

## ORIGINAL PAPER

# Alexithymia and Functional Gastrointestinal Disorders (FGID)

Mina Mazaheri<sup>1</sup>, Hamid Afshar<sup>1</sup>, Stephan Weinland<sup>2</sup>, Narges Mohammadi<sup>1</sup>, Peyman Adibi<sup>3</sup>

Psychosomatic Research Center, Isfahan University of Medical Sciences, Isfahan, Iran<sup>1</sup>

School of Medicine, University of North Carolina (UNC), USA<sup>2</sup>

Integrative Functional Gastroenterology Research Center, Isfahan University of Medical Sciences, Isfahan, Iran<sup>3</sup>

**Introduction:** The purpose of this study was to examine alexithymia symptoms, demographic variables and the severity of gastrointestinal symptoms in a sample of patients with functional gastrointestinal disorders (FGID) and a comparative sample of healthy controls. **Materials and Methods:** The sample consisted of 237 individuals, 129 of whom were patients diagnosed with FGIDs. The patients referred to the psychosomatic disorders clinic of Nour Hospital, Isfahan, Iran. The controlled group included 108 healthy individuals (without digestive diagnosis) matched with the patients by age, gender, marital and educational status. The Toronto Alexithymia Scale (TAS-20) and the Gastrointestinal Symptoms Rating Scale (GSRS) were used to collect data. Data was analyzed using multivariate analysis of variance (MANOVA), correlation coefficients and Fisher's z. **Results:** There was a significant difference between patients with FGIDs and healthy controls in terms of number of alexithymia symptoms and severity of gastrointestinal symptoms. The results also indicated the existence of a relationship between educational level and alexithymia as well as its dimensions (difficulty identifying feelings and difficulty describing feelings) in both groups. However, no significant differences were found between the two groups in this regard. **Conclusion:** The findings of this study indicated that compared to the healthy control group, patients with FGIDs had higher scores of alexithymia and more severe somatic symptoms. Furthermore, higher educational levels were associated with decreased risk of alexithymia. Such finding might be due to higher ability to describe and identify emotions in patients with higher levels of education. **Key words:** Alexithymia, Functional Gastrointestinal Disorders, Demographic Variables.

plained physical symptoms (5). Patients with alexithymia symptoms appear to amplify normal body sensations and interpret somatic signs of emotional arousal poorly (6).

Although the alexithymia construct was derived from the classical psychosomatic disease (1), Taylor et al. believed that alexithymia might appear more frequently with functional somatic symptoms than with the classical psychosomatic diseases (7). A study by Porcelli et al. indicated that patients with functional gastrointestinal disorders (FGIDs) were significantly more alexithymic than inflammatory bowel disease (IBD) patients and healthy persons. It was reported that 66% of the patients with FGIDs demonstrated alexithymic symptoms.

FGIDs are the most common gastrointestinal (GI) problems (9). Although the pathophysiology of FGIDs is not fully understood, evidence has shown that factors including psychological distress and personality disturbances may predicate symptom development (9). Studying patients with irritable bowel syndrome (IBS) has revealed these patients to have greater difficulty in identifying and expressing feelings and also in daydreaming compared to healthy persons (10). Drossman et al. proposed personality traits and emotional states to possibly influence the physiology of the gut, FGID symptom experience, and the outcome of treatment (9). Kano et al. demonstrated an association between alexithymia and hypersensitivity to visceral stimulation. This finding confirms

Corresponding author: Hamid Afshar. Telephone: +98 913 325 2576. Email: afshar@med.mui.ac.ir

## 1. INTRODUCTION

Alexithymia is defined as a decreased ability to use language in the expression of emotion (1). Bagby et al. proposed alexithymia to be a multidimensional construct with features (dimensions) including difficulty in describing feelings, difficulty in distinguishing feelings and bodily sensations, inability to communicate with others,

lack of dreams and imaginary life, and focusing on external experiences (2). These features are thought to show deficiencies in the cognitive processing and regulation of emotions (3), and may be important risk factors in developing some psychosomatic disorders (4).

