

Impact of COVID-19 pandemic quarantine on physical, nutritional, psychosocial life and work aspects in the Kingdom of Saudi Arabia

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ABSTRACT

Background: The coronavirus disease-2019 (COVID-19) is a global public health disaster imposing a nationwide lockdown. This study was undertaken to determine the impact of COVID-19 quarantine on physical, nutritional, psychosocial life, and work aspects on the population of Saudi Arabia. **Methods:** Data collection was based on the fear of COVID-19 Scale (FCV-19S) and was analyzed by the Likert-type scale. A total of 2828 individuals participated during their COVID-19 quarantine. The data were collected during June 10-17, 2020 using the psychosocial FCV-19S. **Results:** COVID-19 quarantine was negatively correlated with the physical, nutritional, psychosocial life and work aspects of the Saudi Arabia's population ($P < 0.05$). As a result of the correlation analysis, gender, sociodemographic status and having a family member dying of COVID-19, marital status (single), monthly income (<3000) and occupation (student), and lost a job or businesses were significantly associated with fear of COVID-19 ($P < 0.05$). Furthermore, the participants reported a reduction in their physical activity by 59%, whereas 26.5% of participants showed an increase of body weight. Moreover, 23% of participants lost their jobs during the pandemic. **Conclusions:** The lockdown period was associated with an increase in the COVID-19 fear score. The degree FCV-19S was varied in different categories in several aspects. Low levels of physical activity and weight gained were observed during the lockdown period.

Keywords: COVID-19, FCV-19S, KSA, quarantine, work aspects

Introduction

On December 31, 2019 in Wuhan city situated in People's Republic of China, a novel strain of coronavirus named

SARS2-CoV was first detected. SARS2-CoV was suggested to be derived from a zoonotic source and underwent a complicated genetic drift mutation. This mutation leads to a global pandemic affecting millions of people around the globe. As a result, the World Health Organization (WHO) declared a global public health emergency and outbreak on January 30 and pandemic on March 11.^[1] Later, SARS2-CoV disease 2019 was named as COVID-19 infection.^[2,3] SARS2-CoV spreads via

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respiratory droplets, when an infected human sneeze or cough the viral droplets spreads in the surrounding environment up to a distance of approximately three feet. Consequently, this will lead to direct infection to other humans who inhale them. Another mode of transmission is indirect infection in people who come in contact with viral contaminated surfaces. The rate of infectivity by SARS2-CoV is comparatively high in contrast to previous strains of Coronavirus reported, which played a role in rapid spread of this virus throughout the globe within a time duration of a few months. The effect of this pandemic was observed in the field of life. In several countries, the health care systems collapsed, and the vast majority of countries suffered from an economic crisis leading to countless numbers of people losing their jobs and business. In order to encounter the spread of infection various steps were undertaken, which include the implementation of social distancing measures. In order to accomplish these preventive measurements, regional or countrywide strict stay-at-home order and quarantine were imposed. The effect of these drastic measures and obligatory restrictions had an impact on psychological, physical, nutritional, and economical aspects. There is no doubt that this pandemic is truly terrifying, however, the social media played a role in exaggerating the psychological stigma associated with this disease which created a terror among general population, and the psychological impact encountered during the pandemic affected the mental health in various ways in the form of anxiety and depression.^[4-6] According to a study conducted in China, almost 35% of the population experienced psychological distress during the period of lockdown.^[7] Moreover, during the lockdown period, physical activities (PA) were declined and majority of people experienced a sedentary lifestyle.^[8] In general, physical inactivity particularly among older adults is considered as the fourth-highest risk factor for mortality worldwide and a major contributor to disability.^[9] Although, it is essential for older population to stay at home as they have a higher risk of COVID-19 related health complication, it is important to make sure that they maintain a good PA.^[10]

