

Illness Perception and Alexithymia in Women with Fibromyalgia and Its Relationship to Psychological Distress

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Abstract

Background: Alexithymia is associated with fibromyalgia. People with difficulty identifying feeling and negative illness perception have difficulty reflecting and regulating their emotions. Also, alexithymia might make difficult for them to verbally communicate their psychological distress as depression and anxiety. **Aim of the study:** The purpose of the study was to see if there was a link between sickness perception, alexithymia, and psychological distress in women with fibromyalgia. **Study Design:** In this study, the descriptive-correlated strategy was adopted. **Setting:** The study was conducted at rheumatology outpatient clinic at Benha University Hospital in Benha City, Qalyubia Governorate. **Subjects:** Convenience sample of 80 women with Fibromyalgia from the previous study setting. **Tools for Data Collection:** The data was collected using four tools: Tool (1) Structured Interview Questionnaire Sheet consists of socio-demographic and clinical data, Tool (2) Toronto Alexithymia Scale, Tool (3) Illness Perception Questionnaire (IPQ), and Tool (4) Hospital Anxiety and Depression Scale (HADS). **Results:** Two thirds of the studied women with fibromyalgia have alexithymia, more than half had negative level of illness perceptions, less than half had moderate degree of anxiety and less than half of the sample has moderate level of depression. Findings indicated also, high statistically significant positive correlation between total alexithymia and total psychological distress (anxiety and depression). Also, there is a high statistically significant negative correlation between total illness perception and total psychological distress (anxiety and depression); while there is a high statistically significant negative correlation between total illness perception and total alexithymia. **Conclusion:** The study concluded that alexithymia had strong positive associations with anxiety and depression. Also, there is a significant negative predictor of illness perception with anxiety and depression among the studied women. In other words, increasing alexithymia and negative illness perception among patients with fibromyalgia associated with more severe depression and anxiety symptoms. **Recommendations:** The study recommended psycho-educational intervention programs to reduce the consequences of fibromyalgia syndrome and further study for large group and male patients for generalization of the results.

Key words

Alexithymia, Fibromyalgia, Illness, Perception, Distress, Woman

Introduction

Fibromyalgia (FM) is a chronic syndrome that is characterized by widespread musculoskeletal pain and other symptoms include fatigue, gastrointestinal symptoms, somatic symptoms, cognitive dysfunction and joint stiffness (**Siracusa et al., 2021; Wolfe et al., 2016**). FM affects 61% to 90% of women and has an estimated incidence of 2%-4% in the overall population (**Sarzi-Puttini et al., 2020; Wolfe et al., 2018**). Its pathophysiology is unclear; however, it appears to be influenced by a number of variables that vary across people. Physical, psychological, behavioral, cognitive, and environmental elements may all be present. Stressful experiences, emotional and physical traumas, a lack of social support, and specific personality traits may be linked to the start of FM and an increase in perceived pain and psychological suffering. (**Romeo et al., 2023**).

Fibromyalgia has considerable socioeconomic expenses for both the health system (medical visits, specialist consultations, diagnostic tests, medications, and other therapies) and the workforce (sick absence, increased absenteeism, and impaired work-related productivity). (**Arnold et al., 2016; Galvez-Sanchez et al., 2019**). Other consequence, Life with FM among woman causes significant psychological distress. because of the wider impact on employment, socializing, relationships and family life (**Galvez-Sanchez et al., 2020**). Literatures suggest that FM sufferers had elevated levels of mental disorders in nearly 97% of fibromyalgia patients: Anxiety symptoms range from 20 to 80%, while depression symptoms range from 13 - 64%, respectively (**Miki et al., 2018; Chang et al., 2015**).

Sechi et al., (2021) indicated a higher prevalence of depressive symptoms, with 59% of women reporting moderate to severe symptoms. Other studies in patients with FM illustrated that there is a susceptibility to suffering from psychological distress, i.e., depression and anxiety (**Geller et al., 2022; Vucurovic et al., 2020**). In this case, **Serrano-Ibáñez et al., (2020)** FMS patients who have persistent pain are at a higher risk of increasing psychological distress, according to one study. Severe pain, negative illness perceptions, dysfunctional coping techniques, personality characteristics (e.g., neuroticism or alexithymia), female gender, and lesser education have all been investigated longitudinally as risk factors for the emergence of depression and anxiety (**Jkremo et al., 2017; Batista et al., 2022**).

Depression and chronic pain often coexist, with up to 60% of chronic pain patients also having depression (Armbrecht et al., 2020; Hooten, 2016). In addition, the combination of chronic pain and depression results in worse treatment outcomes and overall functioning than

either illness alone. Depression and chronic pain have been identified as two of the top three major causes of worldwide disability over the last three decades (Dhanju et al., 2019).

Anxiety is also one of the most common psychological symptoms reported in FM patients. It has been claimed that FMS patients with significant anxiety symptoms engage in less physical exercise and engage in more sedentary habits. Despite the prevalence, anxiety in FMS is still poorly researched, compared to depression, which is indicated in 60% of patients (Kharko et al., 2020; Gutierrez et al., 2022). Also, the fact that FMS patients have depression or anxiety symptoms, they frequently seek care owing to their broad discomfort. This is assumed to be because the sufferers are unable to grasp and articulate their feelings poor illness perception (McDowell et al., 2017).

Illness perceptions, or people's opinions about their illness, have gotten a lot of attention recently because of their potential effect on pain outcomes (Fors et al., 2022). Furthermore, within the Common-Sense Model of Self-Regulation (CSM), sickness perceptions are said to impact illness outcome. According to the approach, people form their own set of beliefs and ideas about their condition (illness representations). These sickness representations are separated into emotional and cognitive representations, which influence emotional reactions and behavior, as well as coping strategies and action plans, such as developing and implementing self-management techniques. This, in turn, may have an impact on sickness outcomes and mental well-being (Leventhal et al., 2016).

The disease perspective of fibromyalgia patients is regarded as having a crucial influence on their coping mechanisms, treatment adherence, and functional adaptability. Although sickness perceptions have been proven to be essential, their incorporation into clinical assessment and care of patients requires additional development and research. A maladaptive coping style is linked to poor disease perceptions, which are linked to depression and anxiety symptoms in FM patients (Farzadkia et al., 2023).

