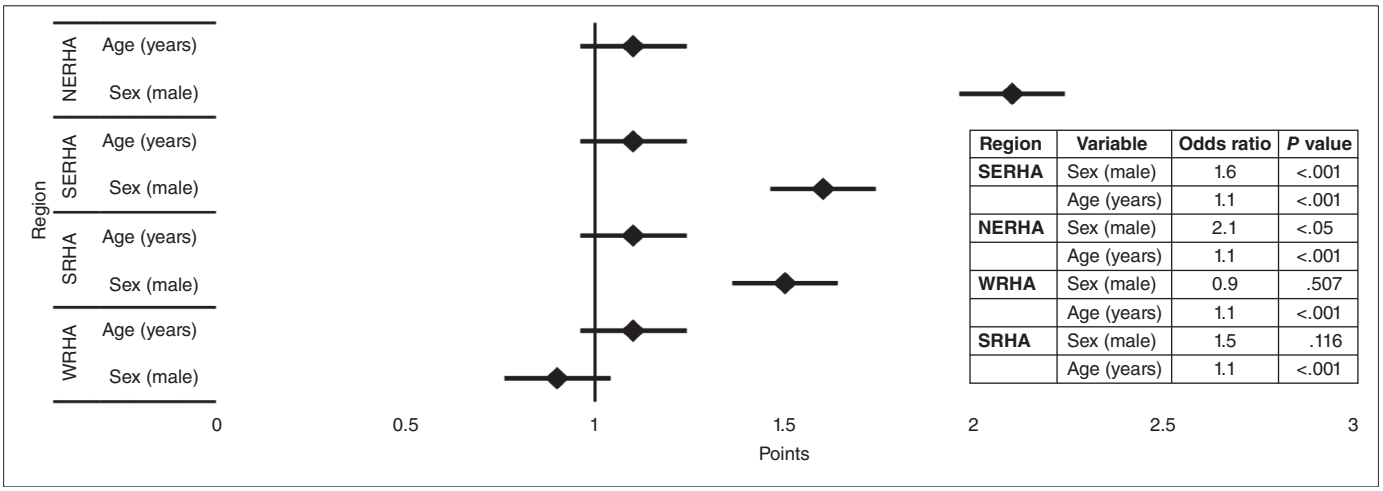
Further studies are needed to determine the extent to which other factors contributed to severe COVID-19 in Jamaica. These include socioeconomic status, access to care, pregnancy, smoking status, obesity, and comorbidities. Additionally, investigations are needed to identify factors that may explain geographic differences.

FIGURE 1. Probability of severe COVID-19 and death by age group and health region, Jamaica, 9 March to 31 December 2020



Abbreviations: NERHA, North East Regional Health Authority; SERHA, South East Regional Health Authority; SRHA, Southern Regional Health Authority; WRHA, Western Regional Health Authority.

FIGURE 2. Odds of severe COVID-19 by age and sex, stratified by health region, Jamaica, 9 March to 31 December 2020



Region	Variable	Odds ratio	*P* value
SERHA	Sex (male)	1.6	<.001
	Age (years)	1.1	<.001
NERHA	Sex (male)	2.1	<.05
	Age (years)	1.1	<.001
WRHA	Sex (male)	0.9	.507
	Age (years)	1.1	<.001
SRHA	Sex (male)	1.5	.116
	Age (years)	1.1	<.001

Abbreviations: NERHA, North East Regional Health Authority; SERHA, South East Regional Health Authority; SRHA, Southern Regional Health Authority; WRHA, Western Regional Health Authority.

Strengths and limitations

The main strength of the study was the large sample size and the use of national data from the public and private sectors. Enhanced surveillance and contact tracing facilitated the identification of cases, and the use of WHO definitions allowed for comparability. Data from Jamaica's surveillance system guided the national response, including targeting sub-groups at risk of severe COVID-19 outcomes. Additionally, this information guided clinical paradigms, informed public health practice, and generated questions to be addressed by the National Research Agenda. This evidence could be useful to countries with a setting similar to Jamaica's.

