

Knowledge, Attitudes and Practices toward COVID-19 Pandemic among Public in Sudan

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Abstract

Background

The novel corona virus COVID-19 is the seventh of genetically related corona viruses known to infect humans and the third with epidemic potentials after SARS-CoV and MERS-CoV. It usually presents as a respiratory infection with fever, cough, generalized body aches and sometimes can be complicated by respiratory failure or multisystem failure. It has emerged as a pneumonia of unknown cause in Wuhan, China in December 2019. Shortly it spread to all continents and most countries with 5.1 million confirmed cases and 332,876 deaths worldwide. At the time of writing in Sudan, a sub-Saharan African country, there were 3,138 confirmed cases and 121 deaths.

Methodology

This was a cross sectional community based online survey aimed to assess knowledge, attitudes and practices toward COVID-19 among public in Sudan. A total of 403 participants were enrolled from different states of Sudan.

Results

Among the participants (n=403), 55.1% were males, 63.3% aged 20-29 years, 33.4% held a university degree or above, and 50.6% were of non-medical professions. The participants' mean knowledge score was (8.56/10=85%), mean attitudes and practices scores were found to be (9.92/13=76.30%) and (8.40/11=76.36%) respectively. Scores of knowledge, attitudes and practices correlated positively with education and employment.

Conclusion

The participants showed very good knowledge regarding transmission, symptomatology and prevention of the virus, with acceptable overall attitudes and practices. More studies with larger samples are needed to explore practice patterns and to identify factors preventing the public from adherence to health recommendations. Extensive utilization of different media as well as community campaigns are important to deliver correct and sound health information especially to vulnerable communities.

Introduction

Background

Since its emergence as a pneumonia of unknown cause first detected in Wuhan, Hubei province, China in December 2019, the novel corona virus (SARS-CoV-2) continued spreading and was soon declared by the WHO as a Public health emergency of international concern on January 31st 2020 [1].

It is the third of genetically related corona viruses with epidemic potentials to be identified in the past two decades, SARS-CoV and MERS-CoV detected in 2002 and 2012 respectively [2,3].

The novel corona virus infection (now officially named COVID-19) may present as cough with fever, shortness of breath and in severe cases it can cause respiratory failure as well as multisystem failure. Although it showed lower case fatality rates than previous corona viruses, it's rapid communicability makes it no less dangerous and this entails more collaborative efforts to halt its transmission [4].

Novelty of the virus, its contagiousness and lack of specific treatment have created an unprecedented Global state of emergency, with countries around the globe taking drastic measures to prevent, contain and treat infections.

Despite all global efforts COVID-19 infections continued propagating crossing borders of countries and continents. At the time of writing according to Johns Hopkins University coronavirus resource center, the confirmed COVID-19 cases were 5.1 million worldwide with a rising death toll of 332,876 distributed over 188 countries and regions [5].

In Africa, the first case was reported in Egypt with abrupt increase to involve many other African countries resulting in 96,829 confirmed cases and 3,031 deaths [6].

As of May 22nd the situation in Sudan was 3,138 confirmed cases with 121 deaths [5].

Problem Statement

The head of Africa Centers for disease control stated that African countries are especially vulnerable to disastrous outcomes due to the corona pandemic [7].

About 41 African countries constituting 87% of the continent had experienced at least one epidemic, while 21 countries (45%) had at least one outbreak annually [2].

Together with sociopolitical instability, poverty and weak health care systems African countries are at risk of deleterious effects of the virus both on economy and lives.

Justification

Sudan as an African country is no exception for the vulnerability to the pandemic effects. Social distancing, early detection, isolation of cases and cases management remain the first-line measures for African countries and Sudan in particular; as their health systems can't deal with cases on large scales.

All above mentioned measures are largely dependent on the public knowledge, attitudes and practices toward the pandemic to facilitate early reporting of cases, personal preventive measures and knowledge driven positive attitudes and practices. That's why this study is so important to provide an insight about the public current standpoint in those areas as no other study so far has addressed this topic in Sudan.

