Original Research Article

Exploring knowledge, attitudes and practices towards COVID-19 amongst the residents in South Africa: a quick online survey

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ABSTRACT

Background: The novel coronavirus (COVID-19) pandemic has spread rapidly inviting unprecedented measures globally. Citizen's adherence to jurisdiction is affected by their knowledge, attitudes, and practices (KAP) towards the disease.

Methods: A cross-sectional survey study among a convenient sample of the general public aged 18 years or more and resident in South Africa was conducted through a self-designed online KAP survey questionnaire during the first few weeks of the South African lockdown to assess the knowledge, attitudes and practices about COVID-19. A p value of <0.05 (two tailed) was taken to be statistically significant.

Results: A total of 885 respondents completed the survey, majority of which were females who identified COVID-19 as a challenge to health and society and agreed with the strategy of lockdown for initial control of the spreading epidemic. In spite of the high knowledge scores of the population 31% of the respondents did not choose to wear a mask while leaving home. Also, a large number of respondents believed that early symptomatic treatment can prove useful to manage the infection. A statistically significant p value (<0.05) was obtained for the study variables in the statistical analysis, which showed that high knowledge scores were found to be associated with gender, categories of annual income and ethnicity.

Conclusions: This survey shows that South African residents of a relatively high level of socioeconomic status, in particular women, have substantial knowledge, positive attitudes, but need to improve practices towards COVID-19 during the rapid rise phase of the COVID-19 outbreak.

Keywords: COVID-19, KAP survey, South Africa

INTRODUCTION

Coronavirus 2019 (COVID-19) is a novel coronavirus disease that has spread across the world at a rapid rate. It was first detected in Wuhan, China in December 2019. This is the third Coronavirus outbreak in the past two decades, following the severe respiratory syndrome coronavirus (SARS-CoV) in 2002 and the Middle East respiratory syndrome coronavirus (MERS-CoV) outbreak in 2012. COVID-19 is highly infectious, with a long incubation period, and its main clinical symptoms include a fever, myalgia, fatigue, dry cough and dyspnoea.[1,2] Preliminary reports suggest that vulnerable population subgroups, such as the elderly or those with chronic health conditions i.e. underlying disease or immunocompromised might be at higher risk for severe infection from this virus.[3]

WHO currently estimates that the fatality rate of COVID-19 is 3.4 %, far lower than that of SARS (9.5%), MERS (34.4%) and H7N9 (39%). The seasonal flu has an average fatality rate of less than 1%.[1,2] It has been reported that in China, 18.5% of the patients with COVID-19 reached critical states, characterized by acute respiratory distress syndrome, septic shock, complicated metabolic acidosis, and haemorrhaging and coagulation dysfunction.[4] Many unprecedented measures have been implemented around the world to control COVID-19 transmission, including national lockdowns, strict monitoring of communities, suspension of public services, the closure of public spaces and quarantine of infected persons and suspected cases.

Previous research suggests that human behaviour is influenced by societies' knowledge and perceptions. The unclear understanding and knowledge of epidemics such as this novel COVID-19 disease among the general population may have an important bearing on the course of this pandemic and may trigger further worry and panic due to misinformation, adding to the complications.[5-7]

In South Africa, the first case was confirmed on 5 March 2020. Following the general trend of disease in many countries so far, we are still in the early stages of the spread of this pandemic.

To facilitate appropriate management of COVID-19, there is an urgent need to understand public awareness and responsiveness toward COVID-19 in a South African context. Various types of cross-sectional surveys are employed for this, the most prevalent and commonly used being the knowledge, attitude, and practice (KAP) survey.[8]

Objective was to assess the knowledge, attitudes and practices about COVID-19 among a sample of the general public in South Africa.

METHODS

Study setting, recruitment data collection and sample size

This survey was conducted from 6 April 2020 to 19 April 2020; 11 days after the South African lockdown which commenced on 27 March. Since it was not possible to conduct this study via a community-based sample, the data was collected among a convenient sample of the population via an online questionnaire managed by Survey Monkey (www.surveymonkey.com). Therefore, no fixed number was kept as a sample size. The recruitment and rollout of respondents to the questionnaire was done via social media and email links. Participants were encouraged to share the questionnaire to their communities to allow for a broader sample group. There was no monetary reimbursement for completing the survey and participants completed the questionnaire voluntarily. The questionnaire was in English and contained a brief introduction, objective, procedures, and voluntary participation, declaration of anonymity and confidentiality and directions on filling in the questionnaire. Participants who understood the content had to select a tick box, agreeing to the terms and conditions laid out in the introduction before proceeding to the questionnaire. The right to withdraw from the study at any time was also conferred.

