Psychometric Verification of the Endemic Disease Phobia Scale Among a Sample of University Students in the Jordan Society

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Abstract: The study aimed to psychometrically validate a scale for measuring endemic disease phobia among a sample of students from Al al-Bayt University in Jordan. The study sample consisted of randomly selected 251 male and female students from Al al-Bayt University in the Hashemite Kingdom of Jordan. The scale used was the Endemic Disease phobia scale developed by Arpaci et al. (2020). Its validity was assessed through confirmatory factor analysis on the four factors, and the scale demonstrated good validity and reliability, indicating its potential use in clinical screening of students. The study found significant differences in the impact of demographic variables on Omicron phobia, with serum type and frequency of obtaining it being factors that influenced Omicron phobia. The study recommends developing specialized programs that focus on guidance, prevention, and treatment for individuals who are experiencing long-term effects of COVID-19 pandemic phobia. The study also recommends using the current scale, likely referring to

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a measurement tool or assessment instrument used in the study, for both research and diagnostic purposes.

Keywords: phobia, fear of COVID-19, Omicron variant, psychometric validation, psychological scales.

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Introduction

The latest novel coronavirus, called Omicron, has led to a rapid increase in cases worldwide (Khan et al., 2022a). Cases associated with the Omicron variant have had a significant impact on mental health. As of January 11, 2022, over 120 countries had already been affected by the Omicron variant, sometimes with multiple variants of SARS-CoV-2 appearing simultaneously, indicating co-circulation of Omicron variants with other coronavirus variants. The distinguishing feature of the Omicron variant is its primary immune target, which can harbor a huge number of genetic changes (over 50 mutations), including nearly 30 mutations associated with spike protein receptors, resulting in 55 amino acid changes due to infection with this variant, including 6 amino acid deletions leading to neutralizing antibody evasion (Rabiul Islam et al., 2022). Since Omicron infection causes particularly genetic changes in serotonin hormone, it is a crucial neurotransmitter in the central nervous system, affecting patients with phobias and social anxiety (Ghandashtani et al., 2023). A study by Chen and Guo (2024) demonstrated that the Omicron variant contains the most expressive amino acid mutations, with nearly 60 mutations across the genome, mostly in the spike protein, especially in the receptor-binding domain. These mutations increase the affinity between Omicron variants, leading to immune evasion and causing symptoms with significantly higher transmissibility compared to other variants.

And the infection began, and the first case was detected during a cross-sectional survey of a sample of patients from December 13, 2021, to December 25, 2021, in Pakistan. A study found that the level of fear was collectively high, reaching 84.5% of the total participants in urban areas compared to those residing in rural areas aged between 21 to 40 years, using a seven-item vocabulary questionnaire (Khan et al., 2022a). Since March 2022, infections

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have surged in China, increasing concerns easily due to infection affecting job levels in healthcare and transmission to their relatives (Zhang et al., 2023).

Omicron Infection Phobia

Phobia is a specific form of anxiety disorder characterized by persistent and excessive fear of something or a specific situation, classified into three groups: social phobia, agoraphobia, and specific phobia, which is the subject of the current study. Five types of phobias have been recognized in the Diagnostic and Statistical Manual of Mental Disorders, including environmental phobia, animal phobia, blood-injection-injury phobia, situational fear, among others. Therefore, Omicron phobia is a type of continuous and excessive fear of new coronavirus variants, which can be classified as a specific type of phobia in the Diagnostic and Statistical Manual of Mental Disorders (Arpaci et al., 2020). It is sometimes referred to as social phobia of the Omicron variant, a prevalent psychological disorder characterized by continuous fear of social situations associated with the context of suffering from the long-term consequences of the pandemic. Phobia often coincides with other psychological disorders such as depression, and patients may experience recurrent psychological distress due to doctors' focus on secondary complications that play on multiple complex genetic conditions (Ghandashtani et al., 2023). Phobia is an escalating sense of panic associated with physiological responses and a type of disorder, chaos, and uncertainty (Shindi et al., 2023). Fear and anxiety about COVID-19, along with the quarantine and social isolation measures adopted, generally lead to specific psychological responses such as emotional disturbances and behavioral changes in the ability to adapt among people. Collective shock and depression may occur across various age groups, particularly prevalent within individual families (Shindi et al., 2023), especially as individuals suffer from long-term post-COVID syndrome, experiencing recurring symptoms for periods that may

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extend to a year or more (Mousa & Al-Farhati, 2023). The diagnostic criterion for specific phobia of continuous fear of the coronavirus pandemic (specific phobia) is outlined in the Diagnostic and Statistical Manual of Mental Disorders, as follows (Arpaci et al., 2020):

1. Exposure to the idea of contracting the coronavirus prompts immediate anxiety that may escalate to panic.
2. The individual realizes they suffer from excessive or irrational fear of the coronavirus.
3. Avoidance of the coronavirus or feeling anxious about interacting with people due to it.
4. People avoid the coronavirus, but if unable to do so, they feel anxious, and this anxiety significantly interferes with their usual routines in different environments.

