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Policy Brief

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The COVID-19 Mortality in South Sudan

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Summary

In this Policy Brief we have analyzed COVID-19 mortality in South Sudan. The Brief examines the distribution and correlates of the pandemic. State testing capacity unaccounted for, we find that South Sudan is actually one of the least hit countries in the region. Second, old age is a major risk factor for death in South Sudan, with persons 60 years or older 2000 percent more likely to die of the pandemic. Third, females, compared to males, have greater odds of surviving COVID-19 but this evidence requires further corroboration. Lastly, having chills, having pre-existing health conditions, and being weak predict a large proportion of COVID-19 mortality. These findings are reflective of the need for a two-pronged intervention. The national Ministry of Health (MoH) should continue to draw from WHO's strategy for managing COVID-19 critically ill patients. A strategy that confines critically ill patients to the ICUs to prevent further spread of the disease is in order. Along the same vein, the ICUs should be inaccessible to non-clinical staff and the general public. Second, the elderly and those with pre-existing health conditions need an extra attention. Routine testing, identification, and isolation of cases could help protect these vulnerable groups. Finally, lifestyle and behavioral alterations lessen transmission. In this regard, the vulnerable persons ought to avoid lifestyles and behaviors that put them at greater risk of this disease[1].

1 Introduction

South Sudan confirmed its COVID-19 first case on April 2, 2020, four months following the outbreak of this virus in the Chinese Province of Wuhan. Since then, the country is increasingly becoming an epicenter of the disease in the region, registering at least 60 new cases daily in May and early June. As the number of infections rises so does the rate of COVID-19 related fatalities, as noted in the MoH's public updates. This unfortunate development has overwhelmed the country's fragile health system, with the outbreak likely to spiral out of control.

As an effort to understand the moderators of mortality in South Sudan, this Policy Brief follows up on our May analysis on the nature and magnitude of COVID-19 in South Sudan. It analyzes fatalities in relation to age, sex, pre-existing health conditions, and core COVID-19 symptoms, determining how these attributes play out and influence the observed outcome. Section 2 summarizes infections from the regional context; Section 3 provides results on fatalities; Section 4 concludes with policy perspectives.

[1] I am grateful to the National Public Health Lab under the leadership of Dr. Lul Riek and Matthew Tut. I owe an immeasurable debt to Atemthii Dau and Geie Daniel for an incredible data management at the Data Center. I am also grateful to Dr. James Alic Garang, Dr. Lual Deng, and Sudd's colleagues for insightful comments on earlier drafts.

2 Infections

According to various sources, including BBC and African Arguments, Africa appears to be experiencing a slower spread of the COVID-19 pandemic, registering 247,552 infections by June 16, 2020[2]. Eastern Africa, which comprises 11 countries, contributes over 20,000 confirmed cases, as noted in Table 1. South Sudan, despite being hit a bit later than most of the countries, caught up very quickly, subsequently contributing a total of 1,755 cases by mid-June. This rose to 1,892 infections by June 21. Compared to sister states, South Sudan is doing relatively better, however. It ranks 4th according to the number of confirmed cases (14.63) per 100,000 population (from low to high).

Table 1. Infections in the Eastern African Region

Country	Number of confirmed cases	Number of fatalities	Cases (per 100000 population)	Fatalities (per 100000 population)
Eastern Africa	22759	635	6.06	2790.11
Burundi	94	1	0.79	1063.83
Djibouti	4207	28	425.81	665.56
Eritrea	41	0	1.16	-
Ethiopia	2670	27	2.32	1011.24
Kenya	3215	84	5.98	2612.75
Rwanda	494	2	3.81	404.86
Somalia	2513	83	15.81	3302.83
South Sudan	1755	30	14.63	1709.40
Sudan	6582	359	15.01	5454.27
Tanzania	509	21	0.85	4125.74
Uganda	679	0	1.48	-

Sources: African Arguments, BBC, & Worldometer, June 2020.

The South Sudan Public Health Lab indicates that it has tested over 10,000 samples since April 2020. Of these, males continue to be disproportionately represented, being 80 percent of those who provided the samples. This is problematic, as females tend to be the most exposed given their overwhelming involvement in household chores, including shopping for family and engaging in economic activities that make them more vulnerable to the disease. Likewise, an overwhelming majority of those seeking testing services are relatively young, averaging 36 years. Those who test positive for COVID-19 tend to be a year older (36 vs. 35 years) than those who do not, confirming the importance of age in determining and combating the outbreak.

COVID-19 infections seem to be pervasive in South Sudan. The infection rate stands at 29.7 percent, or 297 cases per 1,000 population. Compared to females, males have a lower risk of infection but are more likely to die of COVID-19. There are 287 infections for every 1,000 male population and 337.5 infections for every 1,000-female population, respectively.

[2] https://africanarguments.org/2020/06/15/coronavirus-in-africa-tracker-how-many-cases-and-where-latest/

3 Fatality: Evidence and variations

In the global context, fewer Africans have died of COVID-19 so far[3]. As of June 16, 2020, the continent registered some 6,683 deaths. On the same date, only 635 deaths were reported in Eastern Africa, to which South Sudan contributed 34. Thus, compared to the rest of the regional countries, South Sudan ranks 6th in terms of the number of fatalities (1,709.4) per 100,000 population. Fatality rate in South Sudan stands at 1.4 percent, compared with 2.8 percent in the Eastern African region. Nonetheless, a reader should be cautious of the fact that these estimates do not account for possible state capacity testing differences.