Inclusion criteria

The age is >18 years and resident in South Africa at the time of the COVID-19 outbreak.

Exclusion criteria

Incomplete survey response.

Questionnaire design

A pre-tested self-made questionnaire was developed to understand community behaviour towards key research questions. The questionnaire was based on both quantitative and qualitative research variables.

The questionnaire was divided into two parts:

a) The Socio-demographic section: Consisted of variables such as age, gender, ethnicity, the province of current residence and annual income levels.
b) The KAP section: Consisted of 12 questions related to the knowledge, 8 questions related to the attitude and 6 questions related to the practices regarding COVID-19. Majority of the questions were closed-ended with multiple choice options, which were to be answered on an agree/disagree basis, with an additional "not sure" option. The last question was open-ended.

The survey was reviewed for face validity and pilot tested on 14 people.

Statistical analysis

Statistical analysis of survey data was conducted using International Business Machines Statistical Package for Social Sciences (IBM SPSS) software version 21.

Quantitative descriptions about the demographic characteristics were analysed and compared. Inferential statistical tests were used to identify the association between the study variables. The level of statistical significance was set at $p<0.05$ (two-sided).

The analysis of three variants of KAP was done after adjusting the values. Total KAP score was used to rank the level of knowledge and subsequent analysis was conducted to rank fair (0-10) and very good knowledge (11-12) on the basis of median score. Association of demographics and level of knowledge was done using logistics regression. Adjustment was done for age, gender, income, state of residence and race.

RESULTS

The study is being reported in consideration with STROBE guidelines.[9] The survey achieved a response rate of 99.6 % with average time of 4 minutes and 32 seconds spent by the participant to complete it. A total of 888 respondents consented to the survey, out of which 885 completed it.

After excluding the incomplete responses, data analysis represented the majority of the respondents to be female. Most of the female respondents were between 35-44 years of age (n=235), whilst the overall age group for majority of the respondents also lay between 34-45 years of age. Respondents were mainly of white ethnicity (n=784; 88.3%) and were residents in Gauteng. The average annual income ranged from R 200,000 to R 349,999. The resultant frequencies for the demographic factors in the study are elaborated in Table 1.

The Cronbach's alpha using SPSS statistics was 0.711, suggesting that the 25 items of the questionnaire have relatively high internal consistency. The response frequencies for the attributes of the KAP questionnaire are elaborated in Table 2.

Question P6 held open ended responses. About 65.8% of people reported the use of varied types of preventives, of which the most commonly used were vitamin supplements.

The correct answer rates of the 12 questions on the COVID-19 knowledge questionnaire were 77.9-96.5 %. Using the Chi square tests with the unadjusted analysis, knowledge scores were significantly associated across genders, categories of annual income and ethnicity

$(p<0.005)$. After adjustments for regression, knowledge scores were found to be only associated with annual income and gender. Significant and positive correlations between knowledge-attitude $(p<0.001)$, knowledge-practice $(p<0.001)$ and attitude-practice $(p<0.001)$ were observed.

Table 1: Socio-demographics.

Variables	Frequency	%
Gender		
Female	764	86.0
Male	116	13.1
Prefer not to say	5	0.6
Age		
18-24	27	3.0
25-34	163	18.4
35-44	268	30.2
45-54	221	24.9
55-64	150	16.9
65+	56	6.3
Ethnicity		
Black	23	2.6
White	784	88.3
Indian / Asian	37	4.2
Coloured	14	1.6
Prefer not to say	23	2.6
Other	4	.5
Annual Income		
Less than R 200,000	156	17.6
R 200,000 to R 349,999	164	18.5
R 350,000 to R 499,999	136	15.3
R 500,000 to R 749,999	131	14.8
R 750,000 to R 999,999	90	10.1
R 1 000,000 to R 1 499,999	87	9.8
R 1 500,000 or more	51	5.7
Other	70	7.9
Province		
Gauteng	531	59.8
Limpopo	7	.8
Mpumalanga	3	.3
North West Province	4	.5
Free State	6	.7
Kwazulu-Natal	47	5.3
Northern Cape	1	.1
Eastern Cape	120	13.5
Western Cape	166	18.7

The majority of the population agreed that the lockdown was an important measure to control COVID-19, and that there is currently no vaccine for COVID-19 and that neither the flu vaccine nor the TB vaccine could prevent COVID-19.

