



# COVID-19 & Kuwait

The effects of COVID-19 on mental  
health, food consumption and  
relationship dynamics in Kuwait





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# Executive summary

This study was designed by the collaboration with the General Secretary of the Supreme Council of Planning and Development (GSSCPD) of the State of Kuwait and the United Nations Development Programme (UNDP) Kuwait with the purposes to inform the support to the Kuwait government in responding to the pandemic crisis and tailor actions for an integrated response to both COVID-19 and NCDs and tackle not only the mental health and wellbeing effect, but also nutrition, physical inactivity, and relationship dynamics.

The survey was conducted by the questionnaire from June 18 to July 15, 2020, through social media, including WhatsApp and Facebook. The target population was the Kuwait residents over 21-year-old who is living in the territory of the State of Kuwait. Finally, 679 cases (57.9% of females and 42.1% of males; 67.7% of Kuwaiti nationals and 32.3% of non-Kuwaiti nationals) were analyzed.

## Mental health status under COVID-19 outbreak

- 59.8% of females and 51.0% of males are under depression.
- 20.4% of females and 13.6% of males are experiencing extremely severe depression.
- 42.0% of females and 37.8% of males are under psychological distress. And 15.1% of females and 9.1% of males are experiencing severe or extremely severe psychological distress.

## Family tensions and health behaviors

- 34.9% of females and 26.4% of males are suffering from tensions or violent behaviors with family members.
- 22.1% of females and 12.2% of males are experiencing verbal or physical abuse from family members.
- 34.9% of females and 26.4% of males do not take physical activities at least 30 minutes a week.
- 22.1% of females and 12.2% of males are having 'poor' and 'very poor' quality of sleep.

## Affecting variables to mental health

- Four types of food consumption have significant correlations with depression, anxiety, stress, and psychological distress. The consumption of 'vegetables' and 'vegetable unsaturated fatty acids' are positively effective on good mental health, while 'sugary drinks' and 'sweets and snacks' are negative.
- Female (2.00 times), aged 21-29 (4.56 times), the tension of violent behaviors with family members (4.56 time), no physical activities (1.64 times), smoking cigarettes (3.02 times), and poor or very poor quality of sleep (1.75 times) are more likely to cause extremely severe depression.
- Female (3.09 times), aged 21-49 (3.68 times), ill-health conditions or diseases (1.83 times), tension or violent behaviors with family members (3.56 times), smoking cigarettes (3.06 times), and poor or very poor quality of sleep (2.20) are more likely to cause severe or extremely severe psychological distress.

## Conclusion

In conclusion, the citizens and residents of Kuwait show a problematic situation of mental health status, especially depression and psychological distress, under the COVID-19 outbreak. Female, aged 21-49, and single, divorced, and widowed are more vulnerable than male, over 50's, and the married on mental health. There are urgent needs to intervene for health behaviors and social support, including coping methods with COVID-19 related stress, systems for family counsel, community supporting environment for encouraging a healthy lifestyle.

# Abbreviations

AAPOR:

American Association for Public Opinion Research

COVID-19:

Coronavirus disease of 2019

DASS:

Depression, Anxiety, and Stress Scale

GSSCPD:

General Secretariat of Supreme Council for Planning and Development

NCD:

Noncommunicable disease

SDGs:

Sustainable Development Goals

SPSS:

Statistical Package and Services Solutions

SMS:

Short message service

SNS:

Social networking service

UN:

United Nations

UNDP:

United Nations Development Programme

WHO:

World Health Organization

# I. Rationale

## I.1 Background

After Coronavirus disease (COVID-19) was confirmed at the end of December last year at Wuhan, China, COVID-19 began to be epidemic in many neighboring countries. Since then, in late\* February, the global pandemic phase has been met, leading to the occurrence of COVID-19 patients in most countries of the world. Some countries have succeeded in successfully preventing the spread of the virus. But as of the end of August 2020, 215 countries or territories have been experiencing COVID-19 outbreak. (Worldometer, 2020).

Since the 1st case of COVID-19 in Kuwait confirmed on the 24th of February 2020, the State of Kuwait has faced a profound challenge in the pandemic of COVID-19.

As of the end of August, the 27th week after the occurrence of the COVID-19 pandemic in Kuwait, over 80,000 cases have been confirmed being infected by the coronavirus, and more than 500 people have died from the virus in a short period. Kuwait is the 6th country in incidence per million among 215 countries and territories where the coronavirus epidemic is reported around the world. The scale is more extensive than the USA (10th) and Brazil (11th) (Salman, Chun, 2020). Now, no one can predict when the pandemic will be eased globally.

The outbreak of COVID-19 has changed life patterns and the perception of infectious diseases. Many studies on COVID-19 behaviors and perceptions give insights on how people react on the face of the outbreak.

Many people have acquired a good knowledge of the primary mode of disease transmission and common symptoms of COVID-19. However, a substantial proportion of people have misconceptions about how to prevent infection and the recommended care-seeking behavior (Geldsetzer, 2020). More than half of the study population are lacking sufficient health risk management knowledge to safeguard health and well-being (Chan et al., 2020). Furthermore, there are negative correlations between preventive behaviors and risk perception (Taghrir, Borazjani, Shiraly, 2020). Many people do not modify their diet and smoking habits, reducing physical activities during the outbreak, and lockdown (Gallè et al., 2020). While mass media plays a significant influence on both the level of knowledge, perception and attitude on COVID-19 (Motta et al., 2020), more than 80% of the study population believes to be not at-risk of COVID-19 infection (Motta et al., 2020).

The epidemic of coronavirus in Kuwait has brought many changes to people's way of life, behavior, and mental health. Rapid changes in the social environment and life patterns bring negative impacts on mental health and wellbeing so that the adverse effects directly affect to the other behaviors, including smoking, domestic violence, physical inactivity, food consumption, and even quality of sleep.

WHO has recommended assessing impacts of the COVID-19 pandemic and mental health, including depression, stress, anxiety, and psychological distress (WHO, 2020). In particular, UN agencies, including the United Nations, encourage each country to investigate the health and social impacts of COVID-19 and to prepare interventions for it (UN, 2020).

Therefore, in order to promote the wellbeing and health of the Kuwaiti residents, a comprehensive assessment of mental health and wellbeing was needed to be investigated promptly, and the development of behavioral interventions was urgently required.



## 1.2 Purpose and objectives

The COVID-19 pandemic did not only bring severe threat to lives and physical health, however, it also proved to cause depression, stress, and anxiety, along with other psychological problems. “The isolation, the fear, the uncertainty, the economic turmoil - they all cause or could cause psychological distress,” said Devora Kestel, director of the World Health Organization’s (WHO) mental health department. Mental health is a state of mental well-being, it has a very intrinsic value; it is translated in how people act, react, learn, adapt and experience happiness and suffering. The main preventive public health strategies are isolation of infected and high-risk individuals, physical distancing, lockdown for prolonged period of time, simple hygiene actions among others. Social distancing and isolation support in reducing the infection rate, however, it may lead to mental health issues like anxiety and depression (Zhou et al, 2020). Apart from social distancing, the pandemic itself induced panic and fear among people, whether fear of getting infected or losing family member (health), or fear of losing jobs and financial stability (economic), or fear of being lonely and isolated (social). Emotional difficulties are intensified by family stress, uncertainty what the future will hold, disrupted school and education, and increased physical and verbal abuse. Mental health and anxiety are exacerbated with women, as they have to bear the house, family, and job. Considering that good and stable mental health facilitates country’s response to COVID-19 as it supports the ability of people to display health behaviors. Governments, healthcare system, educational institutions, organizations, and NGOs are looking into psychological interventions to adopt the necessary measures and reduce the impact of this crisis on mental health.

Research point out that negative emotions and psychological distress influence disordered food consumption. Obesity is driven by anxiety, stress, and mood swings. Hence, emotional eating is a contributing factor to weight gain and obesity. Given the widespread of negative emotions during the pandemic, and shortage of access to fresh food (especially during lockdown periods), this led to increase in unhealthy eating habits.

Obesity and physical inactivity are among the risk factors of Non-communicable diseases (NCDs). In fact, obesity is a reliable indicator to predict cardiovascular diseases, hypertension, colon cancer, stroke, and other non-communicable diseases. Kuwait is the 11th country with the highest prevalence of obesity in the world, which has a 37.9 percent obesity rate (Worldatlas, 2019). In addition, another serious lifestyle issue is physical inactivity. Kuwait is a country that has the highest prevalence of insufficient physical activity around the world (around 67% of adults do not meet sufficient level physical activity) (WHO, 2019).

Before COVID-19 outbreak, Kuwait (similarly to other countries) was trying hard to achieve many targets in SDGs to reduce the mortality rate related to NCDs. Now, the pandemic is making it even more challenging. Apart from being a physical health risk, COVID-19 has more wide-ranging impact on mental health, well-being, happiness, obesity, physical activity, domestic abuse and others. These risk factors have a prolonged ripple effect on the long run. Opportunities for scaling up action on NCDs should be taken both immediately and as part of longer-term efforts to strengthen systems for health.

With the objective to inform the support to the Kuwait government in responding to the pandemic crisis and tailor actions for an integrated response to both COVID-19 and NCDs, a survey was conducted on the main behaviors during the full lockdown. This study was conducted to evaluate the impact of COVID-19 pandemic on Kuwait citizens and residents. Not only does it tackle the mental health and wellbeing effect, but also nutrition, physical inactivity, and relationship dynamics.

## 2. Methods

### 2.1 Research framework and theories

This study was applied to theoretical modeling approaches, which consist of surveys and development of intervention programs based on the survey. To achieve the two main aims of this study, the assessment of mental health and the development of intervention programs, the research framework was designed based on theories, including the 'Social-Ecological Model (Kilanowski, 2017),' 'Health Belief Model (Janz, Becker, 1984),' and 'Behavioral Insights Approach (Lourenço et. Al, 2016).' The detailed theories and contents linked with this study were summarized in Table I.

