

Investigating the Role of Metacognitive Beliefs, Ambiguity Tolerance, and Emotion Processing in Predicting Nurses' Generalized Anxiety Disorder

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Abstract

Generalized anxiety disorder is one of the most common disorders that has affected many people. The way of analyzing and interpreting the events, tolerating or not the ambiguous situation, and metacognitive beliefs can predict generalized anxiety disorder. The purpose of this research was to investigate the role of metacognitive beliefs, ambiguity tolerance, and emotional processing in predicting generalized anxiety disorder in nurses. The current research was descriptive and correlational. In this study, 155 people were selected as the final sample of the research using the available sampling method. The data collection tools were emotional processing questionnaires, ambiguity tolerance, metacognitive beliefs, and anxiety symptoms. Data were analyzed through multivariate regression and Pearson's correlation coefficient. Statistical findings showed that metacognitive beliefs, ambiguity tolerance, and emotional processing together explain 63.2% of the variance of generalized anxiety disorder. In addition, the findings showed that all three variables have a significant contribution to predicting generalized anxiety disorder ($p < 0.05$), so metacognitive beliefs, ambiguity tolerance, and cognitive processing positively predict generalized anxiety disorder. According to the findings, metacognitive beliefs, ambiguity tolerance, and emotional processing play a role in causing generalized anxiety disorder. Accordingly, changing the type of emotional processing, increasing the ability to tolerate ambiguity, and changing faulty metacognitive beliefs, helped to reduce generalized anxiety disorder.

Keywords: Anxiety, Metacognitive beliefs, Ambiguity tolerance, Nurses

Introduction

Generalized anxiety disorder is one of the most common psychological disorders that is characterized by extreme and uncontrollable worry and has a high coexistence with other anxiety disorders and depression [1]. In the fifth revised edition of the Diagnostic and Statistical Manual of Mental Disorders of the American Psychiatric Association (DSM-5), it is defined as severe anxiety and worry about several events or activities that have continued on most days for at least six months and has control over that is the problem. This disorder is associated with physical symptoms such as muscle tension, irritability, sleep problems, and restlessness. In addition, the one-year prevalence rate of generalized anxiety disorder is between 3 and 8% and the lifetime prevalence rate of this disorder is close to 5.7% [1]. The difference between anxious and healthy people is related to their acceptance of ambiguous situations in real life and their tolerance of these situations. It is predicted that anxious people find possible negative and ambiguous situations unacceptable and use worry as the main strategy to reduce their level of uncertainty [2-4].

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One of the factors related to generalized anxiety disorder is the type of emotional processing that can contribute to nurses' anxiety. Emotional processing is the result of a process that, by reducing emotional disturbance, causes other experiences and behaviors to take place easily. According to Rachman, several factors cause problems in positive emotional processing, and one of these factors is cognitive avoidance, through which the mind refuses to accept events. The inability to adapt to short-term events, depression, and overestimated events are also among these factors. Some people are not capable of rational emotional processing of events and events, especially cognitive patterns that are involved in stress, anxiety, and emotional problems such as rumination and self-blame [5].

The second research variable is ambiguity tolerance which has a direct link with anxiety. Ambiguity tolerance is a personality variable and in the literature of new psychology it has shown itself in certain ways through different inferences, it refers to a process in which a person processes information in an ambiguous situation and compares this information with a set of Cognitive, emotional, and behavioral responses respond. Tolerating ambiguity is accepting uncertainty as a part of life; That is, the ability to continue living with incomplete knowledge and the desire to start a direct activity without knowing whether a person will succeed or not [6]. Ambiguity tolerance, along with other variables involved in anxiety, can give people the knowledge that, despite all conditions, attention should be paid to the personality structure of nurses. When a person or a group is faced with a set of unfamiliar, complicated, and incomprehensible methods, they get confused. In this situation, a person's character trait determines how successfully he can deal with a situation whose end is uncertain. The results of the studies regarding tolerance of ambiguity and anxiety are inconsistent. Some studies show an inverse relationship between these two variables and others show a direct and positive relationship between anxiety tolerance and metacognitive beliefs [7-9].

Another variable related to generalized anxiety disorder is metacognitive beliefs. A person is aware of his ability as an information processor and knows what obstacles and limitations he has to achieve a cognitive goal and how and with what measures to face the limitations. Metacognitive beliefs refer to people's information about their cognitions and their internal state and coping strategies that affect both [10]. Positive metacognitive beliefs are related to the benefits and usefulness of engaging in cognitive activities. Negative metacognitive beliefs are beliefs that are related to the uncontrollability of the importance and danger of cognitive thoughts and experiences [10-12]. Metacognition is considered an important factor in adaptive growth and coping or not coping with anxiety [13].