Coping Theory

The theory views cognitive and behavioral efforts made to deal with external or internal requirements for coexisting with a pandemic as specific, exceeding one's resources. Coping with adaptive behaviors responds to stressful events causing those pressures in one's life. This theory is part of positive psychology and cognitive psychology theories working within a contextual model of events (Khan et al., 2022b). The theory serves two fundamental functions (Khan et al., 2022b):

1. Control of anxiety or emotions resulting from critical or unpleasant situations, whether infection or uncertainty about infection occurrence (emotion-focused coping strategies).

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2. The other involves quickly changing the components of the stressful situation to deal with the underlying problem.

Coping often involves using safety behaviors that modify cognitive failures and tend to improve personal experience evaluation, especially in cases previously affected by the pandemic waves (Burato et al., 2009). The theory comprises five main components: cognitive efforts, behavioral efforts, internal demands, external pressures, and resources. Behavioral efforts refer to more information and evidence related to confronting individuals with those stressful events, aiming to change the circumstances themselves (Khan et al., 2022b). Meanwhile, cognitive efforts such as acceptance, distancing, and escape attempts as defense mechanisms aim to change the context of the situation. While the situation meets environmental expectations and individual goals such as one's desire to obtain a challenging job (work-related pressures in this case), despite obstacles associated with performing a certain type of work efficiently, external requirements from the situational or social environment must be addressed by individuals. Finally, the resources available to individuals (financial, physiological, physical, psychological, and behavioral) influence how they deal with the matter (Khan et al., 2022b). Psychoneuroimmunology has shown that negative emotions and stress-inducing incidents in life may increase susceptibility to infection by negatively impacting the immune system, indicating that anxiety is one of the psychological symptoms that must be carefully considered during the pandemic period. There are only a limited number of psychological measurement tools that facilitate the assessment of emotions and behaviors observed during infections or epidemics (Dilbaz et al., 2020).

Evaluation of one's ability to cope with conditions during the Omicron pandemic and its variant is carried out, and such assessments can be perceived

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through directing a self-question to the individual, "What am I risking in this situation?" The issue lies in assessing the potential impacts of this event (specific internal or external requirements), as well as the importance of the disruption (Khan et al., 2022b). Due to the difficulty of the question, the psychological conflict generated in the individual due to the obscurity of vision and the unknown cause of infection affects mood states, anxiety, avoidance, precaution, and mood alteration satisfactorily, making the impact on the immune system strong and susceptible to infection (Dilbaz et al., 2020).

Protection Motivation Theory

The Protection Motivation Theory explains how individuals cognitively evaluate threats and execute preventive behaviors. The cognitive mediation process includes perceived threat to individuals and tangible effectiveness in adaptation, arousing their protection motivations and various coping mechanisms (adaptive or maladaptive behaviors). Adaptive behaviors refer to individual actions aimed at protecting themselves from the threat, whereas maladaptive behaviors involve avoiding people to engage in counter-protection (Zheng et al., 2021).

Protection motivation refers to individuals adopting preventive behaviors to protect themselves from health threats. Perceived threat includes two dimensions (Zheng et al., 2021):

I. Perceived susceptibility includes people's sense of vulnerability or helplessness resulting from the threat of the pandemic, whether it's infection, transmission, or protection from someone suspected of being infected with the variant.

II. Perceived severity refers to the seriousness of the threat perceived by the individual, whether it is the first time the individual is infected with

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the variant or the extent of similarity between current infection symptoms and previous infections with the variant.