Objectives

This study aims to assess public knowledge, attitudes and practices toward COVID-19 Pandemic in Sudan, which may give policymakers clues about the current public standpoint and unveil areas needing interventions.

Materials and Methods

Study Design, Data Collection and Tools

This is a descriptive cross-sectional study on Sudanese public aging 18 years and above in the period from April 22nd to May 1st 2020.

The sample size was calculated to be 384 with 95% confidence interval and 0.05 maximum tolerable error.

A convenient sample was taken using a structured, online questionnaire.

The authors ensured posting the questionnaire using Google forms across different internet and social media platforms so that sample is demographically inclusive to all regions of Sudan.

The questionnaire was formed based on previous papers addressing the same topic in other countries like china with some modifications to ensure reasonable length and informativity [4,8].

It composed of 25 questions. Six questions were socio-demographic questions and one question about the sources of participants' information. A total of ten questions were assigned to address the knowledge about COVID-19 pandemic: four questions on clinical presentation, two on transmission of the virus and four questions on prevention, control and treatment. Regarding attitudes and practices four questions were assigned for each.

Data Analysis

A computerized statistical package for the social sciences (SPSS) software version 26 was used for data entry and analysis.

Descriptive statistics and frequency tables were used to describe the demographic data.

Answers to the questions were given numerical values to allow scoring of knowledge, attitudes and practices, to perform one way analysis of variance (one-way ANOVA) and calculate Pearson correlation coefficient in order to describe relations of demographic independent variables to scores of knowledge, attitudes and practices.

Ethical Clearance

Participants were implicitly consented by voluntary filling of the questionnaires and were reassured about anonymity of their responses.

Results and Discussion

Table 1: Sociodemographic characteristics of participants

Characteristics		Number	Percentage
Gender	Male	222	55.1%
	Female	181	44.9%
Age group	Less than 20 years	60	14.9%
	20-29 years	255	63.3%
	30-39 years	58	14.4%
	40 and above	30	7.4%
Marital status	Single	270	67%
	Married	81	20.1%
	Divorced	27	6.7%
	Widowed	25	6.2%

Education	Elementary	80	19.9%
	Secondary	188	46.7%
	University	54	13.4%
	Higher degree	81	20%
Occupation	Unemployed	53	13.2%
	Student	80	19.8%
	Non-medical profession	204	50.6%
	Medical profession	66	16.4%
Current residence	Khartoum state	309	76.7%
	Other states	94	23.3%

The total number of participants in this study were 403 with 76.7% residing in Khartoum. Male participants outnumbered females, 55.1% vs. 44.9% respectively.

63.3% aged 20–29 years, mostly single 67%. Nearly half (46.7%) had secondary school degrees, 13.4% university degrees and 20% higher educational degrees.

Half of participants (50.6%) were of non-medical professions with 13.2% of all participants unemployed.

Social media was the most frequently reported source of information about COVID-19 followed by Television, official updates from WHO and ministries of health respectively.

Table 2: Knowledge about COVID-19 among participants

Statement	Yes n (%)	No n (%)	I don't know n (%)
8- The main symptoms of Corona Virus are: fever, fatigue, dry cough and muscle aches.	352 (87.3%)	22 (5.5%)	29 (7.2%)
9- Unlike seasonal influenza, symptoms such as: nasal congestion, runny nose, sneezing are less likely in Corona Virus.	253 (62.8%)	56 (13.9%)	94 (23.3%)
10- Corona Virus is transmitted via respiratory droplets.	383 (95.1%)	5 (1.2%)	15 (3.7%)
11- Corona Virus patient can't infect other people if he didn't show symptoms like fever.	30 (7.4%)	323 (80.2%)	50 (12.4%)
12- Eating or contacting with animals may result in infection with the virus.	211 (52.4%)	81 (20.1%)	111 (27.5%)
13- The virus affects elderly and people with chronic illnesses more severely.	378 (93.8%)	16 (4.0%)	9 (2.2%)

