

# Impact of the coronavirus disease 2019 pandemic on the Palestinian family: A cross-sectional study

SAGE Open Medicine

Volume 9: 1–9

© The Author(s) 2021

Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/20503121211001137

journals.sagepub.com/home/smo



Samer Abuzerr<sup>1,2</sup> , Kate Zinszer<sup>3</sup>, Amira Shaheen<sup>4</sup>,  
Abdel Hamid el Bilbeisi<sup>5</sup> , Ayman Al Haj Daoud<sup>6</sup>, Ali Aldirawi<sup>7</sup>  
and Alshaarawi Salem<sup>8</sup>

## Abstract

**Introduction:** The current study aims to understand and assess the consequences of the coronavirus disease 2019 pandemic on Palestinian families.

**Methods:** This online community-based cross-sectional descriptive study was conducted between 19 April 2020 and 5 June 2020, using a validated questionnaire. The questionnaire comprised of three sections: sociodemographic characteristics, living conditions, and impact of the coronavirus disease 2019 pandemic. A convenience sampling method was used to select participants.

**Results:** A total of 570 adults aged  $\geq 18$  years participated in the study. Of them, 258 (45.3%), 120 (21%), and 192 (33.7%) were residing in the Gaza Strip, West Bank, and East Jerusalem, respectively. A large portion of participants (73.2%) reported that the containment measures of the coronavirus disease 2019 pandemic had caused an excessive burden on their families; 549 (96.3%) revealed that water supplies were not always available at home. However, paying attention to personal hygiene and home cleaning was more than usual before the announcement of the coronavirus disease 2019 pandemic. The mean times of going out of their homes have dropped significantly following the onset of the pandemic,  $p$  value = 0.001 (95% confidence interval). In addition, 192 (33.7%) participants reported that they changed to working remotely from home with 66 (11.6%) having lost their employment.

**Conclusion:** The coronavirus disease 2019 pandemic was associated with an additional burden on the Palestinian families. Moreover, we suggest discussing the obtained results with local and national stakeholders to ensure that they know to improve their actions.

## Keywords

Containment measures, coronavirus disease 2019 pandemic, family, impacts, Palestine

Date received: 25 January 2021; accepted: 14 February 2021

## Introduction

The coronavirus disease 2019 (COVID-19) quickly emerged, leaving governments and local institutions without solutions to ensure the continuity of citizens' lifestyles while using broad measures to reduce disease transmission.<sup>1</sup> There have been significant social, economic, and political consequences of the measures, particularly for more vulnerable communities and countries.<sup>2</sup>

The COVID-19 crisis hit the occupied Palestinian territory in early March 2020, when the first cases of the virus were confirmed. This triggered the declaration of a state of emergency by the Palestinian Prime Minister and the imposition of restrictions to contain the spread.<sup>3</sup> According to the Palestinian Ministry of Health (MoH), since the onset of the pandemic, nearly 217,000 laboratory samples have been tested for COVID-19. The cumulative number of Palestinians who have contracted COVID-19 has been 13,938, with 82 fatalities.<sup>4</sup>

<sup>1</sup>Visiting Scholar with the School of Public Health, Department of Social and Preventive Medicine, University of Montreal, Montréal, QC, Canada

<sup>2</sup>Quality Improvement and Infection Control Unit, Ministry of Health, Gaza, Palestine

<sup>3</sup>Department of Social and Preventive Medicine, School of Public Health, University of Montreal, Montréal, QC, Canada

<sup>4</sup>Public Health Department, Faculty of Medicine and Health Sciences, An-Najah National University, Nablus, Palestine

<sup>5</sup>Department of Clinical Nutrition, Faculty of Pharmacy, Al Azhar University of Gaza, Gaza, Palestine

<sup>6</sup>Palestine Academy for Science and Technology (PALAST), West Bank, Palestine

<sup>7</sup>Pediatric Intensive Care Unit, Al-Shifa Hospital, Ministry of Health, Gaza, Palestine

<sup>8</sup>Optometry and Vision Sciences, University of Minho, Braga, Portugal

### Corresponding author:

Samer Abuzerr, Visiting Scholar with the School of Public Health, Department of Social and Preventive Medicine, School of Public Health, University of Montreal, Montréal, QC, Canada.  
Email: samer\_516@hotmail.com



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons

Attribution-NonCommercial 4.0 License (<https://creativecommons.org/licenses/by-nc/4.0/>) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access pages (<https://us.sagepub.com/en-us/nam/open-access-at-sage>).