There are inherent limitations in the use of national surveillance data including under-reporting, lack of representativeness, and timeliness, which affect generalizability and responsiveness (35). Another possible limitation could be differential under-reporting, which may have skewed the geographic differences observed in our study. Actions to mitigate these constraints included standard surveillance protocols, training, and continuous communication with the field teams. These were implemented during the period under review. Additionally, the establishment of an electronic surveillance system would improve data management.

Our analysis assessed the outcomes of persons with confirmed COVID-19 during the first 9 months of the pandemic throughout Jamaica; it does not represent current or final trends. A longer study period duration could provide opportunities to explore the association of virus variants, vaccines, and adherence to non-pharmaceutical interventions and/or treatments with COVID-19 outcomes.

Other limitations in this analysis included the inability to adjust for some confounders, such as comorbidities, due to incomplete or missing information. Incomplete data on comorbidities restricted our ability to include this variable in the multivariable analyses. In addition, the dataset did not capture information on biomarkers, timing of diagnosis, and socioeconomic status, among other variables. This may have produced residual confounding, which would have biased the results towards the null if this was non-differential. The implementation of electronic health records and research protocols would facilitate the capture of complete data and allow for timely analyses that would inform the response to emerging infections.

Conclusions and recommendations

The findings of this cross-sectional analysis highlight the clinical outcomes for incident COVID-19 during the first 9 months of the pandemic in Jamaica. Confirmed cases were more likely to be female and in younger persons, while there was an increased risk for severe disease, including death, in males and those aged 40 years and older. In addition, severe outcomes varied by geographic region.

Future research is needed to explore the reasons for the geographic differences and the increased risk of severe outcomes among the middle-aged population, including the role of chronic noncommunicable diseases and socioeconomic factors. Other aspects of the public health response, including the effects of COVID-19 variants, vaccines, and non-pharmaceutical interventions, should be investigated. The findings of such studies could be useful to policymakers in other low- and middle-income countries when managing outbreaks and planning for future health crises.

As seen in the findings of this study, in Jamaica, persons 40- to 59-years old are an additional risk group and should be targeted to reduce severe COVID-19 outcomes. In addition, the observed geographic differences in Jamaica have implications for resource allocation and the research agenda. Policymakers are encouraged to provide the requisite resources to allow for an agile response to new and emerging diseases. Improved response would include fast-tracking electronic health records implementation and surveillance systems investment, both of which would allow for more timely pivoting of a response to any future health crisis.

Each country should conduct a country-level analysis of its own COVID-19 situation to identify any country-specific characteristics that should guide its national response. Performing analyses similar to that of this study in other low- and middle-income countries would add to the body of literature on COVID-19 in additional settings and contexts.

Author contributions. KWK, AG, AH, RT, IW, JW, KGJ, and JD conceived the original idea and design; KWK, AG, AH, RT, DR, TM, IW, JW, KGJ, CL, and TDB collected the data; all authors analyzed and interpreted the data; and all the authors drafted, revised, and finalized the manuscript. All authors reviewed and approved the final version.

Conflicts of Interest. None declared.

Disclaimer. Authors hold sole responsibility for the views expressed in the manuscript, which may not necessarily reflect the opinion or policy of the *RPSP/PAJPH* and/or the Pan American Health Organization (PAHO).

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Factores de riesgo asociados a la COVID-19 grave en Jamaica: estudio transversal de datos nacionales de vigilancia

