COVID-19: Eastern Sudanese Population Demographics and Prevalence

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Abstract

Background: Sudan has a significant frequency of COVID-19 infections. Since the first case was disclosed, the Sudanese Federal Ministry of Health has increased monitoring at entrances. A variety of influences have culminated in the outbreak of cases in Sudan, all of which are intimately relevant to the disease's public propagation.

Methods: A hospital-based analytical Cross-Sectional study was implemented at the second wave of the corona pandemic. Seven hundred and seventy patients were submitted in the Red Sea State from April to September 2020. Prevalence and characteristics of suspected COVID-19 patients including: gender predominance, most susceptible age group, mortality rate, comorbidity as associated risk factors and forecast the second wave scenarios.

Results: COVID-19 RNA was detectable in four hundred and eighteen patients out of a total of seven hundred and seventy, with a value of more than fifty-four percent. Two hundred and seventy-two cases were male, constituting more than sixty percent of the study participants. The study population's mortality rate remained at 14%, with seventy of the four hundred and eighteen deaths reported. Cardiovascular disease was the leading cause of mortality, followed by diabetes, hypertension, chronic pulmonary diseases, and cancer. Each of these medical conditions contributed to more than 10% of all fatalities.

Conclusion: The study concluded that COVID-19 is prevalent among the Sudanese Red Sea State's populace. Males are more susceptible to infection than females. The elderly is more prone to COVID-19 than other age groups. Cardiovascular disease, diabetes, hypertension, malignancy, and chronic respiratory conditions. All these chronic, debilitating illnesses are related to the high mortality rate.

Keywords: COVID-19 Demographics Prevalence Port Sudan

Abbreviations: COVID-19: Coronavirus Disease of 2019; RNA: Ribonucleic Acid; FMOH: Federal Ministry of Health, WHO: World Health Organization

Introduction

COVID-19 has had tremendous implications for the entire planet following its detection in December 2019 in Wuhan, the capital of Hubei, China. Over 181.9 million COVID-19 instances had been verified until June 27, 2021, including over 3.9 million deaths. The Americas, Europe, and Asia have all become substantially negatively affected by COVID-19. By June 27, 2021, with 73.1 million cases and 1.9 million fatalities, 47.8 million cases with over 1 million fatalities, and 55.4 million reported cases with 784,965 mortalities respectively [1]. The COVID-19 pandemic is posing a concern to health systems everywhere across the world, particularly in Sudan. The initial COVID-19 case was announced in Sudan on March 13, 2020, and there were 14,401 declared patients as of November 11, 2020, with 9,535 cases recovered and the remaining 3,750 cases under treatment. Also noted were 1,116 fatalities, reflecting a 7.7% case fatality rate [2]. With a population of 43,844,260 residents, Sudan is Africa's second-largest country [3]. Ten African countries have lately shown a significant spike in the incidence of infected individuals, contributing to over 80% of all cases on the continent. Merely five nations account for more than 70% of all mortalities: Algeria, Egypt, Nigeria, South Africa, and Sudan are all countries in Africa [4]. Sudan is located in northeastern Africa and has a substantial incidence of COVID-19 cases, as do Egypt and the Gulf Arab countries. The Sudan Federal Ministry of Health has enhanced the precautions at entrance points before the first case was announced. These precautions, meanwhile, were ineffective due to Sudan's unlocked borders with surrounding nations [5].