When patients, such as those with FM, are presented with an illness or symptoms, they construct a model and representation of the sickness or symptoms (illness perceptions) in order to make sense of or manage the illness and its symptoms. Each patient will have his or her own thoughts regarding the illness's or symptoms' identification, treatment, timing, and implications. Attributions are made in this process to explain the reason for the symptoms (for example, a psychological attribution such as stress or a medical attribution such as

rheumatism). (**Van-Ittersum et al., 2022**). In people suffering from persistent widespread pain in multiple locations like FM, they have negative views about their condition, such as how it will influence their emotional well-being. Also, they may show unfavorable attitudes about their illness's repercussions such as developing psychological distress over time (**De Heer et al., 2017**).

A part from the link between sickness beliefs and psychological suffering, there is also the issue of alexithymia to consider. Individuals suffering with alexithymia may misunderstand their emotional condition as an indication of physical sickness. Alexithymia is a personality characteristic that shows a weakness in cognitive processing and emotional control. It might be a result of the illness's symptoms, aggravating the symptoms, or, as a stable personality feature, causing the symptoms. Studies have demonstrated alexithymia is highly prevalent in FM patients, so between 48% and 68% of FM patients exhibit alexithymia which has a negative impact on both physical and psychological wellbeing. (**Aaron et al., 2019; Tesio et al., 2018**). Patients with FM have a high level of alexithymia, which is characterized by difficulties distinguishing subjective sensations, a limited imaginative process, and an externally oriented cognitive style. Difficulty recognizing and characterizing sensations was found to be substantially connected to worse sleep quality, higher anxiety and sadness, and increased pain catastrophizing and dread of pain (Ghiggia et al., 2017). Alexithymia not only interferes with patients' capacity to appropriately recognize their own subjective experiences on a daily basis, but it also makes it difficult for patients to describe their psychological distress symptoms. There is a substantial link between alexithymia and depressive symptoms, according to the data (Romeo et al., 2022; Horta-Baas et al., 2020). Horta-Baas and colleagues postulated that alexithymia might exacerbate depressed symptoms by causing misunderstandings of bodily sensations. According to other research, alexithymia, depression, and anxiety are all highly linked (Sagar et al., 2021).

The research on alexithymia and illness perceptions among FM patients is important because alexithymia can interfere with the perception of emotional sensations, resulting in an overestimation of psychosomatic symptoms, including sadness and anxiety, as well as an overuse of medical care. (**Horta-Baas et al., 2020; Galvez-Sánchez et al., 2020**).

Most studies have found that people with FM have a greater frequency of alexithymia than the general population and other causes of chronic pain (**Tella et al., 2018**); nevertheless, other studies have not shown these differences (**Calsius et al., 2015**). As a result, pain,

depression, anxiety, alexithymia, and illness perceptions may be linked and impact FMS patients' quality of life. To the best of our knowledge, no study has analyzed these factors together in woman with fibromyalgia. The function of psychological processes in offering possibilities for therapies targeted at pain reduction or management is of special interest to psychologists. Thus, the goal of this study was to look at the link between disease perception, alexithymia, and psychological distress in woman with fibromyalgia.

Significance of the Study:

Fibromyalgia is a chronic disorder characterized by widespread pain, substantial mental discomfort, and functional impairment that primarily affects women (**Ramos-Henderson et al., 2021**). The pain and disability associated with poor illness perceptions disrupt physical, mental, and social activities and job performance. These factors in turn, diminish mental health and cause psychological distress as depression and anxiety (**Farzadkia et al., 2023**).

People with fibromyalgia are more likely to have difficulty detecting and describing their emotions. People who have a high level of alexithymia have tend to describe events rather than express emotions. Because of the reduced capacity to recognize and explain emotions, physiological correlates of emotions are misconstrued as symptoms of sickness. Simultaneously, alexithymia is frequently connected with increased psychological suffering such as sadness, worry, and stress. bad attitudes about the patient's disease, such as the illness's impact on their emotional well-being, which leads to the development of bad mental health outcomes. In other side, emotional awareness and good illness perceptions are essential for efficient emotion control and coping with the illness (**Scarpina et al., 2022**). However, no official research was conducted in Egypt to investigate the perception of illness and alexithymia in women with fibromyalgia and its association with psychological discomfort. As a result, the current study sought to ascertain the link between illness perception, alexithymia, and psychological distress in Fibromyalgia patients.

Aim of the Study:

The purpose of this study was to evaluate the link between illness perception, alexithymia and psychological distress in women with Fibromyalgia.

Research Questions:

- 1-What are the levels of illness thinking, alexithymia, psychological distress in women with fibromyalgia?
- 2- Is there a relationship between illness perception, alexithymia and psychological distress in women with fibromyalgia?

Subject and Methods

Research Design:

This study employed a descriptive-correlational design. The goal of descriptive correlational research is to characterize the connection between variables rather than to infer cause and effect correlations. Correlation study is useful for explaining how one phenomenon is connected to another and indicating how one characteristic might predict another (Lappe, 2000).

Research Setting:

The study was conducted at the rheumatology outpatient clinic at Benha University Hospital, Benha City, Qalyubia Governorate. This hospital is affiliated with the Ministry of Higher Education. This setting was particularly chosen because flow rate of women with FM is satisfactory for the study.

Research Subjects:

A convenience sample of 80 women with FM from the previous study settings.

$$n = \frac{N}{1 + N(e)^2}$$

-n= size of a sample

-N= size of the population

-d= 0.05 is the error rate

-z= The standard score for the significance level is 0.95, which equals 1.96.

-p= property availability and neutral=0.50

Data collection tools:

Data for this study were gathered using four different tools:

Tool (1):- Structured Interview Questionnaire Sheet:

The questionnaire was developed by the researcher based on scientific review of literature to elicit data about socio-demographic and clinical data (age, level of education, marital status, employment, years with symptoms of FM, diagnosis of FM, and pain medication frequency).