Table I Theories and framework of contents of this study

Theories	Framework of the contents
The Social-Ecological Model	<ul style="list-style-type: none"> <li>• Intrapersonal level: Stress, anxiety, depression level from COVID-19; Psychological variables; Stages of change behavioral intentions; Self-efficacy</li> <li>• Interpersonal level: Attitudes of social networks, including the provision of social support</li> </ul>
The Health Belief Model	<ul style="list-style-type: none"> <li>• Socio-demographic and psychological variables</li> <li>• Perceived susceptibility of the COVID-19</li> <li>• Perceived severity of the COVID-19</li> <li>• Health motivation</li> <li>• Perceived benefits of coping actions</li> <li>• Perceived barriers for coping actions</li> <li>• Self-efficacy</li> <li>• Cues to action</li> </ul>
Behavioral Insights	<ul style="list-style-type: none"> <li>• Provision of targeted and efficient solutions at all stages of programs</li> <li>• Enhancement of healthy lifestyle for prevention</li> <li>• Strengthen adherence to treatment</li> </ul>

### 2.2 Survey method and target population

The study was cross-sectional study which was designed to survey with the structured questionnaire through the online base using WhatsApp based on the platform of the UNDP Kuwait. The target population was the Kuwait residents over 21-year-old who is living in the territory of the State of Kuwait. And a non-random sampling method was applied.

The questionnaire was encouraged to respond through the networks of NGOs and research partners from June 19 to July 15 with messages of ethics and purposes of this survey. The total number of respondents was 720 during the survey period. Among them, 41 the respondents who are under 21 years old or are not identified in gender were removed. Eventually, 679 cases were involved in the final analysis.

### 2.3 Questionnaire design and tools

The population-based survey questionnaire was structured to develop behavioral insights intervention programs based on the theories applied in this study: Social-Ecological Model, Health Belief Model, and Behavioral Insight Model. The total number of questions was 65 questions, and the survey items and the number of questions by survey category are summarized in Table 2. And detailed questions are attached as a whole questionnaire.

For measuring perception of COVID-19, based on the previous research (Shahnazi et al., 2020), we modified perceived susceptibility, severity, barriers, self-efficacy, the action cues to apply them to Kuwait's situation. And we allied the theory of Locus of Control and Behavioral Insights to measure differences between either side of locus of control and the perceived identities.

To assess mental health, we applied Depression, Anxiety, and Stress Scale (DASS9) (Yusoff, 2013), which measure depression, anxiety, stress, and general psychological distress.

Table 2 Structure of the questionnaire

Category	Number of questions	Contents of questions
Background information	15	Gender; Age; Marital status; Nationality; Residence area; Living condition: house type, space sharing, numbers in a house; working at home; life at home; Comorbidities and Disability
COVID-19	17	Experience of COVID-19; Attitude, preventive, and protective behaviors of COVID-19; Perceived barriers; Self-efficacy
Mental health	9	Depression, Anxiety and Stress Scale - 9 Items (DASS-9)
Food consumption and eating habits	13	Retrospective and current food consumption
Exercise and other health behaviors	8	Retrospective and current physical activities; Retrospective and current smoking; sleeping quality
Relationship dynamics	3	Comparisons between before and after of COVID-19;
<b>Total</b>	<b>65</b>	

## 2.4 Research ethics

This research is oriented on the ethical standards of the American Association for Public Opinion Research (AAPOR, 2020). As well, the consent outline is adopted from WHO recommendations for the survey under COVID-19 (WHO, 2020). The contents of the consent consisted of 'what is this project about?' 'what are the benefits and risks of taking part?' 'what will you ask, and what will happen to the information I give you?' 'how long will my data be stored for?,' 'concerns,' and 'consent I understand that.'

The research ethics was approved by 'the review board of the Ministry of Health (MOH) on June 10th (# number should be included).

## 2.5 Method of analysis

Four types of analytical methods were applied to figure out the status and intervention clues, using IBM Statistical Package and Services Solutions (SPSS) software version 25 (IBM Corp, Armonk, New York, NY, USA). A p-value < 0.05 was considered statistically significant.

First, frequency analysis was conducted to classify 'General characteristics,' 'Living conditions,' 'Working conditions at home,' and 'Health conditions' of the respondents. Second, cross tabs chi-square test and independent-samples t-test were conducted to identify gender differences of 'perception of COVID-19,' 'mental health,' 'food consumption patterns,' 'health behaviors,' and 'family relationships.'

Third, Pearson's correlation coefficient analysis was performed to identify intercorrelation dependent and independent variables, especially between 'mental health and food consumption,' 'mental health and health behaviors,' and 'other health behaviors.'

Fourth, binary logistic regression analysis was conducted to calculate the odds ratio for predicting variables to mental health, including 'depression and extremely severe depression,' 'anxiety and severe or extremely severe anxiety,' 'stress and severe or extremely severe stress,' and 'psychological distress and severe or extremely severe psychological distress.' Before we conduct the binary logistic regression analysis, all variables were

dichotomized based on pre-analysis of 27 independent variables: gender, age, nationality, marital status, education, house type, working at home, ill-health condition, living with the disabled, tension with family members, family abuse on violence, food consumption (11 types), frequency of exercise, smoking cigarette, smoking shisha, sleep hours, and sleep quality. And with the guidance of the classification of mental health from previous research (Yusoff, 2013), the dependent variables were classified by the status of 'depression: normal, mild, moderate, and extremely severe,' 'anxiety: normal, moderate, severe, and extremely severe,' 'stress: normal, moderate, severe, and extremely severe,' and 'psychological distress: normal, moderate, severe, and extremely severe.'

As dependent variables for binary logistic regression analysis, dichotomization procedures were performed like as 'depression: normal vs. depression, normal vs. extremely severe depression,' 'anxiety: normal vs. anxiety, normal vs. severe or extremely severe anxiety,' 'stress: normal vs. stress, normal vs. severe or extremely severe stress, and 'psychological distress: normal vs. psychological distress, normal vs. severe or extremely severe psychological distress.'

Single binary logistic analysis was conducted of each dependent variable with each independent variables to figure out simple odds ratio. Finally, the binary logistic multi-regression analysis was performed using the 'Forward Stepwise: Wald' method for predicting the levels of depression, anxiety, stress, and psychological distress (final odds ratios).

# 3. Characteristics of the respondents

## 3.1 General characteristics

The general characteristics of the respondents are described in Table 3 and Figure 1. Among 679 cases, 57.9% are female, while 42.1% are male. Kuwait national are 67.7% versus 32.3% of non-Kuwait national. Age groups are relatively evenly involved 28.7% of the '20s, 29.3% of the '30s, 23.0% of the '40s, and 19.0% of 50 or above. 63.8% are married, and 70.3% are educated college-level education or over. The residency of Hawalli and Capital area is higher than the rest four areas, which are 26.8% and 24.4 %, respectively.

Figure 1 Proportions of the respondents by gender, age, and nationality

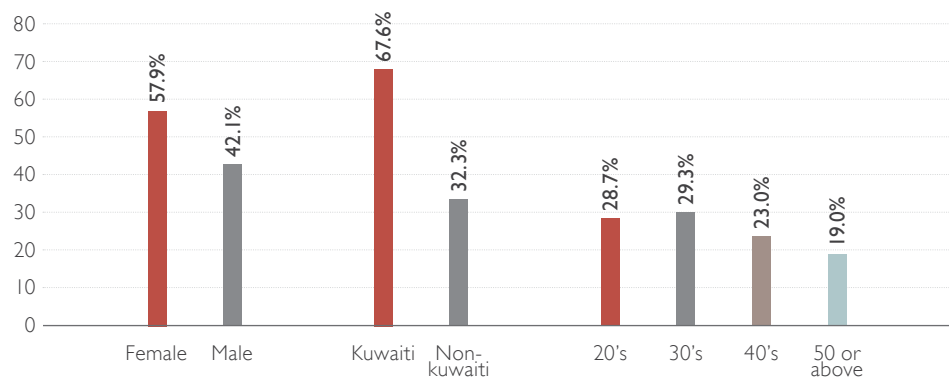


Table 3 Characteristics of the respondents  
(N=679)

Variables	%
<b>Gender</b>	
Female	57.9
Male	42.1
<b>Age</b>	
21~29	28.7
30~39	29.3
40~49	23.0
50~59	15.2
60 and above	3.8
<b>Nationality</b>	
Kuwait	67.7
Non-Kuwait	32.3
<b>Marital status</b>	
Married	63.8
Single (never married)	29.7
Divorced/ spouse deceased	6.5
<b>Education</b>	
High school/intermediate school/primary school/less than primary school	13.3
Diploma	16.5
College/University	47.6
Postgraduate	22.7
<b>Residence area</b>	
Capital (Al Asimah)	24.4
Hawalli	26.8
Farwaniya	11.6
Mubarak Al Kabeer	14.6
Ahmadi	12.7
Jahra	9.9

### 3.2 Living conditions

Table 4 shows the living conditions of the respondents. 32.8% of respondents are living houses with gardens, while the rest respondents are living apartments (37.7%) or houses without a garden (29.5%). 10.2% of respondents are living with disabled families, and 25.6% are living with ten or more family members. 88.5% of the respondents are living with children, in which 23.9% are living with five or more children. 24.1% of respondents have young children who are 12 months or less (8.1%) and 1-2 years old.

Table 4 Living condition of the respondents  
(N=679)

Variables	%
<b>House type</b>	
Apartment	37.7
House without garden	29.5
House with garden	32.8
<b>Do you have a person with disability living at home with you?</b>	
No	89.8
Yes	10.2
<b>How many people live in your household, including yourself?</b>	
Alone	2.1
2	8.5
3-4	11.5
5-6	24.0
7-9	28.3
10 and more	25.6
<b>How many children live in your household with you?</b>	
None	21.5
1	9.9
2	17.4
3	16.3
4	11.9
5 and more	23.9
<b>Which of the following are the age ranges of children living together in the household? (selected all that apply)</b>	
None	15.6
12 months or less	8.1
1-2 years	13.3
3-5 years old	24.6
Elementary school ages	38.7
Intermediate school ages	33.0
Secondary school ages	28.1

### 3.3 Working conditions at home

During the curfew period, 64.5% of respondents are working at home as a job holder, 63.9% are salaried employees. 63.4% of respondents answered that the housework is increased during the COVID-19 outbreak (Table 5).