14- Its not important for children and youth to take precautions.	5 (1.2%)	397 (98.6%)	1 (0.2%)
15- There is currently no cure for the virus, but treating symptoms and complications might induce recovery.	371 (92.1%)	7 (1.7%)	25 (6.2%)
16- Isolating and treating infected individuals is a successful way to reduce the contiguity of the virus.	394 (97.8%)	2 (0.5%)	7 (1.7%)
17- People who got infected should be isolated in suitable place for 14 days	389 (96.5%)	0 (0%)	14 (3.5%)

As shown in table 2, the majority of participants had very good knowledge about symptomatology of the virus with 62.8% recognized that nasal congestion, runny nose and sneezing were less common with COVID-19 compared to the seasonal influenza. Almost all participants knew how the virus spread with 80.2% identified asymptomatic carriers as potential sources of infection which is a vital piece of information for prevention.

About half of participants reported that handling or eating of animals might be a way of contracting COVID-19 which is acceptable as researches are still going on to determine the origin of the virus confidently [3].

The participants acknowledged seriousness of the infection on elderly and those with chronic medical conditions. They recognized there was no specific cure so far for the virus and supported isolation of confirmed or suspected cases to prevent spread and to provide symptomatic management as with previous corona viruses [8].

Table 3: Attitudes toward COVID-19 among participants

Question	Frequency	Percentage
18- Are you worried about getting infected with Corona Virus?		
Yes	135	33.5%
No	148	36.7%
I don't know	120	29.8%
19- In your opinion, if you suspect that you are infected with the virus, what will prevent you from reporting directly to the responsible authorities?		
Fear of not receiving the required care	79	19.6%
Fear of losing the financial income of the family	109	27%
Slow response of official agencies	69	17.2%
Nothing will prevent me	146	36.2%

20- Washing hands with soap and water frequently will reduce the possibility of viral transmission?		
Yes	348	86.4%
No	55	13.6%
21- Do you think if we followed the health guidelines, Sudan will overcome Corona virus?		
Yes	214	53.1%
No	55	13.6%
I don't know	134	33.3%

As shown in table 3, only 33.5% of participant reported they were worried about getting the infection, this low percentage may reflect the relatively high spirituality in the Sudanese population taking such events as tests from the creator or they may be more worried about the outcomes of the epidemic more than the infection itself on their living situations.

Authors intended to explore the factors that may prevent individuals from reporting themselves when infected and as expected fear of losing financial income ranked at top followed by concerns of inadequate health care provision and slow response of official bodies. These three factors must be considered and dealt with appropriately to facilitate rapid reporting of cases and gain the public trust.

The participants agreed that frequent simple hand-washing with soap and water will reduce the transmission. Unsurprisingly only 53.1% believed that Sudan will overcome this pandemic probably because they have witnessed developed countries with excellent health systems failing to control the infections and their citizens succumbing to the virus in large numbers [9].

Table 4: Practices toward COVID-19 among participant

Question	Frequency	Percentage
22- Recently, have you been avoiding crowds and gatherings?		
Yes	134	33.2%
No	132	32.8%
Sometimes	137	34%
23- Recently, were you keen to wear a muzzle before leaving the house?		
Yes	56	13.9%
No	82	20.3%
Sometimes	265	65.8%

24- If you have mild flu symptoms, what will you do?		
Isolate myself for 14 days until symptoms disappear	86	21.3%
Inform the responsible authorities	44	10.9%
Continue my life normally	154	38.2%
I don't know	119	29.6%
25- If there is suspicion of Corona Virus case in your neighborhood, what will you do?		
Try to persuade the suspect to report himself	195	48.4%
Report him myself directly	120	29.8%
This is none of my business	88	21.8%

As demonstrated in table 4, 33.2% have been consistently avoiding crowded places and 34% have been so sometimes while 32.8% stated lack of avoidance for crowded places. This apparently dangerous trend may be due to incompliance with health advices for different reasons or may reflect some occupations in which it's difficult to avoid crowded places or it's a continuation of difficulties with social distancing facing African countries which has 80% of its labor force informal with no alternative source of income if stopped working [10].