In recent years, alexithymia has motivated the study of neurobiology of emotion and how it may relate to unex-

the hypothesis of somatosensory amplification in persons with alexithymia. It is also an important clarification in the influence of alexithymia on brain-gut function, particularly to understand the pathophysiology of FGIDs (11).

Different aspects of alexithymia in psychosomatic disorders may reveal the importance of demographic variables. Pasini et al. studied healthy individuals and showed total alexithymia scores as well as the scores of each subscale to be significantly greater in the higher age groups. In addition, subjects with a lower educational level achieved higher scores on dimensions of difficulty identifying feelings and difficulty describing feelings. Although sex did not make significant differences in total alexithymia scores, women achieved higher scores on the difficulty identifying feelings (12).

According to the available literature, a high rate of alexithymia is observed in patients with psychosomatic disorders. Moreover, alexithymia has a significant role in psychopathology and perceiving somatic symptoms. Therefore, the main purpose of this study was to compare alexithymia, severity of GI symptoms and demographic variables in patients with FGIDs and healthy controls. We thus examined whether significant differences exist between patients with FGIDs and healthy controls in terms of alexithymia, severity of digestive symptoms, and demographic variables.

**2. METHODS**

This was a casual-comparative research including 237 individuals (129 FGID patients and 109 healthy persons). Patients with FGIDs, who met the Rome III criteria, were selected by gastroenterologists. They were then referred to the psychosomatic disorders clinic of Nour Hospital, Isfahan, Iran. The control group consisted of 108 healthy individuals who had no digestive problems. They were matched with the first group based on demographic variables of age, gender, marital and educational status. Data was analyzed using multivariate analysis of variance (MANOVA), correlation coefficient and Fisher’s z test. The Toronto Alexithymia Scale (TAS-20) and the Gastrointestinal Symptoms

Rating Scale (GSRS) were used to collect data.

Toronto Alexithymia Scale (TAS-20): The twenty-item Toronto Alexithymia Scale (TAS-20) is used for measuring alexithymia constructs. It is a self-report questionnaire which assesses alexithymia and has three dimensions of difficulty identifying feelings (DIF), difficulty describing feelings (DDF), and externally oriented thinking (EOT) (13). Items are rated on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). A score more than 60 shows high alexithymia and a score less than 52 shows low alexithymia (14). Based on Cronbach’s alpha, the internal consistency of TAS-20 for total TAS-20 and its dimensions including DIF, DDF, EOT have been reported to respectively be 0.79, 0.75, 0.71, and 0.66 in Iranian normal subjects, and 0.77, 0.73, 0.69, and 0.65 in Iranian clinical subjects (15).

Gastrointestinal Symptom Rating Scale (GSRS): The GSRS is a 15-item disease-specific instrument with five subscales (symptom clusters) including abdominal pain, reflux, diarrhea, constipation and indigestion. The GSRS is rated on a seven-point Likert scale, ranging from 1 (no discomfort at all) to 7 (very severe discomfort). Based on Cronbach’s alpha, the internal consistency of GSRS for total GSRS and its subscales has been reported as 0.62, 0.61, 0.83, 0.80, and 0.70, respectively (16). The GSRS has been translated to English and Persian and has been examined by Iranian gastroenterologists. The internal consistency for the Persian version (total GSRS and its subscales) was computed and obtained as 0.86, 0.61, 0.87, 0.86, and 0.75, respectively.

**3. RESULTS**

A total number of 129 patients with FGIDs (47 males and 82 females) were

evaluated most of whom were female (63.6%), married (68.2%), and graduated from high school (35.7%). In addition, 68.2% of FGID patients aged 21-40 years. On the other hand, the control group included 108 healthy individuals (39 males and 69 females) who were matched with the case group in terms of age, sex, marriage, and educational status.

The results obtained for the FGID and healthy groups are illustrated as descriptive data in Table 1. Mean scores of alexithymia (in total and for its dimensions), and the severity score of GI symptoms and its subscales were greater in patients with FGIDs than in healthy controls.