Table 5 Working condition at home of the respondents  
(N=679)

Variables	%
<b>Employment type</b>	
Salaried employee	63.9
Retired	8.2
Unemployed	6.0
Business Owner	5.0
Student	13.1
Homemaker	3.7
<b>Do you work for a job at home, even under Curfew (for students: are you continuing to study) during the COVID-19 outbreak?</b>	
No	64.5
Yes	35.5
<b>How much time and effort did you spend on housework during the COVID-19 outbreak?</b>	
Rather reduced	10.9
Same as usual	25.8
Slightly increased	37.0
Very much increased	26.4

### 3.4 Health conditions

33.1% of the respondents have the conditions of diseases, of which high blood pressure is the highest as 11.5%, diabetes (10.5%), chronic bronchitis (5.4%), and cardiovascular disease (3.2%) in order (Table 6). 2.2% of the respondents had been infected coronavirus, and 50.4% know the confirmed cases within their immediate social environment.

Table 6 Health condition of the respondents  
(N=679)

Variables	%
<b>Do you have any conditions or diseases? (selected all that apply)</b>	
High blood pressure	11.5
Diabetes	10.5
Cardiovascular disease	3.8
Chronic bronchitis	5.4
Hereditary conditions	3.2
Mental illness	1.5
Cancer	0.9
Physical disability	1.2
None of the diseases	66.9
<b>Are you, or have you been, infected with the novel coronavirus?</b>	
Yes, tested and the result was positive	2.2
Yes, suspected but not confirmed by a test	2.2
No, tested and the result was negative	8.1
No	72.9
Don't know	14.6
<b>Do you know people in your immediate social environment who are or have been infected with the novel coronavirus?</b>	
Yes, confirmed	50.4
Yes, suspected but not confirmed by a test	3.4
No, tested and the result was negative	4.3
No	36.4
Don't know	5.4

# 4. Current status and gender differences of the perception, consumption, experiences, and mental health

## 4.1 Perception of COVID-19

- Table 7 and Figure 2 display the gender differences of attitudes and perceptions about the COVID-19 pandemic.
- Males tend to perceive that they are risk-takers that is higher than females (8.4% vs. 3.8%) ( $p < .05$ ).
- Males are more likely to put their attributions to outside than females ( $p < .001$ ).
- Females are more likely to perceive the coronavirus severely than males ( $p < .001$ ).
- Both genders perceive themselves as highly adapting the right behaviors and measurements to prevent the infection. Still, males see barriers higher to follow the measures for avoiding the coronavirus infection than females do ( $p < .001$ ).
- Both genders consider that “TV, radio, SMS, and Internet information about the disease” is beneficial, and “the news on Social Media and the Internet and TV” induce fear and feeling of threat significantly.

Figure 2 Attitudes and perception on COVID-19 pandemic

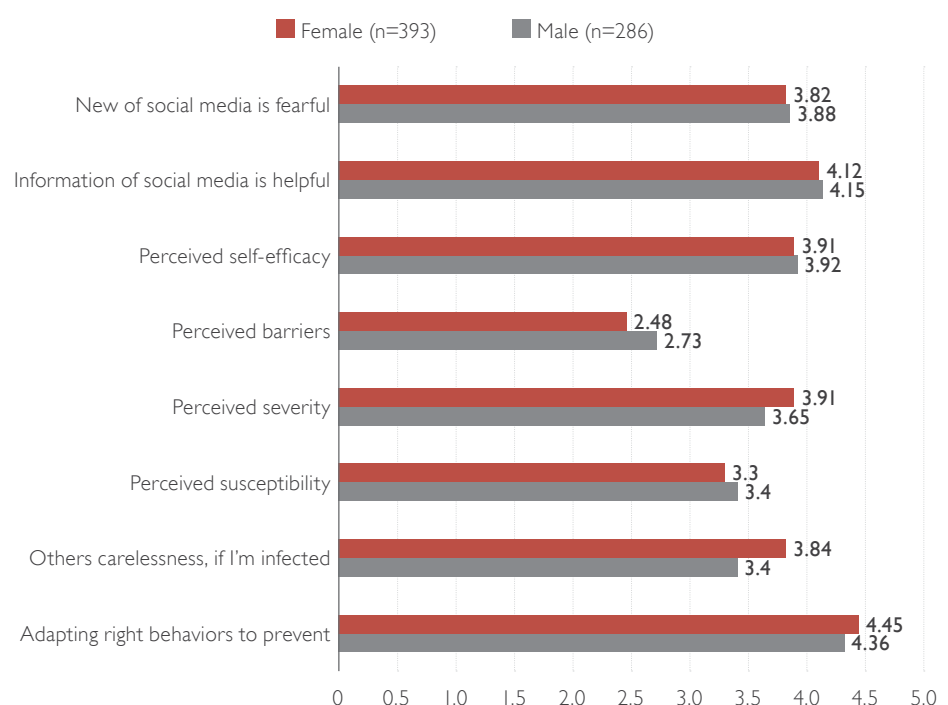




Table 7 Gender differences of attitude and perception on COVID-19 pandemic

Unit: %, mean (SD)

Variables	Female (n=393)	Male (n=286)	X <sup>2</sup> - or t-, and (p-value)
<b>Do you consider yourself to be?</b>			
Risk Averse	66.9	67.5	7.651 (.022)
Risk Takers	3.8	8.4	
Neutral	29.3	24.1	
<b>Do you consider yourself adapting the right behaviors and measurements to prevent the infection?</b> (Mal adaptation ① - ② - ③ - ④ - ⑤ Adaptation)			
	4.45 (.89)	4.36 (1.00)	1.225 (.221)
<b>If I'm infected with coronavirus, it will come with~</b> (My carelessness ① - ② - ③ - ④ - ⑤ Carelessness from other community people)			
	3.84 (1.44)	3.40 (1.61)	3.774 (.000)
Perceived susceptibility <sup>1</sup>	3.30 (1.18)	3.40 (1.00)	-1.136 (.256)
Perceived severity <sup>1</sup>	3.91 (.82)	3.65 (.96)	3.795 (.000)
Perceived barriers <sup>1</sup>	2.48 (.91)	2.73 (.91)	-3.666 (.000)
Perceived self-efficacy <sup>1</sup>	3.91 (.83)	3.92 (.78)	-.212 (.832)
TV, radio, SMS, and Internet information about the disease have been helpful. <sup>1</sup>	4.12 (1.14)	4.15 (1.05)	-.389 (.698)
Is the news on Social Media and the Internet and TV induce fear and feeling of threat? <sup>1</sup>	3.82 (1.09)	3.88 (1.09)	-.656 (.512)

Note: 1. Strongly disagree ① - ② - ③ - ④ - ⑤ Strongly agree

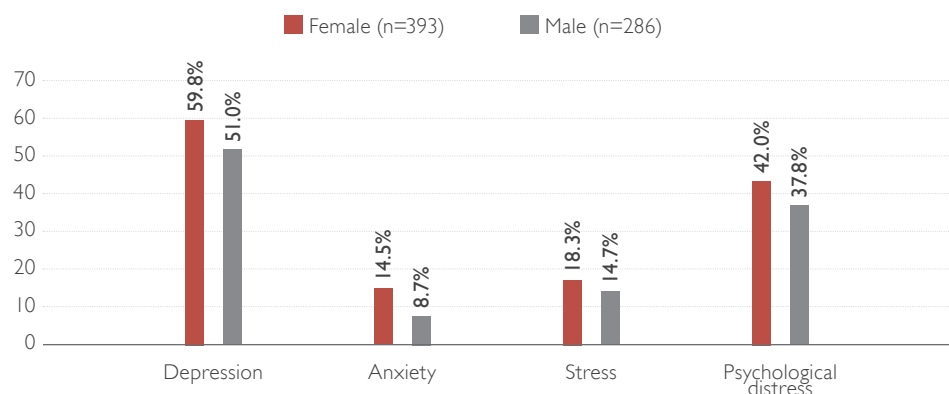
## 4.2 Mental health

Table 8 and Figure 3 show the gender differences in mental health status.

More females are under mental health problems than males, in which mental health status includes depression (59.8% vs. 51.0%), anxiety (14.5% vs. 8.7%), stress (18.3% vs. 14.7%), and general psychological distress (42.0% vs. 37.8%). But among those mental health problems, depression only is statistically significant ( $p < .05$ ).

Significantly, 20.4% of females and 13.6% of males are experiencing extremely severe depression. 15.1% of females and 9.1% of males have severe or extremely severe psychological distress. 9.4% of females and 7.3% of males are under severe or extremely severe stress. And 6.6% of females and 4.1% of males are situated in severe or extremely severe anxiety.

Figure 3 Status of mental health of the respondents

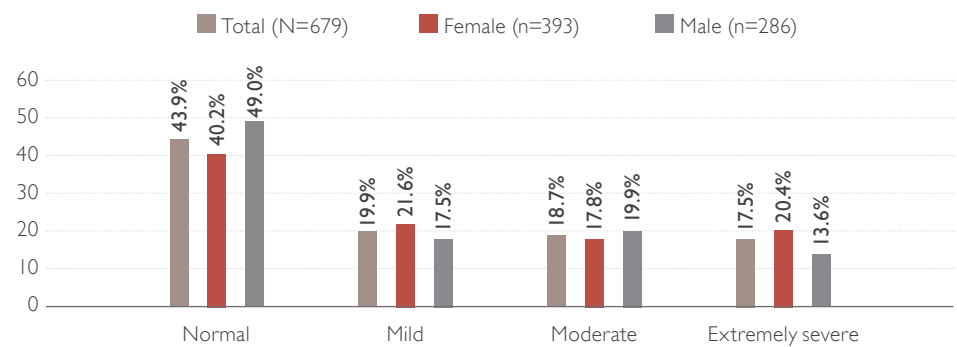


**Table 8** Gender differences of depression, anxiety, stress, and general psychological distress

Unit: %

Mental health	Total (N=679)	Female (n=393)	Male (n=286)	X <sup>2</sup> - and (p-value)
<b>Depression</b>				
Normal	43.9	40.2	49.0	8.980 (.030)
Mild	19.9	21.6	17.5	
Moderate	18.7	17.8	19.9	
Extremely severe	17.5	20.4	13.6	
<b>Anxiety</b>				
Normal	87.9	85.5	91.3	5.961 (.114)
Moderate	6.5	7.9	4.5	
Severe	2.9	3.8	1.7	
Extremely severe	2.7	2.8	2.4	
<b>Stress</b>				
Normal	83.2	81.7	85.3	1.907 (.592)
Moderate	8.2	8.9	7.3	
Severe	5.3	6.1	4.2	
Extremely severe	3.2	3.3	3.1	
<b>General psychological distress</b>				
Normal	62.3	58.0	68.2	8.876 (.064)
Mild	14.1	15.5	12.2	
Moderate	11.0	11.5	10.5	
Severe	7.4	8.7	4.9	
Extremely severe	5.4	6.4	4.2	