Broadly, existing evidence indicates that the elderly population has the greater odds of dying of COVID-19. We confirm this fact in the South Sudanese context: people 60 years or older have a greater probability of dying of COVID-19, with a relative death rate estimated at 6.3 percent, compared to less than 1 percent among folks 59 years or younger. As such, about 64 percent of deaths in South Sudan occur to persons 60 years or older. Our analysis further shows that the average age for those who have died of COVID-19 in the country is 61.5 years. A statistical test confirms the existence of a significant difference between the two groups. Relatedly, other studies confirm that COVID-19 mortality is correlated with patient's sex, underscoring that males have an increased risk of dying of COVID-19 compared to females. This global experience is reflected in South Sudan: we find that the probability of dying in a male population is 1.6 percent. This compares to 0.8 percent in a female population.

3.1 Comorbidity

Over 2.5 percent of the people examined for COVID-19 infection at the Public Health Lab reported pre-existing health conditions, also known as comorbidity. Several studies have established an association between comorbidity and COVID-19 mortality. This analysis shows that 15 percent of the patients with prior health conditions are more likely to die than those who have no prior illnesses. Only 2.4 percent among those without pre-existing conditions are likely to die from the scourge. The proportion of the elderly, 60 years and older, with pre-existing conditions, is 3.8 percent, compared to 2.3 percent among patients 59 years or younger. Females tend to be more morbid than males, their morbidity rate estimated at 2.8 percent in relation to 2.4 percent for males.

3.2 Correlates of COVID-19 mortality

Table 2 assesses the relationship between COVID-19 mortality and age, sex, comorbidity, and the disease's core symptoms. The models assess the repeatedly invoked hypothesis of COVID-19's effects being closely linked to these variables. The estimates, presented as odds ratios, are instructive.

Table 2. Correlates of COVID-19 mortality (odds ratios)

	(1) Model (mortality)	(2) Model (mortality)

[3] https://www.africanews.com/2020/06/13/coronavirus-in-africa-breakdown-of-infected-virus-free-countries/

Age group (ref ≤ 59 years)		
Aged ≥ 60	11.524***	22.067***
	(5.185)	(12.607)
Sex (re = Male)		
Female	0.556	0.307
	(0.351)	(0.244)
Difficulty breathing? (ref = No)		
Yes		2.133
		(2.881)
Having chills? (ref = No)		
Yes		12.902***
		(7.673)
Having a cough? (ref= No)		
Yes		0.366
		(0.536)
Pre-existing conditions? (ref = No)		
Yes		4.229*
		(3.145)
Weakness (ref = No)		
Yes		9.972**
		(11.552)
Constant	0.007***	0.002***
	(0.002)	(0.001)
N	1558	1530
Pseudo R^2	0.133	0.315

Standard errors are in parenthesis
**** p<0.01, ** p<0.05, * p<0.1*

Model 1 explores the relationship between mortality and age and sex of the sample provider. We find that being 60 years or older increases mortality by over 1000 percent. Similarly, females are 44 percent less likely to die compared to males, albeit the estimate being statistically insignificant.

We expand Model 1 to incorporate comorbidity and some of the COVID-19 standard clinical symptoms. When these factors are considered, old age becomes even more lethal, increasing mortality by over 2000 percent. Finally, experiencing chills, having pre-existing conditions, and experiencing body weakness, respectively, are all predictive of death.

4 Conclusions and Recommendations

This Policy Brief has analyzed fatalities in relation to age, sex, pre-existing health conditions, and the COVID-19 clinical symptoms in South Sudan. In terms of infections, South Sudan performs a little better than most of its regional counterparts (7 out of 11), being one of the four countries with the lowest estimates of confirmed cases per 100,000 population. This is also reflected in fatalities: South Sudan ranks 6th among the countries with the lowest numbers of deaths per 100,000 population. A huge caveat is in order, however. The inadequate testing capacity in South Sudan is likely to have resulted in this rosy picture.

Old age is a significant risk factor for the COVID-19 mortality in South Sudan. Persons who are 60 years or older, compared to those younger than 60, are 2000 percent more likely to die of the pandemic. Although females are less likely to die of COVID-19 compared to males by a factor of 44 percent, there is limited proof that a sex difference does indeed exist in this context. Other notable mortality indicators include chills, pre-existing conditions, and weakness.

These findings reflect the significance of designing a strict management strategy for COVID-19 critically ill patients. Because COVID-19 is exceedingly transmissible, South Sudan's national Ministry of Health needs to confine critically ill patients to the ICUs to prevent further spread of the disease (Shang et al. 2020). The ICUs should, therefore, be off limit for non-clinical staff and the general public. Relatedly, a case management unit must pay close attention to chills and weakness, two symptoms that are particularly indicative of COVID-19 fatality in the country. Moreover, South Sudan could benefit from a recently adapted dexamethasone[4], granted it hits the common market on time. The results also imply the importance of paying a special attention to the protection of the elderly and those with underlying health problems. Primarily, routine testing, identification, and isolation of cases could help protect these vulnerable groups. Likewise, lifestyle and behavioral alternation matters. Those considered to be particularly vulnerable ought to avoid lifestyles and behaviors that increase their exposure to the disease, including family and public gatherings.

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[4] https://www.who.int/news-room/detail/16-06-2020-who-welcomes-preliminary-results-about-dexamethasone-use-in-treating-critically-ill-covid-19-patients

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