Knowledge and practices towards COVID-19 among Palestinians during the COVID-19 outbreak: A second round cross-sectional survey

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Abstract

Coronavirus disease 2019 (COVID-19) is a highly transmissible illness that spreads rapidly through human-to-human transmission. To assess the knowledge and practices of Palestinians towards COVID-19 after the ease of movement restrictions, we collected data from Palestinian adults between June 15th and June 30th 2020. The participants' pool represented a stratified sample of 1355 adults from Palestinian households across 11 governorates in the West Bank. The questionnaire included 7 demographic questions, 13 questions about participants' knowledge and awareness of COVID–19, and 4 questions regarding the participants' safety measures that had been taken in the last three months. Based on the results of this study, we conclude that the majority of participants have a good knowledge about COVID-19, but were not adequately committed to the infection control measures necessary to protect themselves and others. The findings may provide valuable feedback to lawmakers and health administrators to prevent the spread of the epidemic.

Introduction

Coronavirus disease 2019, known as COVID-19, is an infectious respiratory disease caused by novel coronavirus SARS-CoV-2 [1] and is spread through human-to-human transmission by body fluid droplets from the mouth or nose, which can spread when a COVID-19 patients talk, coughs or sneezes. The virus can also spread through indirect contact with contaminated surfaces [2][3]. The common symptoms of COVID-19 include fever, dry coughing, and fatigue and may lead to more serious symptoms such as difficulty in breathing and chest pain [4].

Since its emergence in Wuhan, China in December 2019 [5], SARS-CoV-2 has spread rapidly around the globe and was declared by the World Health Organization (WHO) as a global pandemic [6], [7].

Daily, new cases and deaths are being reported worldwide[8]. Many countries have imposed lockdown and movement control. The effectiveness of these mitigation measures is highly dependent on cooperation and compliance of all members of society. Adherence to mandated protective measures is essential in stopping the spread of the virus but is also dependent on the population's overall knowledge, attitudes and awareness, according to KAP theories[9]–[11]. Studies conducted during the SARS outbreak in 2003 suggest that knowledge, attitudes and practices towards viruses are associated with emotions among populations and can play an integral role in determining a society's readiness to accept behavioral change measures from health authorities, especially that a gap still exists in the knowledge of the epidemiology, prevalence and clinical spectrum of Covis-19 [12]–[15].

A first round cross-sectional survey was conducted between April 19th and May 1st 2020, data was collected through Computer Assisted Phone Interviewing (CATI) using resident phone numbers available through the Reach Calling Center [16]. Here, we conducted a second round cross-sectional survey between June 15th and June 30th 2020, designed to assess the knowledge and practices towards COVID-19 among Palestinians after the ease of restrictions.

Materials and Methods

Participants

This cross-sectional study was conducted between June 15th and June 30th 2020.

The study involved 1355 participants from 11 governorates, including 112 localities (supplementary table 1). 1395 households were selected using 3-stage cluster sampling. The cluster of households or census track is considered to be a geographic location that is comprised of approximately 100 households. The process for conducting cluster sampling was carried as follows: (1) Selecting a cluster of households (2) Selecting 10 households randomly from each cluster and (3) Selecting a person at random from the selected household. The clusters were selected using probability proportional to size (PPS) sampling (Table 1).

To select the number of clusters within each population location: (1) we calculated the sampling interval which equals the total number of households divided by the total number of clusters need to be selected by the sample say for example (m). The sampling interval SI= N/m, where N is the total number of households. (2) We selected a random number R0 between 0 and SI. (3) calculated Ri as R0+i*SI, a cluster is selected in Li if Ri belongs to the interval [Ci-1, Ci].

Field work was carried out between 15th June 2020 and 30th June 2020 by a team of registered nurses, laboratory technicians, nursing students and laboratory technician students from the Arab American University following standardized health protocols (World Health, 2020).

Approval from National ethical committee was obtained (PHRC/HC/718/20). Written informed consents were obtained from the 1355 study participants.

Measures

The questionnaire included 13 questions about participants' knowledge and awareness of COVID–19 (Table 1). Since all questions were dichotomies (Yes/No) style, a correct answer was assigned 100 points and an incorrect answer was assigned 0 points. ANOVA test was used to calculate the significance.