**Figure 4** The level of depression of the respondents



**Figure 5** The level of anxiety of the respondents

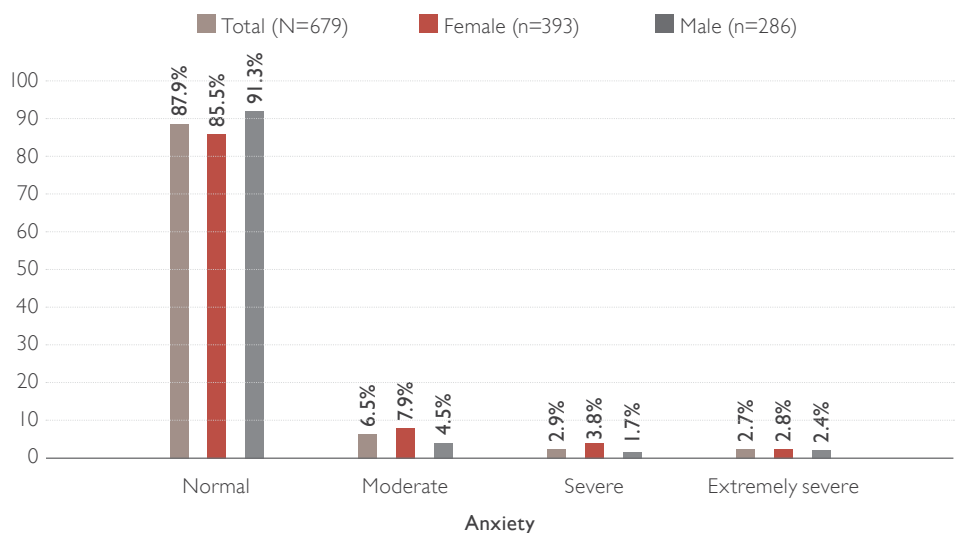


Figure 6 The level of stress of the respondents

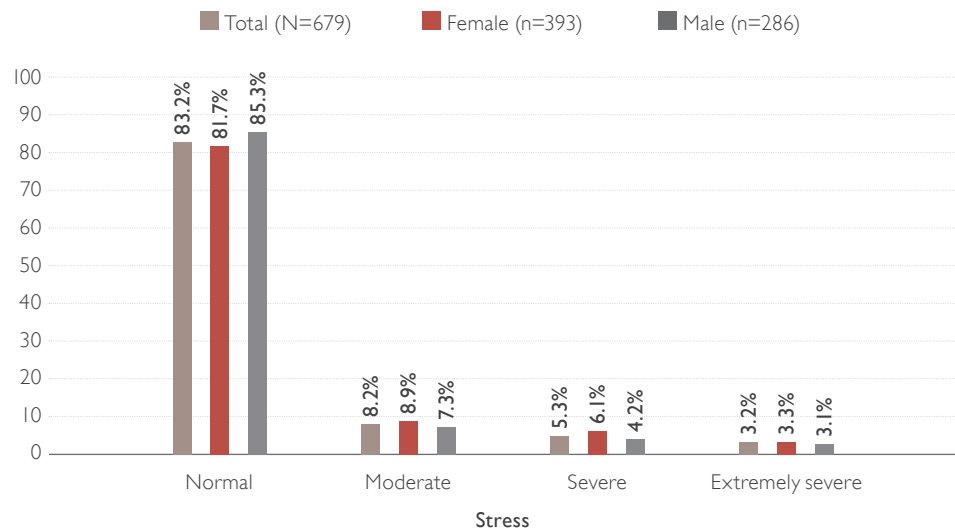
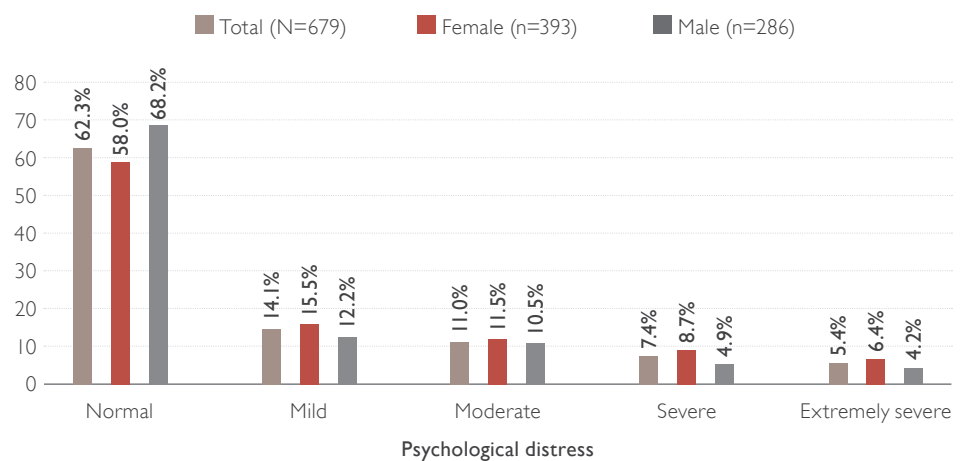


Figure 7 The level of psychological distress of the respondents



### 4.3 Food consumption

Table 9 and Figure 8 explain and display the comparison of the food consumption between before and during the COVID-19 outbreak and gender differences:

- During the COVID-19 outbreak, both genders have increased the consumption of vegetables, fruits, and carbohydrates slightly, and decreased fishes and sugary drinks.
- Males are more consuming meats ( $p < .05$ ), eggs ( $p < .05$ ), and milk products ( $p < .01$ ) than females. But females are more consuming sweets and snacks than males ( $p < .01$ ) during the outbreak.

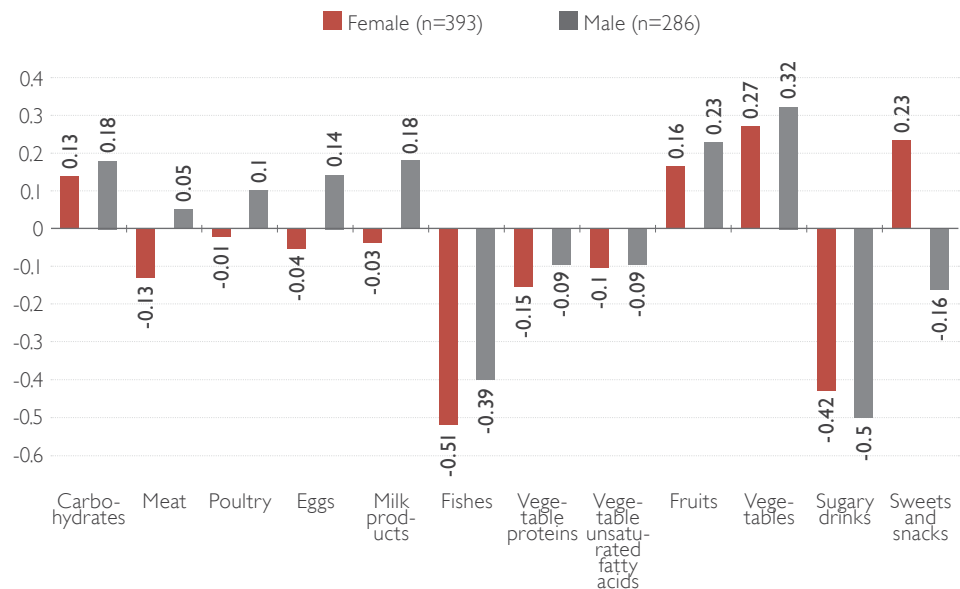
**Table 9** Comparisons of food consumption between before and during the COVID-19 outbreak

Unit: mean (SD)

Comparing with the eating styling before the COVID-19 outbreak in Kuwait, your current amount of the food consumption listed below are:	Total (N=679)	Female (n=393)	Male (n=286)	t- and (p-value)
Carbohydrates	+0.15 (.99)	+0.13 (.99)	+0.18 (1.00)	-0.661 (.509)
Meats	-0.06 (.95)	-0.13 (.97)	+0.05 (.93)	-2.535 (.011)
Poultry	+0.04 (.90)	-0.01 (.89)	+0.10 (.90)	-1.574 (.116)
Eggs	+0.04 (.92)	-0.04 (.98)	+0.14 (.93)	-2.470 (.014)
Milk products	+0.06 (.88)	-0.03 (.87)	+0.18 (.88)	-2.998 (.003)
Fishes	-0.46 (1.05)	-0.51 (1.05)	-0.39 (1.06)	-1.541 (.124)
Vegetable proteins	-0.13 (.94)	-0.15 (.95)	-0.09 (.93)	-0.844 (.399)
Vegetable unsaturated fatty acids	-0.09 (1.00)	-0.10 (.98)	-0.09 (1.03)	-0.152 (.879)
Fruits	+0.19 (1.02)	+0.16 (1.04)	+0.23 (.98)	-0.860 (.390)
Vegetables	+0.29 (.95)	+0.27 (.98)	+0.32 (.92)	-0.687 (.490)
Sugary drinks	-0.45 (1.19)	-0.42 (1.20)	-0.50 (1.18)	0.919 (.359)
Sweets and snacks	0.00 (1.22)	+0.23 (1.24)	-0.16 (1.18)	3.075 (.002)

Note: -2: I eat much less; -1: I eat less; 0: I eat the same as before; 1: I eat more; 2: I eat much more

**Figure 8** Trends of food consumption during the COVID-19 outbreak comparing with before the outbreak



#### 4.4 Health behaviors

Table 10 shows the health behaviors and gender differences of the respondents under the COVID-19 outbreak:

- 34.3% of respondents eat more than before the COVID-19 outbreak, and 35.8% think they have gained weight since March 2020.
- Females answered higher than males that they eat more than before the COVID-19 outbreak (35.9% vs. 32.3%,  $p < .05$ ).
- 33.3% of the respondents do not do 30 minutes of physical activities exercise in a week.
- 36.4% of the respondents think that their quality of sleep is 'poor' or 'very poor.'

