Original Article

To Construction and Standardization of the Waiting Anxiety Questionnaire (WAQ) in Iran

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Objective: This study aimed to develop and validate a questionnaire to measure waiting anxiety .
Methods: This was a cross-sectional study. Extensive review of literature and expert opinions were used to develop and validate the waiting anxiety questionnaire. A sample of 321 participants was recruited through random cluster sampling (n= 190 Iranian men and n= 131 women). The participants filled out WAQ, the Speilberger's State-Trait Anxiety Inventory (STAI), Burtner Rating scale (BRS) and Eysenk Personality questionnaire (EPQ) for adults .
Results: Internal consistency of WAQ was revealed, meaning that all the 20 items were highly correlated with the total score. The Cronbach alpha equaled 0.83 for the Waiting Anxiety Questionnaire .
The Pearson correlation coefficient of the questionnaire with the STAI, BRS and extraversion and neuroticism subscales of EPQ was 0.65, 0.78, - 0.47 and 0.43, respectively, which confirmed its convergent and divergent validity. Factors analysis extracting four cognitive, behavioral, sentimental and physiological factors could explain 67% of the total variance with an Eigen value of greater than 1.
Conclusion: Our findings suggest that WAQ possesses appropriate validity and reliability to measure the individuals' anxiety during the waiting time .

Keywords: *Waiting Anxiety Questionnaire, validity, reliability, Construction*

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Anxiety is one of the most important mental disorders effecting human beings. It is the pressure imposed externally on the individual and leads to physical and mental troubles. Moreover, it disturbs the responses of individuals in regard to social, psychological, physical and family grounds (1). It seems that personality variations and psychological elements are important factors which lead to different reactions to anxiety. Anxiety is regarded as an external factor which is perceived by an individual in definite space or time. Individuals activate their own mental defenses to challenge it; automatic biological organizations will simultaneously join to create psychological defenses and provide the first ground for anxiety to occur (2).

A vast numbers of factors account for anxiety. Waiting for any reason can increase people's level of anxiety. Medical environments such as hospitals may impose varying degrees of mental pressure to patients. Clearly, these patients in addition to their own suffering have to wait for hours to receive the services; thus, anxiety is elevated several times compared with one's previous condition. In addition to the features of the stressful situation and its duration, psychological, social and individual biological characteristics are also influential, because temper streaks of an individual's personality is one of the most important determining factors of stress effects. Personal (IQ, personality type and psychological investment) and external factors (age, gender, education, outcome and occupation) have an effect in perceiving anxiety by individuals (3). Ivarsson et al. (2004) studied patients suffering from heart disorders and concluded that recognizing internal and external effective factors in supporting the experience of a patient in waiting time of the operation improves health process and patients' use from supporting programs (4).

Gentling the surrounding environment can effectively pacify the waiting patients. Cooper and Foster (2008) proposed that the patients' favorite music noticeably decreased their anxiety while waiting for radiotherapy (5).

Researchers believe that personality features involve crucial factors in the occurrence of disorders, because the type of features, proficiency and ability

to manage the stressful situations are regarded as a kind of compatibility related to individual differences. The study findings demonstrated that personality heart- vascular and anxiety diseases are more widespread in type A. The individuals with type A personality show some problems in waiting due to urgency and in such situations, their general behaviors involve sighting a lot, unrest state along with tension, alert attitude and hostile facial movements with puckery eyebrows, regular pressing of fingers and a rare lethargic laughter in the corner of their lips. Moreover, in their social behaviors, cutting the others' words along with the effort to get dominancy, hostility, anger, impatience for sitting in long lines and disregarding the others' turn are well observed, whereas such symptoms are rare or never occur in type B personality(6, 7, 8, 9).

Other personality types such as extraversion and introversion can result in anxiety states as well. Extraversion and introversion respectively lead individuals into positive and negative events. Therefore, individuals with high levels of extroversion probably will experience more positive events. However, if an individual possess high level of neuroticism, it is more probable to experience stressful and negative events. Therefore, extraversions perceive the environment more positively than introversions (10).

