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Mohammed A. Shaheen, Abed Alrahman Tamoni, and Mohannad Damiri

Al-Quds Open University, Palestine
abed55alrhman@gmail.com

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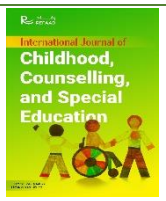

Anxiety Responses due to COVID-19 Among a Sample of Palestinian University Students

Mohammed A. Shaheen[a], Abed Alrahman Tamoni[*a], and Mohannad Damiri[a]

[a]Al-Quds Open University, Palestine
*abed55alrhman@gmail.com

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Abstract: The study aims to investigate the level of anxiety responses and differences related to some variables due to COVID-19 among a sample of Palestinian university students and to verify the COVID-19 anxiety responses scale using the descriptive method on a random sample of 500 individuals. The results show that the level of anxiety responses due to COVID-19 among Palestinian university students and its two factors, emotional and behavioral, were moderate as the mean for the total score is 3.40 and draws a percentage of 60.0%. The behavioral responses were the highest with a mean of 3.56 and a percentage of 71.2% while the emotional responses came with a mean of 3.28 and a percentage of 65.6%. In addition, there are no statistically significant differences in anxiety responses due to COVID-19 according to educational level or marital status; however, the differences are significant in favor of females and higher age groups.

Keywords: *Anxiety responses; COVID-19; Palestinian university students.*

*Corresponding Author
Abed Alrahman Tamoni
Al-Quds Open University, Palestine
E-mail: abed55alrhman@gmail.com

1. Introduction

On December 31, 2019, it was reported officially for the first time about the outbreak of the (COVID-19) pandemic in a market selling seafood in Wuhan-China. It is a virus that affects the respiratory system (Qian et al., 2020). Symptoms of this virus include high temperatures, coughing, bronchitis, difficulty breathing, nausea and muscle pain (Chen et al., 2020). The World Health Organization estimated the death rate due to the virus at about 2%; however, some researchers estimated it between 0.3% and 0.6% (Nishiura et al., 2020). The pandemic spread throughout China and then moved to almost all countries all over the world. Since March 14, 2020, 135 countries have declared COVID-19 transmission to their territories (Zhang et al., 2020). One of those countries to which the pandemic has invaded is Palestine. On March 5, 2020, the Palestinian Ministry of Health confirmed that it had registered seven cases of COVID-19 in a hotel in Beit Jala- Bethlehem Governorate, after a contact with tourists from Greece (AlKhaldi et al., 2020).

As a result, on Thursday evening (March 5, 2020), the Palestinian President issued a presidential decree declaring a state of emergency in all Palestinian territories for a month to confront the COVID-19 virus, which included disrupting schools, kindergartens, institutes, and universities in all Palestinian governorates throughout the entire emergency period (AlKhaldi et al., 2020; Ghandour et al., 2020). Because of the preventive procedures followed by the Palestinian Government to counter this virus, and with the closure of schools and business areas, negative feelings were experienced by Palestinians, especially among children and youth including students whose lives were greatly affected by the pandemic. Modern evidence worldwide indicates that individuals who remain in isolation and quarantine suffer from many difficulties, including anxiety, anger, and psychological stress (Brooks et al., 2020). Accordingly, individuals may experience symptoms such as psychosis, trauma, suicidal thinking, and panic during an outbreak of infectious disease (Salari et al., 2020).

Anxiety is defined as “an emotion characterized by feelings of stress, anxious thoughts, and physical changes such as increased blood pressure” (Baqutayan, 2012, p. 120). In the past, anxiety referred to “a reaction to danger” (Schur, 1958, p. 191), which means that anxiety is characterized by two key aspects: emotional and behavioral responses. When anxiety is above normal, the body's immune system weakens due to fear of contracting the virus, and therefore people will experience emotional and behavioral responses (Salari et al., 2020).

The term psychological responses have been used in many studies, especially those that have examined the impact of crises, natural disasters and dangerous events, including studies that have examined the impact of psychological responses due to the COVID-19 pandemic and SARS pandemic (Wang et al., 2020a; Lee et al., 2006; Cheng & Tang, 2004; Leung et al., 2003).

COVID-19 anxiety responses are individual anxiety reactions to the virus at the behavioral level. Psychological responses are generally defined as an individual’s reactions to a stressful event that affected them, and often the reactions are anxiety, anger, depression, psychological stress, and PTSD (Wang et al., 2020a; Lee et al., 2006; Cheng, & Tang, 2004; Leung et al., 2003).

