



The psychological trait among fitness center goers during home quarantine and its relationship to the body mass index

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Abstract

Background: The Corona pandemic imposed on the countries of the world to take many strict measures to limit the spread of this virus, as home quarantine. **Objective:** this study aimed to identify the psychological aspects level among the fitness center goers during home quarantine and the differences in these aspects level according to the gender variable. As well as, the relationship between the psychological stress and motivation level, in addition, to the relationship between some psychological aspects and the body mass index, finally the differences in the body mass index before and after home quarantine. **Design:** To achieve this, the researchers used the descriptive approach on a sample consisting of (510), selected using randomly sample technique with the average age of (24±2.6) years. Because of the home quarantine and to reduce face-to-face interaction, the researchers used a questionnaire by using the Google form. The study tool consisted of (11) paragraphs associated with stress and (11) paragraphs associated with motivation. The researchers used means, standard deviations, paired and independent sample T-test by using SPSS version 24 with a confidence level of 95% (p value < 0.05). **Results:** The results of the study have shown that the psychological stress level among the study sample came with a high average (4.03) and moderate average (2.83) for motivation domain without any statistically significant differences according to the gender variable. As well as, a statistically significant association between the level of psychological stress and motivational in males and females with a higher percentage of body mass index (BMI) for males and females after home quarantine and a higher percentage of females. While the results of the study showed a statistically significant correlation between psychological aspects and body mass index. **Conclusion:** In light of these results, the urgent need to activate the role and importance of psychological self-care for individuals during home quarantine and work to find a balance between leisure time and other life activities.

Keywords: Psychological stress, Motivation, Body mass index, Home quarantine, Coronavirus.

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INTRODUCTION

By tracking the Corona virus spread, we find that it spread rapidly in most countries within a short period, and this contributed to the economic turmoil, job loss and social isolation, as many individuals suffered from psychological pressure as a natural response to these conditions [1]. On March 14, 2020, this virus became a pandemic in 135 countries in the world [2]. With this wide spread, it is natural for individuals to feel anxiety, fear and this may result in their failure respondent to this virus rationally and objectively, especially since the focus in all countries of the world is mainly on finding effective vaccine, infection control and the rate of cure from treatment [3]. On the other hand, this rapid spread was accompanied by many health and mental problems of individuals [4]. Such as anxiety, depression, stress and negative behaviors [5]. In addition, many psychological and social problems, physical isolation and loneliness [6]. As well as, the negative effects associated with spending a long time on the Internet [7].

To limit the Coronavirus spread, countries in the world have taken strict restrictions and measures on the public life of individuals, such as closing schools, universities, restaurants and fitness centers, which was accompanied by a narrowing of individual freedoms [8]. These strict measures contributed to greater negative impact on the various aspects of individuals, accompanied by a variety of problems such as disturbances, panic and anxiety [9]. Deprivation of daily routine, staying for a long time in a confined space and insecurity poses some challenges for individuals such as, a rise in levels of anxiety, aggression, sleep disturbances and depression and to an increase in individuals' level of fear and frustration [10]. It is clear that the Corona pandemic represents a source of tension due to uncertainty, lack of knowledge and increased financial hardship for individuals [11]. Beyond that, social isolation is stress factors [12]. The economic risk resulting from the closures and home quarantine also represents an additional source of stress [13]. Quarantine and staying at home also leads to a decrease in exposure to sunlight for a long time and this accompany by a decrease in serotonin levels, which is associated with emotional disorders such as anxiety and depression [14]. In general, the psychological effects of home quarantine on individuals can be explained through two ways: being away from friends, which can generate intense emotional frustration, and fear of the virus spread more than expected [15].