Tool (2): Toronto Alexithymia Scale (TAS-20):

The Alexithymia scale is a self-report measure created by Bagby et al. (1994) to examine the many elements of alexithymia. It consists of 20 items, each of which is assessed on a

5-point Likert scale (1 = strongly disagree, 5 = strongly agree). The TAS-20 has three subscales: difficulty describing feelings "5 items" items (2, 4, 11, 12, 17) (i.e., the inability to distinguish among emotions and between them and the bodily sensation of arousal), difficulty identifying feelings "7 items" items (1, 3, 6, 7, 9, 13, 14) (i.e., the inability to verbalize one's emotions), and externally-oriented thought "8 items" (5, 8, 10, 15, 16, 18, 19, 20) i.e., the difficulty in focusing on internal emotional experience). Five of the items are scored in reverse order: 4, 5, 10, 18, and 19. The total alexithymia score is the sum of all 20 replies, whereas the score for each subscale element is the sum of those responses. Total scores can vary from 20 to 100, with higher values suggesting more impairment/difficulties (alexithymia).

The TAS-20 uses cutoff scoring:

The cut-off points used to divide patients were those:

- Scores of ≤ 60 indicates no Alexithymia.
- Scores of ≥ 61 indicates Alexithymia.

Tool (3): Illness Perception Questionnaire (IPQ)-R:

Illness Perception Questionnaire revised version (IPQ-R), developed by **Moss-Morris et al., (2002)** to assesses patients' perception of their illness. The IPQ-R is a 70-items questionnaire which comprises 9 dimensions of illness perceptions. The IPQ-R is divided into three domains: disease identification (14 items), 7 cognitive dimensions (38 items), and causal domain (18 items).

The first section evaluates the (illness identification domain), perceived symptoms, and their likely relationship to the disease. It consists of a list of "14 symptoms." Participants assess whether the symptom has occurred since their sickness (yes/no) and if the symptom is connected to their disease (yes/no). A large number suggests a strong view that the symptom is part of the patient's disease.

The second section (illness beliefs domain), which focuses on seven cognitive dimensions, includes "38 items" about beliefs about (timeline (acute/chronic), a cyclical timeline, perceived consequences of the illness, and beliefs about personal control, treatment control, illness coherence, and emotional representations). Higher scores reflect more negative disease views (e.g., more repercussions or a longer timeline) for the dimensions (consequences, timeline, identity, and emotional representation). Higher

scores reflect more favorable sickness views (e.g., greater personal control or more treatment control) for the aspects (personal control, treatment control, and coherence).

The third section (causal domain) has "18 items" discussing sickness causes. This domain is separated into four dimensions: "psychological attributions (6 items), risk factor attributions (7 items), immune attributions (3 items), and accident or chance attributions (2 items)."

Subjects were given 5 alternatives for all dimensions except the identification dimension, which were transformed to a 5-point Likert-type scale for results analysis: (1) strongly disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, and (5) strongly agree. There were two alternatives for the identification dimension: symptom ascribed to FM "Yes" = (1) and symptom not attributed to FM "No" = (0). Higher scores for each component suggest greater beliefs about the dimension under consideration. Total scores can range from 58-304. The total higher scores of illness perception questionnaire reflect more negative illness perceptions.

Tool 4: Hospital Anxiety and Depression Scale (HADS):

Zigmond and Snaith (1983) developed the Hospital Anxiety and Depression Scale (HADS) to measure psychological discomfort "the severity of depressive (HADS-D) and anxiety (HADS-A) symptoms". This scale has 14 items, seven for anxiety, such as "I feel tense or 'wound up,'" and the other seven for sadness, such as "I still enjoy the things I used to enjoy." Each question includes four replies, each with a score ranging from 0 (not at all) to 3 (very often) for questions (1-2-3-6-7-10-11-12) and reverse questions (4-5-8-9-13-14). Each subscale's total score varied from 0 to 21. Higher scores are indicating the greater frequency of symptoms depression and anxiety.

HADS uses cutoff scoring:

An examination of the two subscale scores (depression and anxiety) confirmed the classification of each mood state into four levels:

- Scores of 0-7 indicates normal level.
- Scores of 8-10 indicates mild level.
- Scores of 11-14 indicates moderate level.
- Scores of 15-21 indicates sever level.

Procedures:

This study involved a preparatory phase, tool content and face validity, tool reliability, a pilot study, and fieldwork.

The preparatory phase began with a review of national and international related literature using journals, periodicals, textbooks, the internet, and theoretical knowledge of the various aspects concerning the topic of the study, followed by translation of the tool into Arabic format for better understanding and back translation to ensure accuracy.

The research instruments' content and face validity were assessed to ensure that they measured what they were designed to measure. It was rigorously evaluated before being presented to a jury of three Psychiatric and Mental Health Nursing professors to be tested for content and face validity. The Cronbach's alpha coefficient was also used to measure the internal consistency and dependability of tools. Cronbach's alpha for the Illness Perception Questionnaire was 0.83, for the Toronto Alexithymia Scale was 0.84, and for HADS-A/HADS-D was 0.93 and 0.90, respectively. These results corroborate the scales' dependability.

A pilot study was carried out on 10% of the patients (8 women with FM). The pilot research's goal was to determine the clarity, application, relevance, and content validity of the instruments, as well as to assess the practicality of the study method. Following the pilot research, it was discovered that the tools in the Arabic version were clear and relevant. As a result, all of the women who participated in the pilot research were included in the study sample. Following the pilot research, the tools were made suitable for usage.

Fieldwork: Data was collected during a three-month period, from November 2022 to the end of January 2023. Ethical approval was obtained from Scientific Research Ethics Committee, Faculty of Nursing, Benha University (REC-PSY.N-P1). After that official approval was taken from Dean of faculty of nursing to the director of Benha University Hospital to take approval for data collection. After an explanation of the purpose of the study to hospital authorities, data were collected through meeting the studied woman during their waiting at rheumatology outpatient clinic. The researcher introduced herself to participant; then explained the aim of the study to every one of them and after that oral consent was taken from every one of them before data collection.

After obtaining the informed consent, data were collected according to availability of the studied woman through 2 days/week; the numbers of interviewed woman were ranged from 3 to 4 patients every day. The time required to fill the questionnaire sheet were 10 minutes for both Structured Interview Questionnaire Sheet and the alexithymia scale, 10-15 minutes for IPR-R scale and HADS. To minimize missing data, the completed tools were gathered on time and updated to ensure their completeness. Finally, the researchers expressed gratitude to the volunteers for their assistance.

Ethical considerations: Participants were interviewed to explain the study's purpose and process. They were informed that they had the right to withdraw from the research at any moment for any reason. It was also stated that the study does not cause any physical or mental injury or anguish to the subjects. Furthermore, all data was coded to ensure the subjects' confidentiality and anonymity.