From March 13, 2020, COVID-19 has been documented in Sudan, with 9894 identified cases and 616 fatalities, for a mortality rate of 6.6%. Khartoum State had the most reported instances (7214), followed by Gazira (955), Gadarif (250), Sinnar (195), north Kordufan (183), the Red Sea (182), and the Nile River (182). Approximately 35% of reported patients were over 45 years old, and this age demographic had the greatest number of fatalities (6%), with men comprising the preponderance of cases (58%) [6]. Khartoum had the largest number of deaths (273), followed by Gazira (146), North Darfur (45), Gadarif (22) and the Red Sea (38). The rate of mortality in Sudan was 6.23%; it was negligible (3.8%) in some states (like Khartoum), but extremely greater (66% and 30%, respectively) throughout others (including Central and North Darfur). This discrepancy might be due to dissimilarities in hospital and diagnosis amenities between both the capital (Khartoum) and the distant Darfur states, but otherwise it could indeed be since the precise proportion of public cases in Darfur states is extremely higher than spotted [7]. Sudan's government has taken a variety of measures to cease COVID-19's propagation throughout the nation. Primarily imposing the lockdown, restricting massive crowds, and vigorously incorporating the media are just several of them. Community health education and expanding consciousness seminars were organized to motivate individuals to enhance their overall personality and practice self-care [8]. As a precaution, Sudan's government issued a countrywide ban on domestic travel on March 16, 2020, and enforced a partial lockdown on April 13, 2020. Nevertheless, this policy was demonstrated to be ineffectual, and it was hampered by the public's paucity of enthusiasm [2]. A number of causes have contributed to the extensive outbreak of cases in Sudan, all of which undoubtedly pertain to the disease's dissemination within the public. These indicators can be classified as social, health-related, financial, and governmental [9]. The significant proportion of health care professionals lack commitment to infection prevention and control protocols. Some people neglect to establish the optimum level of precautionary safeguard owing to a dearth of knowledge or tools. According to a scarcity of consumables and low-setting hospitals with little ventilation [10-12]. The African leadership has been advised by the World Health Organization (WHO) to enhance and develop diagnostic facilities. In addition to guaranteeing that community health is preserved and that rural populations include accessibility to healthcare care, an equitable allocation of health resources should be established. The WHO also advocated for the government to expand diagnosis and motivate them [2].

Materials and Methods

A hospital-based analytical Cross-Sectional study was implemented at the second wave of the corona pandemic. Seven hundred and seventy patients were submitted in the Red Sea State from April to September 2020. Prevalence and characteristics of suspected COVID-19 patients

including: gender predominance, most susceptible age group, mortality rate, comorbidity as associated risk factors and prognostication the second wave scenarios. Each subject's nasopharyngeal swabs were picked, and COVID-19 RNA was identified employing the case definition protocol constituted by the Republic of Sudan's Federal Ministry of Health (FMOH) General Directorate of Curative Medicine in agreement to focus on providing directions to frontline medical professionals pretending to care for COVID-19 patients, criteria for suspicion of COVID19 also directed by FMOH. Data were collected retrospectively, through an anonymous data collection sheet. Extracted from the medical records of COVID-19 patients hospitalized at the time of the data collection. Personal data were collected by direct interviewing questionnaires containing personal information, demographic, as well as risk factors. For data analysis, version 23 of the Statistical Package for Social Sciences (SPSS) was to describe and analyze the data. Confidentiality of participants was assured through the use of an anonymous research tool. Informed consents from the patients/ surrogate decision makers were obtained, voluntary, by contacting them through their registered phone numbers. The collected data were used strictly for the purpose of the study objectives.

Ethics approval

The procedures involving human participation were licensed by the Red Sea University Ethics Board and the COVID-19 center of the Port Sudan teaching hospital. All participants received information concerning the study's objectives, preparatory to the investigation.

Results

COVID-19 RNA was detectable in four hundred and eighteen patients out of a total of seven hundred and seventy, with a value of more than fifty-four percent in this cross-sectional hospital-based research using RT-PCR Table 1. Two hundred and seventy-two cases were male, constituting more than sixty percent of the study participants. The metropolis of Port Sudan was their setting of residency, with a proportion of more than 95% and a sum of 411 cases. The age demographic that included those over 45 years old was shown to be the most impacted within the study population Table 2. The mortality rate among the study population remained fourteen percent, with seventy out of four hundred and eighteen patients passing, whereas the recovery rate was eighty-six percent, constituted three hundred and forty-eight patients. The positive patients in the sample group had previously been diagnosed with chronic conditions such as cardiovascular disease, diabetes, hypertension, chronic respiratory diseases, and malignancy which are respectively the leading cause of death. All of these chronic conditions had a frequency of exceeding 10% among deaths Table 3.