A wide range of studies revealed the psychosocial effects among humans at the individual and social levels during the pandemic. People are more likely to feel anxious and afraid of injury, and therefore feel helpless and angry. Wang et al. (2020a) revealed that psychological responses among a sample included 1210 Chinese individuals, were moderate, as the percentage was 53.8%, and showed an increase in hand washing and hygiene use among respondents. A study by Roy et al. (2020) revealed high levels of anxiety due to the COVID-19 pandemic in India. As more than 80% of the sample individuals were busy thinking about the pandemic, and 72% reported their need to use preventive means, such as: gloves, disinfectants, in addition to having difficulty sleeping. In the United Kingdom, early in the outbreak of the pandemic. Shevlin et al.'s (2020) study revealed that levels of anxiety, depression and trauma symptoms were higher in the study sample compared to previous studies conducted on the population, and anxiety was higher in older participants compared to the younger ones. Li et al. (2020) study conducted in China, before and after the announcement of the COVID-19 pandemic revealed that negative emotions such as anxiety, depression and anger increased after the outbreak of the pandemic was announced while positive emotions including Happiness, life satisfaction decreased after the outbreak was declared. Qiu et

al.'s (2020) study was applied in 36 Chinese provinces and neighboring countries, including: Hong Kong, Macau, and Taiwan. The results revealed that about 35% of the sample individuals suffered from psychological disorders due to the (COVID-19) pandemic, and that females showed higher responses to psychological stress due to the pandemic compared to males. In addition, Wang et al. (2020b) results showed that anxiety was higher among Chinese females compared to males, as well as among people over the age of 40 years compared to low age levels.

The previous literature all over the world indicated moderate to high level of psychological responses due to COVID-19 among different samples. For instance, (Wang et al., 2020a), (Li et al., 2020) in China, (Qiu et al., 2020) in 36 Chinese provinces and neighboring countries, including Hong Kong, Macau, and Taiwan, (Roy et al., 2020) in India, (Shevlin, et al., 2020) in the United Kingdom showed that anxiety due to COVID-19 is a serious disorder that is important to study in all countries and environments. Therefore, there is a need to explore the reality of anxiety due to COVID-19 among the Palestinians, especially the university students, since students constitute a large group of the Palestinian community (more than 250,000), and maybe the pandemic has had a negative impact on them. Along with this notion, UNESCO confirmed that the closure of universities and schools has many negative consequences with respect to students, such as intermittent learning that leads to depriving students and youth from opportunities for growth and development (Almaiah, et al., 2020). A study of Russian and Belarusian university students also confirmed that the COVID-19 pandemic has created a state of psychological and emotional chaos as a sharp rise in mental health problems, including anxiety, depression, stress and sleep disturbance (Gritsenko, et al., 2020). Moreover, a Canadian study focusing on the effects of quarantine after the severe acute respiratory syndrome (SARS) pandemic found an association between longer duration of quarantine with a high prevalence of anxiety and depression among people (Hull, 2005).

Although the term anxiety responses is used in some studies, especially those that examined the impact of crises, natural disasters, and dangerous events, there is no comprehensive scale to measure COVID-19 pandemic anxiety (within the limits of researchers' knowledge). This stems from the theoretical definition of anxiety in general and COVID-19 pandemic anxiety in particular. Hence, there is need to develop a scale of anxiety response due to COVID-19 pandemic, including the emotional and behavioral aspect, given the importance and urgency of the issue. Therefore, this study aims to assess Palestinian university students' psychological responses due to the COVID 19 pandemic and seeks to contribute by filling the gap and providing a tool capable of measuring COVID-19 pandemic anxiety. Accordingly, this research sought to answer the following questions:

- What is the level of anxiety responses due to COVID-19 among Palestinian university students?
- Are there statistically significant differences between the averages of anxiety responses due to COVID-19 among Palestinian university students due to gender, educational level, social status, and age?

2. Materials and Methods

2.1. Participants and Procedure

A multi-stage cluster random sample was selected. In the first stage, and after reviewing the list of Palestinian universities, 4 universities were randomly selected, namely Al-Quds Open University, An-Najah National University, Birzeit University, and the Palestinian Technical University. In the second phase, a college was selected randomly from each university, and then in the third phase, one specialization was chosen from each college in the selected universities. The study instrument was distributed to them through special groups for students on Facebook and WhatsApp, and the sample size reached 500 undergraduate and postgraduate students, aged between 18 and 35 years, 108. i.e., %21.60 were males, and 392, i.e. %78.40 were females.