The new World Bank economic monitoring report highlights critical challenges facing the Palestinian economy. The economy may shrink by at least 7.6%, based on a gradual return to normality from the containment, and by up to 11% in the case of a slower recovery or further restrictions. Poverty is a significant factor affecting the health of Palestinians. Despite universal health care, access to health care can be prevented by travel costs, loss of revenue, and lack of information. Poverty influences access to decent housing, heating, food, clean water, and adequate sewerage, all of which have health consequences. Prior to the COVID-19 pandemic, more than a quarter of Palestinians lived below the poverty line, which is expected to increase to 30% in the West Bank and 64% in Gaza. Even more striking is the youth unemployment rate of 38%, well beyond the Middle East and North Africa's regional average. Living in a particular area of the West Bank or Gaza influences a person's chances of experiencing poverty or deprivation, along with all of its implications on health.<sup>5,6</sup>

The Palestinian Authority's fiscal situation is expected to become increasingly complicated due to a decline in revenues and a substantial increase in public spending on people's medical, social, and economic needs. Even with reallocations of some expenditure, the financing gap could increase alarmingly, from an already high USD 800 million in 2019 to over USD 1.5 billion in 2020 to adequately address these needs. The economy's potential remains confined by restrictions on the movement of people and goods.<sup>7</sup> In addition, unless gender is integrated into national and institutional efforts to combat COVID-19 in Palestine, the pandemics' socioeconomic impact will likely aggravate gender inequalities and women's vulnerabilities, according to a new gender analysis by UN Women.<sup>8</sup>

Therefore, this study aimed to understand and assess the consequences of the current COVID-19 pandemic on Palestinian families. It is imperative to take lessons from the current situation and ensure that local and national authorities improve their actions in future pandemics.

## Materials and methods

### Study design, setting, and period

The current online community-based cross-sectional descriptive study was conducted in the Palestinian territories, including, Gaza Strip, West Bank, and East Jerusalem, between 29 April 2020 and 5 June 2020.

### Tool of the study

A structured online questionnaire (Supplemental material) was distributed through a social media platform (Facebook), the most commonly used social media platform in Palestine, to gather information about sociodemographic characteristics (10 items), living conditions (13 items), and the impact of the COVID-19 pandemic on families (14 items). The

questionnaire was established based on the previous questionnaire developed by the University of Coimbra, Portugal, via the Health Geography Research Team at the Centre of Studies on Geography and Spatial Planning (CEGOT).<sup>9</sup> The questionnaire's content validity was checked by five specialists in the fields of public health, epidemiology, and biostatistics. To ensure the survey acceptability and consistency, an online pilot study on 45 participants was conducted and minor modifications made according to the results of the pilot study.

### Eligibility criteria

Adults aged 18 years or over (both genders) residing in the Gaza Strip, West Bank, and East Jerusalem were asked to participate in this study. To ensure that participants were still living in these regions, they were asked to provide the housing governorate and the neighborhood's name.

### Sample size and sampling

Initially, we calculated the needed sample size for this study. The number of adults aged 18 years or over residing in the previously designated study areas was determined and estimated at 151,201 inhabitants.<sup>10,11</sup> The representative sample size in the current study was determined using the following formula<sup>12</sup>

$$\begin{aligned} \text{Sample size } (n) &= \frac{Z_{1-\alpha/2}^2 P(1-P)}{d^2} \\ &= \frac{(1.96)^2 (0.50)(1-0.50)}{(0.05)^2} = 384 \end{aligned} \quad (1)$$

where  $Z_{1-\alpha/2}$  = standard normal variate ( $Z$  value is 1.96 for a 95% confidence level),  $p$  = response distribution (50%), and  $d$  = margin of error (5%).

As our study was online-based, a convenience sampling method was followed for data collection. Every eligible member of the study population had an equal chance of participating without considering the population number in each of the three study areas.

### Ethical consideration

The study protocol was approved by the Helsinki Ethical Committee in the Gaza Strip, Palestine (Code: PHRC/HC/735/20). The participants were asked to approve their participation to proceed with the online survey. Informed consent for an Internet survey was also obtained from each participant. No monetary rewards were given for completing the questionnaire.

## Data analysis

The Statistical Package for Social Science (IBM SPSS), version 20, was used for data analysis. The normality of data was checked using the Kolmogorov–Smirnov and the Shapiro–Wilk tests ( $p > 0.05$ ). Descriptive statistics of frequency and percentage, and mean and standard deviation (SD) were performed for categorical and continuous variables, respectively. The independent-sample  $t$ -test was applied to investigate the differences between means. The chi-square test was used to examine the differences in the prevalence of different categorical variables. A  $p$  value of less than 0.05 was considered statistically significant.

## Results

### Sociodemographic characteristics

There were 570 participants who completed the questionnaire. Table 1 presents the sociodemographic characteristics of the study participants by region. Of them, 258 (45.3%), 120 (21%), and 192 (33.7%) were residing in the Gaza Strip, West Bank, and East Jerusalem, respectively. The overall mean age of the participants was  $35.4 \pm 9.5$  (SD). Approximately 321 (56.3%) of the study participants were males and a predominant number of participants were married (75.8%). In terms of employment status, 48 (8.4%) of the participants were unemployed. Moreover, many sociodemographic items showed statistically significant differences between the Gaza Strip, West Bank, and East Jerusalem at  $p < 0.05$ .