Based on the previous presentation, the researchers found that there is a clear negative effect of home quarantine on the psychological aspects among the individuals during the Corona pandemic, The danger in this is that there is a double correlation between body mass index (BMI) and psychological problems, as psychological stress contributes to an increase in body mass and on the other hand, an increase in body mass leads to psychological problems. Stress and anxiety may contribute to changes in the nutritional behaviors among individuals, as researchers indicated that there is a statistically significant correlation between stress and body mass [16]. Authors [17] stated that stress is related to weight, as a higher level of stress was observed in overweight among males and this was not observed among the female. Noting that the hormones that are activated in response to stress play an important role in regulating appetite [18]. Stress also effects on the metabolic function, including insulin resistance [19]. Experts indicate that a high level of depression is associated with a higher BMI through two pathways: anxiety about health and anxiety related to physical appearance through dissatisfaction with body image [20]. Psychological stress is linked to weight through a variety of mechanisms, including influence on behavior, lack of physical activity [21]. Stressful life situations can affect a person's leptin levels, leading to the consumption of high-calorie foods, which contributes to weight gain [22].

Young people (18-30) year's experience higher levels of stress, anxiety and depression in response to the Coronavirus outbreak [23]. This may be due to the huge amount of information they receive from social media and the media, including rumors, which can easily cause stress [24]. Authors [25] Also indicates that males experience higher depression levels than females and similar levels of anxiety and stress. While authors [26] indicate that female suffer more consequences of the Corona pandemic than male. On the other hand, there is a relationship between stress and obesity in female more than male [18]. In contrast, [27] indicates that psychological stress is more associated with weight gain in male than in female. Accordingly, understanding the role of social stressors and their relationship to weight gain is crucial to the effect of these stressors on metabolic systems,

endocrine pathways, increased intake of high-calorie food as well as decreased participation in sport activities [28,29]. Here comes the role of regularity in the sports activities, which helps to reduce stress and symptoms of depression. In addition, contribute to facilitating the release of the endorphin hormone that is linked to the immune system, as immune cells are able to produce this hormone and this reflects the bilateral relationship between the nervous and immune system, which can be improved in response to the sports activities. It also improves self-confidence and reduces the risk of depression and improves mood [30-32]. Moreover, the practice of sports activities contributes to controlling the level of the hormone cortisol in the body, which contributes to reducing stress and reducing the risk of depression [33]. Not forgetting the positive role of regular physical activity on brain health and thus improving motor communication networks. Where psychological and health motives are considered one of the most important motives for practicing sports activities for their positive role in helping the individual adapt, achieve psychological balance and improve the mood of the individual by inhibiting anxiety and depression [34]. Where Authors [35] indicate that, there is an inverse relationship between motives and symptoms of depression.

The problem of the study is that home quarantine is accompanied by strict restrictions on the daily routine of individuals, and it may be accompanied by a decrease in the level of motivation to practice sports activities due to the loss of friends during the exercise of physical activities, which leads to the individual feeling of disappointment. In addition, we find that countries focus mainly on finding an effective vaccine and controlling infection, with a decrease in interest in the psychological aspects related to weight. The importance of the study that it focused on a topic considered extremely important through the interrelationships between psychological aspects and body mass index during the Corona pandemic. Therefore, this study aimed to identify the level of some psychological aspects (psychological stress and motivation) of fitness center goers during home quarantine, and the differences in the level of these aspects according to the gender variable. As well as, the relationship between the level of psychological stress and motivations of fitness center goers, in addition, to the relationship between the level of some psychological aspects (psychological stress and motivations) and the body mass index, and finally the differences in the body mass index before and after home quarantine

MATERIAL AND METHODS

Patients and study design

In the present online survey by Google from conducting in Amman, the researchers used this online questionnaire to collect the data from a sample of (510) goers from fitness centers in Amman selected using randomly sample technique with an average age (24 ± 2.6) year's. The sample under study were explained the purpose of our study to get their consent. Where the researchers obtained the anthropometric measurements of the study sample through the records of fitness centers and body mass index (BMI) was calculated as weight (kg) divided by height (m^2). Where the table 1 provides a distribution of the sample according to the personal and demographic characteristics variables.