Also, a significant population disagreed with refraining from using Chinese products, which gives us an idea about their behaviour as a responsible public.

The majority were following directives and staying at home during the lockdown and agreed that washing hands frequently and social distancing are the best preventative measures to keep from contracting COVID-19. 65% (n=584) reported having taken preventative medicines for COVID-19, the most commonly mentioned being vitamins such as vitamin C, vitamin D, zinc, and homeopathic medicines.

Table 2: Response frequencies of KAP questionnaire.

Questions		Agree (%)	Disagree (%)	Not sure (%)
K1.	Is COVID-19 a challenge to health and society?	857 (96.5)	14 (1.6)	14 (1.6)
K2.	Is it necessary to notify the health authorities if anyone you know tests positive for COVID-19?	772 (86.9)	55 (6.2)	58 (6.5)
K3.	If a person has not travelled in last 4 months, gives no history of possible exposure with an infected person and suffers with sore throat, cold, cough and fever, should the person be tested for COVID-19?	557 (62.7)	233 (26.2)	95 (10.7)
K4.	Eating or coming into contact with animals would result in the infection with the COVID-19 virus.	40 (4.5)	741 (83.4)	104 (11.7)
K5.	Persons with COVID-19 cannot infect others when a fever is not present.	16 (1.8)	821 (92.5)	48 (5.4)
K6.	It is not necessary for children and young adults to worry about infection with the COVID-19 virus.	32 (2.9)	837 (91.9)	16 (4.8)
K7.	Does every infection with COVID-19 require hospitalisation?	26 (2.9)	816 (91.9)	43 (4.8)
K8.	Does a COVID-19 positive infection mean the person would surely die?	4 (0.5)	861 (97.0)	20 (2.3)
K9.	Is there a vaccine for COVID-19?	22 (2.5)	779 (87.7)	84 (9.5)
K10.	Can the flu vaccine prevent COVID-19?	6 (0.7)	795 (89.8)	84 (9.5)
K11.	Can the TB vaccine prevent COVID-19?	11 (1.2)	692 (77.9)	182 (20.5)
K12.	There currently is no effective cure for COVID-19, but early symptomatic and supportive treatment can help most patients recover from the infection.	824 (92.8)	20 (2.3)	41 (4.6)
A1.	Do you think the lock down by the government was an over-reaction to control COVID-19?	58 (6.5)	770 (86.7)	57 (6.4)
A2.	Do you think you should be avoiding Chinese products or foods or visiting Chinese restaurants currently?	101 (11.4)	702 (79.1)	82 (9.2)
A3.	Is COVID-19 a bioweapon developed by China to become a super-power?	97 (10.9)	521 (58.7)	267 (30.1)
A4.	Can antibiotics treat COVID-19?	33 (3.7)	693 (78.3)	159 (18)
A5.	Can homeopathy prevent COVID-19?	70 (7.9)	594 (66.9)	221 (24.9)
A6.	Can homeopathy treat COVID-19?	206 (23.2)	428 (48.2)	251 (28.3)
A7.	Does 5G have something to do with causation of COVID-19?	80 (9.0)	549 (61.8)	256 (28.8)
A8.	Will COVID-19 have a negative impact on the economy?	866 (97.5)	7 (0.8)	12 (1.4)
P1.	Washing hands frequently and social distancing are the best ways of keeping yourself safe from catching COVID-19.	842 (94.8)	20 (2.3)	23 (2.6)
P2.	Are you staying in your home as mandated by the government?	872 (98.2)	8 (0.9)	5 (0.6)
P3.	Do you wear a mask when you leave home and whilst away from home?	559 (63.0)	281 (31.6)	45 (5.1)
P4.	Do you wash/sanitize your hands when you return home?	875 (98.5)	6 (0.7)	4 (0.5)
P5.	Have you taken any preventive vitamin/medicine(s) for COVID-19?	584 (65.8)	263 (29.6)	38 (4.3)

DISCUSSION

To the best of our knowledge, this is the first South African KAP study on the COVID-19 pandemic amongst South African residents. In this predominantly white female population sample, there was high statistical significance when comparing the demographics and the knowledge component of the KAP, indicating that most respondents are knowledgeable about COVID-19. The findings of a high level of knowledge regarding COVID-19 can be expected as we consider that the first case of COVID-19 in South Africa was confirmed almost 2 months after it was first detected in China. Because of the seriousness of the pandemic, the unprecedented measures many countries have taken to control the pandemic, the

South African Governments' communications and directives, as well as the role of the media in reporting this emergency, these results showed that this population acquired knowledge of COVID-19 via various information channels.