Statistical Data Analysis:

To evaluate data, the social science statistical tool SPSS version 25 was employed. To characterize socio-demographic data and the levels of study variables, descriptive statistics such as percentages, frequencies, means, weighted means, relative weights, and standard deviations were utilized. Pearson's correlation coefficients were utilized to evaluate the relationship between the variables in the research. $P \leq 0.05$ was regarded significant, while $P < 0.01$ was considered extremely significant.

Results:

Table (1) The examination of patients' descriptive characteristics showed that the age of more than half (52.5%) of the studied women ranged from 40 to < 50 years with mean age of 45.11 ± 10.87 years, less than half (48.8%) had secondary education level, more than three quarters (77.5%) were married, and about two thirds (65.0%) were employed. Results also illustrates that, more than half (51.3%) of the participants had symptoms of the disease FM for greater than ≥ 3 years. Forty percent (40.0%) have living with fibromyalgia for up to 1-5 years. Concerning pain medication frequency, about two thirds (65.0%) of the studied women were taking medication 1–2 times daily.

Table (2) Mean scores and standard deviations for the alexithymia among the studied women with fibromyalgia, the highest mean score of alexithymia subscales was 24.46 ± 5.31 for the subscale externally-oriented thinking. Next, comes the difficulty

describing feelings subscale with the mean of 20.97 ± 8.04 . The sample's lowest mean score was difficulty identifying feelings of 17.68 ± 2.14 , while, the overall mean score of alexithymia among the studied women was 63.12 ± 14.03 .

Figure (1): Distribution of the studied women regarding level of alexithymia, results illustrate that, two thirds (66.3%) of the studied woman have alexithymia, while one third (33.7%) of them have no alexithymia.

Table (3): Mean scores and standard deviations for the illness perception among the studied women, table illustrates that the highest mean scores for emotional representations dimension with 18.30 ± 4.47 , followed by mean score of timeline (acute/chronic) dimension was 17.63 ± 5.56 , mean score of treatment control dimension was 13.76 ± 7.51 . Concerning to consequences dimension was 12.13 ± 2.93 , while 10.86 ± 3.82 for timeline cyclical and 10.47 ± 3.93 for personal controls dimensions. Furthermore, the lowest mean score for illness identity domain was 9.03 ± 1.82 and 9.42 ± 4.13 for illness coherence dimension. Regarding to illness perception of the studied woman about possible causes of fibromyalgia, the highest mean score for risk factors dimension with 13.45 ± 5.96 followed by psychological attributions with mean score of 12.25 ± 5.27 , mean score immunity dimension was 10.45 ± 3.29 while, the lowest mean score for accident or chance dimension was 5.50 ± 0.84 .

Figure (2): Distribution of the studied women regarding the total level of illness perception; results reveal that more than half (58.8%) of the studied woman had negative level of illness perception, while less than half of them (41.2%) had positive level illness perception.

Table (4): Mean scores and standard deviations for anxiety and depression among the studied women with fibromyalgia; the present study findings shows that the overall mean score was 11.61 ± 3.07 for anxiety among the studied woman, while overall mean score for depression among the studied woman was 11.45 ± 2.92 .

Figure (3): Distribution of the studied women regarding total levels of anxiety and depression; results show that less than half (46.3%) of the studied woman have moderate level of anxiety, while the about one fifth (21.2%) have severe level of anxiety. The result also reveals that, less than half (45.0%) of the studied woman has moderate level of depression, and less than one fifth (16.3%) of them have severe level of depression.

Table (5): Pearson's correlations between total scores of alexithymia and total illness perception as well as total psychological distress (anxiety and depression) among the

studied woman; the result illustrates that there is a highly statistically significant positive correlation between total alexithymia and total psychological distress (anxiety and depression) at $p \leq 0.001$. Also, there is a highly statistically significant negative correlation between total illness perception and total psychological distress (anxiety and depression) at $p \leq 0.001$; while there is a highly statistically significant negative correlation between total illness perceptions and total alexithymia at $p \leq 0.001$.

Table (6): Represents prediction role of alexithymia and illness perception on anxiety by using liner regression, results revealed that both alexithymia and illness perception had a statistically significant prediction role on anxiety.

Table (7): Represents prediction role of alexithymia and illness perception on depression by using liner regression, results revealed that both alexithymia and illness perception had a statistically significant prediction role on depression.

Table (1): Socio-demographic and clinical characteristics of the studied women (n=80).

Descriptive Characteristics	No.	%
Age (years)		
20 < 30 years	9	11.3
30 < 40 years	11	15.0
40 < 50 years	42	52.5
≥50 years	17	21.2
Mean ±SD	45.11±10.87	
Level of education		
Primary education	23	28.7
Secondary education	39	48.8
Graduate education	18	22.5
Marital status		
Single	6	7.5
Married	62	77.5
Divorced	9	11.3
Widow	3	3.7
Employment		

Employee	52	65.0
House wife	16	20.0
Retired	12	15.0
Years with symptoms of FM		
< 1 year	11	13.7
1 year	8	10.0
2 years	20	25.0
≥3 years	41	51.3
Diagnosis of fibromyalgia		
less than month	7	8.7
1 - 6 months ago	10	12.5
6 months - 1 year	13	16.3
1 - 5 years	32	40.0
> 5 years	18	22.5
Pain medication frequency		
1–2 times daily	52	65.0
>3 times daily	15	18.7
0- ≤1 time weekly	4	5.0
2–6 times weekly	9	11.3

Table (2): Mean scores and standard deviations for the Alexithymia among the studied women (n=80).