In order to measure anxiety, a number of tools have been introduced worldwide, and they are as followed: Beck Anxiety

Inventory (BAI), a 21-item self-report instrument used to measure the severity of anxiety in both adolescents and adults (11); Speilberger's State-Trait Anxiety Inventory (STAI), a 40-item self-report instrument which distinguishes the temporary condition of anxiety and one's long-standing quality of trait anxiety (12); The Endler Multidimensional Anxiety Scales (EMAS) are self-report measures to assess and predict anxiety across situations as well as measuring treatment response (13); Zung Self-Rating Anxiety Scale (SAS) is for anxiety disorders (14); finally, the Hospital Anxiety and Depression Scale (HADS) which is a14-item questionnaire to measure anxiety and depression for both healthy and sick clients (15).

However, there is no instrument to measure waiting anxiety. It is focus of interest to investigate the level of anxiety among individuals waiting inspiring Speilberger's STAI. Moreover, its validity and reliability were assessed emphasizing physiological, cognitive, behavioral and emotional sub-indicators and the factor analysis was applied as well.

Material and Methods

This was a cross-sectional study with 321(190 men and 131 women) participants waiting at the medical centers of Tehran. They were recruited through random cluster sampling from the second, third and seventh districts of Tehran medical centers (private, governmental and charity), hospitals and clinics.

Measures

The present study utilized the researcher's devised waiting anxiety questionnaire, Spielberger's STAI, personality type, BRS and EPQ (adult form). The WAQ has been devised on the basis of Spielberger's STAI which possessed 20 three-choice items. The questions of the questionnaire are concerned with cognitive, physiological, emotional and behavioral (states or traits) aspects of anxiety. The participants replied to the questions with three-point Likert scale (never, sometimes, often) which were scored from 0 to 2, respectively. In all the items except items 3, 11, 15 and 18, the "never choice" showed absence of anxiety, the sometimes choice" indicated medium anxiety, and the "often choice" showed high degrees of anxiety.

In addition to this questionnaire, the participants responded to Spielberger's STAI which evaluates individuals' anxiety and uncertainty or assesses how they react to mental pressure. It has been devised by Spielberger, et al. (1970) and involves 40 questions among which 20 assess latent anxiety and the other 20 are concerned with hid anxiety. State anxiety is influenced by the situation. Trait anxiety items affect the current feeling of the individual and scrutinize individual traits. This questionnaire has been utilized as the most common test to evaluate anxiety in different studies during the last 20 years. Moreover, it was validated by Shirazi et al. (2003) in Iran and has been applied frequently in various researches, and its validity and reliability have been scrutinized for numerous times (16).

Burtner Rating scale (BRS) has been devised by Burtner and Freedman (1976) to assess type A and B; it involves 14 items and each item is comprised of two phrases. Each individual's score is posited in the range of 0 to 14. Conventional point of 70 can be considered to separate type A and B because the range of scores (0-70) leans towards type B rather than type A; its validity and reliability were investigated on 420 participants in Iran by Isfahan medical university; its validity was reported 0.79; and the reliability coefficient of test- retest for this scale was reported to be 0.71 to 0.84. Furthermore, its simultaneous validity with the organized interview was 0.75, and it was 0.70 with the scale of Genkinz et al. (17, 18).

The 90-item Eysenck Personality Questionnaire (EPQ) was developed to identify one's personality characters (19). EPQ targets three important personality dimensions: psychoticism (P), extroversion (E) and neuroticism (N) (20). This tool's measures are 'yes' or 'no' and scoring for all dimensions. This tool contains 21 questions to identify the subject's truthful compliance to the questions.

The study data were analyzed by descriptive statistical methods, Pearson correlation coefficient and method of principle factor analysis.

Results

The study participants consist of 321 individuals, 190 men and 131 women aged 19 to 45 (mean age of 35.11yrs). Of all the participants, 207 were married; of 321 participants, 50 did not have a high school diploma, while 271 had tertiary education.

Table 1 indicates the statistical characteristics of 20 items of the questionnaire, the general score, and the correlation of each item with the general score and the effect of omission of each item in alpha Cronbach. The range of the total score was 8 to 32. The mean of the 20 items was from 1.03 (in 18 items) to 1.93 (in 15 items) and their standard deviations were from 0.15 % (in 19 items) to 0.95% (in 19 items). The mean and standard deviation of the whole questionnaire was 29.04 and 8.49, respectively. Cronbach alpha coefficient for WAQ equaled 0.83. Moreover, omitting one of the test items did not increase alpha significantly. Therefore, it seemed essential not to omit any item (Table 1).