The results of multivariate ANOVA indicated a significant difference be-

| Variable                        | Control Group |                    | FGID Patients |                    |
|---------------------------------|---------------|--------------------|---------------|--------------------|
|                                 | Mean          | Standard Deviation | Mean          | Standard Deviation |
| Alexithymia total               | 21.62         | 3.2                | 60.26         | 11.18              |
| Difficulty identifying feelings | 3.05          | 1.13               | 24.05         | 6.95               |
| Difficulty describing feelings  | 2.88          | 1.27               | 14.79         | 4.14               |
| Externally oriented thinking    | 2.89          | 1.31               | 21.25         | 4.57               |
| Severity of GI symptoms         | 1.49          | .63                | 16.27         | 4.78               |
| Abdominal pain                  | 1.89          | 1.05               | 3.77          | 1.44               |
| Reflux syndrome                 | 1.93          | 1.16               | 3.25          | 1.66               |
| Diarrhea syndrome               | 2.04          | 1.45               | 2.70          | 1.67               |
| Constipation syndrome           | 1.79          | 1.29               | 3.11          | 1.50               |
| Indigestive syndrome            | 1.66          | 1.13               | 3.45          | 1.46               |

**TABLE 1.** Mean scores of alexithymia and its dimensions, and severity of gastrointestinal (GI) symptoms and its subscales in functional gastrointestinal disorders (FGIDs) and healthy groups

| p       | F    | Error df | Hypothesis df | Value | Test          |
|---------|------|----------|---------------|-------|---------------|
| < 0.001 | 4.39 | 226      | 10            | 0.049 | Wilks’ lambda |

**TABLE 2.** The results of multivariate analysis of variance for alexithymia and severity of gastrointestinal (GI) symptoms in functional gastrointestinal disorders (FGIDs) and healthy groups

tween patients with FGIDs and healthy controls in terms of alexithymia total scores and its dimensions (p < 0.01). There was also a significant difference between the two groups in terms of severity of GI symptoms (p < 0.01) (Tables 2 and 3).

The data represented in Table 4 shows that among the demographic variables in patients with FGIDs, only educational level had a significant relationship with total alexithymia scores, as well as with D1 (difficulty identifying feelings) and D2 (difficulty describing feelings) (p < 0.01). However, the results of correla-

| Observed Power | Partial Eta Squared | p       | F      | Mean Square | df | Sum of Squares | Variable                |
|----------------|---------------------|---------|--------|-------------|----|----------------|-------------------------|
| 1.000          | 0.837               | < 0.001 | 1.20   | 87741.09    | 1  | 87741.09       | Alexithymia total       |
| 1.000          | 0.804               | < 0.001 | 961.35 | 25920.91    | 1  | 25920.91       | D1                      |
| 1.000          | 0.778               | < 0.001 | 823.58 | 8327.04     | 1  | 8327.04        | D2                      |
| 1.000          | 0.874               | < 0.001 | 1.62   | 19810.71    | 1  | 19810.71       | D3                      |
| 1.000          | 0.812               | < 0.001 | 1.01   | 12845.66    | 1  | 12845.66       | Severity of GI symptoms |
| 1.000          | 0.350               | < 0.001 | 126.32 | 209.04      | 1  | 209.04         | Subscale 1              |
| 1.000          | 0.170               | .002    | 48.22  | 102.554     | 1  | 102.554        | Subscale 2              |
| 1.000          | 0.041               | < 0.001 | 10.08  | 25.12       | 1  | 25.12          | Subscale 3              |
| 1.000          | 0.178               | < 0.001 | 51.02  | 101.91      | 1  | 101.91         | Subscale 4              |
| 1.000          | 0.313               | < 0.001 | 107.21 | 187.78      | 1  | 187.78         | Subscale 5              |

**TABLE 3.** The results of multivariate analysis of variance for alexithymia and its dimensions, severity of gastrointestinal (GI) symptoms and its subscales in functional gastrointestinal disorders (FGIDs) and healthy groups D1: Difficulty identifying feelings; D2: Difficulty describing feelings; D3: Externally oriented thinking; Subscale 1: Abdominal pain; Subscale 2: Reflux syndrome; Subscale 3: Diarrhea syndrome; Subscale 4: Constipation syndrome; Subscale 5: Indigestive syndrome