The questionnaire also included 4 questions about the practices (Table 2). 100 points was assigned to full compliance and 0 points was given to lack of compliance within a given dimension.

Table 1: Questions used to test the participants knowledge about COVID-19

Questions	Corresponding Score
Do all corona virus patients exhibit fever , and/or sore throat and/or muscle ache as symptoms?	SQ3_1
Corona virus comprises a risk on the elderly only	SQ3_2
Corona virus spreads through droplets	SQ3_3
Coronavirus lives for hours in air particles?	SQ3_4
Corona virus spreads within a distance less than 2 meters between individuals	SQ3_5

One should avoid going to crowded gatherings	SQ3_6
Isolating and treating Corona virus patients is a good way to prevent the spread of the virus	SQ3_7
People who interacted with Corona virus patient should be isolated for 14 days	SQ3_8
Antibiotics are efficient for treating Corona virus	SQ3_9
Wearing a face mask can efficiently prevent the spread of the virus	SQ3_10
Using hand sanitizers, disinfectants and washing hands can efficiently prevent the spread of the virus	SQ3_11
One can get infected with the Corona virus through touching surfaces that are contaminated with Corona virus and then touching their mouth and nose	SQ3_12
Infected persons with the Corona virus can infect others even if they don't have fever	SQ3_13

Table (2): Questions used to measure the participants practices related to COVID-19 spread

Questions	Options as they were given in the questionnaire	Corresponding score
Q4_1 : Through the past three months, have you avoided going to crowded gatherings like weddings and funerals	1- Always = 100 points 2- Most of the times= 75 points 3- Sometimes = 50 points 4- Rarely = 25 points 5- Never = Zero points	SQ4_1
Q4_2: Through the past three months have you complied with wearing face mask and gloves when leaving your house?	1- Always = 100 points 2- Most of the times= 75 points 3- Sometimes = 50 points 4- Rarely = 25 points 5- Never = Zero points	SQ4_2
Q4_3: Through the past three months, have you washed your hands and used alcohol to disinfect your hands regularly ?	1- Always = 100 points 2- Most of the times= 75 points 3- Sometimes = 50 points 4- Rarely = 25 points 5- Never = Zero points	SQ4_3
Q4_4: Through the past three	1- Always = 100 points	SQ4_4

months have you complied with keeping distance, avoiding shaking hands and kissing other people?	2- Most of the times= 75 points 3- Sometimes = 50 points 4- Rarely = 25 points 5- Never= zero points	

Data Analysis

Data analysis was conducted using the statistical software (IBM SPSS 23.0) to produce a preliminary cross-tabulation of the study variables with the background indicators. This statistical report is comprised of cross-tabulations of all the study variables representing knowledge and practice as well as the demographic characteristics of respondents.

Knowledge Score was calculated as (SQ3_1+SQ3_2+…+SQ3_12+SQ3_13)/13 based on the dimensions given in table 1 and Practice score was calculated as (SQ4_1+SQ4_2+SQ4_3+SQ4_4)/4 based on the dimensions given in Table (2).

Results

A total of 1355 participants from 1395 households across 11 governorates, including 112 localities (supplementary table 1). The sample included 26% in age group (15-24), 23% in age group (25-34), 28% in age group (35-49) and 23% tests in age group (50+). In total, the sample included 1218 males and 137 females.

We used ANOVA to test the bivariate relationship between knowledge score (dependent variable) and educational level as independent variable. The study showed an average knowledge score of 62 points out of 100 points. Our results show a statistically significant difference in knowledge between respondents who completed lower education vs those who completed higher education (P-value=0.048) (Table 3.A), and a statistically significant correlation between knowledge and age (p-value=0.008). The highest knowledge score (68 points) was reported among Palestinians with age category 50 – 59 years of age, while the lowest score (63 points) was among those with ages less than 39 years (Table 3.B). No significant difference was observed in females compared to males (P-value=0.53) (Table 3.C).

Table 3. A. 1. knowledge score of respondents who completed lower education versus those who completed higher education and 2. Anova results between and within groups. B. 1. knowledge score of respondents among different age groups and 2.Anova results between and within groups, C. 1 knowledge score of respondents among different genders and 2. Anova results between and within groups.

A

1.