2.2. Measures

Due to the lack of scales tackling anxiety responses resulting from COVID-19 pandemic, the researchers developed a special 16-item scale based on the previous study instruments, including (Rubin et al., 2009; Wong et al., 2007; Qian et al., 2005; Lau et al., 2003). The scale included biographic information on gender, educational level, marital status and age of the participants. Likert-type scale ranging from 1 (Never) to 5 (Always) was used to collect the required data of the current study, which was divided into two phases,

i.e., validating the study instrument (scale) and the descriptive study on anxiety.

2.3. Scale Validation

Considering the characteristic of our target population (Palestinian university students) specifically and the Palestinian society generally, validation of the scale was necessary to ensure its suitability to explore the study objectives. In order to validate the study instrument, validity factor analysis was used. The following two methods were adopted to verify global honesty:

- **Exploratory Factor Analysis (EFA):** An exploratory global analysis of the 16 items of the scale was performed, and before that, the Bartlett test had been calculated to verify the significance of the correlations in the matrix. The approximate value of the spherical Bartlett test was $\chi 2=3206.815$, $P< .000$, which indicates the fulfillment of this condition. The value of the KMO test was calculated for testing the integrity of the sample for global analysis. Its value was 0.923, which is considered a high value according to (Kaiser & Rice, 1974). The factor analysis used the Principal Axis Factoring, and then Oblique Rotation using Promax for all the constituent parts of the scale, according to (Fabrigar et al., 1999) recommendation, and the Eigen Value was used according to Criterion. So, the value of the latent root value of the factor exceeds one, and after adopting .30 as a minimum level of significance of the saturation of each item in the factor according to the Guilford criterion. The results indicated that all the paragraphs of the scale of 16 items, the saturation values for them according to Gilford criterion are greater than .30, and Table 1 shows the global construction extracted after recycling.

Table (1): Factor analysis for COVID-19 anxiety response scale

No.	Item	Scale factors	
		Factor 1	Factor 2
The first factor: emotional anxiety responses			
Item9	I feel nervous upon hearing news about the coronavirus	.805	
Item16	People fear of corona virus makes me anxious	.798	
Item7	I am worried about being infected with the coronavirus	.673	
Item2	I feel like my life is being threatened by the coronavirus	.662	
Item1	I am worried about the spread of corona virus	.639	
Item12	I am afraid of losing a livelihood due to the disruption of life facilities	.627	
Item15	I think nobody can stop the spread of this virus	.568	
Item13	Coronavirus is more dangerous than other flu types	.522	
Item4	The news annoys me about the number of people infected with coronavirus	.479	
The second factor: behavioral anxiety responses			
Item6	I take all precautions to avoid being infected with the virus		.789
Item3	I avoid shaking hands with others so they do not pass this virus		.727
Item14	I do not mix with others for fear of coronavirus		.673
Item8	reduced the number of people I meet every day		.635
Item5	I wear hand gloves when leaving public places		.617
Item10	I don't touch things that others touch before me		.603
Item11	I wash my hands with soap and water more than usual		.532
Eigenvalues		**5.253**	**4.746**
Contrast ratio		**36.681%**	**7.629%**
Cumulative contrast ratio		**44.311%**	

The first factor: The underlying root 5.253, indicates about 36.681% of the total variance of the matrix and positive saturation with nine items: 1,2,4,7,9,12,13,15,16 on the COVID-19 anxiety scale. The contents of these items reveal responses that express emotional anxiety and hence the researchers called this factor "emotional anxiety response".

The second factor with its latent root 4.746, explained 7.629% of the total variance of the matrix and positive saturation with the rest seven items, namely 3,5,6,8,10,11,14 of the COVID-19 anxiety scale. The contents of these items express behavioral anxiety responses; consequently, they were called "behavioral anxiety responses."

The contrast ratio of both factors; emotional and behavioral explains 44.311% of the total variance of the matrix. Accordingly, the factors of the scale were saturated with its items indicating that the scale and its factors were distinct on their own. This explanation gives a relatively close saturation between these items and the factors of the scale, which confirms the validity of the scale to meet the requirements of the study.