The content validity of the questionnaire was confirmed by 10 specialists (psychologists and psychiatrists), and also split method was applied to evaluate reliability; Guttmann coefficient for split method was 0.84. To scrutinize reliability with the test-retest 80 participants were randomly chosen, and they again completed the waiting anxiety test two weeks later. The coefficient of correlation between these two tests was reported to be 0.82 which demonstrates the high reliability of the questionnaire. In order to analyze internal validity and simultaneous validity of the waiting anxiety in this study, the correlation between WAQ with Spielberger's STAI BRS and EPQ (adult form) was calculated . Moreover, the coefficient of correlation of total scores was calculated in several tests. The coefficient of correlation of WAQ with STAI was 0.65; it was 0.78 with type A personality, 0.23 with psychosis, 0.43 with neuroticism and -0.47 with extraversion which was significant ($p< 0.0001$) in all the instances.

The results of the factor analysis were represented in Table 2. The amounts acquired for KMO was higher than 0.7 and the significant level of Bartlett sphericity test was also less than 0.5. Therefore, the data in the present study can be considered a factor (21).

Eigen value for factor analysis was considered higher than 1 in this study. Therefore, four factors were extracted which confirm the factor analysis validity of WAQ in Table 3. The reason for the utilization of this method in this study is that varimax rotation produces factors which show high correlations with smaller set of variables, whereas they reveal a weak correlation with another set of variables.

The factor load of higher than 0.46 was considered to select the items for each factor. Four factors were extracted which generally explained 67% of the total variance. The mentioned factors are as follows:

Items for physiology (factor 1):

Waiting in line upsets me so as breathing will be difficult for me.

Hospital and clinic environments upset me so that my blood pressure changes.

While waiting, my heart beat increases.

While waiting, my body temperature changes.

While standing in line, I get so nervous that my muscles tighten.

Items for cognitive (factor 2):

When I am waiting for a turn, I like to finish my work earlier than the other people.

When I am waiting, I often think that I have dropped behind my works.

I think that if I did not have to wait, I would visit the doctor more.

Standing in line and waiting reminds me of my probable difficulties.

Waiting makes me doubt whether to stay or leave.

Items for behavioral (factor 3):

When I am waiting, I have to walk.

When I am waiting, my feet are restless and they shake.

When I think I have to wait, I do not enter in to the environment at all.

When I think into result of examination, I get anxious.

When I am standing in line, I should take care not to miss my turn by others.

Items for emotional (factor 4):

When I am in waiting room, I feel pleased.

When I am waiting to visit the doctor, I feel relaxed and comfortable.

In the waiting room, I feel secure.

I feel pleased to attend to clinic even with long waiting.

Waiting room of clinic is not pleasant to me and reminds bad memories.

The correlation analysis of the WAQ demonstrates a significant relation with such demographic variables as overall anxiety, gender and education, whereas no relation was observed with family anxiety and occupation. T test was applied to analyze the relation between gender and waiting anxiety which revealed that gender posits a significant influence on waiting anxiety ($t = 2.045$, $df = 314$, $p = 0.05$).

Therefore, women demonstrated higher waiting anxiety rather than men. With respect to education, it was indicated that individuals with tertiary education proposed more waiting anxiety rather than those individuals who did not have a high school diploma ($t = -5.166$, $df. = 314$, $p= 0.001$).

Table 1: Mean, Standard Deviation, Correlation of Welfare Test with Total Score and Coefficient of Cronbach alpha with the Omission of the Item

Item	Mean	Standard Deviation from Total Score	Total Correlation	Cronbach Alpha in Omission of Item
1	1.70	0.87	0.67	0.83
2	1.60	0.87	0.51	0.83
3	1.73	0.16	0.65	0.82
4	1.90	0.65	0.68	0.83
5	1.40	0.59	0.78	0.82
6	1.20	0.20	0.68	0.83
7	1.30	0.73	0.74	0.83
8	1.16	0.48	0.52	0.82
9	1.50	0.19	0.49	0.83
10	1.13	0.39	0.73	0.82
11	1.70	0.22	0.78	0.83
12	1.40	0.90	0.70	0.82
13	1.40	0.28	0.75	0.81
14	1.37	0.44	0.63	0.81
15	1.93	0.93	0.68	0.83
16	1.47	0.95	0.61	0.82
17	1.37	0.58	0.59	0.82
18	1.03	0.48	0.62	0.83
19	1.57	0.15	0.77	0.82
20	1.37	0.31	0.69	0.82
total	29.04	8.49	1	0.83