### Living conditions

Table 2 shows the living conditions of the study participants' families by region; 384 participants stated that their homes had an outdoor space, such as a balcony (43.2%) or garden (24.7%). More than half of the participants (58.9%) had no central heating or air conditioning system in their homes. The vast majority of the study participants (96.3%) reported that water supplies were not always available in the home during the period of the COVID-19 pandemic. Electricity was not available 24 h a day for 41.6% of the participants with 91.1% residing in the Gaza Strip. Approximately three-fourths of the participants (72.6%) had Internet access at home. Furthermore, several living condition items presented statistically significant differences between the Gaza Strip, West Bank, and East Jerusalem at  $p < 0.05$ .

### The impact of the COVID-19 pandemic on households

Table 3 displays the impact of the COVID-19 pandemic on the participants' families by region. Overall, following the pandemic's onset, 73.2% of the participants reported that the containment measures of the COVID-19 pandemic had put

an additional burden on their families. Only 9.5% of the participants mentioned that they traveled to another area or outside the country since the COVID-19 pandemic was announced.

Only 12.6% of the study participants reported that they had undergone COVID-19 testing with 1% having a positive result. A total of 32.1% of participants reported that they were subjected to quarantine following the onset of the pandemic such as physical distancing, obligatory home quarantine, and mandatory quarantine in a health care center. The overall mean period of quarantine per day was  $9.8 \pm 18.9$  (SD), reflecting a short period of quarantine.

After the confinement measures, 33.7% of the participants revealed that they switched to working remotely from home with 11.6% having lost their employment. Approximately one-third (34.7%) continued to use the same mode of transportation as before the COVID-19 pandemic with 6.3% stopping the use of public transport, 7.9% used their private cars, 5.3% walking, and 0.5% decided by motorbike.

Concerning personal hygiene and home cleaning, after the announcement of the COVID-19 pandemic, only 1.6% of participants revealed less than usual before the pandemic, whereas 31.6% reported as usual before the pandemic and 66.8% indicated more than usual compared to pre-pandemic. When asked about interest in following the latest developments about the COVID-19 pandemic, 48.9%, 26.3%, and 24.7% of participants always answered, very often, and sometimes, respectively.

## Discussion

To the best of our knowledge, the current study was one of the first studies to understand better and assess the consequences of the current COVID-19 pandemic on Palestinian households. Our study showed that approximately three-fourths of the study participants reported that the containment measures of the COVID-19 pandemic had caused an excessive burden on their families. It is worth mentioning that local Palestinian authorities have taken various measures to contain the COVID-19 spread, ranging from hygiene promotion activities to complete or partial lockdown of cities.<sup>13</sup> The Palestinian Association Report for Improvement and Local Development discussed the socio-economic impact of COVID-19 on the various sectors in Palestine. There was an increased burden on families due to the new tasks imposed on them, such as homeschooling their children and dealing with the challenges that women and men are encountering, such as after losing their employment. This pandemic is particularly challenging for women, specifically in the labor market.<sup>14</sup>

Our study showed statistically significant differences in many sociodemographic and living condition items between the Gaza Strip, West Bank, and East Jerusalem at  $p < 0.05$ . This result could be attributed to the contrast in the political,

**Table 1.** Sociodemographic characteristics of the study participants by region..

Variables	Total (n = 570)	Gaza Strip (n = 258)	West Bank (n = 120)	Jerusalem (n = 192)	p
	n (%)	n (%)	n (%)	n (%)	
Age (years)					
Mean ± SD	35.4 ± 9.5	37.0 ± 9.1	34.3 ± 10.8	34.0 ± 9.0	0.002
Gender					
Male	321 (56.3)	228 (88.4)	24 (20.0)	69 (35.9)	0.001
Female	249 (43.7)	30 (11.6)	96 (80.0)	123 (64.1)	
Marital status					
Single	129 (22.6)	42 (16.3)	42 (35.0)	45 (23.4)	0.001
Married	432 (75.8)	216 (83.7)	72 (60.0)	144 (75.0)	
Divorced	9 (1.6)	0 (0.0)	6 (5.0)	3 (1.6)	
Years of education					
Mean ± SD	14.6 ± 5.7	15.0 ± 6.0	13.5 ± 6.9	14.6 ± 4.3	0.061
Employment status					
Unemployed	48 (8.4)	21 (8.1)	9 (7.5)	18 (9.4)	0.120
University student	48 (8.4)	18 (7.0)	6 (5.0)	24 (12.5)	
Officer <sup>a</sup>	444 (77.9)	201 (77.9)	99 (82.5)	144 (75.0)	
Retired	30 (5.3)	18 (7.0)	6 (0.5)	6 (3.1)	
Nature of residence area					
Rural	96 (16.8)	39 (15.1)	27 (22.5)	30 (15.6)	0.010
Residential	462 (81.1)	213 (82.6)	87 (72.5)	162 (84.4)	
Industrial	12 (2.1)	6 (2.3)	6 (5.0)	0 (0.0)	
Type of housing					
Separate apartment	366 (64.2)	171 (66.3)	63 (52.5)	132 (68.8)	0.001
Independent home or villa	195 (34.2)	87 (33.7)	57 (47.5)	51 (26.6)	
Converted carriage house or tent	9.0 (1.6)	0 (0.0)	0 (0.0)	9 (4.7)	
Family size					
Mean ± SD	6.9 ± 6.0	8.8 ± 8.2	5.4 ± 2.6	5.2 ± 1.9	0.001
Older persons over the age of 70 years at home					
Mean ± SD	0.7 ± 5.9	0.3 ± 0.6	2.3 ± 12.8	0.1 ± 0.4	0.002
Persons under the age of 12 years at home					
Mean ± SD	2.2 ± 2.7	3.1 ± 3.6	1.40 ± 1.4	1.43 ± 1.4	0.001

SD: standard deviation.