Alexithymia	Possible score	Min.	Max.	Mean ± SD
Difficulty Describing Feelings(7-35	9	28	20.97± 8.04
Difficulty Identifying Feelings	5-25	12	20	17.68± 2.14
Externally-Oriented Thinking	8-40	15	30	24.46±5.31
Total Score	20-100	36	78	63.12±14.03

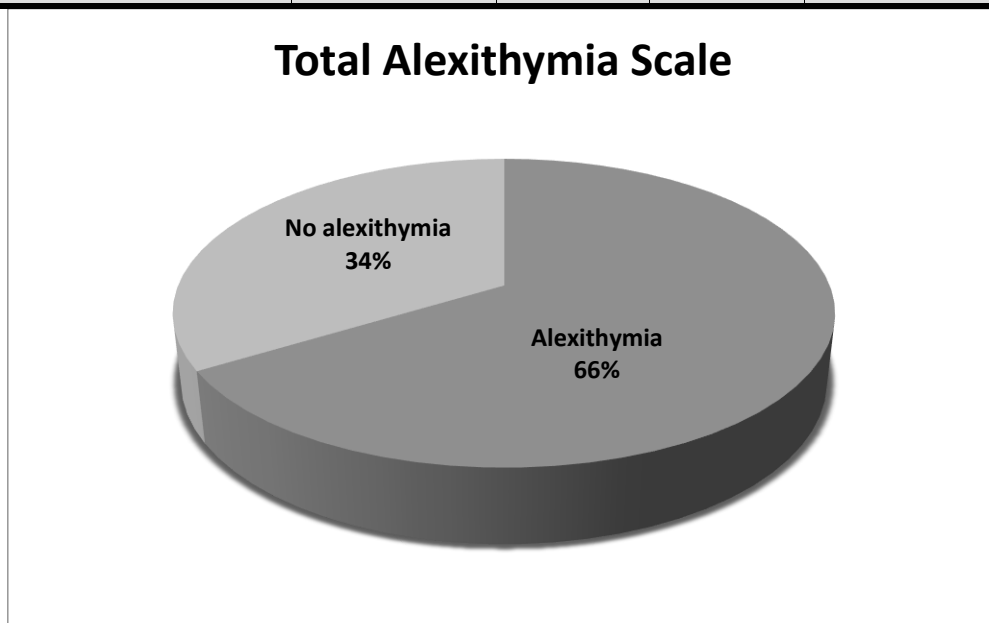


Figure (1): Distribution of the studied women regarding to level of alexithymia (n=80).

Table (3): Mean scores and standard deviations for the illness perception among the studied women (n=80).

Illness Perception Scale	Possible score	Min.	Max.	Mean ± SD
Illness identity domain				
Identity	0-14	7	11	9.03± 1.82
Illness beliefs domain				
Timeline (acute/chronic)	6-30	6	24	17.63± 5.56
Consequences	4-20	5	16	12.13±2.93
Personal control	6-30	6	16	10.47± 3.93
Treatment control	6-30	6	22	13.76± 7.51
Illness coherence	5-25	5	15	9.42± 4.13
Timeline cyclical	5-25	5	15	10.86± 3.82
Emotional representations	6-30	10	25	18.30± 4.47
Causal domain				
Psychological attributions	6-30	6	18	12.25±5.27
Risk factors dimension	6-30	8	20	13.45±5.96
Immunity dimension	6-30	6	14	10.45±3.29
Accidence or chance dimension	2-10	4	6	5.50±0.84
Total Illness Perception	58-304	75	200	143.28± 42.25

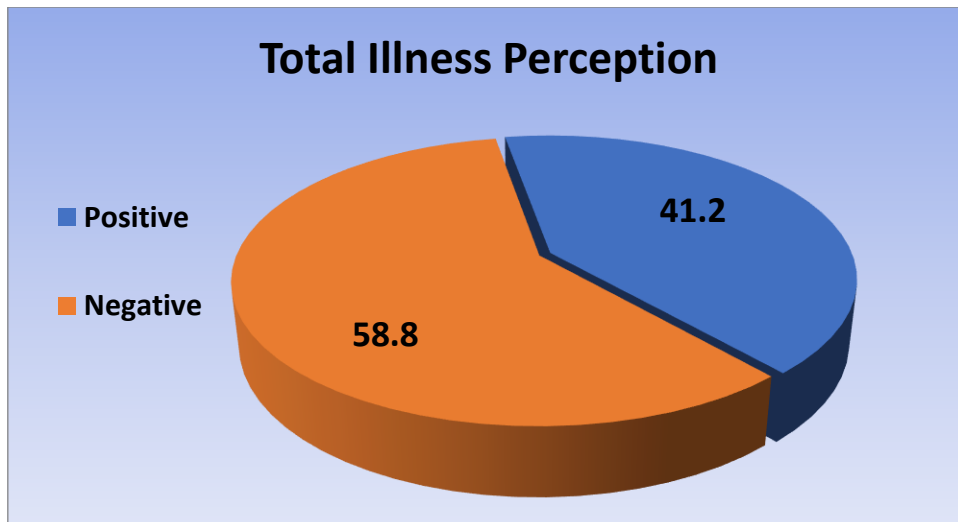


Figure (2): Distribution of the studied women regarding to total level of illness perception.

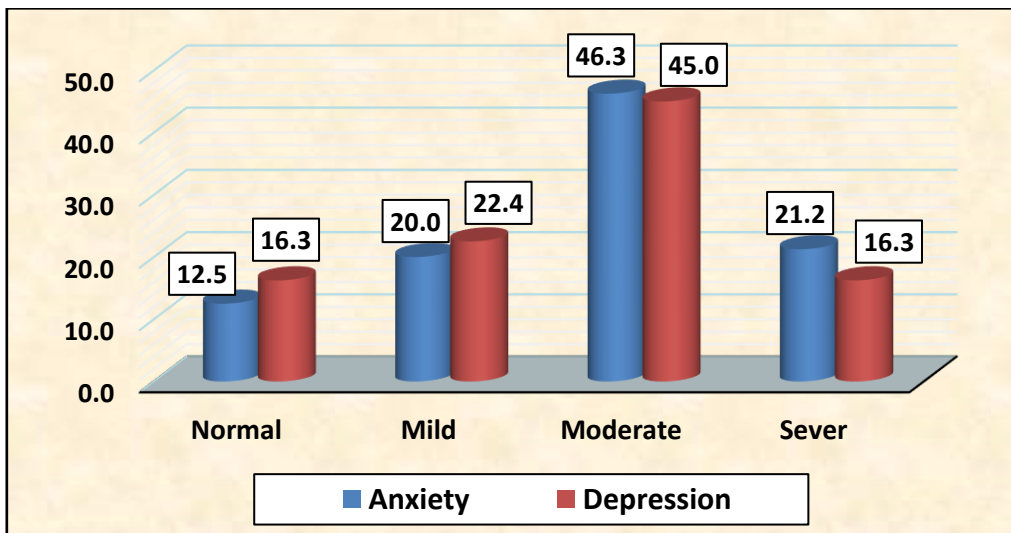


Figure (3): Distribution of the studied women regarding to levels of anxiety and depression.