The nursing job is considered one of the hard jobs and deals with many unexpected and stressful events, including accidents, injuries caused by fights, falling from a height, infectious and rare diseases, and the like. Knowing the level of anxiety of nurses and the factors involved in this anxiety helps to make them more capable through training. As mentioned earlier, the review of the background of the research shows that there have been many researches in the field of nurses' anxiety, but the results of some of these researches are inconsistent with each other, in addition, the combination of the existing variables has not been worked together, and there is no feeling in this field. The purpose of this research was to investigate the role of metacognitive beliefs, ambiguity tolerance, and emotional processing in predicting generalized anxiety disorder in nurses.

Materials and Methods

The current research is descriptive of the correlation type. The statistical population of this research included 271 people, and the sampling method was done in an available manner. The sample size was based on the statistical population and according to Morgan's table, 183 people were selected. The criteria for subjects to enter the research included graduation in nursing, at least a bachelor's degree, willingness to participate in the research, and working in a government medical center. The exclusion criteria included filling out the questionnaires incompletely, and filling out the questionnaire based on a specific algorithm (for example, zigzag filling, giving the same answer to two opposite options, etc.). After preparing the questionnaires, the links to the questionnaires on ambiguity intolerance, emotional information processing, and generalized anxiety disorder were provided to the nurses. The participants were assured of their privacy and identity, and the research was conducted anonymously to ensure the anonymity of the participants.

Among the 183 completed questionnaires, 28 questionnaires (15.3%) were excluded from the review process due to incomplete responses. Finally, 155 questionnaires were subjected to statistical analysis. The tools used in this research included Baker *et al.*'s Emotional Information Processing Questionnaire, McLean and Davidal's Ambiguity Tolerance Questionnaire, Wells' Metacognitive Beliefs Questionnaire, and Anthony's Generalized Anxiety Disorder Questionnaire.

Baker *et al.*'s Emotional Information Processing Questionnaire was used to measure emotional information processing. Barker *et al.* created this questionnaire in 2007. The initial version of this scale had 48 questions, which was later shortened by Bakker *et al.* in 2010 and a 25-question version was prepared. This scale has five subscales: suppression, emotion dysregulation, unpleasant emotional processing, effects of unprocessed emotions, and avoidance. The range of scores in this tool is from 25 to 125 and in each subscale from 5 to 25, and a higher

score in this scale indicates healthy emotional processing. Cronbach's alpha and retest coefficients of this scale have been reported as 0.92 and 0.79, respectively.

The scale of intolerance of ambiguity was created by McClean in 1993 to evaluate the tolerance of ambiguity and it consists of 13 items that are answered on a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5) [14]. A score of 15 to 30 indicates low ambiguity tolerance, 30 to 45 moderate ambiguity tolerance, and a score above 45 indicates high ambiguity tolerance. McClain reported an internal reliability of 0.82 and confirmed the validity of the test [14].

Wells and Cartwright-Houghton designed the Wells Metacognitive Beliefs Questionnaire (MCQ-30) in 2004 [15]. This questionnaire is based on Wells and Mathews's self-regulation executive action model for the adult population of 18 years and above, and it is a 30-item self-report scale that measures people's beliefs about their thoughts. This questionnaire has 5 subscales, which are cognitive trust or weak cognitive confidence, positive beliefs about worry, cognitive suppression, and negative beliefs about worry that are related to controllability and risk. Beliefs related to the need to control thoughts in this 30-question test have a minimum score of 30 and a maximum score of 120. Higher scores mean more defective metacognitive beliefs [15]. Reliability obtained through Cronbach's alpha for subscales, the total scale ranged from 0.72 to 0.93, and the test-retest reliability for the total score after 22 to 118 days was 0.75 and 0.59 to 0.87 has been reported for the subscales [16, 17].

Spitzer, Kronkey, Williams, and Levy to diagnose generalized anxiety disorder and measure the severity of clinical symptoms developed the short scale of generalized anxiety disorder. As the name of this scale suggests, it has seven main questions and one additional question that measures the interference of the disorder in the person's functions. Questions are scored on a Likert scale from 0 to 3. From the sum of the scores of the seven main questions, the total anxiety score is obtained, which has a range from 0 to 21. Cronbach's alpha coefficient of this scale is 0.92 and its retest coefficient after two weeks is 0.83, which indicates high internal consistency and good reliability of this scale.

The analysis of the results of this research was done using SPSS version 23 statistical software at two descriptive and inferential levels. Pearson's correlation coefficient was used for descriptive data analysis and multivariate regression analysis was used to predict generalized anxiety disorder based on emotional information processing, ambiguity tolerance, and metacognitive beliefs.