Data are expressed as means ± SD for continuous variables and as percentages for categorical variables. The differences between means were tested by using the independent-sample t-test. The chi-square test was used to examine the differences in the prevalence of different categorical variables. A p value of less than 0.05 was considered statistically significant.

<sup>a</sup>An officer is a holder of public, civil, or military office.

economic, demographics, and living and humanitarian conditions between the three regions.<sup>15</sup>

The vast majority of the study participants revealed that potable water was not always available in the home during the period of the COVID-19 pandemic. Despite this, personal hygiene and home cleaning were important for participants, indicating the awareness and perception level of participants of the seriousness of COVID-19 and their level of worry and concern related to contracting the virus. Water and electricity shortages are common in Palestine and pre-COVID-19; it has been documented repeatedly how water and electrical power supplies were inadequate to meet Palestinian household's needs, particularly in the Gaza Strip.<sup>16–19</sup> These shortages worsened current COVID-19 as most electrical engines need fuel, which was not possible

due to fuel import restrictions, which also affected water pumps. Interestingly, the majority of the population uses mobile Internet bands or 12 V stable power supply for wifi router, making wifi much more accessible than potable water or electricity.

The previous finding from the same population was in line with ours. Abuzerr and his colleagues reported that water and electrical power supplies were inadequate to meet the Palestinian family's demand.<sup>16–19</sup>

Two-thirds of participants revealed that their homes had an external space such as a balcony or household garden. In recent years, several studies have highlighted how 20 to 25 min spent in a natural environment, such as balcony, terrace, private garden, and a shared garden, can positively influence people's well-being, especially during COVID-19.<sup>20,21</sup>

**Table 2.** The living conditions of the study participants' families by region.

Variables	Total (n=570) n (%)	Gaza Strip (n=258) n (%)	West Bank (n=120) n (%)	Jerusalem (n=192) n (%)	p
Presence of an external space					
Yes	384 (67.4)	153 (59.3)	90 (75.0)	141 (73.4)	0.001
No	186 (32.6)	105 (40.7)	30 (25.0)	51 (26.6)	
Type of outer space					
Balcony	246 (43.2)	108 (41.9)	60 (50.0)	78 (40.6)	0.001
Household garden	141 (24.7)	48 (18.6)	30 (25.0)	63 (32.8)	
There is a central heating or air conditioning system					
Yes	228 (40.0)	57 (22.1)	66 (55.0)	105 (54.7)	0.001
No	336 (58.9)	201 (77.9)	51 (42.5)	84 (43.8)	
Don't know	6 (1.1)	0 (0.0)	3 (2.5)	3 (1.6)	
Water is always available in the home					
Yes	18 (3.2)	12 (4.7)	6 (5.0)	0 (0.0)	0.004
No	549 (96.3)	246 (95.3)	114 (95.0)	189 (98.4)	
Don't know	3 (0.5)	0 (0.0)	0 (0.0)	3 (1.6)	
All rooms at home have windows or a ventilation system					
Yes	522 (91.6)	246 (95.3)	108 (90.0)	168 (87.5)	0.010
No	48 (8.4)	12.0 (4.7)	12 (10.0)	24 (12.5)	
Don't know	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
Natural light is enough to light the house on a sunny day					
Yes	456 (80.0)	213 (82.6)	99 (82.5)	144 (75.0)	0.058
No	111 (19.5)	45 (17.4)	21 (17.5)	45 (23.4)	
Don't know	3 (0.5)	0 (0.0)	0 (0.0)	3 (1.6)	
Moisture or mold on the walls or ceiling of the house					
Yes	192 (33.7)	69 (26.7)	45 (37.5)	78 (40.6)	0.023
No	363 (63.7)	180 (69.8)	72 (60.0)	111 (57.8)	
Don't know	15 (2.6)	9 (3.5)	3 (2.5)	3 (1.6)	
Hear noise coming from neighbors or the street					
Yes	390 (68.4)	183 (70.9)	72 (60.0)	135 (70.3)	0.002
No	165 (28.9)	63 (24.4)	48 (40.0)	54 (28.1)	
Don't know	15 (2.6)	12 (4.7)	0 (0.0)	3 (1.6)	
The electricity in the house is available 24h a day					
Yes	330 (57.9)	42 (16.3)	111 (92.5)	177 (92.2)	0.001
No	237 (41.6)	216 (83.7)	9 (7.5)	12 (6.2)	
Don't know	3 (0.5)	0 (0.0)	0 (0.0)	3 (1.6)	
Internet access is available at home 24h a day					
Yes	414 (72.6)	183 (70.9)	75 (62.5)	156 (81.2)	0.001
No	153 (26.8)	75 (29.1)	42 (35.0)	36 (18.8)	
Don't know	3 (0.5)	0 (0.0)	3 (2.5)	0 (0.0)	
You have a smartphone in your home					
Yes	561 (98.4)	252.0 (97.7)	117 (97.5)	192 (100.0)	0.097
No	9 (1.6)	6 (2.3)	3 (2.5)	0 (0.0)	
Don't know	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
Computers and laptops are available at home for family students to benefit from distance learning programs					
Yes	384 (67.4)	153 (59.3)	84 (70.0)	147 (76.6)	0.001
No	174 (30.5)	102 (39.5)	36 (30.0)	36 (18.8)	
Don't know	12 (2.1)	3 (1.2)	0 (0.0)	9 (4.7)	
TV is available at your home					
Yes	546 (95.8)	249 (96.5)	105 (87.5)	192 (100.0)	0.001
No	24 (4.2)	9 (3.5)	15 (12.5)	0 (0.0)	
Don't know	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	