RESUMEN

Objetivos. Describir las características y los resultados de los casos de COVID-19 en Jamaica y explorar los factores de riesgo asociados a la COVID-19 grave desde el 9 de marzo hasta el 31 de diciembre del 2020.
Métodos. Se realizó un análisis transversal de datos nacionales de vigilancia a partir de los casos confirmados de COVID-19 en Jamaica. Las definiciones de caso confirmado, gravedad de la enfermedad y muerte se basaron en las directrices de la Organización Mundial de la Salud. Para determinar la asociación con los criterios de valoración se utilizó la prueba de χ^2 y la prueba exacta de Fisher. Se usaron modelos de regresión logística para determinar los factores predictivos de la COVID-19 grave.
Resultados. Se incluyeron en el análisis 12 169 casos de COVID-19 (mediana de edad, 36 años; 6 744 mujeres [55,4%]), de los que 512 (4,2%) fueron de enfermedad grave. De estos pacientes, 318 (62,1%) fallecieron (mediana de edad al morir, 71,5 años). Se observó una asociación de la enfermedad grave con el sexo masculino (OR de 1,4; IC del 95 %, 1,2-1,7) y con la edad igual o superior a 40 años (OR de 6,5; IC del 95 %, 5,1-8,2). La muerte por COVID-19 también mostró una asociación con el sexo masculino (OR de 1,4; IC del 95%, 1,1-1,7), con la edad igual o superior a 40 años (OR de 17,9; IC del 95%, 11,6-27,7) y con la Región de Atención de Salud Occidental en comparación con la Sudoriental (OR de 1,7; IC del 95%, 1,2-2,3).
Conclusiones. Los resultados de este análisis transversal indican que los casos confirmados de COVID-19 en Jamaica correspondieron una mayor probabilidad a mujeres y personas más jóvenes, mientras que las muertes por COVID-19 fueron más frecuentes en varones y personas de mayor edad. Hay un mayor riesgo de evolución desfavorable de la COVID-19 a partir de los 40 años, que afecta de manera desproporcionada a los varones. Las muertes por COVID-19 también variaron según la región geográfica. Esta evidencia podría ser de utilidad para otros países con entornos similares y para los responsables de la formulación de políticas en materia de gestión de brotes y salud.

Palabras clave COVID-19; SARS-COV-2; enfermedades transmisibles emergentes; monitoreo epidemiológico; diagnóstico de la situación de salud; región del Caribe.

Fatores de risco associados a desfechos graves da COVID-19 na Jamaica: estudo transversal de dados de vigilância nacional

RESUMO

Objetivos. Descrever as características e os desfechos dos casos de COVID-19 na Jamaica e explorar os fatores de risco associados à COVID-19 grave de 9 de março a 31 de dezembro de 2020.
Métodos. Análise transversal de dados de vigilância nacional usando casos confirmados de COVID-19 na Jamaica. As definições de caso confirmado, gravidade da doença e morte foram baseadas nas recomendações da Organização Mundial da Saúde. Foram usados testes de qui-quadrado e exato de Fisher para determinar a associação com os desfechos. Modelos de regressão logística foram usados para determinar os preditores de COVID-19 grave.
Resultados. Esta análise incluiu 12.169 casos de COVID-19 (idade mediana: 36 anos; 6 744 do sexo feminino [55,4%]), dos quais 512 casos (4,2%) apresentaram doença grave; desses, 318 pacientes (62,1%) morreram (idade mediana ao morrer: 71,5 anos). A doença grave estava associada a ser do sexo masculino (razão de chances [RC]: 1,4; intervalo de confiança de 95% [IC 95%]: 1,2–1,7) e ter 40 anos ou mais de idade (RC: 6,5; IC 95%: 5,1–8,2). A morte por COVID-19 também estava associada a ser sexo masculino (RC: 1,4; IC 95%: 1,1–1,7), ter 40 anos ou mais (RC: 17,9; IC 95%: 11,6–27,7) e estar na Região Sanitária Oeste em comparação com a Região Sanitária Sudeste (RC: 1,7; IC 95%: 1,2–2,3).
Conclusões. Os achados desta análise transversal indicam que a probabilidade de casos confirmados de COVID-19 na Jamaica era maior em indivíduos do sexo feminino e mais jovens, ao passo que as mortes por COVID-19 ocorreram com mais frequência em indivíduos do sexo masculino e mais velhos. Há um risco maior de resultados desfavoráveis em relação à COVID-19 a partir dos 40 anos, e indivíduos do sexo masculino são desproporcionalmente mais afetados. A morte por COVID-19 também variou de acordo com a região geográfica. Essas evidências podem ser úteis para outros países com cenários semelhantes e para os formuladores de políticas encarregados de manejar surtos e gerenciar a saúde.

Palavras-chave COVID-19; SARS-COV-2; doenças não transmissíveis; monitoramento epidemiológico; diagnóstico da situação de saúde; região do Caribe.