Table (4): Mean scores and standard deviations for anxiety and depression among the studied women with Fibromyalgia (n=80).

Variables	Alexithymia		Illness perceptions	
	r	p-value	r	p-value
Psychological distress				
- HADS-Anxiety	0.920	0.000**	-0.849-	0.000**
- HADS-Depression	0.941	0.000**	-0.892-	0.000**
Alexithymia			-0.888-	0.000**

Psychological distress	Possible score	Min.	Max.	Mean \pm SD
HADS-Anxiety	0-21	4	18	11.61 \pm 3.07
HADS-Depression	0-21	6	16	11.45 \pm 2.92

Table (5): Correlations between total alexithymia and total illness perception as well as total psychological distress (anxiety and depression) (n=80).

**** Highly statistically significance $p \leq 0.001$**

Table (6): Prediction role of alexithymia and illness perception on anxiety by using liner regression.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.095	1.405		2.914	.005
Alexithymia	.152	.015	.723	10.428	.000
Illness perception	-.014-	.004	-.245-	-3.530-	.001

Dependent Variable: Anxiety

Table (7): Prediction role of alexithymia and illness perception on depression by using liner regression.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.582	1.522		3.010	.004
Alexithymia	.141	.016	.704	8.947	.000
Illness perception	-.015-	.004	-.266-	-3.382-	.001

Dependent Variable: Depression

Discussion

Fibromyalgia (FM) is a multifaceted condition which affects mainly women. The etiology of FM is yet to be well studied. Psychological distress is one of the primary factors that contribute to the handicap induced by this disorder and must thus be investigated. People with FM may have increasing symptoms as a result of psychological distress. Alexithymia also is an emotional dysregulation trait, largely observed and could play an important role in FM. It is also correlated with anxiety and depression. Individuals with alexithymia are unable to distinguish bodily sensations such as somatic expressions of emotions and may misunderstand their emotional excitation as indicators of disease. this could amplify the negative perception

of illness which positively correlates with psychological distress. Illness perceptions are critical to determining illness because patients act on their views.

Results illustrated that the mean age of the studied women was (45.11±10.87) years, which is consistent with **Fidel et al., (2022)**. In their study, **Fidel et al.**, reported a mean age of (45.60 ±9.82). However, the result of this reported study is inconsistent with **Gutierrez et al., (2022)**. In which they found that the average age of participants was (56.91 ± 8.94). Concerning the education level, less than half of the participants had secondary level of education. This result is inconsistent with **Gutierrez et al., (2022)**, as they stated that most participants had primary education. Also, this reported study is inconsistent with **Sechi et al., (2021)** where they had mostly women with high school diploma.

More than three-quarters of the individuals were married; this finding is consistent with **Romeo et al., (2022)** who showed that most participants in FM group were married. Results are inconsistent with **Vespa, et al., (2015)** who stated that the majority of the participants were single. Also the result disagree with **Shuster et al., (2009)** who founded that the majority of the women in the FMS group were divorced. In addition, finding reveals about two thirds were employee. This result agrees with **Reig-Garcia et al., (2021)** where half of sample was actively employed. Our finding is inconsistent with **Martinez et al., (2021)** in which more than half was unemployed. This is also inconsistent with **Berk et al., (2020)** They discovered that almost half of the participants were housewives.

Regarding the clinical characteristics of the FM patients, results showed also more than half of the sample had the symptoms of FM for more than ≥ 3 years. This result consistent with **Lee et al., (2017)** where the average symptom duration was 8.31 years. Additionally, about two fifths of our samples are diagnosed fibromyalgia for 1-5 years. This result is consistent with **Ramos-Henderson et al., (2021)** stated that more than one third of their sample had been diagnosed for greater than 3 years. However, our result is inconsistent with **Romeo et al., (2022)** who concluded that patients had the illness for an average of 9 years. The result also, disagrees with **Van Overmeire et al., (2008)** who stated that, years of diagnosis of fibromyalgia among the studied participant were more than 5 years.

According to mean scores and standard deviations for alexithymia women with Fibromyalgia, results reveals the highest mean score of alexithymia subscales for externally-oriented thinking (EOT), followed by difficulty describing feelings (DDF), while lowest mean

score was seen in difficulty identifying feelings (DIF). These findings point to the prevalence of a more externally oriented cognitive style as well as difficulties identifying and expressing emotions. Alexithymia had higher mean scores and standard deviations in all three TAS-20 dimensions. This finding is congruent with the findings of Akay et al., (2022), who discovered that "difficulty articulating emotions and externally-oriented cognition" dimensions of alexithymia were elevated among patients with FM followed by difficulty identifying feelings. Moreover, a study by Martinez et al. (2013) found that FM women had much greater difficulty identifying and characterizing sensations than healthy women, but had less externally oriented thinking.

This reported study's results are inconsistent with **Di Tella et al., (2018)** where they observed that people with FM have high scores in alexithymia (difficulties in identifying and describing subjective feelings together followed by external-oriented thinking). This result also, inconsistent with **Marchi et al., (2019)** stated that FM patients had higher DIF scores, then DDF, and high in EOT than healthy subjects. In the same side, Yüksel et al. (2021) found that the TAS-20 subscale scores were as follows: 28.81 4.06 for difficulties identifying feelings 16.97 3.07 for trouble articulating emotions, and 29.76 4.49 for expressive thinking.

Concerning to distribution of the studied women regarding total level of alexithymia, about two thirds of the studied women had alexithymia; this may be due to woman with fibromyalgia unable to distinguish their bodily feelings, such as somatic expressions of emotions, and may misunderstand their emotional arousal as indicators of sickness. The result is congruent with studies that showed alexithymia is more common in FM patients (**Di Tella et al., 2018; Aaron et al., 2019**). Also, **Tesio et al., (2018)** found that more than one-quarter of the sample had alexithymic characteristic at a clinical level.

The reviewed evidence indicate that alexithymia is highly prevalent among FM patients, compared to the population as a whole and individuals suffering from various types of chronic pain (**Martinez et al., 2020; Galvez-Sánchez et al., 2020; Tella et al., 2018**). Overall, the findings of this study indicated that patients with FM had greater degrees of alexithymia and trouble connecting to their own bodies when compared to patients with other conditions and even those who did not have any ailment, indicating a higher level of morbidity among those patients. Alexithymia major indices were also seen in FM patients and the elderly (**Romagnoli et al., 2016**). On other side, study by **Calsius et al., 2015**) have found no difference in alexithymia scores between FMS patients and healthy control subjects.