Data are expressed as percentages for categorical variables. The chi-square test was used to examine the differences in the prevalence of different categorical variables. A *p* value of less than 0.05 was considered statistically significant.



**Table 3.** The impact of the COVID-19 pandemic on the participants' families by region..

Variables	Total (n=570)		Gaza Strip (n=258)		West Bank (n=120)		Jerusalem (n=192)		P
	n	(%)	n	(%)	n	(%)	n	(%)	
The containment measures of the COVID-19 pandemic have put an additional burden on your family									
Yes	417	(73.2)	189	(73.3)	84	(70.0)	144	(75.0)	0.051
No	138	(24.2)	63	(24.4)	36.0	(30.0)	39	(20.3)	
Don't know	15	(2.6)	6	(2.3)	0	(0.0)	9	(4.7)	
Have you traveled to another area outside your country since the COVID-19 pandemic has announced									
Yes	54	(9.5)	33	(12.8)	15	(12.5)	6	(3.1)	0.001
No	516	(90.5)	225	(87.2)	105	(87.5)	186	(96.9)	
The reason for travel									
Business	21	(3.7)	15	(5.8)	3	(2.5)	3	(1.6)	0.001
Tourism	6	(1.1)	3	(1.2)	3	(2.5)	0	(0.0)	
Medical treatment	6	(1.1)	6	(2.3)	0	(0.0)	0	(0.0)	
Family visit	12	(2.1)	3	(1.2)	9	(7.5)	0	(0.0)	0.001
For education	9	(1.6)	6	(2.3)	0	(0.0)	3	(1.6)	
Mode of travel which was used									
Plane	27	(4.7)	21	(8.1)	3	(2.5)	3	(1.6)	0.001
Cruise ship	3	(0.5)	0	(0.0)	3	(2.5)	0	(0.0)	
Car	24	(4.2)	12	(4.7)	9	(7.5)	3	(1.6)	
Have you done a coronavirus detection test?									
Yes	72	(12.6)	15	(5.8)	6	(5.0)	51	(26.6)	0.001
No	498	(87.4)	243	(94.2)	114	(95.0)	141	(73.4)	
The result of the COVID-19 test									
Positive	6	(1.1)	0	(0.0)	6	(3.1)	0	(0.0)	0.001
Negative	66	(11.6)	15	(5.8)	45	(23.4)	6	(5.0)	
Have you been subject to quarantine?									
Yes	183	(32.1)	48	(18.6)	42	(35.0)	93	(48.4)	0.001
No	387	(67.9)	210	(81.4)	78	(65.0)	99	(51.6)	
Type of quarantine/isolation									
Optional home quarantine (physical distancing)	153	(26.8)	39	(15.1)	36	(30.0)	78	(40.6)	0.001
Obligatory home quarantine	27	(4.7)	6	(2.3)	6	(5.0)	15	(7.8)	
Mandatory quarantine in a health care center	3	(0.5)	3	(1.2)	0	(0.0)	0	(0.0)	
Have your family members been quarantined with you?									
Yes	123	(21.6)	27	(10.5)	30	(25.0)	66	(34.4)	0.001
No	60	(10.5)	21	(8.1)	12	(10.0)	27	(14.1)	
No quarantine	387	(67.9)	210	(81.4)	78	(65.0)	99	(51.6)	
The period of quarantine per day									
Mean $\pm$ SD	9.8 $\pm$ 18.9		6.5 $\pm$ 18.4		13.8 $\pm$ 23.6		11.8 $\pm$ 15.2		0.001

(Continued)