During the quarantine period shortage of food supply and decrease in sun exposure can lead to vitamin D deficiency. Various studies and clinical trials showed, having adequate levels of Vitamin D in the body has a protective effect. And this by reducing the risk of acquiring influenza and COVID-19.^[11] Therefore, emphasizing and public awareness about the importance of vitamin D supplementation should be promoted. On the work and economical aspect, both governments and individuals suffered from the financial crisis including developed countries such as the US. The U.S. Gross Domestic Product (GDP) for the first quarter of 2020 dropped by 4.8% which is the largest decline since the global financial crisis in 2008.^[12] The instability in the economy resulted in unemployment and loss of income for many individuals in various sectors.^[13] The aim of this study is to assess the influence of COVID-19 quarantine on physical, nutritional, psychosocial life and work aspects on Saudi Arabia's population using fear of the COVID-19 scale (FCV-19S), which

is a newly developed scale designed to evaluate different aspects of fear of the COVID-19 pandemic.

Methods

Participants

This is an online survey performed during the COVID-19 pandemic outbreak. An anonymous Arabic-language survey was distributed using the Google Form as a tool. A total of 2828 individuals participated in the study during the quarantine. Participants agreed to participate voluntarily, and they did not receive a financial incentive for their participation.

Study design

The Study announcements contain brief information about the study and a web-page link to it. The survey was shared via social media applications like WhatsApp, Twitter, Instagram, and others. The survey was written in Arabic language and conducted on the local Saudi Arabia population. It collected information in four different aspects as participants' demographics, physical and nutritional, psychosocial fear of COVID-19 (FCV-19S), work, and economical aspect. It required approximately 3 minutes to be completed. The data were collected during June 10–17, 2020 using the psychosocial fear aspect of COVID-19 (FCV-19S).^[5] A self-report measure aimed at assessing fear of COVID-19. The scale consists of seven items pertaining to emotional fear reactions towards the pandemic. Participants are requested to respond on a five-item Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The total score ranges between 7 and 35, with a higher sum score indicating a higher fear of COVID-19.^[14] The measure showed appropriate internal validity (Cronbach α of 0.82) and was also found to correlate with anxiety and depression, as evaluated by the Hospital Anxiety and Depression Scale^[15] and the Perceived Vulnerability to Disease Scale.^[7]

Ethical clearance

The ethical approval of the study was taken from the Qassim University and involved participants' written consent were taken before the start of the study.

Statistical analysis

Data were analyzed with Microsoft Excel. Categorical variables were described as mean value \pm standard deviation, frequencies, and percentages. The correlation coefficient was calculated to correlate between fear items and other questions. A value of $P = 0.05$ was used as an indicator of statistical significance.

Results

Sociodemographic characteristic and its impact on COVID-19 fear scale

We estimated the association between sociodemographic characteristics and Fear of COVID-19 using FCV-19S scale. A total of 2828 participants from different areas of Saudi Arabia volunteered in this study. Most of the participants were

female (55.1%) while only 44.9% were Male. Moreover, the majority of the participants were single (64.6%) with University education level or higher (73.1%). The vast majority of the participants were students (60.1%) with monthly income less than 3000 SAR (55.9%). Furthermore, we found that females had a higher fear score (17.5/35). Participants who were students, unemployed, single or with only high-school degree or less had a higher fear score [Table 1].

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The changes in the nutritional and physical activity were shown in [Table 2], only 26.5% of the participants showed an increase in body weight with no significant change in the nutritional supplements intake or sun exposure during quarantine. Furthermore, more than half of the participants have a decrease in their physical activity [Table 2]. With respect to the psychosocial aspect, 93% of the participants were mentally stable. However, 23% of participants who tested positive or had a relative who died from COVID-19 had a slightly higher FCV-19S than those who tested negative. In addition, Majority of the participants (61.5%) indicated that the lockdown had a positive effect making them closer to their family than before. Also, the participants reported an increase in use of social application by 90% [Table 2]. In the economic aspect, 26.6% of the participants revealed that their monthly income has decreased since the pandemic started while more than half did not face any changes in their monthly income. Additionally, 77% of the participants were able to keep their jobs while 23% lost it, and 70% of the participants had to work online. Moreover, the household expenses decreased by 30% [Table 2].