Knowledge Scores	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean

					Lower Bound	Upper Bound
Preparatory or less	374	61.6824	18.74460	.96926	59.7765	63.5883
Secondary	483	61.4429	18.92001	.86089	59.7513	63.1345
College degree or more	498	64.0408	16.50213	.73948	62.5879	65.4937
Total	1355	62.4638	18.04538	.49023	61.5021	63.4255

2.

Anova Results	Sum of Squares	df	Mean Square	F	Sig.
Between Groups with Different Education Levels	1970.191	2	985.095	3.034	.048
Within Groups with Different Education levels	438940.571	1352	324.660		
Total	440910.762	1354			

B

1.

Knowledge Scores	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
15-39 years	505	61.4471	19.40679	.86359	59.7504	63.1437
30- 39 years	282	60.5565	19.19325	1.14294	58.3067	62.8063
40- 49 years	253	64.2749	15.23110	.95757	62.3890	66.1607
50- 59 years	186	65.8395	15.67144	1.14909	63.5725	68.1065
60 + years	129	62.1944	17.49448	1.54030	59.1466	65.2421
Total	1355	62.4638	18.04538	.49023	61.5021	63.4255

2.

Anova Results	Sum of Squares	df	Mean Square	F	Sig.
Between Age Groups	4506.701	4	1126.675	3.485	.008
Within Age Groups	436404.061	1350	323.262		
Total	440910.762	1354			

C.

1.

Knowledge Scores	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Male	1218	62.3595	18.16445	.52047	61.3384	63.3806
Female	137	63.3914	16.98481	1.45111	60.5217	66.2610
Total	1355	62.4638	18.04538	.49023	61.5021	63.4255

2.

Anova Results	Sum of Squares	df	Mean Square	F	Sig.
Between Gender Groups	131.124	1	131.124	.402	.526
Within Gender Groups	440779.638	1353	325.779		
Total	440910.762	1354			

N: number of respondents; Std Deviation: *standard deviation;* Std. Error: standard error; df degrees of freedom; F: F-test.

The study indicates that the lowest knowledge score (10 points) was related to SQ3_1 which addresses knowledge of COVID-19 Symptoms, the second lowest score (29 points) was related to SQ3_2 addressing antibiotics as an efficient treatment for COVID-19 (table 4).

Table 4: Mean score of knowledge variables

	Mean	N	Std. Deviation	Std. Error of Mean
SQ3_1	10.7749	1355	31.01777	.84264
SQ3_2	29.1513	1355	45.46270	1.23505
SQ3_3	84.0590	1355	36.61928	.99481
SQ3_4	72.8413	1355	44.49421	1.20874
SQ3_5	79.1882	1355	40.61116	1.10325
SQ3_6	83.4686	1355	37.16005	1.00950
SQ3_7	84.2804	1355	36.41194	.98918
SQ3_8	83.6162	1355	37.02648	1.00587
SQ3_9	23.0996	1355	42.16257	1.14540
SQ3_10	20.0000	1355	40.01477	1.08705
SQ3_11	83.0996	1355	37.48935	1.01845
SQ3_12	81.9926	1355	38.43908	1.04425

SQ3_13	76.4576	1355	42.44204	1.15299

N: number of respondents; Std Deviation: standard deviation; Std. Error: standard error; df degrees of freedom; F: F-test.

Our results showed a statistically significant difference in good practice between respondents who completed lower education vs those who completed higher education (P-value=0.000) (Table 5A), and a statistically significant correlation between practice and age (P-value=0.037). The lowest practice score (54 points) was among age group 15 – 29 years old, while the highest practice score (60 points) was among age group 30 – 39 years of age (Table 5B). (Table 3.B). Our data showed that practices score among Palestinians females (68 points) was higher than that among Palestinian males (59 points). The difference is statistically significant with P-value=0.004. (Table 5C).

Table 5. A. 1. Practice score of respondents who completed lower education versus those who completed higher education and 2.Anova results between and within groups with different educational levels. B. 1. Practice score of respondents among different age groups and 2.Anova results between and withinvage groups, C. 1.Practice score of respondents among different genders and 2.Anova results between and within gender groups.

A.

1.

Knowledge Scores	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Preparatory or less	374	56.2166	34.80002	1.79947	52.6782	59.7549
Secondary	483	57.2593	33.22763	1.51191	54.2886	60.2301
College degree or more	498	65.7882	28.58226	1.28080	63.2717	68.3046
Total	1355	60.1061	32.33360	.87838	58.3829	61.8292

2.