**Table 3. (Continued)**

Variables	Total (n=570)		Gaza Strip (n=258)		West Bank (n=120)		Jerusalem (n=192)		P
	n (%)	mean ± SD	n (%)	mean ± SD	n (%)	mean ± SD	n (%)	mean ± SD	
Typically, how many times did you go out of the house a week before and after the announcement of the COVID-19 pandemic for the following reasons (mean ± SD)									
To buy commodities	Before	5.5 ± 4.4	5.9 ± 4.4	5.3 ± 4.0	5.1 ± 4.6	0.001			
	After	2.5 ± 2.7	2.9 ± 3.1	2.3 ± 1.8	2.2 ± 2.6				
To seek health care	Before	1.3 ± 2.1	0.9 ± 1.4	1.3 ± 1.1	1.9 ± 3.0	0.001			
	After	0.5 ± 1.5	0.3 ± 1.0	1.2 ± 2.7	0.5 ± 1.5				
For work	Before	4.7 ± 2.6	4.8 ± 2.9	4.9 ± 2.2	4.4 ± 2.4	0.001			
	After	2.3 ± 2.7	3.0 ± 2.9	2.2 ± 2.7	1.5 ± 2.4				
For hiking or physical activity	Before	3.3 ± 5.7	2.7 ± 2.2	5.3 ± 11.7	2.9 ± 2.1	0.001			
	After	0.7 ± 1.6	0.8 ± 1.7	1.0 ± 1.9	0.4 ± 1.2				
To assist vulnerable or dependent persons	Before	1.5 ± 2.2	1.5 ± 2.4	1.6 ± 1.8	1.2 ± 2.1	0.001			
	After	0.7 ± 2.1	0.8 ± 2.5	0.9 ± 1.9	0.6 ± 1.5				
What was the primary transportation mode you were using on your daily travel (to go to work/study/do other everyday activities) before the COVID-19 pandemic?									
Public transportation		261 (45.8)	153 (59.3)	54 (45.0)	54 (28.1)	0.001			
Private car		258 (45.3)	81 (31.4)	48 (40.0)	129 (67.2)				
Motorcycle		9 (1.6)	6 (2.3)	0 (0.0)	3 (1.6)				
Walk on the foot		42 (7.4)	18 (7.0)	18 (15.0)	6 (3.1)				
With the COVID-19 pandemic, what changes have happened in the mode of your daily travel?									
I no longer move because I switched working/studying remotely from home		192 (33.7)	51 (19.8)	54 (45.0)	87 (45.3)	0.001			
I no longer move because I lost my job		66 (11.6)	18 (7.0)	12 (10.0)	36 (18.8)				
I continued to use the same mode of transportation as before		198 (34.7)	147 (57.0)	9 (7.5)	42 (21.9)				
I decided to stop using public transportation		36 (6.3)	15 (5.8)	6 (5.0)	15 (7.8)				
I decided to start using my private car		45 (7.9)	15 (5.8)	18 (15.0)	12 (6.2)				
I decided to start hopping on foot		30 (5.3)	9 (3.5)	21 (17.5)	0 (0.0)				
I decided to start moving around with a motorbike		3 (0.5)	3 (1.2)	0 (0.0)	0 (0.0)				
Paying attention to personal hygiene and home cleaning after the announcement of the COVID-19 pandemic									
Less than usual before the pandemic		9 (1.6)	6 (2.3)	0 (0.0)	3 (1.6)	0.004			
As usual before the pandemic		180 (31.6)	63 (24.4)	51 (42.5)	66 (34.4)				
More than usual before the pandemic		381 (66.8)	189 (73.3)	69 (57.5)	123 (64.1)				
Do you follow up on information updates about the COVID-19 pandemic?									
Always		279 (48.9)	123 (47.7)	63 (52.5)	93 (48.4)	0.657			
Very often		150 (26.3)	75 (29.1)	27 (22.5)	48 (25.0)				
Sometimes		141 (24.7)	60 (23.3)	30 (25.0)	51 (26.6)				

COVID-19; coronavirus disease 2019; SD: standard deviation. Data are expressed as means ± SD for continuous variables and as percentages for categorical variables. The differences between means were tested by using the independent-sample t-test. The chi-square test was used to examine the differences in the prevalence of different categorical variables. A p value of less than 0.05 was considered statistically significant.

The Palestinian health system's response to the COVID-19 pandemic was comprehensively analyzed in the World Health Organization (WHO) report of the Occupied Palestinian Territory COVID-19 Response Plan.<sup>22</sup>

Our study also showed a reduction in participants' movement and use of public transportation after the announcement of the COVID-19 pandemic. Since the mean times of going out of their homes before and after the announcement of the COVID-19 pandemic have dropped significantly at  $p < 0.05$ . These findings matched the results of community-based studies from different parts of the world, which indicated a positive attitude of the public toward social distancing, avoiding travel, and socializing.<sup>23–25</sup>

After the COVID-19 pandemic announcement, one-third of our study participants reported that they stopped commuting and switched to working remotely from home. This result confirms that the COVID-19 increases labor market inequalities as the pandemic's economic consequences were more considerable for specific occupations. Individuals in professions working in proximity to others are more probably affected, while professions able to work remotely are less affected.<sup>26</sup>