Regarding the scores of the illness perception domains, the findings illustrated that, women attributed a low proportion of their symptoms to their illness (illness identity) and low illness understanding (illness coherence). Participants with FM had a low illness identity score, indicating that they have limited personal grasp of their disease's symptoms. Participants with FM had a poor disease coherence score, indicating that they do not have a clear image of their condition. This means that low illness coherence is strongly related to low identity of the symptoms of their disease.

Additionally, the emotional representations, timeline acute/chronic, treatment control and consequences dimensions; were the four the most highly evaluated aspects of sickness beliefs domain. The women in our study experienced fibromyalgia as a chronic illness (timeline acute/chronic), and were unstable emotionally thus provoked a stronger response. So that; they had great faith in the treatment's ability to reduce symptoms and cure their illness (treatment control). Furthermore, they experienced various bad feelings as a result of their FM, such as emotional representations of being angry, nervous, or depressed. Because FM is a chronic illness, these findings are not surprising, leading to the perception that the illness and symptoms would last for a long time or even forever. These are could be due to that, more than half of the studied women have symptoms of their disease FM of ≥ 3 years and about two fifths of them diagnosed from fibromyalgia from 1- 5 years. Concerning the consequences, the patient feels that their sickness will have a significant impact on their physical, social, and psychological functioning (consequences). During the course of a long period of FM; the patients went through widespread pain over the entire body which affected home, work and relationship with others. This resulted in increased anxiety and depression.

Our results are consistent with **Wilgen, (2008)** who discovered that patients viewed FM to be a chronic disorder with substantial repercussions. The results are inconsistent with a study about "Do cultural differences exist in the impact of illness perception and fibromyalgia on female patients from Spain and the Netherlands?" who founded those Spanish ladies outperformed Dutch females in the characteristics of "identity, timeline (acute/chronic), consequences, cyclical timeline, and emotional representation." Females in the Netherlands scored higher in personal control, disease coherence, and treatment control dimensions than Spanish females (**Montero et al., 2015**).

The examination of the perceptions of this study`s patients about the causes of illness showed that the most common risk factors of disease were (hereditary, diet, poor medical care

in the past, behavior, smoking, alcohol use, and aging). Psychological attributions were the second most common causes (stress, mental attitude, family problems, overwork, personality and emotional state). This means that patients who reported more psychological explanations for their FM, such as stress or "emotional state," also had greater risk factor explanations, such as dietary habits, alcohol use, or heredity. This finding is in line with **Wilgen, (2008)**. Their findings suggested that FM-specific attributions were connected to psychological attributions and risk factor attributions in a substantial way. Previous research revealed that, despite growing understanding of FMS, the disease's etiopathogenesis remains unknown. There appear to be several factors involved, including genetic, psychological, immunological, hormonal, and environmental influences (Albrecht et al., 2019; Atzeni et al., 2019).

The reported result's consistent also with **Goldenberg, (2022)** who noted that the etiology of fibromyalgia is unknown; nevertheless, many physical or mental events (such as infection, injury, or stress) may have a role in initiating symptoms, despite the fact that many patients have a life-long history of chronic pain. Also, in previous review fibromyalgia seems to run in families, other risk factors such as emotional and physical abuse, anxiety and depression or an infection raises chances of getting fibromyalgia. The psychological attributions may mirror societal trends in which individuals have been found to be unable of dealing with challenges in an increasingly complicated and demanding existence, and where life problems have been somatized and medicalized.

Concerning the participants' total scores of illness perception, result revealed that more than half of the studied woman has negative illness perception. The result illustrated the high scores on the emotional representations, timeline acute/chronic, treatment control and consequences dimensions. Also, moderate scores for timeline cyclical and personal control dimensions, while the lowest scores on illness identity and illness coherence dimensions. This suggests that the patients in our study had a poor comprehension of their condition and less symptoms as a result of it, as well as greater (emotional manifestations) such as anxiety and depression, strong ideas about the chronicity of the disease and its harmful implications because their FM. However, they also reported that they had fewer personal interventions in managing their illness and that it was cyclical in nature. They also expressed lower beliefs in the number of symptoms associated with the illness and negative beliefs in their own personal understanding of their condition.

In this study, it was shown that fewer than half of the women investigated had a moderate degree of anxiety when the level of psychological distress (anxiety and depression) was assessed. One-fifth of those polled experienced extreme anxiety. This might be because FMS is characterized by pain in various sites; it is a chronic and severe illness that can have a terrible impact on the lives of patients. As a result, it impacts their capacity to work, engage in daily activities, and form relationships which could directly affect the overall quality of the patient's life and the also the life of their dependents. This makes the patients vulnerable for anxiety. This result consistent with **Muhammad & Ishaq, (2019)** illustrated a higher incidence of anxiety in patients with FM than healthy control group. On the other hand, this result is inconsistent with **Gutierrez et al., (2022)** who founded that regarding to anxiety; participants show mild levels of anxiety.

The result also revealed that, less than half of the studied women had moderate level of depression, and less than one fifth of them had sever level of depression. This might be because persistent deep muscular pain, one of the major symptoms of FM, can occur early and lead to tension, worry, and social isolation. Chronic and recurring pain lowers mood and eventually leads to depression. These findings are consistent with Sechi, (2021) observation that the incidence of depressed symptoms in this population was increased, with more than half reporting moderate to severe depression symptoms. In the same vein, Sarzi-Puttini et al., (2020) noted that depression is common in fibromyalgia patients and can have a significant role in illness development and severity. **Bruce, (2022)** also suggested a link between fibromyalgia and depression. In fact, people with fibromyalgia are up to three times at higher risk of having depression at the time of their diagnosis than someone without fibromyalgia. Depressive symptoms worsen when the degree and duration of pain worsen.

High levels of anxiety and depression has been seen in many other studies with lots of variation in the prevalence. Fibromyalgia is a multidimensional illness that is accompanied by not only physical pain but also psychological anguish and mental problems such as anxiety and depression. Ismail and colleagues (2022). Previous studies supported our result that, fibromyalgia patients had higher mean scores of anxiety and depression **Cappe 2020; Galvez-Sánchez et al., 2020; & Geller, (2022)**. Women with FM demonstrated higher levels of anxiety and depressive symptoms compared to healthy people. **Akay et al., (2022)** also stated that, mild-moderate depressed and moderate-severe anxiety symptoms were present in

patients with fibromyalgia. Depression and state anxiety were more prevalent in FM compared to the other two groups (Vucurovic et al., 2020).