Table 2: Test and Bartlett sphericity for Waiting Anxiety Questionnaire

P	Bartlett sphericity	KM
0.859	0.001	43173.914

Table 3: Variance Percentage, Cumulative Percentage of Variance, and Eigen value of four factors

Percentage of Variance	Variance Percentage Cumulative	Total	Factor
30.01	29.80	1.87	1
37.11	5.87	1.00	2
43.09	5.57	1.00	3
34.45	12/89	1/45	4

Table 4: Rotated Factor Matrix of Waiting Anxiety Questionnaire with Varimax Style

Item	Factor1	Factor2	Factor3	Factor4
1	0.655			
4	0.624			
5	0.613			
6	0.598			
14	0.546			
2		0.688		
9		0.634		
12		0.562		
16		0.504		
17		0.498		
7			0.615	
8			0.609	
10			0.589	
13			0.551	
19			0.499	
3				0.665
11				0.588
15				0.524
18				0.491
20				0.475

Investigating the relationship of overall anxiety rate on waiting anxiety in different states demonstrated that those individuals experiencing general anxiety have higher waiting anxiety ($t = -3.928$, $df.= 314$, $p = 0.001$).

Discussion

The findings suggest that WAQ is a valid and reliable questionnaire to be used in Iranian waiting population. The findings of this study reveal that the mean of participants in WAQ was 29.04. The correlation analysis between items of the WAQ and the total score indicated that each of them were highly correlated (0.49 to 0.78) with the total score. With respect to reliability, it was indicated that all the items had almost the same role in the total score. Furthermore, omitting no item did not increase alpha significantly; therefore, changing or omitting the questionnaire's items did not seem essential. Simultaneous reliability of this questionnaire was confirmed by calculating the correlation of the WAQ with STAI, BRS and EPQ; the validity of the waiting anxiety construct was significantly acceptable so that the correlation coefficient of the WAQ with STAI was 0.67 which indicates consistency of these two scales to scrutinize anxiety. It indicates that an individual's anxiety states while waiting are so similar to the states and traits of stressed individuals.

The correlation coefficient of waiting anxiety with personality type questionnaire was 0.78 which illuminates that individuals with type A personality have the tendency to anxiety while they are waiting. In other words, symptoms of waiting anxiety exist more in individuals with type A personality and it will increase in environments in which an individual is waiting. The correlation coefficient of the Waiting Anxiety with EPQ in the neuroticism and extraversion subscales were 0.43 and 0. 48, respectively which was significant in all the items (P□0.001), and indicates high rate of anxiety in most individuals who have stressful personality while waiting. Moreover, the significant negative correlation of extroversion with waiting anxiety shows less anxiety rate in extraverted individuals while waiting. The consistency of neuroticism signs with waiting anxiety shows that individuals with neurotic personality reveal more symptoms of waiting anxiety. Moreover, waiting anxiety symptoms have a negative correlation with extraverted personality. In other words, introverted individuals have more waiting anxiety .

The study results also revealed that overall anxiety affects waiting anxiety as individuals who have anxiety in different levels show more waiting anxiety, whereas it does not show any significant correlation with family anxiety and occupation. Moreover, gender also influences waiting anxiety symptoms. In other words, females experience higher waiting anxiety in the waiting time. The relation between education and waiting anxiety was investigated, and it was demonstrated that individuals with university education show higher waiting anxiety rather than individuals who did not complete high school. This proposes that educated individuals probably feel more urgency in time. Their higher rivalry and superiority sense leads them to experience more anxiety in the waiting times.

Limitation

This study suffers from some limitations; it involved small number of participants. Therefore, its generalizability may not extend beyond this study. The effect of environmental factors on waiting anxiety can be investigated in future studies.

Conclusion

Waiting environment is a crucial factor in creating anxiety especially in medical places and our findings suggest that WAQ possesses appropriate validity and reliability to measure the individuals' anxiety during waiting time.

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