About 11.6% of the study participants stopped moving because they lost their jobs. This result was consistent with the preliminary review carried out by Coibion et al. to characterize how labor markets are being affected by the COVID-19 pandemic. The study expected that job loss would be significantly larger than implied by new unemployment claims, and many of those losing jobs will not actively look to find new ones.<sup>27</sup> In addition, the study conducted by Brynjolfsson et al. revealed that about 10.1% of the US population laid off or furloughed since the start of COVID-19.<sup>28</sup> Furthermore, the deterioration of the family's financial situation during the pandemic could be associated with some avoidance behaviors, which would worsen people's mental health and lead to a more passive lifestyle.<sup>29,30</sup> Around half of the study participants reported that they were always interested in following up on the latest updates of the COVID-19 pandemic, indicating that the COVID-19 pandemic may be stressful for the Palestinian people.

### Limitations

Findings from our study should be interpreted with caution. A convenience sampling method was used, which has likely led to selection bias in our study population and also the generalizability of our findings.

### Conclusion

Findings from this online cross-sectional study concluded that the COVID-19 pandemic was associated with an additional burden on Palestinian families; since the COVID-19 pandemic is still ongoing, other aspects have not been included in this study needed to be investigated in future

studies. Therefore, we strongly recommend psychologists and social workers to play their crucial role in promoting the society member's mental health during and after the pandemic.

### Acknowledgements

The authors are grateful to the Palestine Academy for Science and Technology (PALAST) for publishing the study survey on the PALAST Facebook website. The authors also wish to thank the study participants for their valuable participation in this study. In addition, the present study was submitted as a preprint in the JMIR Public Health and Surveillance on 3 July 2020.

### Author contributions

S.A., K.Z., and A.S. participated in idea conception, proposal development, design of the study, and data collection. A.H.B. and A.A. performed the statistical analysis and drafted the manuscript. A.A.D. and A.S. participated in the draft review. All authors have read and approved the final version of the document and agree with the authors' order of presentation.

### Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

### Ethical approval

The study protocol was approved by the Helsinki Ethical Committee in the Gaza Strip, Palestine (Code: PHRC/HC/735/20).

### Informed consent

The participants were asked to approve their participation to proceed with the online survey. Informed consent for an Internet survey was also obtained from each participant.

### ORCID iDs

Samer Abuzer  <https://orcid.org/0000-0001-8950-3293>

Abdel Hamid el Bilbeisi  <https://orcid.org/0000-0001-8870-8326>

### Data availability

The data used to support the findings of this study are available from the corresponding author upon request.

### Supplemental material

Supplemental material for this article is available online.

### References

1. Joseph J. COVID-19: lifestyle tips to stay healthy during the pandemic. *The Military Healthy System*, 2020, <https://health>.