Results and Discussion

From the total of 155 questionnaires that were subjected to statistical analysis, 55 were men (35.48%) and 100 were women (64.52%). In terms of education level, 144 people (93%) had bachelor's degrees, and 11 people (7%) had master's degrees. In **Table 1**, the descriptive statistics of emotional information processing variables, ambiguity tolerance, metacognitive beliefs, and generalized anxiety disorder are presented.

Table 1. Mean and standard deviation of subscales of emotional information processing, ambiguity tolerance, and generalized anxiety disorder.

Variable	Subscales	Mean ± SD
Emotional information processing	Suppression	12.19 ± 2.83
	Lack of emotion regulation	14.12 ± 2.96
	Inconvenient processing	13.93 ± 2.95
	The effect of unprocessed emotion	12.49 ± 3.98
	Avoid	12.45 ± 2.06
	Total number	155
Intolerance of ambiguity	There is no subscale	53.96 ± 5.38
Metacognitive beliefs	Cognitive trust	17.66 ± 4.51
	Positive belief about worry	20.34 ± 8.58
	Cognitive self-awareness	13.79 ± 2.98
	A negative belief about worry	18.96 ± 7.47
	Thought control	18.87 ± 3.55
	Total number	155
Generalized anxiety disorder	There is no subscale	11.70 ± 2.24

As can be seen in **Table 1**, among the emotional information processing subscales, the mean of emotion dysregulation is the highest, and the mean of suppression is the lowest. The highest dispersion is related to the effect of unprocessed emotion, and the lowest dispersion is related to avoidance. Among the subscales of metacognitive beliefs, the mean of positive belief about worry is the highest, and the mean of cognitive self-awareness is the lowest. The highest dispersion is related to positive belief about worry, and the lowest dispersion is related to cognitive self-awareness. The normality of the distribution of scores was confirmed by checking the skewness and kurtosis of the scores. Its value varied between 0.08 and 0.15. Considering that, this value is less than two, then the data are normal, and parametric tests can be used to analyze the data.

Table 2. The correlation coefficient of emotional information processing subscales with generalized anxiety disorder.

Subscale	Generalized anxiety disorder
Suppression	0.39
Lack of emotion regulation	0.27
Inconvenient processing	0.26
The effect of unprocessed emotion	0.52
Avoid	0.43

As seen in **Table 2**, all five subscales of emotional information processing (suppression, emotion dysregulation, unpleasant processing, and unprocessed emotion effect) have a positive relationship with generalized anxiety disorder. In addition, according to the results of the present study, a positive relationship was reported between intolerance of ambiguity and generalized anxiety disorder ($r = 0.37$, $P < 0.01$).

As can be seen in **Table 3**, the four subscales of metacognitive beliefs (cognitive trust, positive belief about worry, cognitive self-awareness, and thought control) except negative belief about worry have a positive relationship ($P \geq 0.01$) with generalized anxiety disorder. A higher score in these subscales means a faulty metacognitive belief that leads to anxiety.

Table 3. The correlation coefficient of subscales of metacognitive beliefs with generalized anxiety disorder.

Subscale	Generalized anxiety disorder
Cognitive trust	0.77
Positive belief about worry	0.70
Cognitive self-awareness	0.43
A negative belief about worry	-0.52
Thought control	0.55

To investigate the role of emotional information processing, ambiguity tolerance, and metacognitive beliefs in predicting generalized anxiety disorder, regression analysis was used using the inter (simultaneous) method. The variables of emotional information processing, ambiguity tolerance, and metacognitive beliefs were entered into the regression equation as predictor variables and generalized anxiety disorder as criterion variables. As can be seen in **Table 4**, the F value observed is significant ($P < 0.01$) and 63.2% of the variance related to generalized anxiety disorder is explained by emotional information processing, ambiguity tolerance, and metacognitive beliefs ($R^2 = 0.632$). Because the relationship between the predictor variables and the dependent variable (except the negative belief about worry) is positive, it means that the higher the processing of emotional information, intolerance of ambiguity, and faulty metacognitive beliefs, the higher the level of generalized anxiety disorder. The beta coefficients are as follows: information processing variables ($P = 0.01$, $\beta = 0.433$), ambiguity tolerance ($P = 0.01$, $\beta = 101$), and metacognitive beliefs ($P = 0.01$, $\beta = 0.503$).

Table 4. Multiple correlation coefficient and determination coefficient of scales of emotional information processing, ambiguity tolerance, and metacognitive beliefs with generalized anxiety disorder.