Anova Results	Sum of Squares	df	Mean Square	F	Sig.
Between Groups with Different Education Levels	25650.622	2	12825.311	12.476	.000
Within Groups with Different Education levels	1389904.440	1352	1028.036		
Total	1415555.062	1354			

B.

1.

Knowledge Scores	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
15-29 years	505	56.8317	33.33639	1.48345	53.9172	59.7462
30- 39 years	282	63.4309	31.11793	1.85305	59.7832	67.0785
40- 49 years	253	62.5988	31.69802	1.99284	58.6741	66.5236
50- 59 years	186	59.2742	31.87037	2.33685	54.6639	63.8845
60 + years	129	61.9671	32.06011	2.82274	56.3818	67.5523
Total	1355	60.1061	32.33360	.87838	58.3829	61.8292

2.

Anova Results	Sum of Squares	df	Mean Square	F	Sig.
Between Age Groups	10679.249	4	2669.812	2.566	.037
Within Age Groups	1404875.813	1350	1040.649		
Total	1415555.062	1354			

C.

1.

Knowledge Scores	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Male	1218	59.2570	32.34675	.92684	57.4386	61.0754
Female	137	67.6551	31.33167	2.67685	62.3615	72.9487
Total	1355	60.1061	32.33360	.87838	58.3829	61.8292

2.

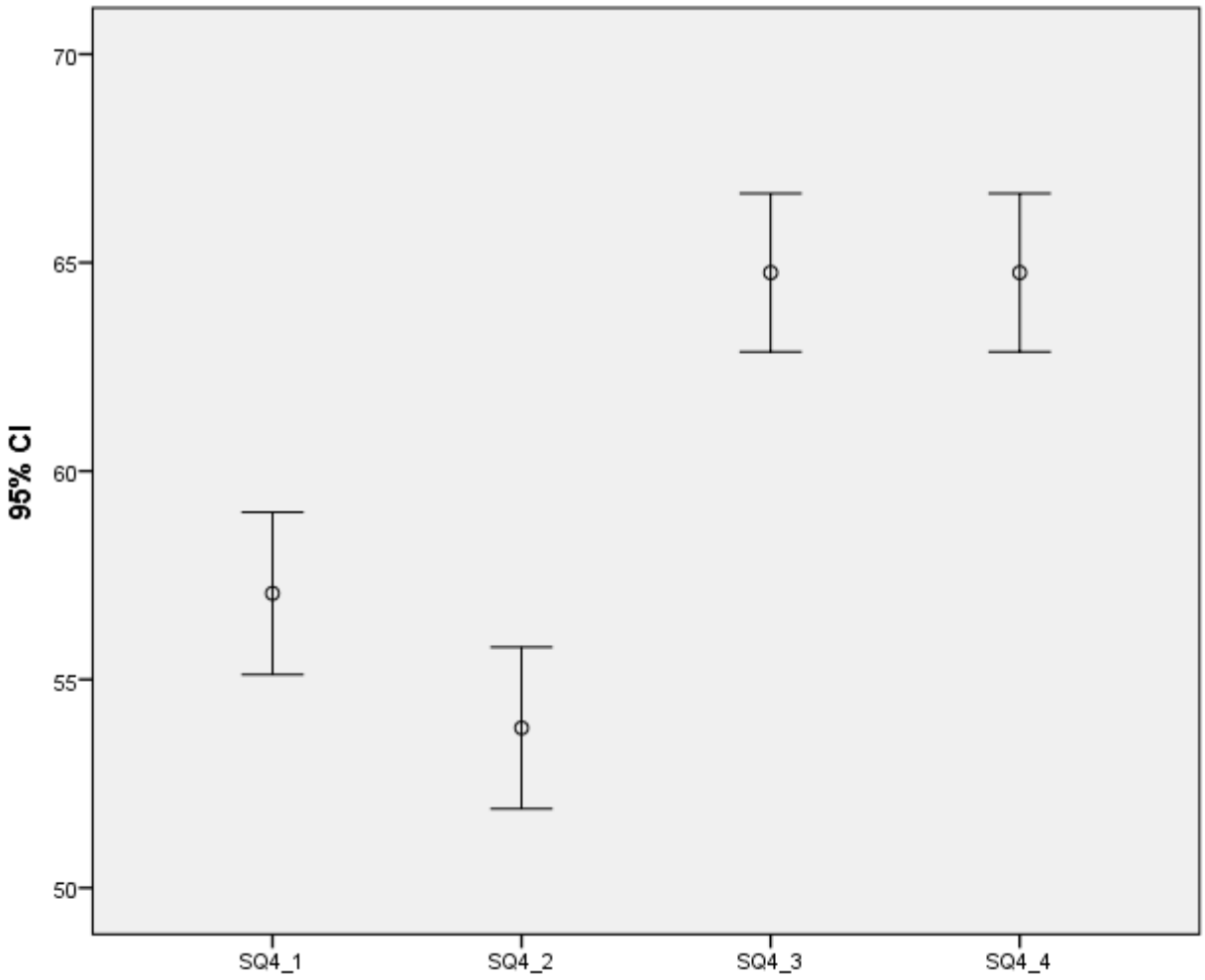
Anova Results	Sum of Squares	df	Mean Square	F	Sig.
Between Gender Groups	8685.480	1	8685.480	8.353	.004
Within Gender Groups	1406869.582	1353	1039.815		
Total	1415555.062	1354			