- mil/News/Articles/2020/05/22/COVID-19-lifestyle-tips-to-stay-healthy-during-the-pandemic
- Corbet S, Hou Y, Hu Y, et al. Aye Corona! The contagion effects of being named Corona during the COVID-19 pandemic. *Finance Res Lett* 2020; 38: 101591.
  - United Nations Office for the Coordination of Humanitarian Affairs (OCHA). COVID-19 crisis, 2020, <https://www.ochaopt.org/covid-19>
  - United Nations Office for the Coordination of Humanitarian Affairs (OCHA). COVID-19 emergency situation report 15, 2020, <https://www.ochaopt.org/content/covid-19-emergency-situation-report-15>
  - Hammoudeh W, Kienzler H, Meagher K, et al. Social and political determinants of health in the occupied Palestine territory (oPt) during the COVID-19 pandemic: who is responsible? *BMJ Glob Health* 2020; 5(9): e003683.
  - AlKhalidi M, Abuzerr S, Obaid H, et al. Social determinants of health in fragile and conflict settings: the case of the Gaza Strip, Palestine. In: Laher I (ed.) *Handbook of healthcare in the Arab World*. Cham: Springer, 2020, [https://link.springer.com/referenceworkentry/10.1007/978-3-319-74365-3\\_203-1](https://link.springer.com/referenceworkentry/10.1007/978-3-319-74365-3_203-1)
  - The World Bank. Economic monitoring report to the ad hoc Liaison Committee, 2020, <http://documents1.worldbank.org/curated/en/844141590600764047/pdf/Economic-Monitoring-Report-to-the-Ad-Hoc-Liaison-Committee.pdf>
  - UN Women. COVID-19: gendered impacts of the pandemic in Palestine and implications for policy and programming—findings of a rapid gender analysis of COVID-19 in Palestine, 2020, <https://reliefweb.int/report/occupied-palestinian-territory/covid-19-gendered-impacts-pandemic-palestine-and-implications>
  - Santana P. (Coord.) *Survey: COVID-19 impact on your family and community*. Centre of Studies in Geography and Spatial Planning. University of Coimbra, 2020, <https://surveys.uc.pt/index.php/992535?lang=en>
  - Palestinian Central Bureau of Statistics (PCBS). On the occasion of the International Population Day 11/7/2019. *Stat of Palestine*, 2019, <http://www.pcbs.gov.ps/post.aspx?lang=en&ItemID=3503#:~:text=Based%20on%20estimates%20prepared%20by,males%20and%201.46%20million%20females>
  - United Nations Office for the Coordination of Humanitarian Affairs (OCHA). East Jerusalem 2019, <https://www.ochaopt.org/location/east-jerusalem>
  - Charan J and Biswas T. How to calculate sample size for different study designs in medical research? *Indian J Psychol Med* 2013; 2: 121.
  - The WHO Regional Office for the Eastern Mediterranean (EMRO). State of Palestine state of emergency: COVID-19 response plan—needs for donor support 2020, [http://www.emro.who.int/images/stories/palestine/documents/Palestine\\_Authority\\_COVID-19\\_Response\\_Plan\\_Final\\_26\\_3\\_2020.pdf](http://www.emro.who.int/images/stories/palestine/documents/Palestine_Authority_COVID-19_Response_Plan_Final_26_3_2020.pdf)
  - The Palestinian Association for Improvement and Local Development. The socio-economic impact of COVID-19 on the various sectors in Palestine 2020, <https://reform.ps/the-socio-economic-impact-of-covid-19-on-the-various-sectors-in-palestine/>
  - United Nations Conference on Trade and Development. Report on UNCTAD assistance to the Palestinian people: developments in the economy of the Occupied Palestinian Territory 2019, [https://unctad.org/meetings/en/SessionalDocuments/tdbex68d4\\_en.pdf](https://unctad.org/meetings/en/SessionalDocuments/tdbex68d4_en.pdf)
  - Abuzerr S, Hadi M, Zinszer K, et al. Comprehensive risk assessment of health-related hazardous events in the drinking water supply system from source to tap in Gaza Strip, Palestine. *J Environ Public Health* 2020; 2020: 7194780.
  - Abuzerr S, Nasser S, Yunesian M, et al. Water, sanitation, and hygiene risk factors of acute diarrhea among children under five years in the Gaza Strip. *J Water Sanit Hyg Dev* 2020; 1: 111–123.
  - Abuzerr S, Nasser S, Yunesian M, et al. Prevalence of diarrheal illness and healthcare-seeking behavior by age-group and sex among the population of Gaza Strip: a community-based cross-sectional study. *BMC Public Health* 2019; 1: 704.
  - Abuzerr S, Nasser S, Yunesian M, et al. Household drinking water safety among the population of Gaza Strip, Palestine: knowledge, attitudes, practices, and satisfaction. *J Water Sanit Hyg Dev* 2019; 3: 500–512.
  - D'Alessandro D, Gola M, Appoloni L, et al. COVID-19 and living space challenge: well-being and public health recommendations for a healthy, safe, and sustainable housing. *Environment* 2020; 5: 1–15.
  - Berto R, Barbiero G and Pasini M. Biophilic design triggers fascination and enhances psychological restoration in the urban environment. *Journal of Biourbanism* 2015; 1: 27–34.
  - World Health Organization (WHO). Occupied Palestinian Territory COVID-19 response plan: prepared by the Humanitarian Country Team 2020, <https://www.who.int/health-cluster/countries/occupied-palestinian-territory/Occupied-Palestinian-Territory-COVID-19-Humanitarian-Response-Plan-April-2020.pdf?ua=1>
  - Roy D, Tripathy S, Kar K, et al. Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic. *Asian J Psychiatr* 2020; 51: 102083.
  - Chinazzi M, Davis T, Ajelli M, et al. The effect of travel restrictions on the spread of the 2019 novel coronavirus (COVID-19) outbreak. *Science* 2020; 368: 395–400.
  - Pabayo R, Gauvin L and Barnett TA. Longitudinal changes in active transportation to school in Canadian youth aged 6 through 16 years. *Pediatrics* 2011; 128(2): e404–e413.
  - Béland P, Brodeur A and Wright T. The short-term economic consequences of COVID-19: exposure to disease, remote work and government response 2020, <https://papers.ssrn.com/abstract=3584922>
  - Coibion O, Gorodnichenko Y and Weber M. Labor markets during the COVID-19 crisis: a preliminary view. *National Bureau of Economic Research*, 2020, <https://www.nber.org/papers/w27017.pdf>
  - Brynjolfsson E, Horton J, Ozimek A, et al. COVID-19 and remote work: an early look at us data. *National Bureau of Economic Research*, 2020, <https://www.nber.org/papers/w27344.pdf>
  - Lau JT, Yang X, Tsui H, et al. Monitoring community responses to the SARS epidemic in Hong Kong: from day 10 to day 62. *J Epidemiol Community Health* 2003; 57(11): 864–870.
  - Lau JT, Yang X, Tsui HY, et al. Impacts of SARS on health-seeking behaviors in general population in Hong Kong. *Prev Med* 2005; 41(2): 454–462.