- The cigarettes smoking rate of males is much higher than females (40.6% vs. 5.3%,  $p < .001$ ), but the rates of smoking shisha are not significantly different between males and females (8.7% vs. 5.1%).
- 15.7% of males have increased the amounts of smokes during the COVID-19 outbreak.
- 12.5% of females sleep five or less than 5 hours, which is higher than males of 10.1% ( $p < .05$ ).

Table 10 Health behaviors under the COVID-19 outbreak

**Unit: %**

Health behaviors	Total (N=679)	Female (n=393)	Male (n=286)	X <sup>2</sup> - and (p-value)
<b>Overall, I eat more than before the COVID-19 outbreak.</b>				
Yes	34.3	35.9	32.2	6.686 (.035)
No	52.9	49.1	58.0	
I am not sure	12.8	15.0	9.8	
<b>Overall, I think I have gained more weight since March 2020.</b>				
Yes	35.8	34.4	37.8	.839 (.657)
No	55.5	56.7	53.8	
I am not sure	8.7	8.9	8.4	
<b>In the past week, how many days have you done a total of 30 minutes or more of physical activity?</b>				
None	33.1	35.4	30.1	4.750 (.690)
1 day	8.1	6.9	9.8	
2 days	9.9	9.4	10.5	
3 days	13.8	14.2	13.3	
4 days	8.2	8.1	8.4	
5 days	9.7	9.9	9.4	
6 days	4.9	4.1	5.9	
7 days	12.2	12.0	12.6	
<b>During the COVID-19 outbreak, do you think you are doing exercise more regularly than you do before the COVID-19 outbreak?</b>				
Yes, I exercise more regularly than before.	22.8	22.6	23.1	3.107 (.375)
No, I exercise more irregularly than before.	34.3	33.8	35.0	
I exercise at the same regularity as I do before.	11.6	10.2	13.6	
I do not exercise.	31.2	33.3	28.3	
<b>How many do you usually smoke a day? (include electric cigarettes)</b>				
None	79.8	94.7	59.4	132.397 (.000)
5 or less than 5 EA	5.0	2.3	8.7	
5-9 EA	3.2	1.3	5.9	
10-19 EA	6.0	1.5	12.2	
Over 20 EA	5.9	0.3	13.6	
<b>How many times do you usually smoke shisha a day?</b>				
None	93.4	94.9	91.3	4.299 (.231)
Once or twice	4.7	3.3	6.6	
3-4 times	1.0	1.0	1.0	
Over 5 times	0.9	0.8	1.0	
<b>During the COVID-19 outbreak, do you think you smoke more than you do before the COVID-19 outbreak?</b>				
Yes, I smoke more than before.	9.1	4.3	15.7	123.497 (.000)
No, I do smoke less than before.	5.0	2.8	8.0	
I smoke the same amount as before.	10.3	2.0	21.7	
I do not smoke.	75.6	90.8	54.5	
<b>How many hours do you usually sleep a day? (include nap)</b>				
5 or less than 5 hours	11.5	12.5	10.1	9.635 (.022)
6-7 hours	42.3	37.4	49.0	
8-9 hours	35.6	37.9	32.5	
Over 10 hours	10.6	12.2	8.4	
<b>How do you think about the quality of your sleep to compare what you do before the COVID-19 outbreak?</b>				
Very poor	12.7	14.5	10.1	5.918 (.205)
Poor	23.7	24.4	22.7	
Same	32.5	29.5	36.7	
Good	21.6	21.4	20.0	
Very good	9.4	10.2	8.4	

#### 4.5 Family relationship

Table II explains the relationship dynamics with family members under the COVID-19 outbreak:

- 34.9% of female respondents answered that tensions or even violent behaviors were increased in relationships with any of family members (husband/wife, parents, children) compared to before the outbreak of the COVID-19 outbreak, while 26.4% of males answered 'yes.'
- Females have higher experiences that abused, such as verbal or physical abuse than males (22.1% vs. 12.2%,  $p < .01$ ).
- The respondents answered, as the variables affecting the mental wellbeing of themselves and any of their family members, leading to tensions or even violent acts in the relationship during the COVID-19 outbreak, "fear about the future prospects (36.8%)," "physical proximity (26.5 %)," "financial anxieties (25.3%)," and "lack of common interest and/ or hobbies (20.6%)" in order.
- Among the variables, females answered significantly higher than males in "increased household work (23.4 vs. 11.5,  $p < .001$ ) and "lack of common interest and/or hobbies (23.7% vs. 16.4,  $p < .05$ )."

Table II Relationship dynamics under the COVID-19 outbreak

	Unit: %			
Health behaviors	Total (N=679)	Female (n=393)	Male (n=286)	X <sup>2</sup> - and (p-value)
<b>Have tensions or even violent behavior increased in relationships with any of your family members (husband / wife, parents, children) compared to before the outbreak of COVID-19 outbreak?</b>				
Yes	31.3	34.9	26.4	5.717 (.057)
No	65.4	62.3	68.7	
I refuse to answer	3.2	2.8	3.9	
<b>Have these tensions in your relationships with any of your family members (husband / wife, parents, children) that resulted in physical or verbal abuse?</b>				
Verbal abuse	14.1	17.8	9.1	14.888 (.005)
Physical abuse	0.9	0.5	1.4	
Verbal and physical abuse	2.9	3.8	1.7	
No	78.5	74.3	84.3	
I refuse to answer	3.5	3.6	3.5	
<b>In your view, what are the factors affecting the mental wellbeing of yourself and any of your family member, leading to tensions or even violent acts in the relationship during the COVID-19 outbreak? (Please select all that apply)</b>				
Physical proximity	26.5	26.7	26.2	.021 (.930)
Increased demands at the job	10.3	11.2	9.1	.793 (.443)
Increased household work	18.4	23.4	11.5	15.531 (.000)
Increased tasks to guide children's learning	15.9	18.1	12.9	3.256 (.089)
Financial anxieties	25.3	24.4	26.6	.403 (.533)
Fear about the future prospects	36.8	34.4	40.2	2.442 (.126)
Lack of common interest and/or hobbies	20.6	23.7	16.4	5.288 (.022)
Lack of physical exercise and sport	17.1	15.0	19.9	2.826 (.099)
Lack of sleep and rest	21.2	23.2	18.5	2.118 (.155)
Increased negative health symptoms	11.0	12.5	9.1	1.922 (.175)
Others	25.3	24.7	26.2	.208 (.656)

# 5. Inter-correlations between mental health and health behaviors

## 5.1 Correlations between mental health and food consumption

Table 12 displays correlation coefficients between the types of food consumption and mental health, including depression, anxiety, stress, and general psychological distress.

- Four types of food consumption have significant correlations with depression, anxiety, stress, and psychological distress:
- The more consume 'vegetable unsaturated fatty acids ( $p < .05$ )' and 'vegetables ( $p < .05$ ),' the lower the score of depression.
- The more consume 'vegetables, the lower the score of anxiety ( $p < .01$ ).
- The more consume 'vegetables, the lower the score of psychological distress ( $p < .05$ ).
- The more consume 'sugary drinks ( $p < .05$ )' and 'sweets and snacks ( $p < .05$ ), the higher the score of depression.
- The more consume 'sugary drinks ( $p < .01$ )' and 'sweets and snacks ( $p < .01$ ), the higher the score of stress.
- The more consume 'sugary drinks ( $p < .01$ )' and 'sweets and snacks ( $p < .01$ ), the higher the score of psychological distress.

Table 12 Correlations between mental health and the consumption of the food types

	Depression	Anxiety	Stress	General psychological distress
Carbohydrates	.024	-.012	.009	.009
Red meats	-.026	-.059	-.021	-.043
Poultry	.008	-.032	.014	-.003
Eggs	-.053	-.023	.002	-.030
Milk products	-.039	-.014	-.010	-.026
Fishes	-.070	-.039	-.009	-.049
Vegetable proteins	.009	-.013	.058	.022
Vegetable unsaturated fatty acids	-.077*	-.074	.011	-.057
Fruits	-.058	-.074	-.041	-.070
Vegetables	-.076*	-.110**	-.047	-.095*
Sugary drinks	.091*	.073	.134**	.121**
Sweets and snacks	.081*	.075	.106**	.106**

\*:  $p < .05$ ; \*\*:  $p < .01$

## 5.2 Correlations between mental health and health behaviors

Mental health is highly correlated with health behaviors, including physical activities, smoking cigarettes, and quality of sleep (Table 13):

- The physical activities reduce stress. The more the days of physical activities in a week, the lower the score of stress ( $p < .05$ ).
- The smoking amounts are positively correlated with the score of depression ( $p < .05$ ). The more smokes, the higher the score of depression.
- The quality of sleep is correlated with all mental health dimensions, including depression ( $p < .01$ ), anxiety ( $p < .01$ ), stress ( $p < .01$ ), and psychological distress strongly ( $p < .01$ ). The better the quality of sleep, the less the score of depression, anxiety, stress, and psychological distress.