| Type of correlation | Variable          | Healthy group |          |         |        | Patients with FGIDs |          |          |        |
|---------------------|-------------------|---------------|----------|---------|--------|---------------------|----------|----------|--------|
|                     |                   | Alexi (total) | D1       | D2      | D3     | Alexi (total)       | D1       | D2       | D3     |
| Biserial            | Sex               | 0.190*        | 0.198*   | 0.144*  | 0.070  | -0.135              | -0.103   | -0.167   | 0.039  |
|                     | Marital status    | 0.098         | 0.003    | 0.128   | 0.220* | 0.083               | 0.101    | 0.147    | -0.097 |
| Pearson             | Age               | 0.115         | 0.008    | 0.113   | 0.143* | -0.046              | -0.010   | -0.081   | -0.040 |
|                     | Educational level | -0.379**      | -0.421** | -0.217* | -0.169 | -0.309**            | -0.261** | -0.249** | -0.150 |

**TABLE 4.** The results of Pearson's and Biserial correlations between alexithymia and its dimensions and demographic variables \* Correlation is significant at the 0.05 level (2-tailed). \*\* Correlation is significant at the 0.01 level (2-tailed). Alexi (total): Total alexithymia; D1: Difficulty identifying feelings; D2: Difficulty describing feelings; D3: Externally oriented thinking

| z     | Variable  |
|-------|---|
| 0.73  | Education and alexithymia                                   |
| 1.39  | Education and dimension 1 (difficulty identifying feelings) |
| 0.123 | Education and dimension 2 (difficulty describing feelings)  |

**TABLE 5.** The results of Fisher's z test for the comparison of correlations between educational level and alexithymia and its dimensions in the two groups of functional gastrointestinal disorders (FGIDs) patients and healthy individuals

tions in the healthy group specified significant relationships between sex and scores of total alexithymia and D1 ( $p < 0.05$ ), age and D3 (externally orientated thinking) ( $p < 0.05$ ), and educational level and total alexithymia, D1 and D2 scores ( $p < 0.05$ ). According to Table 4, significant correlations were found in the two groups of FGID patients and healthy subjects between educational level and alexithymia, as well as educational level and D1 and D2 scores. In order to compare the correlation scores in the two groups, Fisher's z test was used. No significant differences were found as they were compared at the significance level

of 0.05 (Table 5).

#### 4. DISCUSSION

The findings of this study indicated significant differences between patients with FGIDs and healthy controls in terms of alexithymia scores and severity of GI symptoms. The alexithymia rate and severity of GI symptoms in patients with FGIDs were higher than in the healthy group. Other studies have also reported similar findings. For instance, Porcelli et al. recognized FGID patients to be more alexithymic than IBD patients and a healthy group. They estimated that 66% of patients demonstrated components of alexithymia (8). Another study reported the rate as 75.9% (17). Moreover, Porcelli et al. found high alexithymia in 56% of FGID patients (8). This was similar to rates reported in the studies of patients with panic disorder, post-traumatic stress disorder, essential hypertension, somatoform disorder, substance use disorders, and eating disorders (18). The findings of this study were consistent with the study of Sayar et al. in which

IBS patients were found to be unable to identify feelings, describe feelings and fantasize (10). Moreover, similar to our study, Porcelli et al. demonstrated high alexithymia in FGID patients and found a relationship between this trait and functional somatic complaints (18). However, Jones et al. reported high alexithymia prevalence (especially in the dimension of difficulty identifying feelings) in 12% of the functional dyspepsia (FD) patients (19). On the other hand, some researchers have introduced alexithymia as a cultural construct (20). Therefore, not much of the high alexithymia rate found by Jones et al. could have been due to cultural differences. In summary, the present research indicated patients with FGIDs to demonstrate high alexithymia symptoms.

FGIDs are considered a consequence of a complex dysregulation of brain-gut axis. They are known to affect systems involving emotional, cognitive, and neurophysiological functions (9). Such qualities might lead to higher rates of alexithymia among patients with FGIDs than those with IBD. They might also be responsible for the accompanied psychiatric disorders, and other psychological symptoms, especially alexithymia among FGIDs patients (17).