Table 1. A description of the study sample (n= 510)

Variables	Category	Repetition	Percentage/ %
Gender	Male	325	63.7
	Female	185	36.3
	Total	510	100
High/M	Less than 1.70	183	35.9
	1.70 and more	327	64.1
	Total	510	100

Table 2. The stress and optimism scales of the study sample responses

The response/ stress and motivation	Degree	average	Level
Very often	5	More than 4.20	Very high
Fairly often	4	3.40- less than 4.20	High
Some times	3	2.60- less than 3.40	Moderate
Almost never	2	2.60- less than 1.80	Low
Never	1	Less than 1.80	Very low

Study design

Due to curfew in the country and to reduce interaction face to face, an electronic questionnaire was built using (Google questionnaire), which consist of (11) paragraphs that deals with the stress, and (11) paragraphs that deals with the motives. Noting that the comprehensive ban and closure of fitness centers continued from 3/21/2020 until the end of May. In addition, we used the fifth Likert scale to measure how participants feel about each paragraph (table 2). This study was conducted at the mid-June.

Scientific coefficients of the study tool

To verify the validity of the study tool, the researchers presented it to a committee of (five) arbitrators with the competence and experience of the faculty members at the Universities of Jordan to find out the suitability of paragraphs of this questionnaire and its ability to achieve the goal of the study. To verify the consistency of the study tool, the researchers used the Alpha Cronbach coefficient, where Cronbach alpha for the stress domain was found to be (0.87) and (0.86) for the motivation domain and this values is considered a high indicator of the stability of the study tools.

Ethical considerations

The participants' rights were protected by explaining the purpose and significance of the study. The clients were informed that their participation in the study would remain anonymous and that their privacy was respected. They were provided with a comprehensive explanation that their involvement in the study was voluntary and that they could withdraw at any time and written approval was obtained from all study participants. Accordingly, there was no need for approval from the Ethics Committee at the University of Jordan.

Statistical analysis

To achieve the objectives of the study and answer its questions, the researchers used means, standard deviations, Alpha Cronbach coefficient, the Independent - Sample T-test and the paired Sample T-test by using SPSS version 24 with a confidence level of 95% ($p= 0.05$).

RESULTS

The data collected from (510) goers from fitness centers in Amman, this data contain in Table 3, reveals the means and standard deviations of study sample responses about the stress and motivation level's during home quarantine. In order to reveal the differences in the psychological stress level and motivational among fitness center goers during the home quarantine according to gender variable, the table 4 include the independent sample T-test results. On the other hand, the researchers tried to identify the relationship between the psychological stress and motivation level during home quarantine among fitness center goers, the table 5 contains the values of the correlation coefficient between these aspects. With the aim of detecting changes in the body mass index (BMI) values before and after home quarantine, Table 6 includes the means and standard deviations of the BMI values among the study sample before and after home quarantine. The researchers also aimed to identify the relationship between the level of some psychological aspects (psychological stress and motivation) among the fitness center goers and the body mass index. Table 7 contains the values of the correlation coefficient between these aspects.

Table 3. Mean and standard deviations of the stress and motivation level's during home quarantine. (n=510)

Stress paragraph's	Means	SD	Level
I feel that I have run out of all my energies during home quarantine	4.12	0.83	High
I feel that I am unable to continue exercising during home quarantine	4.09	0.77	High
I became very anxious during home quarantine	4.10	0.80	High
I became irritable during home quarantine	4.10	0.81	High
I became very frustrated during home quarantine	4.07	0.80	High
I am having difficulty sleeping during home quarantine	3.95	0.82	High
I am having difficulties in taking decision-making steps	3.91	0.80	High
I suffer from decreased concentration during home quarantine	3.97	0.83	High
I feel bored during home quarantine	4.12	1.90	High
I feel a decrease of self-confidence during the stone home	3.92	0.81	High
I cannot deal with problems during home quarantine	3.94	0.74	High
Stress domain	4.03	0.46	High
Motivation paragraph's	Means	SD	Level
I have the desire to continue training during home quarantine	2.99	1.08	Moderate
I enjoy training during home quarantine	2.77	1.17	Moderate
I have the ability to solve the problems that I encounter during home quarantine	2.81	0.96	Moderate
I am determined to succeed despite the conditions of home quarantine	2.90	0.96	Moderate
The home quarantine period did not reduce my dependence on myself	2.96	1.01	Moderate
I have the ability to employ alternative tools in home quarantine training	3.02	1.10	Moderate
The home quarantine period did not reduce my desire to maintain my health	2.96	1	Moderate
The home quarantine period did not diminish my desire to maintain a suitable body mass	2.80	1.01	Moderate
The home quarantine period did not affect my ability for training tasks	2.70	1.03	Moderate
I can stop negative thoughts during the home quarantine	2.56	1.03	Moderate
I have the ability to adapt during my home quarantine	2.64	1.07	Moderate
Motivation domain	2.83	0.56	Moderate