- **Confirmatory factor analysis (CFA):** The confirmatory factor analysis (CFA) was performed using the Maximum Likelihood Estimation method, in order to judge the validity of the measurement model and its conformity to the data, and using the AMOS, 23 programs, as in Figure (1) below:

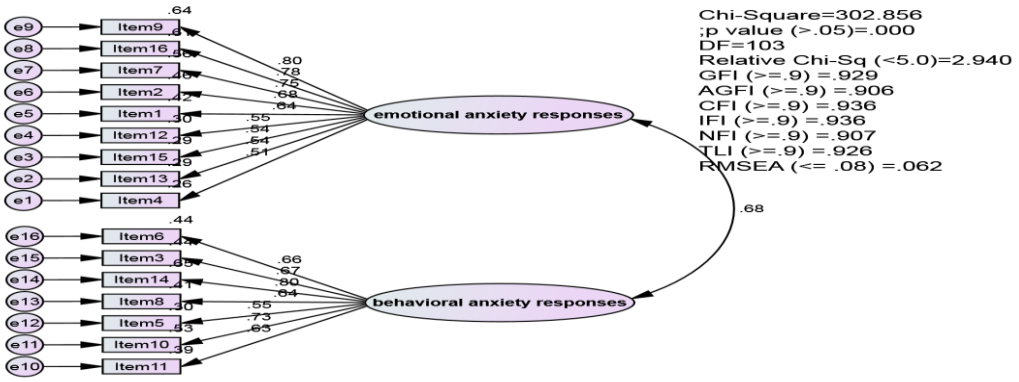

Figure (1): The saturation of the items with the standard values on the factors to which they belong and the values of conformity to the model

Figure (1) shows that the value of χ^2 reached 302.856, $P<$ .000, and it is mentioned that the indicator of χ^2 is marred by some defects, including affection of the sample size used in the study. Large samples may lead to rejection of the model even if it is a good model or close to the actual model. Small samples may also lead to accepting a lower quality model, or a relatively large difference between them and the observed data (Hair et al., 2013). It is noted from Figure (1) that the value of CMIN/df (the relative χ^2 reached 2.940), which is divided by χ^2 degrees of freedom, and this value is less than the acceptance value which must be less than or equal to 3 according to (Bentler, 1990).

Based on the CFA, the results showed the following values: CFI= 0.929, AGFI=0.906, GFI= 0.936, IFI=0.936, NFI=0.926, TLI=0.907 which are greater than the common value for accepting these indicators which must be greater or equal to 0.90. It is obvious that the RMSEA=0.62 is less than the Value of the criteria for acceptance, which should be less or equal to 0.80. All these indicators are acceptable at the values reported to them, which indicates that the study data support the global structure of the scale.

In order to verify the Reliability of the scale and its dimensions, the Cronbach's Alpha formula was used on the sample data after measuring the validity of 16 items. Values came between .85-.87, and for the total degree reached .90. These values are high, and indicate that the scale is appropriate, and therefore achieving the study objectives.

3. Results

3.1. Answer to the first research question

To answer the first research question, the mean scores were calculated for the level of responses to COVID-19 anxiety in the study sample. Table (2) presents the results.

Table (2): Mean, standard deviation and percentage for COVID-19 anxiety response scale

Factor	M	SD	Percentage	Level
emotional anxiety responses	3.28	0.82	65.6	moderate
behavioral anxiety responses	3.56	0.88	71.2	moderate
Total degree of anxiety	**3.40**	**0.75**	**68.0**	**moderate**

The results of the first question revealed that the level of anxiety responses due to COVID-19 among Palestinian university students was moderate, as the arithmetic average for the total degree was 3.40, and a percentage of 68.0%.

3.2. Answer to the second research question

To answer the second research question, arithmetic averages and standard deviations for the responses of the individuals in the study sample were calculated. Table (3) presents the results.

Table (3): Mean, standard deviation of anxiety responses due to COVID-19 according to demographic variables

variable	level	emotional responses		behavioral responses		Total degree of anxiety	
		M	SD	M	SD	M	SD
Gender	male	3.11	0.87	3.46	0.96	3.26	0.83
	female	3.33	0.81	3.58	0.85	3.44	0.72
Educational level	BA	3.27	0.83	3.53	0.87	3.39	0.75
	MA	3.30	0.79	3.66	0.90	3.46	0.77
Social status	single	3.23	0.83	3.54	0.91	3.37	0.76
	married	3.38	0.83	3.57	0.84	3.47	0.77
	divorced	3.13	0.68	3.62	0.80	3.34	0.54
Age	Less than 23	3.14	0.84	3.41	0.94	3.26	0.77
	From 23 to 30	3.37	0.75	3.67	0.82	3.50	0.67
	Greater than 30	3.42	0.83	3.68	0.81	3.53	0.76

Table (3) shows that there are phenomenal differences between the averages of anxiety responses due to the demographic variables of the study. To reveal the significance of these differences, a 4-way ANOVA "without interaction" analysis was performed on the overall score of the anxiety scale.