The vast majority of the population sample agreed that the lockdown was an important measure to control the spread of COVID-19, and 98.2% were following directives from the government to stay at home. 94.5% of the population sample agreed that washing hands and social distancing were the best measures to prevent contracting COVID-19. However, despite it being declared as a pandemic and a highly contagious infection, as well as the high level of knowledge on COVID-19, 31.6% of the population did not choose to wear a mask when leaving or whilst away from home. Most respondents (97.5%) also agreed that COVID-19 will have a negative impact on the economy.

Most respondents also agreed that it is necessary for children and young adults to worry about infection and a majority of them also understood that early symptomatic and supportive treatment could help most patients recover.

Interestingly, 11% of the respondents believed the virus to be a bioweapon and 30.1% were unsure about it. Further 9% agreed with 5G having something to do with the causation while 28.8% were unsure about the same. This shows how false narratives and the conspiracy theories circulating on social media platforms can amplify misunderstandings in the times of global emergencies.

There were 65.8% of the respondents had reportedly used supplements and vitamins, with the most used supplement being vitamin C. Preliminary research is currently underway to investigate the effects of intravenous Vitamin C on COVID-19.[10,11] This could suggest that this population is following therapeutic measures available in alternative and complementary therapies.

These findings are useful for public health policymakers and health workers to recognize that public health education measures regarding COVID-19 knowledge, personal hygiene and social distancing have been shown to be effective in this population sample group. Since the majority of the respondents disagreed with the fact that COVID-19 can be treated with antibiotics and also acknowledged that early symptomatic and supportive treatment can help most patients recover, they could be looking for a possible integrated approach to combating it.[12]

Due to the imposed lockdown, the study was restricted in the manner to which it could be distributed. The limitation of this study was that the sample was over-representative of white women, largely living in Gauteng province in South Africa. The study did not consider education levels and occupation which are commonly used as proxy measures of socioeconomic status.[13] Whilst the questionnaire did glean information on income groups, the study did not allow for more specific information regarding income. Given that the minimum criteria for income group was <R200, 000, strictly speaking, the findings can only be generalised to South African populations of at least an average socioeconomic status. This particular sector has more access to internet and online health information resources compared to other socioeconomic groups such as rural communities and the elderly, and is therefore likely to have better knowledge, attitudes and practices outcomes. Therefore, it is important to investigate further KAP research of COVID-19 in these population groups in South Africa.

In addition to the limited sample representativeness, an additional limitation of the study was the inadequate face to face and focus group assessment of attitudes and practices toward COVID-19. This was an unfortunate limitation due to the lockdown but should be considered for further studies.

The strength of this study lies in the fact that that it was conducted in the first fortnight of the South African lockdown. We can infer that the interventions communicated by the government were taken up favourably and quickly by the population sample, as evident in the KAP component of the study. This, in all likelihood, contributed to the success of flattening the curve in South Africa during the month of April 2020.[14]

CONCLUSION

The findings of this study will provide insight when designing future interventions to promote specific messages to enhance knowledge, change attitude and improve practice regarding COVID-19.

In summary, our findings show that South African residents of a relatively high level of socioeconomic status, in particular women, have had substantial knowledge, positive attitudes, but need to improve practices towards COVID-19 during the rapid rise phase of the outbreak.

Recommendations

What is already know on this topic

COVID 19 is a major worldwide epidemic. Government's constant efforts on awareness drive for the citizens to manage the COVID-19 epidemic in their respective countries. Governments across the world have acted to try reducing the spread of the virus. From limiting the international travel, few of them also tried restricting movement within their borders and also stopped people from mixing in public by enforcing lockdown, including South Africa. Health policy and human rights experts warn that countries face a difficult balance between

protecting public health and infringing on personal freedoms.

What this study adds

Insight about existing beliefs and behaviours of the citizens of South Africa coping with the epidemic. Also, the data collected can be further utilized by policy makers to ascertain the disease progression awareness and measures to contain the epidemic after the enforced lockdown is lifted and to avoid future knee jerk reactions.

It reveals the misconceptions such as people's uncertainty about the role of 5G or biological warfare in relation to COVID-19 that may cloud people's judgement and hinder the management programmes.

ACKNOWLEDGEMENTS

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