Descriptive details for the Fear scale of COVID-19

Table 1: Sociodemographic characteristics and fear scale (n=2828)

	n (%)	Fear scale*
Age (Mean±SD)	28.5±11.9	-
Gender		
Male	1270 (44.9)	15.3
Female	1558 (55.1)	17.5
Marital Status		
Single	1826 (64.6)	17.0
Married	944 (33.3)	15.5
Divorced/widowed	58 (2.1)	17.4
Educational Level		
Less than university education	760 (26.9)	17.3
University education or higher	2068 (73.1)	16.2
Monthly Income		
<3000 SR	1581 (55.9)	17.1
>3000 SR	1247 (44.1)	15.7
Occupation		
Unemployed	476 (22.4)	16.4
Student	1277 (60.1)	17.3
Employed	1075 (17.5)	15.6

*Score is out of out of 35

As shown in [Table 3], there are two distinct factors for the fear scale. The First one is the emotional fear reaction, which contains items such as, “I am most afraid of the coronavirus”. Factor 2, which covered symptomatic expressions of fear such as “My hands become clammy when I think about the coronavirus”. [Table 3] shows the measurements for central tendency, internal consistency (Cronbach α), skewness, and kurtosis. We found that items 5, 6, and 7 were not normally distributed (as indicated by a Skewness and Kurtosis). The overall Cronbach α score when item deleted is 0.82 [Table 4].

Correlation between COVID-19 fear questions

In this study, the inter-item correlations ranged between 0.28 and 0.62, and There is a good correlation between items (1,2), (2,5), and (6,7) as the values were higher than 0.6 [Table 4].

Univariate analysis of the association between demographic and COVID-19 characteristics and fear of COVID-19

The result from [Table 5] reports the univariate analyses of the association between demographic and COVID-19 characteristics and fear of COVID-19. Regarding gender, female participants were positively associated with fear of COVID-19, reporting higher rates of fear (OR = 0.46, 95%CI 0.32–0.67, $P < 0.000$). In the level of socioeconomic status such as education (high school), marital status (single), monthly income (<3000) and occupation (student), were also significantly associated with fear of COVID-19, reporting higher rates of fear (OR = 0.43, 95%CI 0.17–0.66, $P < 0.000$; OR = 0.56, 95%CI 0.29–1.11, $P < .000$; OR = 0.69, 95%CI 0.54–0.87, $P < 0.001$; OR = 0.50, 95%CI 0.45–0.55, $P < 0.001$ correspondingly). Furthermore, taking supplements (yes) and lost a job or businesses were also positively associated with fear of COVID-19 (OR = 0.64, 95%CI 0.57–0.71, $P < .005$; OR = 0.59, 95%CI 0.53–0.66, $P < 0.05$, respectively).

Discussion

This study was undertaken to assess the psychometric, physical, nutritional, economic, and social impact of COVID-19 in a normative population of Saudi Arabia. Recent data from several sources showed that about 2.1 million people were infected during the peak of spread of COVID-19 in Saudi Arabia within 2 months from the date the lockdown was first enforced on March 25, 2020.^[15,16] In addition, the partial lockdown strategy of Saudi government has lowered the infection to 0.4 million till September 2020.^[15-17] Currently the Saudi government has implemented strict rules of social distancing and face covering, which has effectively flattened the COVID-19 infection curve to less than 0.004 million by March 24, 2021.^[18] In this study, we evaluated the COVID-19 fear by using the Arabic version of the FCV-19S to ensure the reliability and validity of the survey among the Saudi citizens with various categories.^[5] Our finding showed that the results have an unidimensional structure with a good internal consistency. The internal consistency of our questionnaire was $\alpha = 0.82$ which is less than the previous