Despite the traditional Protection Motivation Model explaining how perceived threat leads to preventive behaviors, it overlooks the affective consequences during the cognitive evaluation process (Zheng et al., 2021). Fear is a fundamental emotion that motivates people to avoid a specific threat, and during the assessment of threat severity and susceptibility (Zheng et al., 2021), fear is an acquired drive and an attempt to comply with persuasive or deceptive messages. The theory assumes that fear or emotional tension functionally drives the individual towards desirable behavior through defensive reactions exhibited after fear arousal (Boss et al., 2015). Fear can be elicited as a defensive reaction and emotional adaptation to the threat. Studies have confirmed that fear can be an external variable affecting individuals' attitudes and preventive behaviors towards the threat. Specifically, fear can compel individuals to deal with the threat seriously, increasing their self-protective motivation (Boss et al., 2015; Zheng et al., 2021). Intense fear can lead to self-blame as a maladaptive coping mechanism due to excessive phobia or acceptance of reality, where self-blame is a form of emotional discharge, rumination, and behavioral disengagement associated with mental disorders. Meanwhile, actively coping using positive reinterpretation and seeking social support are associated with adaptive responses (Lindinger-Sternart et al., 2021).

Statement of the problem

Due to the novelty of data related to COVID variants, studies have relied on artificial intelligence software to improve procedures in terms of quality and accuracy of clinical data since the World Health Organization announced the outbreak of COVID-19. On November 26, 2021, a new type of concern associated with Omicron, or the second wave of the SARS pandemic was

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documented about 23 months after the initial case of COVID-19 was reported. Comparing concerns about Omicron with its predecessor from pandemics, it became clear that the reported magnitude of concerns increased several times more than the Delta variant, as the infection period is longer and there are higher rates of reinfection (Yilmaz et al., 2024). A study by Khan et al. (2022) indicated that COVID-19 phobia significantly affects the mental health of healthcare providers, increasing fatigue, pressure, and emotional stress associated with work. Yilmaz et al. (2024) relied on deep learning and its algorithms to predict the progression of disease before and after infection with Omicron using data from the United States, Spain, and Turkey. The data were used to compare between actual clinical data and those generated using algorithms, and the study found concordance indices ranging from 0.71 to 0.81, with a negative diagnostic accuracy of 0.78 or higher for patients with severe cases before and during Omicron.

Zhang et al. (2023) conducted a study to identify anxiety related to COVID, and the stability with a coefficient alpha for the scale was 0.895, with a content validity index of 0.920. Exploratory factor analysis and scree plot were used, and a general factor explained 72.56% of the total variance, with saturations ranging from 0.790 to 0.885. Confirmatory factor analysis showed that the general factor had good fit indices, with GFI = .992, AGFI = .975, RMSEA = .054, RMR = .005, TLI = .932, and CFI = .966. Convergent validity for the scale showed correlations of r = .619 for post-traumatic stress disorder, r = .55 for fear of COVID, and r = .367 for depression.

The study by Sapmaz et al. (2017) aimed to assess the reliability and stability of the Turkish version of the Specific Phobia Severity Scale, formulated in line with diagnostic and statistical manual of mental disorders criteria. The study sample consisted of 50 patients treated in the child psychiatry

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unit, using the Childhood Anxiety Scale for Emotional Disorders along with the phobia scale. The results supported stability with a coefficient alpha of 0.75 for the phobia scale, and for validity, a general factor explained 74.1% of the total variance. Convergent validity with the childhood anxiety scale yielded a correlation of 0.480, indicating validity and stability for clinical or research purposes.

In the Turkish context, Cengiz et al. (2019) conducted a study on the Social Anxiety Scale, applied to a sample of 55 patients with social phobia, of whom 31 were male and 24 females, meeting the diagnostic and statistical manual of mental disorders fourth edition criteria. Validity was verified using exploratory factor analysis, with a Kaiser-Meyer-Olkin measure of sampling adequacy of 0.675, and rotated factor analysis using promax rotation method, which yielded five factors explaining 71.45% of the total variance. The scale's stability was 0.87 according to Cronbach's alpha method.

Dilbaz et al. (2020) developed a scale for social phobia based on the social and demographic model, applying it online to a sample of 1243 participants. Exploratory and confirmatory factor analyses were conducted on the final version of the 22-item scale and its subscales: anxiety, mood, seeking reassurance, and avoidance. The coefficient alpha for the scale was 0.84, and a confirmatory factor analysis revealed a four-factor model slightly superior to a second-order general factor model.

In a study by NKA et al. (2023), exploratory factor analysis was used for a phobia scale applied to a sample of 267 Malaysian university students, comprising 14 items. The study identified three factors explaining 70.8% of the total variance, with a Kaiser-Meyer-Olkin measure of sampling adequacy of

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0.77 and a coefficient alpha of 0.84 for the scale and 0.72, 0.78, and 0.86 for the subscales.