Table 13 Correlations between mental health and health behaviors

	Depression	Anxiety	Stress	General psychological distress
Days of physical activities	-.061	-.037	-.085*	-.074
Daily amount of smoking cigarette	.084*	.013	.020	.049
Daily amount of smoking shisha	.041	.033	.059	.054
Sleep hours	.047	.013	.014	.031
Quality of sleep	-.139**	-.181**	-.158**	-.194**

\*:  $p < .05$ ; \*\*:  $p < .01$ 

### 5.3 Correlations between health behaviors

Each health behavior is significantly correlated with each other, except the smoking shisha (Table 14):

- The days of physical activities have strongly positively correlated with 'quality of sleep' ( $p < .01$ ) and vegetable consumption ( $p < .05$ ), and strongly negatively correlated with 'consumption of sugary drinks' ( $p < .01$ ) and 'consumption of sweets and snacks' ( $p < .01$ ).
- Sleep hours are positively correlated with good quality of sleep ( $p < .05$ ). And the quality of sleep is negatively correlated with 'consumption of sugary drinks' ( $p < .01$ ) and 'consumption of sweets and snacks' ( $p < .05$ ), while it strongly positively correlated with 'the days of physical activities' ( $p < .01$ ).
- 'The consumption of vegetables' is negatively correlated with 'the consumption of sugary drinks' ( $p < .05$ ).

Table 14 Correlations between health behaviors

	Days of physical activities	Daily amount of smoking cigarette	Daily amount of smoking shisha	Sleep hours	Quality of sleep	Vegetable consumption	Sugary drinks	Sweets and snacks
Days of physical activities	-							
Daily amount of smoking cigarette	-.022	-						
Daily amount of smoking shisha	-.045	.170**	-					
Sleep hours	-.024	.006	-.067	-				
Quality of sleep	.112**	-.037	-.018	.262**	-			
Vegetable consumption	.076*	-.050	.045	.054	.028	-		
Sugary drinks	-.194**	.028	.068	.083*	-.116**	-.022	-	
Sweets and snacks	-.177**	-.056	.014	.097*	-.084*	-.078*	.597**	-

\*:  $p < .05$ ; \*\*:  $p < .01$



# 6. Prediction variables to mental health

## 6.1 Predicting variables to depression and extremely severe depression

Table 15 is the final models for the prediction of both depression and extremely severe depression controlled by socio-demographic and other behaviors. Besides, Figure 9 displays the final odds ratios of extremely severe depression:

Gender is a factor in predicting extremely severe depression. Females are twice to have extremely severe depression than males, but there is no difference between genders in the likelihood of depression.

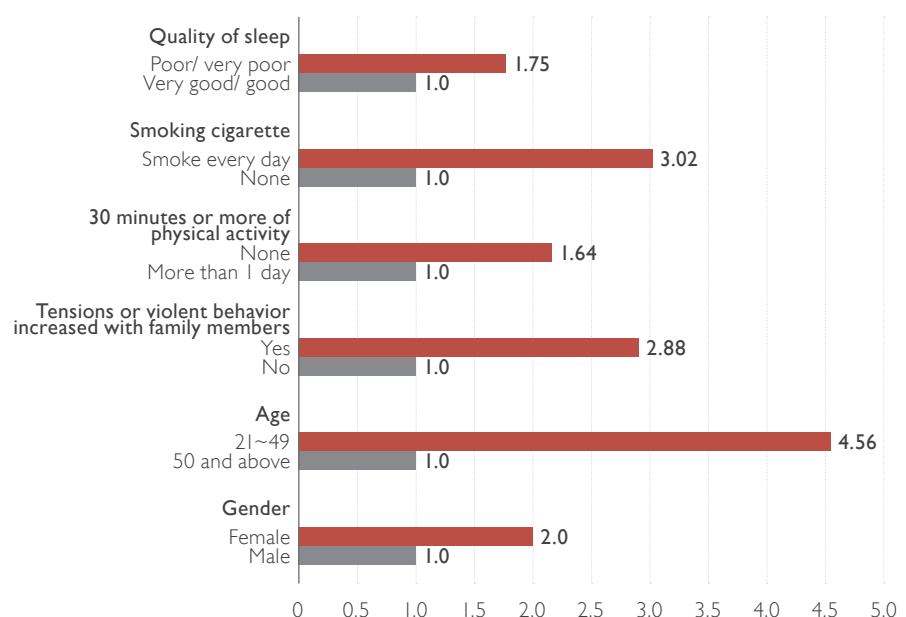
Age is a good variable to predict both depression and extremely severe depression. Aged 21~49 are 2.18 times more likely to have depression and 4.56 times more likely to be extremely severe depression than aged 50 and above:

- Also, the one who has increased tensions or violent behaviors within the family is 2.07 times more to have depression and 2.88 times more likely to have extremely severe depression than the one who hasn't increased them.
- The one who eats more 'sweets and snacks' comparing with the eating before the COVID-19 outbreak is 1.52 times more likely to be under depression than the one who eats the same as before or less the episode.
- Exercise is one indicator to predict extremely severe depression. The one who does not do physical activities of at least 30 minutes in a week is 1.64 times more to be under extremely severe depression than the one who does at least 30 minutes' physical activities in a week.
- Smoking cigarettes is a good prediction indicator for both depression and extremely severe depression. Smokers are 1.63 times more to be under depression and 3.02 times more to have extremely severe depression than non-smoker.
- Sleeping hours are one factor to explain depression. The one who sleeps less than 8 hours or more than 9 hours, including naps per day, is 1.55 times more likely to have depression than the one who has 8-9 hours' sleep.
- As well as the quality of sleep is one prediction factor of extremely severe depression. The one who answered in the categories of sleep quality in 'poor' or 'very poor' is 1.75 times more likely to be under extremely severe depression than the ones who answered as of 'good' and 'very good.'

Table 15 Predicting variables to depression

Variables	Final odds ratio (95% CI)	
	Normal vs. Depression	Normal vs. extremely severe depression
<b>Gender</b>		
Male	-	1
Female	-	2.00 (1.13, 3.55)
<b>Age</b>		
50 and above	1	1
21~49	2.18 (1.14, 3.35)	4.56 (1.86, 11.22)
<b>Have tensions or even violent behavior increased in relationships with any of your family members?</b>		
No	1	1
Yes	2.07 (1.41, 3.35)	2.88 (1.75, 4.76)
<b>Comparing with the eating styling before the COVID-19 outbreak in Kuwait, your current amount of 'sweets and snacks'</b>		
I eat the same as before or less	1	-
I eat more	1.52 (1.07, 2.17)	-
<b>In the past week, how many days have you done a total of 30 minutes or more of physical activity?</b>		
More than 1 day	-	1
None	-	1.64 (1.00, 2.71)
<b>How many do you usually smoke a day? (include electric cigarettes)</b>		
None	1	1
Smoke every day	1.63 (1.08, 2.48)	3.02 (1.58, 5.79)
<b>How many hours do you usually sleep a day? (include nap)</b>		
8-9 hours	1	-
Less than 8 hours or more than 9 hours	1.55 (1.11, 2.16)	-
<b>How do you think about the quality of your sleep to compare what you do before the COVID-19 outbreak?</b>		
Very good/ good	-	1
Poor/ very poor	-	1.07, 2.86)

Figure 9 Final odds ratio predicting extremely severe depression



## 6.2 Predicting variables to anxiety and severe or extremely severe anxiety

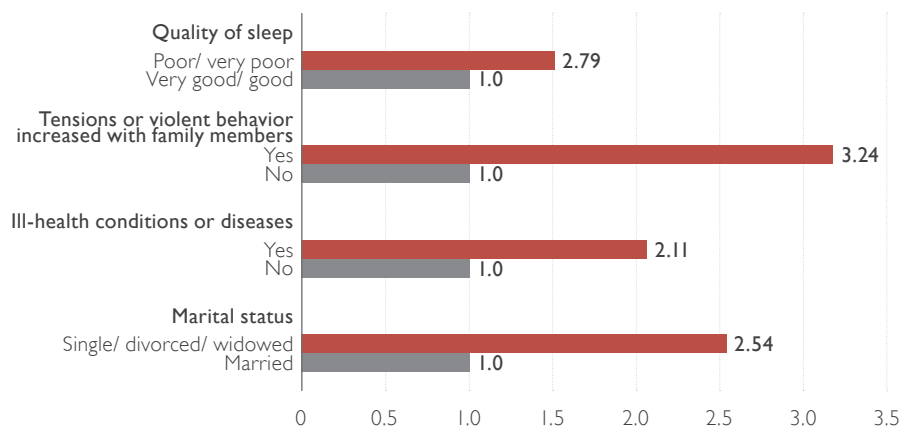
Table 16 is the final models for the prediction of both anxiety and severe or extremely severe anxiety controlled by socio-demographic and other behaviors. Figure 10 is the final odds ratios of severe or extremely severe anxiety:

- Rather than married, singles, divorced, and widowed are 2.54 times more likely to have severe or extremely severe anxiety.
- The persons who have chronic ill-health conditions or diseases are 2.11 times more likely to be under severe or extremely severe anxiety than the ones who haven't them.
- The one who have increased tensions or violent behaviors with family members during the COVID-19 outbreak is 2.52 times more likely to have anxiety and 3.24 times more likely to have severe or extremely severe anxiety than the persons who haven't.
- The ones who answered in the categories of sleep quality in 'poor' or 'very poor' are 2.07 times more likely to have anxiety and 2.79 times more likely to be under severe or extremely severe anxiety than the ones who answered as of 'good' and 'very good.'

Table 16 Predicting variables to anxiety

Variables	Final odds ratio (95% CI)	
	Normal vs. Anxiety	Normal vs. severe or extremely severe anxiety
<b>Marital status</b>		
Married	-	1.0
Single/ divorced/ widowed	-	2.54 (1.24, 5.20)
<b>Do you have any conditions or diseases?</b>		
No	-	1.0
Yes	-	2.11 (1.03, 4.32)
<b>Have tensions or even violent behavior increased in relationships with any of your family members?</b>		
No	-	1.0
Yes	2.52 (1.54, 4.11)	3.24 (1.57, 6.65)
<b>How do you think about the quality of your sleep to compare what you do before the COVID-19 outbreak?</b>		
Very good/ good	-	1.0
Poor/ very poor	2.07 (1.26, 3.38)	2.79 (1.35, 5.80)

Figure 10 Final odds ratio predicting severe or extremely severe anxiety



### 6.3 Predicting variables to stress and severe or extremely severe stress

Table 17 is the final models for the prediction of both stress and severe or extremely severe stress controlled by socio-demographic and other behaviors. Also, Figure 11 shows the final odds ratios of severe or extremely severe stress.