Table 2: Impact on nutrition and physical activity, psychosocial, and economic aspects during COVID-19 lockdown among the Saudi population (n=2828)

Aspect	n (%)	Fear Scale	P
a) Nutrition and physical activity:			
Took supplements			
Yes	900 (31.8)	17.1	0.04
No	1928 (68.2)	16.2	
Weight change			
Increased	749 (26.5)	17.1	0.08
Decreased	744 (26.3)	16.6	
Don't know	244 (8.6)	18.2	
No change	1091 (38.6)	15.6	
Frequency of sun exposure			
Not exposing	967 (34.2)	17.3	0.08
Once a week	469 (16.6)	17.2	
Twice a week	435 (15.4)	16.4	
More than twice a week	954 (33.8)	15.4	
Frequency of exercise before the quarantine			
Always	1295 (45.9)	15.7	0.08
Occasionally	408 (14.4)	16.7	
Rarely	346 (12.3)	16.6	
Never	775 (27.4)	16.9	
Physical activity during the quarantine			
More than before	418 (14.8)	16.3	0.07
The same	741 (26.2)	17.0	
Less than before	1669 (59)	15.4	
The usefulness of sports channels and applications to stimulate doing physical activities			
Yes	1209 (42.8)	16.9	0.06
No	1619 (57.2)	16.2	
b) Psychosocial aspect:			
Been diagnosed with mental illnesses by a psychiatrist			
Yes	190 (6.7)	18.3	0.3
No	2638 (93.3)	16.4	
Have been COVID-19 positive*			
Yes	676 (23.9)	16.6	0.2
No	2152 (76.1)	16.5	
A relative died from COVID-19			
Yes	95 (3.4)	17.2	0.3
No	2733 (96.6)	16.6	
Effect of quarantine on the familial relationship			
Positive effect, become closer than before	1735 (61.5)	16.2	0.08
Negative effect, led to more problems	317 (11.2)	17.6	
I don't know	771 (27.3)	16.7	
Use of social applications to keep in contact with your others			
Yes	2557 (90.4)	16.3	0.06
No	271 (9.6)	15.2	
c) Economic aspect			
Lost a job or business*			
Yes	650 (23)	17.1	0.05
No	2178 (77)	16.3	
Effect of household expenses			
Increased	774 (27.4)	17.3	0.06
Decreased	858 (30.3)	16.3	
No change	843 (29.8)	15.9	
Don't know	353 (12.5)	16.8	

Contd...

Table 2: Contd...

Aspect	n (%)	Fear Scale	P
Frequency of applications usage for shopping			
Never	554 (19.6)	15.7	0.06
Rarely	460 (16.3)	16.6	
Occasionally	872 (90.9)	16.7	
Always	939 (33.2)	16.7	
Changes to the monthly income			
Increased	309 (13)	17.1	0.06
Decreased	630 (26.6)	16.8	
No change	1353 (57.1)	16.1	
Complete loss	79 (3.3)	17.0	
Mode work during the quarantine			
As previously (physically)	416 (18.4)	15.9	0.07
Online	1582 (70.1)	16.8	
Both	260 (11.5)	16.7	

*By participant himself or a family member

Table 3: Descriptive details for the fear scale of COVID-19

Descriptive details for the fear scale	Mean (SD*)	Variance	Kurtosis	Skewness	Cronbach α^{**}
Factor 1: Emotional fear reactions					
I am most afraid of the coronavirus.	2.11 (1.27)	1.63	-0.96	-0.12	0.79
It makes me uncomfortable to think about the coronavirus.	2.39 (1.39)	1.94	-1.12	-0.38	0.79
I am afraid of losing my life because of the coronavirus.	1.37 (1.45)	2.10	-1.02	0.62	0.81
When watching news and stories about the coronavirus on social media, I become nervous or anxious.	2.03 (1.38)	1.92	-1.23	-0.01	0.78
Factor 2: Symptomatic expressions of fear					
My hands become clammy when I think about the coronavirus.	0.44 (0.91)	0.82	4.50	2.23	0.77
I cannot sleep because I'm worrying about getting the coronavirus.	0.41 (0.87)	0.76	5.38	2.37	0.80
My heart races or palpitates when I think about getting the coronavirus.	0.74 (1.16)	1.34	1.13	1.48	0.78