Arpaci et al. (2020) conducted on a sample comprising non-academics, pre-university students, undergraduate, and graduate students, totaling 1250 participants, exploratory factor analysis was applied to the 19-item C-19 P-S scale. A cut-off points of loadings equaled to 0.4, yielding four factors explaining 61.65% of the total variance, with a Kaiser-Meyer-Olkin measure of sampling adequacy of 0.926 and coefficient alpha ranging from 0.851 to 0.903 for the sub-dimensions.

Methodology

Participants: The sample was randomly selected from students at the Faculty of Education, Al al-Bayt University in the Hashemite Kingdom of Jordan. The sample consisted of 251 male and female students. In terms of gender, the sample was divided into 104 (41.4%) males and 147 (58.6%) females. Regarding the academic level, the sample was divided into 180 (71.7%) undergraduate students and 71 (28.3%) graduate students. Table 1 illustrates the demographic characteristics of the study data.

Table 1. Sample and sampling characteristics of university students in the Jordanian environment.

Variables	Indicators	frequency	Percentage
Gender	Males	104	41.4%
	Females	147	58.6%
Grade	Bachelors	180	71.7%
	Post graduated	71	28.3%
Vaccine taking	Yes	250	99.6%
	No	1	.4%
	1	48	19.1%

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Variables	Indicators	frequency	Percentage
Infection frequencies	2	62	24.7%
	3	42	16.7%
	4	60	23.9%
	5	39	15.5%
Type of vaccine	Phyzer	150	59.8%
	AstraZeneca	64	25.5%
	Sinopharm	23	9.2%
	Johnson	14	5.6%

Omicron Phobia Scale: The researcher Arabicized the C19P-SE (Coronavirus Phobia Scale) developed by Arpaci et al. (2020) considering the phobia criteria outlined in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) to measure levels of coronavirus phobia in different age groups. The scale items were modified to align with the phenomenon of the Omicron variant. The scale consists of 20 items distributed across four dimensions: psychological dimension (items 1, 5, 9, 13, and 17), non-organic psychological dimension (items 2, 6, 10, 14, and 18), economic dimension (items 3, 7, 11, 15, and 19), and social dimension (items 4, 8, 12, and 16). A five-point Likert scale was selected for respondents to rate their agreement with each item, ranging from 5 = strongly agree to 1 = strongly disagree. The term "coronavirus pandemic" was replaced with the term "Omicron variant." The scale scores range from 20 to 100, with higher scores indicating greater phobia in individuals. The reliability coefficients of the scale in the study by Arpaci et al. (2020) ranged from 0.85 to 0.89 for test-retest reliability, and the Cronbach's alpha coefficient was 0.93 for the overall scale.

Data analysis

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The study utilized JAMOVI 2.3.26, a free Indian statistical software, for analyzing the results. The data were complete, with no missing values, as all responses were mandatory in the electronic form. Frequencies were used to describe the demographic data and characterize the sample. Exploratory factor analysis was employed to examine the cohesion of the structural factors. The study confirmed the structure of the scale using confirmatory factor analysis for the quadripartite structure of Omicron variant phobia. The reliability was assessed using two methods: Cronbach's alpha coefficient and omega coefficient. The study examined the impact of demographic variables on Endemic Disease phobia using multivariate analysis of variance (MANOVA) method.

Results

Reliability of the Omicron Phobia Scale for University Students in the Jordanian Society:

The reliability of the scale dimensions was assessed using Cronbach's alpha coefficient and the omega coefficient. The values for the dimensions and items of the scale as a whole are presented in Table 2.

Table 2. Reliability coefficients of the Omicron Phobia subscales for university students.

Components	Cronbach's Alpha	Omega
Psychological	.633	.634
Psychosomatic	.659	.700
Economic	.521	.531
Social	.441	.489
Over all items	.856	.860

Item 5 was excluded from the psychological dimension of the Omicron Phobia scale, while item 6 was excluded from the psychosomatic dimension as

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it was considered a negatively worded item according to the program's report. Additionally, item 12 was excluded from the social dimension. The overall item reliabilities for the scale were above 0.80, indicating that the scale demonstrated strong reliability at both the psychological and clinical levels for its application in the Jordanian society.

Descriptive Indicators

Several descriptive indicators were estimated for the dimensions of the scale, including the mean, median, skewness, standard deviation, and kurtosis. The values are presented in Table 3.

Table 3. Descriptive indicators for the Omicron phobia subscales.