Table (4): Quadrant variance analysis (without interaction) on the overall score of responses to COVID-19 anxiety according to demographic variables

Source of variance	SS	df	MS	F	*P*
Gender	3.995	1	3.995	7.344	.007**
Educational level	0.312	1	0.312	0.573	.449
Social status	1.046	2	0.523	0.962	.383
Age	9.336	2	4.668	8.581	.000**
Error	268.194	493	0.544		

With reference to table (4), there are no statistically significant differences in anxiety due to educational level and social status; however, statistically significant differences existed due to the gender in favor of female participants, and due to age in favor of older participants.

To illustrate the significance of the differences between the averages of anxiety responses due to COVID-19, a multivariate variance analysis MANOVA was conducted on the domains of the responses of anxiety scale. Before the analysis was performed, and to verify its assumptions regarding the absence of a linear polymorphism multicollinearity, the correlation coefficients for the two factors of the scale followed by a Bartlett spherical test were used, as correlation coefficients did not exceed .80, and are considered acceptable as they did not exceed r>.90 according to (Tabachnick & Fidell, 2012). The approximate value of $\chi 2$ for the spherical test Bartlett=192.609, P<.000, indicates that this condition has been met, and homogeneity of Covariance by homogeneity of the covariance through Box's M test, with a value of 103.411, P=.002, is appropriate when P>.001 according to (Hahs-Vaughn, 2016), and confirms the verification of this assumption. Table 5 illustrates the results of the multivariate analysis of variance:

Table (5): Analysis of multiple triple variances (without interaction) on the sub-domains of the scale of anxiety responses due to COVID-19 due to demographic variables

Source of variance	variable	SS	df	MS	F	*P*
Gender						
Wilks' Lambda value= 0.983 *P* =0.016	emotional responses	5.436	1	5.436	8.324	.004**
	behavioral responses	2.468	1	2.468	3.255	.072
Educational level						
Hoteling's Trace value= 0.004 Value *P* = 0.415	emotional responses	0.868	1	0.868	1.329	.250
	behavioral responses	0.006	1	0.006	0.008	.928
Social status						
Hoteling's Trace value= 0.012 *P* = 0.227	emotional responses	1.798	2	0.899	1.377	.253
	behavioral responses	1.400	2	0.700	0.923	.398
Age						
Wilks' Lambda value= 0.966 *P* =0.002	emotional responses	9.479	2	4.739	7.257	.001**
	behavioral responses	9.155	2	4.578	6.037	.003**
Error	emotional responses	321.953	493	0.653		
	behavioral responses	373.813	493	0.758		

It is evident from table (5) that there are no statistically significant differences in the fields of emotional and behavioral responses due to educational level and social status. Differences were statistically significant due to gender variable in the field of emotional responses only, in favor of females. The differences were also statistically significant according to the age variable in the areas of emotional and behavioral responses. To reveal the location of the differences between the averages of emotional and behavioral responses, and the total score according to the age variable, a Scheffe Test was conducted, as in table (6) below.

Table (6): Scheffe Test of the differences due to age

variable	level	From 23 to 30	Greater than 30
emotional responses	Less than 23	-.24*	-.28*
behavioral responses	Less than 23	-.26*	-.27*
Total degree of anxiety	**Less than 23**	-.25*	-.27*

Table (6) shows that differences in the degree of anxiety responses due to COVID-19, either in emotional or behavioral responses, were in favor of the higher age group.

4. Discussion

4.1. The level of anxiety responses due to COVID-19 among Palestinian university students

The confinement of students to their houses for long periods of time, sometimes lasting for months which students did not use to experience, their disconnection with their universities to which they frequented almost daily, the new lifestyle that is different from their lifestyle before the pandemic which was imposed on them, and their fear of contracting the COVID-19 caused them restless state of mind. They also felt worried, stressed and bored. The resulting fear and tension made them feel lonely, as they lost the daily routines, and were obliged to live in isolation from their colleagues, friends, and universities. Their professors also added to these pressures by imposing on them e-learning needs that they were not accustomed to in the past. Considering that humans are social by nature, the proceedings of social separation have caused anxiety, tension and loneliness, especially in light of the daily conversation through the media about new cases.