Table 1. Distribution of study group according to RT-PCR for COVID-19.

Variable	Characteristic	Frequency n=770	Percent %
RT-PCR	Positive	418	54.3
	Negative	352	46.7
	Total	770	100

Table 2. Distribution of RT-PCR positive study group according to demographic Characteristic.

Variable	Characteristic	Frequency n=418	Percent %
Gender	Male	272	65
	Female	146	35
Residents	Port Sudan	411	98.3
	Sinkat	2	0.5
	Suakin	1	0.2
	Tokar	3	0.8
	Hayya	1	0.2
Age/group	<15	6	1.4
	15-29	94	22.5
	30-44	105	25.1
	45 and >	213	51

Table 3. Distribution of study group according death rate and comorbidity association.

Variable	Characteristic	Frequency n=70	Percent %
Outcome of COVID19	Death	70	14
	Recovery	348	86
Comorbidity among deaths	Cardiovascular	20	29
	Diabetes mellitus	14	20
	Hypertension	13	18
	Cancer	11	16
	Chronic respiratory disease	12	17

Discussion

The advent of the COVID-19 health crisis has posed a tremendous threat to the community everywhere across the entire globe. Regrettably, there isn't a lot of official evidence from Sudan, so information on disorder demographics, intensity, fatalities, and relevant chronic conditions is sparse. As a result, during the pandemic second wave in Sudan, we investigated the peculiarities of COVID-19 infection. In total, 418 patients out of 717 were isolated in this cross-sectional hospital-based research, with a value of more than 54% in this cross-sectional hospital-based research. The predominance of COVID-19 patients in this investigation were males (65%, 272/418), which might be explained by the broader fraction of males following the subsequent spike, as highlighted by Fang, et al. [13]. Throughout the third surge, there were no gender disparities in the frequency of instances, and females constituted nearly 60% of the total, culminating in approximately equal numbers of males and females. Further conceptual research figured that males comprised 60% of COVID-19 victims [14]. Fifty-one percent of our patients (213/418) were categorized as old, with an age of more than 45 years. This finding in the concurrent study was matched with a meta-analysis conducted by Fang et al. to explore the correlations between epidemiologic and comorbidity parameters with the outcome of coronavirus infection [13].

Fifty-one percent of our patients (213/418) were categorized as old, with an age of more than 45 years. This finding in the concurrent study was matched with a meta-analysis conducted by Fang et al. to explore the correlations between epidemiologic and comorbidity parameters with the intensity and outcome of coronavirus infection [15]. In contradiction to previous observations, more than 25% of all patients had diabetes and hypertension, which was in line with our evidence [16]. The Case Fatality Rate (CFR) fluctuated by municipality, with some cities reporting a low CFR (around 4.0%) and others possessing a high CFR (above 30%). Following the coronavirus infection pandemic, the Sudanese authorities have initiated preventative policies such as temporary lockdown, contact control, risk, social distancing, as well as seclusion to combat the growing pandemic, these case fatality rate stated by Altayb, et al. [17].

Conclusion

According to the study, COVID-19 is prominent among the Sudanese population of the Red Sea State. Males are more prone to infection than females. COVID-19 was more abundant in the elderly than in other age categories. Cardiovascular disease, diabetes, hypertension, malignancies, and chronic respiratory conditions are all examples of long-term incapacitating conditions related to a high fatality rate.

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Conflicts of Interest

The authors certify that they have no irreconcilable obligations. There was no financing or support offered for the study's execution.

Author's Contribution

The authors have contributed equally to the study design and manuscript write-up. All authors read and approved the final version of the manuscript.

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