Alexithymia is a cognitive-emotional phenomenon due to automatic inhibitive processes of information and emotional feelings (21). It causes exacerbation of somatic diseases (11). Research has demonstrated the relationship between alexithymia and some of its dimensions (difficulty identifying feelings and difficulty describing feelings) with severity of GI symptoms in patients with FGIDs (10,11,18,22). Porcelli et al. showed alexithymia to be the most powerful predictor of recovery status and overall reduction in GI symptoms in FGID patients. Moreover, after controlling variables such as depression, anxiety and GI symptoms, alexithymia can predict the improvement of GI symptoms severity in patients (18).

Individuals demonstrating alexithymia have undifferentiated feelings. Such feelings are accompanied with an active physiological arousal which describes and adjusts feelings and in turn

exacerbates the symptoms (23). In fact, emotional arousal is accompanied with physiological arousal and bodily sensations. Because of the inability to identify and distinguish between feelings and bodily sensations, alexithymic individuals concentrate on somatic sensations. They may then amplify and misinterpret them. Consequently, patients with high alexithymia may experience more severe somatic symptoms and respond poorly to treatment. These patients are often referred to other physicians instead of psychiatrists (18).

The analysis of demographic variables might provide some patterns to the role of alexithymia in psychosomatic disorders. Accordingly, the present study examined the relationship of alexithymia and demographic variables in both patients with FGIDs and the healthy group. The results indicated the existence of a relationship between educational level and alexithymia as well as its dimensions (difficulty identifying feelings and difficulty describing feelings) in both groups. However, no significant differences were found between the two groups in this regard. Age in the healthy group was also found to have a significant relationship with the dimension of externally orientated thinking (concrete thinking). Moreover, sex and total scores of alexithymia, as well as the scores of difficulty identifying feelings were related.

Similar to the present study, previous researches have suggested relationships between alexithymia and educational level (12,24-26), age (12,26), sex (24,26), and marital status (24). Taylor et al. (6) and Kauhanen et al. (24) found alexithymia to be more frequent in men. Pasini et al. (12) and Bettina et al. (25) showed that although men and women were not significantly different in alexithymia rate, women had higher scores in identifying feelings. In Iran, Mohammad did not find any significant differences in alexithymia rates between men and women with ulcerative colitis (27). On the contrary, other research has been unable to identify significant differences in alexithymia of normal males and females. Parker et al. suggested that alexithymia and social-demographic variables such as age, sex and educational level were not sig-

nificantly related (28). Thus, based on some previous findings, alexithymia and some of its dimensions are more prominent in higher age groups, lower educational levels and unmarried individuals. Therefore, the following paragraphs will provide some explanations regarding the mentioned findings and their contradictions.

Higher educational level might result in increased cognitive processing, emotional perceptions, and better communication skills. Such individuals will thus be able to express their feelings easily and more effectively.

According to traditional (cultural) beliefs, men can perceive signs and meanings of feelings and social emotions to a lesser extent than women. On the other hand, women are known to be more sensitive and intuitive. This phenomenon may be related to their cultural sexuality roles and to the sexual differences in the nervous system. Men may be weak in their social intuition but they have enough skills to pay attention to their feelings (29). Although men express their emotions less than women, it is unlikely that alexithymia is a common male trait. Therefore, cultural variations may cause significant differences between men and women of populations under survey.

Alexithymia has partial consistency (i.e. it is not a stable personality trait) (30). In addition, it is possibly a cultural bound construct (20). Therefore, some of paradoxes in the literature about the relationship between alexithymia and demographic variables can be justified. However, for more concrete outcomes, further studies are required.

In conclusion, the findings of the present study suggested higher alexithymia rate and more severe somatic symptoms in patients with FGIDs than in healthy individuals. Higher educational level was also found to be associated with lower probability of alexithymia. Alexithymia can thus be considered as a psychological phenomenon, which is under the influence of social phenomena like education.

Considering the relationship between alexithymia and educational level, training may be effective for better perception and understanding of somatic symptoms. FGID patients are

therefore suggested to be trained in order to decrease the severity of GI symptoms by using emotional awareness and emotion management methods.

A major limitation of this study was selecting healthy individuals based on their own claim of being healthy. In fact, no medical examinations or interviews were conducted to testify their claims. Future studies need to select healthy subjects using medical interviewing and examinations.

**Conflict of interest: none declared.**

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