This finding is consistent with that of Wang et al. (2020a) who investigated psychological responses among a sample included 1210 Chinese

individuals, and found the responses moderate, i.e. the percentage was 53.8%,. On the other hand, the finding of the current study disagreed with Roy et al. (2020) study results that revealed high levels of anxiety due to the COVID-19.

4.2. Differences in the levels of anxiety responses due to COVID-19 related to gender, educational level, social status, and age

Differences in the gender variable in favor of female participants may be attributed to the delicate female nature, which is reflected in their emotional and behavioral responses to stressful life events including the pandemic anxiety. In addition to the male culture that still dominates in the Palestinian community, which has serious repercussions on the role of females and their feelings towards problems facing their society. Considering the nature of the variation in the psychological characteristics, education gives males wider opportunities for expression, entertainment, and freedom. Therefore, females are much more negatively affected than males, who are not significantly affected when compared to females.

This finding aligns with Qiu et al. (2020) finding that females showed higher responses to psychological stress due to the pandemic compared to males. It also agreed with the result of Wang et al. (2020b) which indicated that anxiety was higher among females compared to males.

The differences due to age can be attributed to the overall degree of anxiety responses due to COVID-19, and the areas of emotional and behavioral responses. This difference can be explained by the fact that those in the highest age group are married, fear for their children's safety, and have financial commitments, unlike those in the lower age group, who often do not have responsibilities such as providing income to the family, as most of them may have their expenses covered by their parents. Likewise, the bullying practiced against the elderly during the COVID-19 pandemic as they are the most vulnerable to infection, has negatively affected their psychological immunity, and thus they have become more vulnerable to mental disorders, including anxiety. Therefore, these participants did not seem as anxious as their higher-age counterparts whose anxiety was high.

The results of the current study are in agreement with Shevlin et al. (2020) study, which concluded that anxiety was higher in older participants compared to younger participants. It also agreed with Wang et al. (2020b) study that anxiety was higher among people over the age of 40 years compared to lower age levels.

The lack of differences in the educational level can be attributed to the fact that all Palestinian university students have an acute awareness of the situation. The pandemic affected them with the same degree of severity, as they were engaged in the same direction towards completing their studies. Since they shifted from face-to-face education to e-learning, this led to additional pressures due to the COVID-19 pandemic. As a result, they were close in their grades on the scale of anxiety responses.

The absence of significant differences due to the social status may be attributed to the fact that the Palestinian community often has extended families in spite of the presence of nuclear families, and almost all of them reside within the same area. This means that they meet interact and socialize daily with each other, especially when given the preventive measures prohibiting movement during quarantine. This social situation enabled families to meet and exchange conversations regardless of their social status, whether they were married, single, or divorced, and therefore there was no effect due to pandemic. The presence of family members at home for long periods during the COVID-19 pandemic has created a state of solidarity that left no differences between single and married people within the family and given the homogeneity of responsibilities towards the family among them regardless of their marital status.

5. Conclusions

The importance of this research theoretically highlights an important topic in the current period, the COVID-19 pandemic, which provides a base for researchers and may contribute as a modest addition to theoretical literature in this field; as well as enrich the knowledge about the nature of the research variables.

The youth in Palestinian society have become accustomed to the lack of daily routines, practice activities, interacting routinely with peers, and participating in events. The effect of being quarantined at home for long periods was uncomfortable for them and was reflected in their emotional and behavioral responses and hence in their feelings of anxiety. Home quarantine, the lack of clarity about the near future, and the absence of government interventions to support and reassure

students played a major role in increasing instability and feelings of anxiety.

Research on the psychological impacts of the COVID-19 pandemic remains in its infancy. This study can provide an insight into further applied research to confirm or oppose its results considering the lack of literature on changes in psychological disorders (i.e. anxiety) in relation to demographic variables (i.e. sex, age).

Recommendations:

In light of the current study findings, the researchers suggested the following recommendations:

- Providing collective and individual counseling services to alleviate the stresses due to the emotional and behavioral responses among members of Palestinian society, including youth, due the COVID-19 pandemic, and beyond.
- Giving special attention and care to older age groups of young people, especially females, and provide follow-up psychological services.
- Carrying out more studies related to psychological changes among individuals in Palestinian society due to the COVID-19 pandemic, as a basis for building effective counseling programs.

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