Table 4. Independent sample T-test results for the stress and motivation domains according to gender variable (n=510)

Variables	Gender	Number	Mean	SD	T	p
Stress	Male	325	4.04	0.50	0.375-	0.708
	Female	185	4.02	0.39		
Motivation	Male	325	2.87	0.60	1.30-	0.194
	Female	185	2.80	0.48		

p - statistical significance

Table 5. Matrix of correlation coefficients between the psychological stress and motivation (n=510)

Psychological stress	Male motivation		Female motivation	
	Correlation coefficient	p	Correlation coefficient	p
	0.236-	0.00	0.316-	0.00

p - statistical significance

Table 6. Paired sample T-test results for the BMI values before and after home quarantine (n=510)

Variable	Gender	Results for the BMI values	Mean	SD	df	T	p
Mass / kg	Male	Before home quarantine	80.3	16.43	324	-23.65	0.00
		After home quarantine	84.56	17.10			
	Female	Before home quarantine	61.03	15.62	184	-22.56	0.00
		After home quarantine	65.12	16.77			
Body mass index kg/m ²	Male	Before home quarantine	25.08	3.87	384	-22.52	0.00
		After home quarantine	26.48	4.22			
	Female	Before home quarantine	22.84	4.22	184	-21.42	0.00
		After home quarantine	24.38	4.17			

p - statistical significance

Table 7. Matrix of correlation coefficients between the psychological psychological aspects and body mass index (n=510)

Psychological aspects	Body mass index	
	Correlation coefficient	p
Psychological stress	0.421	0.003
Motivation	0.362	0.047

p - statistical significance

DISCUSSION

The Corona pandemic imposed on the countries of the world to take many strict measures to limit the spread of this virus, as home quarantine and physical distancing were one of these measures, which resulted in many psychological pressures on individuals in general. In addition, the home quarantine is punctuated by stress and anxiety due to the lack of clarity in individuals about when to return to their daily routine. The results of the study showed indicators consistent with this proposition, as the psychological stress level among the study sample were high (4.03). Where the responses of the study sample showed that they feel exhausted from all their energies, feel bored and lonely and become more anxious, angry and frustrated in addition to sleep disturbances during home quarantine as well as becoming unable to continue exercising during home quarantine and this result is consistent with previous studies that indicated that home quarantine is accompany by a variety of sleep disturbances, anxiety and panic due to reduced safety in individuals. Deprivation of daily routine, uncertainty, lack of knowledge and increased financial difficulties for individuals may contribute to a high level of psychological stress during home quarantine. Where physical distancing is a factor of stress for individuals, economic risk and home quarantine are additional factors of stress. In addition, the stress is the relationship between the person and the environment in which he lives, and the high level of these stressors reduces the individual's sense of safety and psychological well-being among individuals. The psychological effects of home quarantine of individuals can also be explained by distancing themselves from friends and the resulting severe emotional frustration. The reason for the high level of psychological stress may also be due to the fact that part of the study sample are students in universities, where the closure of universities and resorting to distance education contributed to an increase The level of these stressors being a new experience. Not to lose sight of the negative role of the huge amount of information on social media and the media, including rumors and their negative impact on the level of psychological stress of individuals during home quarantine. Where the results of a study conducted by researchers showed that individuals feel an increased level of anxiety and fear due to false rumors on social media and the absence of adequate medical information about this virus.

By reviewing the level of motivation of fitness center-goers during home quarantine, the researchers found that it was a moderate mean (2.83). Where the responses of the study sample indicated that the desire to continue training was negatively affected by home quarantine through a decrease in the ability to solve problems and perform training tasks during home quarantine. In this

area, studies indicate an inverse relationship between motives and symptoms of depression [35]. Where the motivations are the basic engine for all types of human behavior, as they are dynamic and active forces in order to satisfy the needs and desires of individuals. In addition, psychological and health motives are among the most important motives for practicing sports activities. Avoiding exercise negatively affects the psychological balance, mood, levels of anxiety and depression in individuals through a decrease in the level of secretion of chemical elements and mood stimulating hormones such as serotonin, endorphins and dopamine. Motivation is a dynamic relationship between the individual and his environment and includes many factors related to behavior, directing and continuing in order to achieve his desired goals.