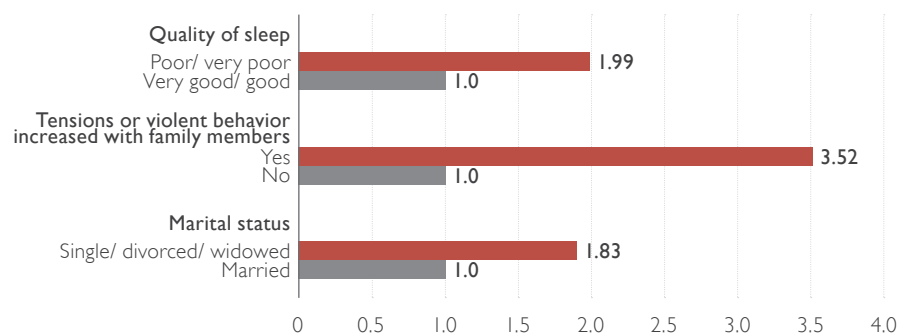
Marital status, tensions with family members, and quality of sleep are good predicting variables to both stress and severe or extremely severe stress while smoking cigarette predict stress only:

- Singles, divorced, and widowed are 1.63 times more likely to be under stress and 1.83 times more likely to have severe or extremely severe stress than married.
- The persons who have increased tensions or violent behaviors with family members during the COVID-19 outbreak are 3.07 times more likely to be under stress and 3.52 times more likely to have severe or extremely severe stress than the ones who haven't.
- The ones who answered in the categories of sleep quality in 'poor' or 'very poor' are 1.94 times more likely to have stress and 1.99 times more likely to be under severe or extremely severe stress than the ones who answered as of 'good' and 'very good.'
- Smokers are 1.70 times more likely to be under stress than non-smokers.

Table 17 Predicting variables to stress

Variables	Final odds ratio (95% CI)	
	Normal vs. Stress	Normal vs. severe or extremely severe stress
<b>Marital status</b>		
Married	1.0	1.0
Single/ divorced/ widowed	1.63 (1.05, 2.54)	1.83 (1.01, 3.29)
<b>Have tensions or even violent behavior increased in relationships with any of your family members?</b>		
No	1.0	1.0
Yes	3.07 (1.985, 4.76)	3.52 (1.94, 6.39)
<b>How many do you usually smoke a day? (include electric cigarettes)</b>		
None	1.0	-
Smoke every day	1.70 (1.03, 2.83)	-
<b>How do you think about the quality of your sleep to compare what you do before the COVID-19 outbreak?</b>		
Very good/ good	1.0	1.0
Poor/ very poor	1.94 (1.25, 3.01)	1.10, 3.61)

Figure 11 Final odds ratio predicting severe or extremely severe stress



#### 6.4 Predicting variables to psychological distress and severe or extremely severe psychological distress

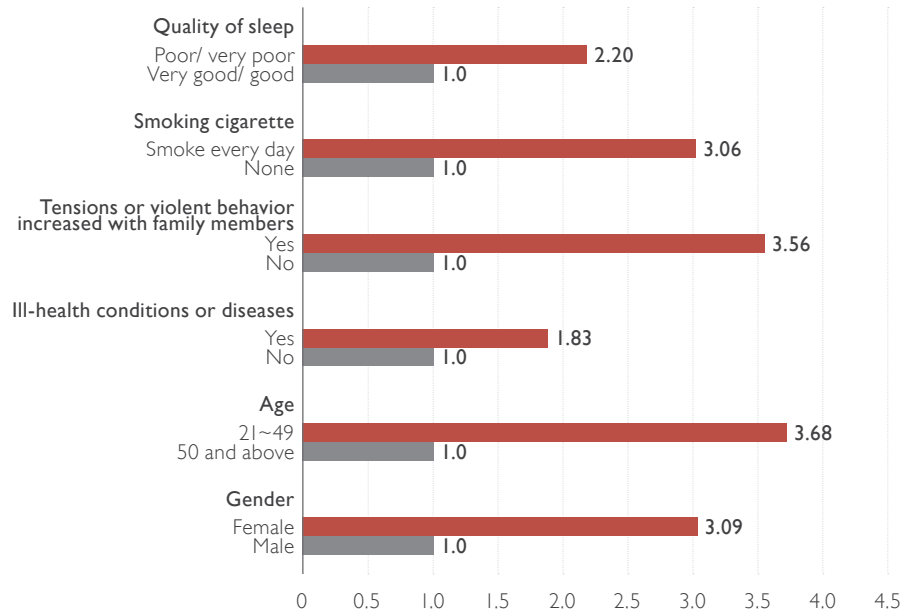
Table 18 is the final models for the prediction of both psychological distress and severe or extremely severe psychological distress controlled by socio-demographic and other behaviors. In addition, Figure 12 presents the final odds ratios of severe or extremely severe psychological distress:

- Females are 3.09 times more likely to be severe or extremely severe psychological distress than male.
- Aged 21-49 are 2.43 times more likely to have psychological distress and 3.68 times more to be under severe or extremely severe psychological distress than aged 50 and above.
- The persons who have chronic ill-health conditions or diseases are 1.55 times more likely to have psychological distress and 1.83 times more to be under severe or extremely severe psychological distress than the ones who haven't them.
- The persons who have increased tensions or violent behaviors with family members during the COVID-19 outbreak are 1.68 times more likely to have psychological distress and 3.56 times more likely to be under severe or extremely severe psychological distress than the ones who haven't increased tensions or violent behaviors with family members.
- The persons who have experiences of the 'verbal and physical abuse' with family members are 1.66 times more likely to be under psychological distress than the ones who don't.
- The persons who eat more 'sweets and snacks' than before the COVID-19 outbreak are 1.46 times more likely to have psychological distress than the ones who eat them less than before.
- Smokers are 3.06 times more likely to have severe or extremely severe psychological distress than non-smokers.
- The ones who answered in the categories of sleep quality in 'poor' or 'very poor' are 1.61 times more likely to have psychological distress and 2.20 times more likely to be under severe or extremely severe psychological distress than the ones who answered as of 'good' and 'very good.'

Table 18 Predicting variables to psychological distress

Variables	Final odds ratio (95% CI)	
	Normal vs. Distress	Normal vs. severe or extremely severe distress
<b>Gender</b>		
Male	-	1
Female	-	3.09 (1.54, 6.19)
<b>Age</b>		
50 and above	1	1
21-49	2.43 (1.46, 4.04)	3.68 (1.37, 9.92)
<b>Do you have any conditions or diseases?</b>		
No	1	1
Yes	1.55 (1.07, 2.25)	1.83 (1.07, 3.32)
<b>Have tensions or even violent behavior increased in relationships with any of your family members?</b>		
No	1	1
Yes	1.68 (1.10, 2.57)	3.56 (2.08, 6.09)
<b>Have these tensions in your relationships with any of your family members?</b>		
No	1	-
Verbal or physical abuse	1.66 (1.01, 2.73)	-
<b>Comparing with the eating styling before the COVID-19 outbreak in Kuwait, your current amount of 'sweets and snacks'</b>		
I eat the same as before or less	1	-
I eat more	1.46 (1.02, 2.07)	-
<b>How many do you usually smoke a day? (include electric cigarettes)</b>		
None	-	1
Smoke every day	-	3.06 (1.47, 6.36)
<b>How do you think about the quality of your sleep to compare what you do before the COVID-19 outbreak?</b>		
Very good/ good	1	1
Poor/ very poor	1.61 (1.14, 2.28)	2.20 (1.28, 3.78)

Figure 12 Final odds ratio predicting severe or extremely severe psychological distress



## 7. Conclusion

The residents of Kuwait show a problematic situation of mental health status, especially depression and psychological distress, under the COVID-19 outbreak. 59.8% of females and 51.0% of males are under depression. Furthermore, 20.4% of females and 13.6% of males are experiencing extremely severe depression. 42.0% of females and 37.8% of males are under psychological distress. And 15.1% of females and 9.1% of males have severe or extremely severe psychological distress. 18.3% of females are under stress, and 14.5% are under anxiety. While 14.7% of males are under stress, and 8.7% are under anxiety.

Female, the aged 21-49, tensions or violent behaviors within the family, non-physical activities, smoking cigarettes, and poor quality of sleep are the good predicting factors of depression.

The predicting factors for anxiety are marital status (single, divorced, and widowed), chronic ill-health conditions and diseases, tensions or violent behaviors within the family, and the poor quality of sleep.

Marital status (single, divorced, and widowed), tensions with family members, and quality of sleep are suitably predicting variables to both stress and severe or extremely severe stress while smoking cigarettes predict stress only.

Female, aged 21-49, smoker, the persons who have 'chronic ill-health conditions or diseases', 'tensions or violent behaviors with family members,' and the ones who answered in the categories of sleep quality in 'poor' or 'very poor' are more likely to be under psychological distress than the others.

The results show that there are weaknesses of coping COVID-19 and mental health, being urgent needed to intervene for health behaviors and social supports, including coping methods for COVID-19 stress, systems for family counsel, community supporting environment for encouraging a healthy lifestyle.

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## Questionnaire for behavioral insights during COVID-19 outbreak

### Dear Participant,

Thank you for taking part in this survey to help improve actions taken in response to the novel coronavirus pandemic (COVID-19) and to inform the response to similar future outbreaks.

### What is this project about?

This survey aims to inform governmental outbreak response measures, including policies, interventions, and communications.

During the 20-minute survey, you will be asked questions about yourself, the perceived attitude of the coronavirus, the actions you have taken to protect yourself, including mental health, food consumption, and relationship dynamics.

You will not be asked to provide any personal data.

This study is conducted by the United Nations Development Programme (UNDP) in Kuwait and the Kuwait Public Policy Center (KPPC).

For any questions related to the study, please contact Dr. Ahmad Salman at [drahmad-salman@gs-scpd.gov.kw](mailto:drahmad-salman@gs-scpd.gov.kw) or Dr. Sungsoo Chun at [sungsoo.chun@undp.org](mailto:sungsoo.chun@undp.org)

### Consent I understand that:

- My participation is entirely voluntary.
- All my answers will be used for scientific research and program development to improve actions taken in response to the coronavirus pandemic and to inform the response to similar future outbreaks.
- My data will be stored securely. However, no personal data will be stored, and my answer will be completely anonymous.
- My data gathered in this study will be shared with government agencies.
- Because I am submitting anonymous data, it will not be possible to withdraw my answers after they have been submitted.