*SD=Standard Deviation. **Cronbach α score when item deleted. N.B. Overall Cronbach α score is 0.82

Table 4: Correlation of COVID-19 fear scale questions

	(1)	(2)	(3)	(4)	(5)	(6)
(2)	0.6189*					
(3)	0.2866	0.2889				
(4)	0.5576	0.5012	0.3671			
(5)	0.5555	0.6082*	0.3216	0.5668		
(6)	0.3246	0.3095	0.4760	0.3873	0.3544	
(7)	0.4041	0.3919	0.4903	0.4702	0.4496	0.6297*

Arabic FCV-19S ($\alpha = 0.88$).^[5] Interestingly, it is the same as the reported original scale which is $\alpha = 0.82$.^[7] In comparison to other studies, the internal consistency for Italian study was $\alpha = 0.87$,^[19] Bangla $\alpha = 0.87$,^[20] and Turkish $\alpha = 0.85$.^[21] The inter-item correlations ranged between 0.28 and 0.62, and there is a good correlation between items (1,2), (2,5), and (6,7). The reason for the fear factor associated with COVID-19 can be justified because of the elevated infectivity rate of this virus as well as the social stigma associated with this disease. However, items 5, 6, and 7 had lower mean and variance values compared with the other items. This suggests that participants tended to strongly disagree with these descriptive symptomatic expressions of fear (factor 2). Moreover, items 1 and 2 are more like general questions or statements that most of the responders normally would strongly agree with them.

There is no doubt that COVID-19 lockdown induced fear among the general population. Here in this study, the score of fear of The COVID-19 significantly varied in different categories. We found that females are strongly scared of COVID-19 as compared to male participants as shown in [Table 1]. These results were inconsistent with other studies performed in different regions of the globe showed that the females and students have higher COVID-19 fear.^[22,23] The reason that female showed a great COVID-19 fear than male may rely on the fact of gender differences in response to emotional stress, where women at great risk to anxiety and stress than men.^[24,25] Furthermore, we also found that single participants showed an increase level of fear to COVID-19 as compared with married individuals, this may be attributed to the fact that married couples provide motivational and emotional support to each other, which can buffer the effect of psychological panic. In addition, participants with high school education score a higher FCV-19S than university education level, possibly due to the lack of awareness and knowledge. Furthermore, low-income individuals who earn less than 3000SAR are associated with a high COVID-19 score. This can be justified by the anxiety and fear from losing their jobs. Additionally, as we mentioned before, Students also expressed more fear than employed, this could be a result of the vagueness of the means and methods that will be followed to continue their education.

Table 5: Univariate analysis of the association between demographic and fear of COVID-19 characteristics of studied subjects

	OR	Lower 95% CI	Upper 95% CI	P
Demographic				
Gender (female)	0.46	0.32	0.67	<0.000
Education (low-level)	0.43	0.17	0.66	<0.000
Marital status (single)	0.56	0.29	1.11	<0.000
Monthly Income (<3000 SR)	0.69	0.54	0.87	<0.001
Occupation (Student)	0.50	0.45	0.55	<0.001
COVID-19-related factors				
Taking supplements (Yes)	0.64	0.57	0.71	<0.05
Have been COVID-19 positive (Yes)	0.86	0.68	1.10	>0.05
A relative died from COVID-19 (Yes)	1.05	0.94	1.17	>0.05
Lost a job or business (Yes)	0.59	0.53	0.66	<0.05