Relatively few participants wore face masks when leaving houses this might be explained by the severe shortage in face-masks and personal protective equipments globally and the prices surge [11].

Majority of participants showed positive practice toward reporting suspected cases of corona virus.

Table 5: Linear relationships between the different scores and independent variables of age, education and occupation

Variables		Age	Education	Occupation
Practice scores	Pearson Correlation	.064	.580	.710
	Sig. (2-tailed)	.203	.000	.000
	n	403	403	403
Attitude scores	Pearson Correlation	-.046	.319	.395
	Sig. (2-tailed)	.357	.000	.000
	n	403	403	403
Knowledge scores	Pearson Correlation	.208	.197	.218
	Sig. (2-tailed)	.000	.000	.000
	n	403	403	403

Table 5 shows positive linear relationship between variables of education and occupation with scores of knowledge, attitudes and practice. When combined with table 6 showings mean scores of participants we conclude that scores of knowledge attitudes and practices increases with education and employment. The same applies to knowledge scores with age.

Table 6: Scores of knowledge, attitudes and practices toward COVID-19 among participants

Characteristics	Knowledge score			Attitudes score			Practice score		
	Mean ± SD	F value	P value	Mean ± SD	F value	P value	Mean ± SD	F value	P value
Gender									
Male	8.60±1.530	0.35	0.557	9.964±3.062	0.07	0.791	8.41±1.563	0.01	0.912
Female	8.51±1.519			9.884±2.958			8.39±1.642		
Age group									
Less than 20	7.52±2.175			9.83±3.115			8.78±1.595		
20-29 years	8.70±1.336	12.42	0.000	9.79±3.044	0.87	0.454	8.28±1.604	2.59	0.042
30-39 years	8.93±1.212			10.41±2.734			8.69±1.501		
40 and above	8.77±1.135			10.33±3.055			8.13±1.592		
Education									
Elementary	7.74±1.826			7.40±2.468			7.66±1.331		
Secondary	8.73±1.483	10.579	0.000	9.54±2.944	68.796	0.000	8.10±1.472	32.697	0.000
University	8.81±1.455			10.72±2.334			9.94±1.522		
Higher degree	8.83±0.985			12.80±0.401			8.80±1.391		
Occupation									
Unemployed	7.70±1.897			5.53±1.514			7.11±1.281		
Student	8.35±1.729	8.877	0.000	8.00±1.684	150.804	0.000	7.74±1.667	28.185	0.000
Non-medical	8.82±1.295			11.10±2.585			8.81±1.398		
Medical	8.73±1.307			12.18±0.389			8.97±1.488		
Current residence									
Khartoum state	8.58±1.494	0.146	0.703	9.88±3.017	0.289	0.591	8.43±1.599	0.329	0.566
Other states	8.51±1.625			10.07±3.006			8.32±1.594		

The cutoff point between good and bad score for knowledge, attitudes and practices was chosen to be 70% based on previous similar papers and classification of questions based on difficulty for non-medical personals [3,12].

The mean overall scores for knowledge was very good 8.56/10 (85%), however mean scores of attitudes and practices were 9.92/13(76.3%) and 8.4/11(76.36%) respectively.

Limitations and Weaknesses of the Study

1. Limitations to internet access lead to underrepresentation of vulnerable groups and elderly who might have poor knowledge, bad practices and negative attitudes
2. Unstandardized questionnaire and convenient sampling were used due to timely constraints, novelty of the virus and infeasibility of focused group discussions due to the lockdown and curfew.

Conclusion and Recommendations

- The participants showed very good knowledge regarding transmission, symptomatology and prevention of the virus, with acceptable overall attitudes and practices.
- Scores of knowledge, attitudes and practices correlate positively with education and employment.
- More studies with larger samples are needed to explore practice patterns and to identify factors preventing the public from adherence to health recommendations.
- Extensive utilization of different media as well as community campaigns are important to deliver correct and sound health information especially to vulnerable communities.

Competing Interests

None to declare.

Authors' Contributions

All authors contributed to the design, execution of the study, data analysis and were actively involved in writing. They all read and approved the final manuscript.

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