Anxiety symptoms accompany a substantial proportion of depressive illnesses, just as depression and anxiety frequently appear with multiple painful manifestations, or painful manifestations induce or intensify depressed and anxious expressions. There is mounting evidence that pain and depression have pathophysiological, neurophysiological, and technical imaging similarities (Arango-Dávila & Rincón-Hoyos, 2018). The reason for such a variation in the prevalence of both anxiety and depression in different studies could be due to the use of different measurements scales for the measurement of anxiety, depression, cultural differences, coping strategies or difference in the familial and social support. According to the findings, people with Fibromyalgia syndrome have significant levels of despair and anxiety, indicating the existence of substantial psychological distress.

Concerning to Pearson's correlation between total scores of alexithymia and total psychological distress (anxiety and depression) among the studied woman; the result illustrated that there is a highly statistically significant positive correlation between total alexithymia and total psychological distress (anxiety and depression). This may be due to inability of the studied woman to identify and determine their own sensations properly restrict not only their capacity to manage their emotions, but also vocal expression of psychological discomfort, which can have a detrimental influence on anxiety and depression levels. Also, The misperception of patients about their body feelings is another condition that alexithymia can worsen anxiety, depressive symptoms, and discomfort. This result is consistent with **Montoro et al., (2016)** who shown that alexithymia was more closely linked with clinical variables (pain, anxiety, depression, and QoL) in healthy patients than in the FMS group, where many relationships vanished after anxiety and depression were accounted for. Additionally, our findings are consistent with **Horta-Baas et al., (2020)** who found that nearly two thirds of the studied women have alexithymia and the prevalence is higher in women with depression. Female patients with FM and alexithymia had higher pain intensity, anxiety and depression levels, impairment perception, and a worse quality of life than those with FM alone.

Di Tella et al. (2018) also demonstrated that FM patients with alexithymia had greater levels of psychological discomfort than those without alexithymia. The study's findings also showed a strong correlation between alexithymia—specifically, difficulty identifying feelings—and the affective aspect of pain perception. This finding lends support to the idea that in people with chronic muscular diseases, alexithymia is more closely linked to the unpleasant affective aspect of pain than the sensorial one. Anxiety especially served as a mediator in the relationship between alexithymia and pain.

Concerning to the relationship between overall sickness perception and total psychological distress. The present study illustrated that there is a highly statistically significant negative correlation between total illness perception and total psychological distress (anxiety and depression). This is may be due that negative illness perception correlated with anxiety and depression. **Costa et al., (2016)** also concluded similarity. They noted that people suffering from chronic widespread pain may have unfavorable thoughts about their sickness (the illness affecting their emotional well-being). These variables were discovered to be linked to an increase in depressed and anxious symptoms. Cross-sectional research has found that more severe pain and unfavorable sickness perceptions are associated with depression and anxiety in patients with (chronic) pain and rheumatic disorders (Ligthart et al., 2014; Järemo et al., 2017).

This conclusion supports the main results of Sagar et al., (2021). who concluded stated that alexithymia and depression are highly correlated. Individuals with alexithymia have difficulties connecting their emotional states to the causes that produce these emotions. As a result, alexithymia patients are unable to control and cope well with unpleasant emotions following stressful situations, resulting in the continuation of negative feelings, which may lead to depressive symptoms. In other words, those with alexithymia are more likely to experience undifferentiated unpleasant emotional feelings.

With regard to the correlation between total illness perception and total alexithymia, there was a highly statistically significant negative correlation between total illness perception and total alexithymia. This may be agreeing with the results of the present study about illness perception that represent weak beliefs about symptoms attributed to the illness and negative beliefs about the personal understanding of the condition as well as experiences emotional representations (greater emotional distress). Furthermore, weak beliefs in cyclical identification of disease and little personal interventions in managing the illness all together lead to negative illness perception which correlates significantly with presence of alexithymia

among the studied woman with FM. Previous study has shown that alexithymia has strong positive connections with sadness, anxiety, and stress.

Alexithymia exhibited substantial positive associations with anxiety and depression once all data was fitted. In other words, higher levels of alexithymia will aggravate the patients' despair and anxiety. This might be because Alexithymia may affect emotional adjustment, focus, processing, and appraisal of cognitive and emotional information. As a result, people with alexithymia struggle to deal with stressful situations, notably illnesses. This reinforces feelings of inadequacy and inadequacy in this group and exacerbates unpleasant emotions such as anxiety and sadness. This study's findings are consistent with earlier research on alexithymia and anxiety and depression. According to Nekouei et al. (2014), alexithymia has substantial positive correlations with depression and anxiety. Similarly, Marchi et al. (2019) confirmed the substantial link between alexithymia and psychological discomfort in FMS. The present study represents a significant negative predictor of illness perception with anxiety and depression. Meaning, increased negative illness perception among patients with fibromyalgia was associated with more severe depression and anxiety symptoms. This finding is similar with the findings of De Heer et al. (2017), who proposed that negative cognitions regarding the disease and the initial degree of affective symptoms are more relevant risk factors in the development of later depressed and anxious symptomatology. On the other hand, this result agrees with Järemo et al., (2017). They noted that restricting sickness beliefs in patients with chronic widespread pain is associated with lower health status, particularly in situations of a high number of physical or mental symptoms, negative consequences beliefs, or the illness hurting them emotionally.

Conclusion:

It was concluded that worse illness perception and alexithymia among women with fibromyalgia are significantly associated with anxiety and depressive symptoms. Therefore patient`s illness perception should be managed as well as level of alexithymia in order to improve FM symptoms for better psychological status.

Recommendations:

- Psycho-educational intervention programs to reduce the consequences of fibromyalgia syndrome.
- Stress management program for women with fibromyalgia to decrease their psychological distress.

- Awareness programs for increasing illness perceptions in patients with FM.
- Skills-based therapies (such as Cognitive Behavioral Therapies) may be very beneficial for persons suffering from alexithymia.
- Further study for large group and male patients for generalization of the results.

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