Components	Psychological	Psychosomatic	Economic	Social	Phobia
Psychological	--				.855***
Psychosomatic	.730***	--			.890***
Economic	.596***	.709***	--		.866***
Social	.447***	.446***	.518***	--	.682***
N	251	251	251	251	251
Mean	12.6	12.9	15.5	8.38	49.4
Median	13	13	16	8	51
Std	3.79	3.70	3.83	2.59	11.6
Min	4	4	5	3	16
Max	20	20	25	14	77
Skewness	-.205	-.146	-.211	.040	-.468
kurtosis	-.506	-.372	.247	-.651	.421

From the results in Table 3, it is observed that the standard deviations for the psychological, psychosomatic, and economic dimensions are relatively high, indicating greater variability in scores. However, the social dimension of Omicron phobia was above average. In terms of skewness, the data showed moderate skewness as none of the values exceeded the acceptable limit of one.

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The correlations between the sub-scales were moderate to high, indicating internal consistency and structural integrity of the scale.

Dimensional Coherence of the Factor structure

An exploratory factor analysis was conducted using the Maximum Residuals method, and an oblique rotation technique called Oblimin was employed. A cutoff point of 0.3 was set for accepting item loadings to achieve model simplicity. The number of factors to extract was not predetermined. The results are presented in Table 4.

Table 4. Dimensional Coherence of the omicron phobia structure among university students.

Indicators	factor		
	One	two	Three
1			.31
2	.43		
3			.41
4			.62
5			.65
6			.64
7			.65
8	--	--	--
9		.44	
10		.86	
11		.83	
12		.65	
13	.51	.33	
14	.65		
15	.71		
16	.65		
17	.70		
18	.77		
19	.31	.33	

The results yielded a model characterized by parsi. The KMO measure was 0.83, and the eigenvalues for the three dimensions were 3.46, 2.57, and 2.28, respectively. The explanatory variance for these factors was 18.2%, 13.5%, and 12%, with a total explained variance of 43.7%. It was observed that

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the four factors of the scale were not cohesive, while their items were distributed across three factors, with two or three items per factor. This may reflect the sensitivity of the factorial structure or suggest that the experience of phobia represents a complex feeling during the Omicron outbreak in early 2024.

The Confirmatory Factor Analysis (CFA) Model

The unweighted least squares method was used to perform Confirmatory Factor Analysis (CFA) considering some correlations among error variances due to the presence of a negative determinant in the correlation matrix. The model fit indices are presented as follows:

Table 5. Goodness of fit indices of the four-factor model of the Omicron phobia model.

X2	df	P	SRMR	RMSEA	NNFI	AGFI	GFI
426.44	133	.000	.080	.094	1	.93	.95

The goodness-of-fit indices demonstrated good fit based on the SRMR, RMSEA, NNFI, AGFI, and GFI indices. However, the chi-square index was statistically significant, indicating a lack of fit. This could be influenced by the nature of the data or the sample size. Additionally, the RMSEA index was slightly inflated but still within an acceptable range. The fit indices are as follows:

Table 6. Item loadings on the four factors of the Omicron phobia model.

latent	observed	Loadings	SE	t-value
Psychological	O1	.43	.044	9.28
	O5	.27	.048	5.47
	O9	.59	.039	15.25
	O13	.67	.033	20.26
	O17	.61	.036	17.09

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latent	observed	Loadings	SE	t-value
Psychosomatic	O2	.45	.042	10.65
	O6	.13	.054	2.33
	O10	.71	.029	24.80
	O14	.60	.032	18.86
	O18	.73	.029	25.22
Economic	O3	.32	.046	6.96
	O7	.23	.145	5.17
	O11	.64	.564	17.45
	O15	.52	.444	12.98
	O19	.53	.447	12.70
Social	O4	.22	.130	4.77
	O8	.14	.061	3.42
	O12	.48	.383	9.09
	O16	.48	.373	8.69

The item factor loadings of the psychological dimension ranged from 0.27 to 0.67. For the psychosomatic dimension, saturations varied from 0.13 to 0.73. Economic dimension saturations ranged from 0.23 to 0.64, while social dimension saturations ranged from 0.14 to 0.48. None of the dimension's items were excluded. The graphical representation of the model is illustrated below:

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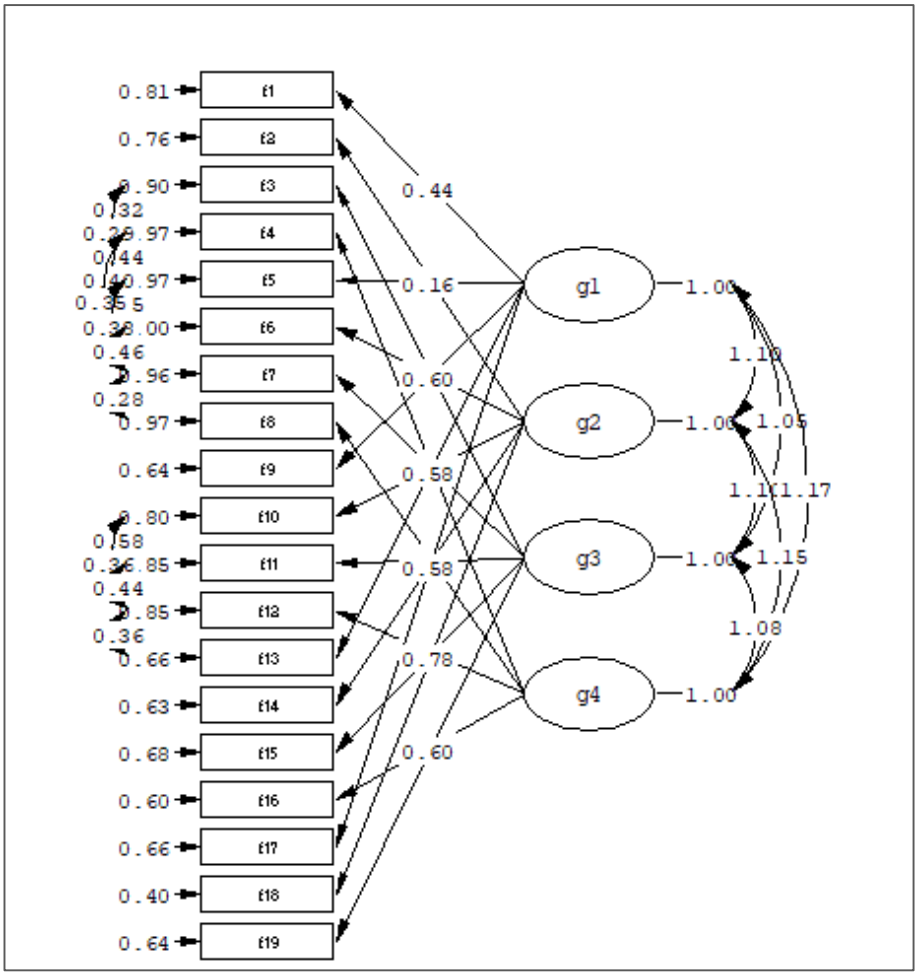

Figure 1. the CFA model of Omicron phobia construction.

Note. P1= psychological component, P2= Psychosomatic component, P3= economic component, P4= social component. F1 to t19 refers to omicron phobia items.

The effect of demographic Variables on Omicron Phobia Among University Students in the Jordanian Society:

A multivariate analysis of variance (MANOVA) test was used to examine the influence of demographic variables, namely gender, university degree, type of

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anti-coronavirus medication received by the student as a vaccine, and the frequency of obtaining the medication. Omicron phobia was considered the dependent variable. The results are presented in Table 7, which illustrates the impact of demographic variables on Omicron phobia.

Table 7. The effect of demographic variables on Omicron phobia.

Source	Sum of square	df	Mean square	F	Sig.
Corrected	6928.56	37	187.26	1.49	.043
Intercept	93183.36	1	93183.36	741.56	.000
Gender	14.95	1	14.95	.12	.730
Grade	96.09	1	96.09	.77	.383
Type of vaccine	1288.18	3	429.39	3.42	.018
Vaccine frequency	1074.07	3	358.02	2.85	.038

The results of Table 7 in the study indicated a lack of significant differences in Omicron phobia attributed to gender and university degree, while there were significant differences in Omicron phobia related to the type of anti-coronavirus medication and the frequency of obtaining it.

The researchers attribute the lack of significance in the differences in Omicron phobia to gender to the shared anxiety and fear of contracting the virus between males and females. There may be a similarity in the level of awareness and consciousness regarding the health threat and preventive measures, such as adhering to preventive measures and adopting healthy behaviors. Additionally, the significant role of official media in increasing awareness of this pandemic, including prevention and treatment methods, has contributed to a general culture among all individuals in the sample, regardless of their gender. They possess sufficient medical knowledge that qualifies them to understand the reasons for prevention and treatment and to engage in appropriate health behaviors and measures.