Model	Sum of squares	Degree of freedom	Mean square	F	P-value	R	R ²
Regression	489.214	3	163.071	-	-	-	-
Remainder	284.721	151	-	86.464	0.0001	0.795	0.632
Total	15637.638	154	1.886	-	-	-	-

The present study was conducted to determine the role of emotional processing, ambiguity tolerance, and metacognitive beliefs in generalized anxiety disorder. The results showed that the emotional processing variable has a significant relationship with generalized anxiety disorder and can predict the generalized anxiety disorder of nurses. The results of the research are consistent with previous findings. For example, in research conducted on people with generalized anxiety disorder, the results showed that metacognitive therapy based on mindfulness is effective in improving the emotional processing of people with generalized anxiety disorder [18]. In another study conducted on women with generalized anxiety disorder, the results showed that group therapy based on acceptance and commitment leads to improvement in the emotional processing of women diagnosed with generalized anxiety disorder [19].

In explaining these results, according to the cognitive-behavioral pattern of processing information and paying attention to emotional stimuli in a biased way, it leads to the stabilization of distorted and negative beliefs in the individual, creates the initial core of anxiety disorder, and plays a role in its continuation. On the other hand, in addition to causing attention bias, distorted emotions cause defects in emotional processing. The results of various studies show that people who choose ineffective strategies during emotional processing are more vulnerable to emotional problems [20-23]. Based on this concept, Bakker classified emotional processing into three levels: recognition and experience, control and expression, and insufficient emotion processing, and believes that emotional processing can be deficient in each of these three levels. The styles related to controlling and expressing emotions, including suppression, decomposition, avoidance, and lack of control, and the style related to insufficient processing level is called disturbance. The important point is that the nature of emotional disturbances, including disturbance, manifests differently in different disorders. Anxious people tend to selectively pay attention to some aspects of the environment and ignore others [2]. This attention mostly includes the negative aspects of the environment. Excessive attention of anxious people to negative signs and constant rumination of threatening things in the environment has caused people with generalized anxiety disorder to be unable to release their attention from threatening environmental signs and this defect extends to most of their daily activities [24, 25].

The results related to tolerance of ambiguity showed that tolerance of ambiguity has a significant relationship with generalized anxiety disorder and can predict the generalized anxiety disorder of nurses. The results of the research are consistent with previous findings [7-9, 26, 27]. In a research that was conducted on anxious nurses, the results showed that treatment based on emotional efficiency can be effective in reducing experiential avoidance, intolerance, and indecisiveness, and increasing the level of distress tolerance of nurses in another research which was conducted on women diagnosed with generalized anxiety disorder with treatment based on acceptance and commitment, the results showed that the treatment is effective in reducing rumination and improving the emotional processing of women diagnosed with generalized anxiety disorder [28, 29].

In explaining these findings, it can be said that since daily life involves getting involved in ambiguous and uncertain situations, people with an intolerance of ambiguity will experience many sources of threats and dangers during their lives. The continuation of this trend leads to concerns. There are many negative emotions like anxiety [6].

The results related to the third variable showed that the variable of metacognitive beliefs has a significant relationship with generalized anxiety disorder and can predict the generalized anxiety disorder of nurses. The results of the research are consistent with previous findings. The above finding can be explained in such a way metacognitive beliefs are a factor in strengthening the increase of worry and experiencing more anxiety. Although having a low level of anxiety seems desirable for optimal performance, heightened anxiety can be destructive to one's performance. Positive beliefs about worry cause a person to continue feeling threatened. In the need to control thoughts, a person seeks to control his thoughts, and if he cannot control them, he will be guilty and it will increase his anxiety [10]. Another metacognitive factor related to anxiety is poor cognitive certainty. The more a person feels that he has weaker concentration and memory, the more anxiety he experiences [12]. This factor can be bilateral; That is, the anxiety factor itself can also reduce concentration and working memory space, causing weaker performance and intensifying anxiety. Negative beliefs about the uncontrollability of thoughts also cause tension in a person, and the experience of this tension causes the availability of the concept of threat in information processing and intensification of a person's anxiety [11].

Conclusion

The purpose of this research was to investigate the role of metacognitive beliefs, ambiguity tolerance, and emotional processing in predicting generalized anxiety disorder in nurses. Statistical findings showed that metacognitive beliefs, ambiguity tolerance, and emotional processing together explain 63.2% of the variance of generalized anxiety disorder. In addition, the findings showed that all three variables have a significant contribution to predicting generalized anxiety disorder, so metacognitive beliefs, ambiguity tolerance, and cognitive processing positively predict generalized anxiety disorder. According to the findings, metacognitive beliefs, ambiguity tolerance, and emotional processing play a role in causing generalized anxiety disorder.

Accordingly, changing the type of emotional processing, increasing the ability to tolerate ambiguity, and changing faulty metacognitive beliefs, helped to reduce generalized anxiety disorder.

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