By referring to the responses of the study sample about the psychological stress and motives level according to the gender variable, the researchers found that they are close between males and females, with no statistically significant differences between them during home quarantine. On the other hand, these results came differently with previous studies as some studies indicated that males are more affected by home quarantine and the outbreak of the Coronavirus [23-25]. While authors [26] indicates that females suffer more from the consequences of the Corona pandemic than males. The results of the study also showed a statistically significant correlation between the level of stress and motives in males and females, as psychological and social motives are considered one of the most important motives for engaging in sports activities. This clearly highlights the negative impact of home quarantine on the psychological aspects, through physical isolation, loneliness, boredom, reduced exposure to sunlight for a long time, and the accompanying decrease in serotonin levels and it is associated with emotional disorders that may affect individuals such as anxiety and depression. With an increase in the level of psychological stress in individuals, the danger lies through the interrelation between body mass index and psychological problems. The results of the study related to changes in the body mass index showed that it increased by a percentage (5.58)% for males and (6.74)% for females. Rising the psychological stress levels during home quarantine induce changes in the nutritional behaviors of individuals by increasing the intake of high-calorie foods. Where studies indicate a statistically significant relationship between psychological stress and body mass. Additionally, the high level of psychological stress leads to an increase in the secretion of cortisol as a response to stress. This increase also contributes to disturbances in the hormones that are active in response to psychological stress, which negatively affects the regulation of appetite in individuals as well as negatively affects the efficiency of metabolic processes inside the body. Where [36] indicates that there is a correlation between the psychological stress level and BMI in females more than males. There is also an association between psychological factors and obesity [37]. Notably, studies indicate that high levels of depression are associated with higher levels of body mass index through concern for health, and on the other hand, anxiety over the outward appearance of the body and dissatisfaction with body image and females are more concerned with body image. The decrease in support and control of negative thoughts also contributes to the high psychological stress level, noting that the lack of physical activity at this increase. Regular exercise of sports activities and a healthy diet contribute to a decrease in the body mass index, and this appears more clearly in females, as the relationship between psychological stress and obesity in females is higher than in males [18]. On the contrary, studies indicate that psychological stress is more related to weight gain in males compared to females [29]. Psychological stress also affects the food choices of individuals by reducing the time available to prepare healthy food and preferring fast, high-fat foods with high calories. Where psychological and social stress is considered a risk factor for weight gain and the impact of these stressors is greater in female than male [38]. Data in the United States of America and Europe showed a clear negative linear relationship between obesity and indicators of the socio-economic status of individuals [39,40].

CONCLUSION

The strict measures imposed by the countries of the world to confront the rapid spread of the Coronavirus, such as home quarantine, contributed to increasing social isolation, unity and restricting the daily routine of individuals. Where the results of the study showed high levels of psychological stress among the study sample without any statistically significant differences according to the gender

variable. The results of the study also showed a statistically significant association between the level of psychological and motivational stress in males and females. In addition to, a higher percentage of body mass index (BMI) for males and females after home quarantine and a higher percentage of females. While the results of the study showed a statistically significant correlation between psychological aspects and body mass index. In light of these results, the urgent need to activate the role and importance of psychological self-care for individuals during home quarantine and work to find a balance between leisure time and other life activities. Not forgetting the positive role of regularity in the sports activities and its positive role in controlling psychological stress and maintaining the body mass index. In addition, to the need for states to pay attention to the psychological aspects of individuals during this pandemic and not focus only on finding an effective vaccine for this virus with the need to provide scientific and objective information related to the virus and this definitely reduces the impact of rumors and misinformation about this virus spreading on social media.

CONFLICTS OF INTEREST AND FUNDING STATEMENT

We declare no competing interests. There are no sources of funding

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