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The researchers attribute the lack of significance in the differences in phobia towards Omicron to the fact that all individuals in the sample suffer from the fear of the COVID-19 pandemic without exception. They are exposed to similar experiences, and students of various academic levels are facing the same current conditions. They belong to almost the same age group, especially after all the necessary health measures have been implemented, such as social distancing, wearing masks, and using sanitizers in the same way. Therefore, confronting this pandemic crisis requires a certain level of scientific knowledge. The rapid developments in events and the widespread spread of the virus have not differentiated between them. Instead, it has become a collective concern that affects everyone. Therefore, the ability to face these difficult circumstances, endure them, and have faith in confronting the virus and continuing life is associated with individuals' capacity, endurance, and belief. Consequently, the researchers believe that high-thinking students and those with higher levels of patience across various academic levels demonstrate a more realistic and mature approach in dealing with the events and health situations caused by the pandemic.

Discussion

A study conducted by Zhang et al. (2023) reported the presence of a general factor of scale structure. This may psychologically justify the notion that the fear of COVID-19 is an elusive and incomprehensible feeling, thus rendering the individual unable to determine the extent to which this feeling relates to different aspects. This study differs from the current study, which identified four factors. Additionally, from a psychological perspective, it may indicate that the Jordanian community sample has adapted to the illness in a distinctive way, with individuals experiencing less fear of the Omicron variant.

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Certainly! In the study by Sapmaz et al. (2017), they focused on phobia behavior in children and used a brief scale that was based on the criteria outlined in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5). Their findings revealed the presence of a general factor that explained phobia behavior among the child participants. On the other hand, the current study being discussed differs from Sapmaz et al.'s study. One possible explanation provided by the researchers for the disparity in results is the variation in the study samples. Different samples may exhibit diverse characteristics, such as demographic factors or cultural influences, which could contribute to variations in the findings.

Moreover, the researchers also suggest that the current study's results may be influenced by the unique circumstances of the ongoing pandemic. The unprecedented psychological and health-related challenges posed by the pandemic might have imposed certain constraints on individuals, affecting their mental well-being. This could potentially lead to individuals experiencing symptoms and perceiving illness even in the absence of objective evidence, primarily due to the intense fear and anxiety surrounding the possibility of contracting the virus. These additional factors, such as the particularities of the sample and the impact of the pandemic, provide further context and possible explanations for the differences observed between the current study and the previous research conducted by Sapmaz et al. (2017).

Dilbaz et al. (2020), aimed to explore and understand the factors related to phobia. Using a socio-demographic model, they analyzed their findings and identified four key factors associated with phobia: mood, anxiety and seeking reassurance, and avoidance. The first factor, mood, refers to the emotional state of individuals experiencing phobia. It encompasses feelings such as fear, distress, or unease that are commonly associated with phobic reactions. The

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second factor, anxiety and seeking reassurance, highlights the role of anxiety in phobia and the tendency of individuals to seek reassurance or validation from others to alleviate their anxious feelings. This factor suggests that individuals with phobia may engage in behaviors aimed at obtaining reassurance or confirmation to alleviate their fears. The third factor identified by Dilbaz et al. is avoidance. This refers to the tendency of individuals with phobia to actively avoid situations, objects, or places that trigger their fear or anxiety. Avoidance behavior is a common characteristic of phobia and serves as a coping mechanism to minimize exposure to the feared stimuli. When comparing these factors to the three factors found in the scale used in the current study—social, psychological, and psychosomatic—there is a notable overlap. The social factor in the scale can be related to seeking reassurance and the social aspect of phobia, where individuals may seek support from others. The psychological factor in the scale aligns with the mood factor identified by Dilbaz et al., as both capture the emotional and psychological aspects of phobia. Finally, the psychosomatic factor in the scale encompasses the avoidance behavior identified by Dilbaz et al., as it involves the physical and behavioral manifestations of phobia. The current study offers an explanation for the similarity between the factors. They propose that the phobia of illness or pandemics, such as the present situation, imposes additional constraints and obligations on individuals and families. These constraints may include the need to provide appropriate treatment and medical examinations, as well as ensuring healthier nutrition. These added responsibilities and stressors may contribute to the manifestation of phobia symptoms and influence the factors associated with phobia. By considering the impact of external factors, such as the constraints imposed by the illness or pandemic context, the researchers in the current study provide a deeper understanding of the dynamics of phobia. They emphasize the

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importance of considering contextual factors when examining and interpreting research findings related to phobia, as these factors can significantly influence the manifestation and experience of phobia symptoms.

Certainly! In the current study, the researchers aimed to explore and understand the factors associated with phobia related to the COVID-19 pandemic. They compared their findings to a previous study conducted by Arpaci et al. (2020) that used the same measurement instrument to examine similar phenomena. The researchers found that their results were consistent with the earlier study, indicating a level of agreement in identifying factors contributing to phobia.