OR=odds ratio; CI=confidence interval

As regards the physical and nutritional aspects, our results revealed that the body weight was increased in 26.5% of participants, while decreased in 26.3% of participants. Meanwhile, 38.6% of participants reported no change in their body weights during the quarantine period. Also, our results revealed that the physical activity of 59% of the participants during quarantine is decreased as compared to the pre-pandemic status and 26.2% exhibited no change in their physical activity [Table 2]. These observations correspond with other previous studies.^[8-10] This might be attributed to the mandatory stay-at-home order issued by Saudi government. However, being physically active during lockdown contributes in buffering the physical and mental consequences associated with COVID-19 and plays role in controlling the symptoms of the various chronic diseases.^[26-28] Importantly, the impact of COVID-19 pandemic quarantine on physical, nutritional, psychosocial life or work aspects investigated in this study has also severely affected the practice of primary care physicians in Saudi Arabia.^[29,30] Several studies reported anxiety or fear among healthcare professionals at both primary and secondary levels during this pandemic.^[31,32] Therefore, there is an urgent need for their supportive programs that will only give up-to-date information of the pandemic but also help them to stress out the fear of this ongoing pandemic.

Previous studies showed that vitamin D supplementation has immune-modulatory properties, which include down-regulation of pro-inflammatory cytokines and reduce the risk of COVID-19.^[11,33] COVID-19 infection induce cytokines storm leading to increased level of pro-inflammatory cytokines and C-reactive protein.^[34,35] Our result showed that majority of the participants (68.2%) did not take any vitamin supplementations during the period of domestic quarantine as well as enough sun exposure. This result could be an indication of the lack of awareness of most individuals about the vital role and information about vitamin supplementation and sun exposure. With regard to the effects of COVID-19 quarantine to psychosocial aspects, our results showed that 90.4% of the participants reported that the social media applications played an important role keeping them in touch with their relatives and friends. Also, the quarantine had

a positive impact on 61.5% of the participants creating strong family ties during the lockdown period. However, other countries such as the United States, Australia and UK revealed that the lockdown and social distancing measures that were applied to prevent the spread of COVID-19 have contributed to spark increase in levels of domestic violence, which includes physical, emotional, sexual, and domestic abuse by 21–35%, 5%, and 25%, respectively, since lockdown.^[36-38]

The global lockdown and social distancing measurements affected various sectors of economics and business operation.^[39,40] Hence, it is important to note that in order to elevate the negative impact of the pandemic on the economics and business, the Saudi governments issued several initiatives to support business such as financial incentive for the private sector. On the other hand, the Saudi governments had increased the value added tax (VAT) from 5 to 15%. Thus, we wanted to investigate the impact of COVID-19 on the economic aspect. Our results showed that 23% of the participants or their relatives have lost their jobs. Also, the monthly income was reduced by 26.6% of participants, while it was increased for only 13% of participants. The household expenses had dropped in 30% of the participants while the online shopping increased in 33% of participants. This could be due to the Stay-at-home order. This study has few limitations, due to the lockdown restrictions the online survey was the only option for us to conduct our study. The questionnaire was online and self-reported. Thus the survey was limited to individuals with access to the Internet. Furthermore, people from lower socio-economic groups and rural areas might not have the internal access. The pandemic is still ongoing and there are a lot of unknowns concerning it and when it is going to end. Therefore, further investigation and study are required regarding the extent of the impact as well as looking to the effect of social distancing measurements on the society and personal level. Thus, our data need to be confirmed and investigated in future larger population studies. Despite these limitations, our study provides information on the impact of COVID-19 quarantine covering abroad aspects such as physical, nutritional, psychosocial life, and work aspects.

In summary, this study clearly showed that the lockdown period during the pandemic was well correlated with an increase in the COVID-19 fear score. The degree FCV-19S was varied in different categories in several aspects. Low levels of physical activity and weight gained were observed during the lockdown period.

Authors' contributions

All authors share equal effort contribution towards substantial contributions to conception and design, analysis and interpretation of data; drafting the article and revising it critically for important intellectual content; and final approval of the manuscript version to be published.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/

their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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