N: number of respondents; Std Deviation: *standard deviation;* Std. Error: standard error; df degrees of freedom; F: F-test.

Our study shows that the first two practices dimensions SQ4_1 which addresses the avoidance of crowded places and SQ4_2 which addresses compliance with wearing face masks got the lowest

scores (54 points and 57 points respectively). SQ4_3 which addresses compliance with washing hands on a regular basis and SQ4_4 which addresses compliance with social distancing got higher scores (Figure 1).

Figure 1: Mean score of the four dimensions comprising the practice score



Discussion

This is a second round cross-sectional survey done in Palestine to examine the knowledge and practices towards COVID-19 among Palestinians.

In our study, we found that the majority of participants had a good base of knowledge about COVID-19, which is consistent with other studies conducted worldwide [14], [17] and with our first round study [16]. However, there was a low practice of health measurements among the participants.

Our results indicate that participants with higher educational level are more knowledgeable and apply better practices than those with lower educational level. This is consistent with a study conducted in Jordan, Saudi Arabia and Kuwait which reported high education level as an important predictor of greater COVID-19 knowledge scores ($p<0.01$) [18].

The differences between the two scores were statistically significant with P-value=0.048, 0.000 respectively. On another note, Our study also shows a statistically significant correlation between knowledge and age as well as good practice and age (p-value=0.008, p-value=0.037, respectively). The lowest knowledge score was among those with ages less than 39 years and practice score was among age group 15 – 29 years old. This result implies that efforts should be put to draw target groups and implement COVID-19 education on people with lower educational level and age groups less than 39 years old. These findings clearly indicate the importance of drawing target groups and implementing COVID-19 knowledge of targets via health education and media as this may both improve their outlook, motivate individuals to make appropriate decisions and result in safer personal practices, especially that good practice of hand hygiene, regular use of masks and gloves, social and physical distancing and self-quarantine have proven to limit prevalence of many infectious diseases and reducing the widespread infections [19], [20].

Our data shows that even though there is no significant difference between females and males in terms of their knowledge about COVID-19, practices score among Palestinians females is higher than that among Palestinian (P-value=0.004). This may be a consequence of females experiencing higher levels of stress, anxiety, and depression [21]. A survey conducted by KFF found that women are more likely than men to worry about the negative consequences of the pandemic and to report mental health effects from worrying about coronavirus. The study reported that women stay at home instead of going to work, school, or other regular activities [22]. In this respect, women tend to maintain social distancing and play an essential role in public health management [23].

Lastly, our study shows that the first two practices dimensions which address the avoidance of crowded places compliance with wearing face masks got low knowledge scores, indicating the need to educate a promote Palestinians to adhere to social distancing measures in order to stop the spread of COVID-19.

In conclusion, our study provides valuable feedback to lawmakers working to stop the spread of the virus. Conducting cross sectional surveys on a regular basis is important to facilitate the implementation of effective policy by enabling health officials to better understand the knowledge and practices of the Palestinian population towards COVID-19.

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