However, the current study noted some differences in their findings. They observed that the Kaiser-Meyer-Olkin (KMO) measure, which assesses the adequacy of the sample for factor analysis, yielded a smaller value compared to the previous study. This suggests that the measurement instrument used in the current study might have limitations in capturing the full range of factors underlying phobia related to the pandemic. The linguistic differences resulting from the translation of the scale may have introduced biases and affected the results as well. Additionally, the researchers examined the explained variance in their data. They found that only 43.7% of the variability in phobia could be accounted for by the identified factors. This implies that a substantial portion, amounting to 56.3% of the variance remained unexplained. Such a high level of unexplained variability raises questions about the comprehensiveness of the measurement instrument and its ability to capture the full complexity of phobia in the context of the pandemic. To shed light on the unexplained variance, the researchers proposed possible explanations. They suggested that mood disturbances or obsessions resulting from a lack of social support could contribute to the unexplained variability. Furthermore, specific

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fears related to the threat of children or elderly family members contracting the virus might also play a role in the unexplained variability. In summary, while the current study's findings aligned with a previous study, there were differences and limitations to consider. The smaller KMO measure and the substantial unexplained variance suggest that the measurement instrument used in the current study might have certain limitations. The researchers offered insights into potential factors contributing to the unexplained variability, including mood disturbances, lack of social support, and specific fears related to vulnerable family members. These findings emphasize the need for further research to better understand the complex nature of phobia related to the Omicron variant and to refine measurement tools accordingly.

Through the analysis of descriptive variables, it became apparent that there was no difference between genders, indicating a sense of adaptation or a non-secure coping mechanism with the Omicron variant. On the other hand, the convergence of both genders within the family may reflect their efforts to provide protection for all family members, particularly the elderly and children, through preventive measures to avoid infection. According to the theory of preventive motivations, both genders may feel vulnerable to the incomprehensible threat due to the uncertainty surrounding the conditions of infection and prevention of the Omicron variant, as indicated by a study (Zheng et al., 2021). The significance of the impact of serum repetition and the type of antiviral drug on Omicron variant phobia in the theory of preventive motivations is justified. The closest interpretation to the logic of the theory is that intense fear of the threat becomes a defensive reaction and an emotional coping mechanism towards the threat, where the defensive strategy is to resort to a specific type of drug or repeat its intake, as indicated by (Boss et al., 2015). The circulating rumors on social media about the side effects of the serum and

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its long-term harmful effects may be the repetitive cause behind the emotional-behavioral association related to certain concerns formed because of personal beliefs built on falsehoods in light of unconfirmed medical rumors and information, as mentioned by (Lindinger-Sternart et al., 2021).

Recommendations

1. Utilizing the Findings for Building Guidance, Preventive, and Therapeutic Programs: The first recommendation suggests using the results of the study to develop specialized programs that focus on guidance, prevention, and treatment for individuals who are experiencing long-term effects of COVID-19 pandemic phobia. These programs can be designed to address the specific challenges and concerns faced by individuals who have developed phobias related to the pandemic. By dealing the programs to their needs, it is hoped that individuals can receive the necessary support and assistance to overcome their fears and improve their well-being.

2. Using the Scale for Research and Diagnostic Purposes: The second recommendation is directed towards researchers and educational administrations in universities. It suggests using the current scale, likely referring to a measurement tool or assessment instrument used in the study, for both research and diagnostic purposes. This means that the scale can be employed to gather data and investigate further into the phenomenon of pandemic-related phobias among university students. Additionally, it can serve as a diagnostic tool to identify individuals who may be experiencing significant levels of fear and require intervention or support.

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Availability of data and materials

The datasets produced and analyzed in the present study are not publicly accessible in order to protect the privacy of the participants. However, interested parties may obtain access to the datasets by contacting the corresponding author and making a reasonable request.

Competing interests: The authors declare no competing interests.

Ethical Approval and consent: Oral consent has been detected from the students online, the students were informed of their rights and responsibilities while responding to the scale. Appropriate instructions were provided to the students before the application, and they were alerted that their scores on the scale were completely independent of their grades. The sample did not receive any rewards for responding to the scale. The response to the scale was optional, and students were allowed to withdraw whenever they found it appropriate or felt bored. The study obtained approval from the Administrative Affairs Council to apply the study tool to Al al-Bayt University students, with approval No. 2265 dated March 11, 2024.

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