Please note that you can stop the survey at any time.

By ticking the box, you are agreeing that you are at least 21 years old, that you have read the information about the study, and that you voluntarily agree to take part in it.

- I agree to participate in this study.
- I disagree to participate in this study.

**Background information****1. Please select your gender.**

- 1 Male  2 Female

**2. What is your marital status?**

- 1 Single/Never married  2 Married  
 3 Divorced  4 Spouse deceased

**3. What is your highest education level completed?**

- 1 No formal schooling  2 Less than primary school  
 3 Primary school completed  4 Intermediate school completed  
 5 High school completed  6 Diploma  
 7 College/University completed  8 Post graduate degree

**4. What is your age? (Enter your age)**

(      )

**5. Please specify your nationality.**

- 1 Kuwait  2 Stateless  3 India  
 4 Egypt  5 Bangladesh  6 Pakistan  
 7 Philippines  8 Syria  9 Others

**6. Where is your residence located?**

- 1 Capital (Al Asimah)  2 Hawalli  3 Farwaniya  
 4 Mubarak Al Kabeer  5 Ahmadi  6 Jahra

**7. Please select your housing type.**

- 1 Apartment  2 House without garden  
 3 House with garden  4 Others

**8. How many people live in your household, including yourself?**

- 1 Alone  2 2-3  3 3-4  
 4 5-6  5 7-9  6 10+

**9. How many children live in your household with you?**

- 1 None  2 1  3 2  
 4 3  5 4  6 5+

**10. Which of the following are the age ranges of children living together in the household? (Please select all that apply)**

- 1 None  2 12 months or less  3 1-2 years  
 4 3-5 years old  5 Elementary school ages  6 Intermediate school ages  
 7 Secondary school ages

**11. Do you have a person with disability living at home with you?**

- 1 Yes  2 No

**12. Please select your employment type.**

- 1 Salaried employee  2 Retired  3 Homemaker  
 3 Unemployed  5 Student  6 Business Owner  
 7 Others

**13. Do you work for a job at home, even under Curfew (for students: are you continuing to study) during the COVID-19 outbreak?**

- 1 Yes  2 No

14. How much time and effort did you spend on housework during the COVID-19 outbreak.

- 1 Rather reduced       2 Same as usual       3 Slightly increased  
 4 Very much increased

15. Do you have any conditions or diseases? (Please select all that apply)

- 1 High blood pressure       2 Diabetes       3 Cardiovascular disease  
 4 Chronic bronchitis       5 Hereditary conditions       6 Mental illness  
 7 Cancer       8 Physical disability       9 Other  
 10 None

### COVID-19 experience and belief

16. Are you, or have you been, infected with the novel coronavirus?

- 1 Yes, tested and the result was positive       2 Yes, suspected but not confirmed by a test  
 3 No, tested and the result was negative       4 No  
 5 Don't know

17. Do you know people in your immediate social environment who are or have been infected with the novel coronavirus?

- 1 Yes, confirmed       2 Yes, suspected but not confirmed by a test  
 3 No, tested and the result was negative       4 No  
 5 Don't know

18. Do you consider yourself adapting the right behaviors and measurements to prevent the infection (such as physical distancing, staying home, refraining from gatherings and parties, wearing gloves, masks, and other safety measures)?

Adaptation  1 -  2 -  3 -  4 -  5 Mal adaptation

## 19. Perception, Attitude, and Practice about COVID-19

### General instructions

- Answer each question as best as you can.
- Estimate if you are not sure.
- A guess is better than leaving a blank.
- Please read each statement and check the box most appropriate to you.

	Strongly agree	Partially agree	No idea	Partially disagree	Strongly disagree
<b>Perceived susceptibility</b> 1. I consider myself to be at risk of coronavirus infection.					
2. I am more likely to get the disease.					
<b>Perceived severity</b> 3. This disease has a high mortality rate.					
4. The transmission power of this disease is high.					
<b>Perceived barriers</b> 5. It is difficult to follow the instructions to prevent this disease.					
6. It is difficult to wash hands regularly with soap and water.					
7. The mask is scarce in the market, and thus I do not wear a mask.					
8. It is difficult not to touch hands, mouth, nose, and eyes.					
9. Perceived self-efficacy I can follow every preventive instruction against the disease.					
10. For me avoiding an infection with the novel coronavirus in the current situation is easy.					
<b>Cues to action</b> 11. TV, radio, SMS, and Internet information about the disease have been helpful.					
12. Is the news on Social Media and the Internet and TV induce fear and feeling of threat?					

## 20. If I'm infected with coronavirus, it will come with~

My carelessness ① - ② - ③ - ④ - ⑤ Carelessness from other community people

## 21. Do you consider yourself to be?

① Risk Averse

② Risk Takers

③ Neutral

**Mental health****22. Depression, Anxiety and Stress**

- Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week.
- There are no right or wrong answers.
- Do not spend too much time on any statement.

	(0) Do not apply to me at all	(1) Apply to me to some degree, or some of the time	(2) Apply to me to a considerable degree or a good part of time	(3) Apply to me very much or most of the time
1. I found it difficult to work up the initiative to do things				
2. I tended to over-react to situations				
3. I experienced trembling (e.g. in the hands)				
4. I was worried about situations in which I might panic and make a fool of myself				
5. I felt that I had nothing to look forward to				
6. I found myself getting agitated				
7. I was intolerant of anything that kept me from getting on with what I was doing				
8. I felt I was close to panic				
9. I was unable to become enthusiastic about anything				

### Food consumption

#### 23. Food consumption questions

##### General Instructions

- Answer each question as best as you can.
- A guess is better than leaving a blank.
- Please read each statement and check the box most appropriate to you.

Comparing with the eating styling before the COVID-19 outbreak in Kuwait, your current amount of the food consumption listed below are:	I eat much more	I eat more	I eat the same as before	I eat less	I eat much less
1. Carbohydrates [Bread and cereals (wheat, rice, maize, or other cereals)/ Roots (potatoes, sweet potatoes, cassava, or other roots)]					
2. Animal products [Red meats (beef, ramp, or other red meats)/ Poultry (chicken, turkey, or other pultices)/ Eggs]					
3. Milk products [Milk, yogurt, cheese, or other dairy products]					
4. Fishes					
5. Vegetable proteins [Beans, pintos, kidney, peas, lima, lentils, soybeans, or refried beans]					
6. Vegetable unsaturated fatty acids [Nuts and seeds (avocados/ almonds, hazelnuts, and pecans/ pumpkin and sesame seeds)]					
7. Fruits					
8. Vegetables					
9. Sugary drinks (sweetened beverages)					
10. Sweets and snacks (cakes, cookies, biscuits, chocolate, confectionery, dried dates, sweet desserts, or other sweets)					

26. Overall, I eat more than before the COVID-19 outbreak.

- ① Yes                     
  ② No                     
  ③ I am not sure

25. Overall, I think I have gained more weight since March 2020.

- ① Yes                     
  ② No                     
  ③ I am not sure

### Exercise and other health behaviors

26. In the past week, how many days have you done a total of 30 minutes or more of physical activity. (This may include sport, exercise, and brisk walking or cycling for recreation or to get to and from places, but should not include housework or physical activity that is part of your job.)

None   1 day   2 days   3 days   4 days   5 days   6 days   7 days

27. During the COVID-19 outbreak, do you think you are doing exercise more regularly than you do before the COVID-19 outbreak?

- ① Yes, I exercise more regularly than before.
- ② No, I exercise more irregularly than before.
- ③ I exercise at the same regularity as I do before.
- ④ I do not exercise.

28. During the COVID-19 outbreak, do you think you exercise more intensively than you usually do?

- ① Yes, I increased the intensity of exercise.
- ② No, I decreased the intensity of exercise.
- ③ I exercise at the same intensity as I do before.
- ④ I do not exercise.

29. How many do you usually smoke a day? (include electric cigarettes)

- ① None
- ② 5 or less than 5 EA
- ③ 5-9 EA
- ④ 10-19 EA
- ⑤ Over 20 EA

30. How many times do you usually smoke shisha a day?

- ① None
- ② Once or twice
- ③ 3-4 times
- ④ Over 5 times

31. During the COVID-19 outbreak, do you think you smoke more than you do before the COVID-19 outbreak?

- ① Yes, I smoke more than before.
- ② No, I do smoke less than before.
- ③ I smoke the same amount as before.
- ④ I do not smoke.

32. How many hours do you usually sleep a day? (include nap)

- ① 5 or less than 5 hours
- ② 6-7 hours
- ③ 8-9 hours
- ④ Over 10 hours

33. How do you think about the quality of your sleep to compare what you do before the COVID-19 outbreak?

- ① Very poor
- ② Poor
- ③ Same
- ④ Good
- ⑤ Very good

**Relationship dynamics**

34. Have tensions or even violent behavior increased in relationships with any of your family members (husband / wife, parents, children) compared to before the outbreak of COVID-19 outbreak?

- ① Yes                                       ② No                                       ③ I refuse to answer

35. Have these tensions in your relationships with any of your family members (husband / wife, parents, children) that resulted in physical or verbal abuse?

- ① Verbal abuse                               ② Physical abuse                               ③ Verbal and physical abuse  
 ④ No     ⑤ I refuse to answer

36. In your view, what are the factors affecting the mental wellbeing of yourself and any of your family member, leading to tensions or even violent acts in the relationship during the COVID-19 outbreak? (Please select all that apply)

- ① Physical proximity                               ② Increased demands at the job  
 ③ Increased household work                               ④ Increased tasks to guide children's learning  
 ⑤ Financial anxieties                               ⑥ Fear about the future prospects  
 ⑦ Lack of common interest and/or hobbies       ⑧ Lack of physical exercise and sport  
 ⑨ Lack of sleep and rest  
 ⑩ Increased negative health symptoms (such as high blood pressures, diabetes, Cardiovascular symptoms, and/or other acute or chronic diseases)  
 ⑪ Others     ⑫ Refuse to answer

Thank you very much for  
your participation!





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