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The Effect of the Fibrotherapy Intervention Program on the Coping Patterns of Fibromyalgia Patients

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Background: Fibromyalgia (FM) syndrome is characterized by physical symptoms such as pain, fatigue, and sleep disorders, as well as mental symptoms that include depression, mental exhaustion, and a sense of hopelessness. The current study focuses on 3 main strategies used by FM patients living in communities in the Gaza Envelope who are under constant security threat: problem-oriented, emotion-oriented, and avoidance.

Methods: The study introduces a groundbreaking intervention program based on a fibrotherapy intervention (FTI) program developed at the Rehabilitation Center “Ezra LeMarpeh” led by Rabbi Avraham Elimelech Firer. The cohort study sample consists of 96 women who have been diagnosed with FM and have participated in the FTI program for 10 weeks. The study uses mixed methods of quantitative and qualitative analyses in which 16 women from the sample were interviewed. In addition to collecting demographic information and medical data, the study used the Brief Cope questionnaire.

Results: The findings corroborate the hypothesis and show a difference between the coping patterns of FM patients before and after the intervention.

Conclusions: The sharing experience as a part of the FTI program can lead FM patients to adopt positive disease management strategies, which may improve their quality of life.

Key Words: fibromyalgia, fibrotherapy, problem-oriented coping, emotion-oriented coping, avoidance coping

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The civilian population living in the proximity of the Gaza Strip in Israel has been subjected to repeated missile attacks. The incessant showers of missiles pose a series of security threats when the area enters a state of war during periodical military operations. For approximately 2 decades, residents living in this region, also known as the Gaza Envelope, often live under an emergency regime and step in and out of normative functioning.¹ Many studies have discussed the psychological and behavioral effects of exposure to a stressful situation resulting from a prolonged security threat. The effects are not uniform and range from mild to severe stress responses such as anxiety, depression, anger, psychological distress,

aggressive behavior, psychosomatic symptoms, and so on.² Coping with a prolonged security threat is also not uniform. Although some studies found coping difficulties, some empirical evidence shows that most of the population do not experience emotional problems and demonstrate resilience and satisfactory coping with a security threat situation.^{3,4}

Working in the Gaza Envelope area as a therapist for many years with patients who were diagnosed with fibromyalgia (FM), a disease characterized by chronic pain, raised the interest to conduct a study among the local FM patients who are, as mentioned, under prolonged security threats, to address this prevalent phenomenon. Ablin et al⁵ found evidence for an association between musculoskeletal pain and somatic symptoms and chronic stress. Therefore, prolonged security threats can be associated with the prevalence of chronic pain.

Fibromyalgia syndrome is characterized by widespread chronic pain in all parts of the musculoskeletal system.^{6,7} Fibromyalgia significantly impairs patients' quality of life and functioning abilities and is a common reason for seeking medical help.⁸ Aside from the excruciating pain, FM manifests in many other symptoms, including sleep disorders, chronic fatigue, lack of concentration, and memory disorders.⁹ These symptoms impair the level of social, professional, and family functioning in FM patients, which may also develop symptoms of depression and anxiety that contribute to the decline in quality of life.⁶

The pathogenesis of FM pain is currently unknown, but abnormal responses to chronic stress can play a critical role in many FM disorders, including increased pain and fatigue.¹⁰ Traumatic events can trigger the presence of FM.¹¹ In a test case study in Israel, the authors found that a traumatic event experienced by the subject during her third pregnancy led to FM symptoms, whereas she was pregnant again approximately a year later.¹² A study of FM patients in the United States found that patients who had PTSD showed more symptoms of FM than patients who did not have PTSD or had only partial PTSD.¹³

Lerman et al¹⁴ focused on exposure to terrorist missile attacks on chronic pain and patients' physical and mental health. They examined 55 patients who were treated in a pain clinic. The findings indicated that exposure to terror attacks predicted an increase in pain intensity and the sensory component of pain in the preattack period. The main challenge for people with FM is disease management. Thus, issues such as coping resources and coping strategies are of tremendous importance in the optimal management of the disease.¹⁵

COPING STRATEGIES IN STRESSFUL SITUATIONS

“Coping” refers to cognitive and behavioral efforts to control and minimize the physical, psychological, or social damage of an event or situation or to tolerate the internal and external demands that emerge from the stressful event/situation.¹⁶ Although some develop resilience and adequate coping, others continue to experience various symptoms of stress. Consequently, coping with stressful situations is a cognitive-perceptual process by which the individual assesses the threat and their ability to cope with it, and hence their

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The study was conducted according to the guidelines of the Declaration of Helsinki and approved by Ariel University (July 26, 2020).

Informed consent was obtained from all subjects involved in the study.

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response to the given situation.¹⁷ Lazarus and Folkman¹⁷ used the term “coping” to describe the cognitive and behavioral efforts one makes to manage stress, usually classified as emotion-oriented or problem-oriented coping. The authors based their description on Selye,¹⁸ who proposed the term “stress” to explain the reactions observed in the general adaptation syndrome identified as an initial alarm response followed by a state of adaptation, also known as the “resistance phase.” Selye argued that a healthy response to stress leads to adaptation, whereas an unhealthy response will lead to fatigue. The person's choice of coping strategies with FM is affected by perceiving the stressful situation as a threat or a challenge.¹⁹ Assessing reality as a “threat” is associated with frequent use of unhealthy coping strategies, experiences of negative emotions, and overall lower performance. In contrast, assessing reality as a “challenge” results in adaptive coping strategies, positive emotions, and high performance.²⁰ The choice of coping strategy for a stressful event and the meaning that an individual applies to it is also influenced by one's perception of the internal and external resources available to them.²¹ Internal coping resources include personal resources such as locus of control, self-esteem, and level of optimism.¹⁷ Coping has a temporary nature and is generally limited in time; thus, different coping strategies are often used at different periods. For example, a patient may use avoidance coping in the initial or later phase of coping in some situations and other coping strategies in other situations.²² There are 3 main coping strategies.

Problem-Oriented Coping

Problem-oriented coping is a style of coping that aims to resolve a stressful situation or event or change the source of the stress. Coping strategies that can be considered problem-oriented include overcoming stress (eg, problem-solving or removing the source of stress), seeking information or assisting in treating the condition, and moving away from the stressful situation.²³ Problem-oriented coping includes coping and operational planning²⁴ and performing actions to change the problematic situation, such as focusing on problem management, perseverance, or more substantial efforts, and searching for alternative solutions.²⁵ A 2002 study found a reliable link between problem-oriented coping strategies and positive health outcomes.²⁶

Emotion-Oriented Coping

Coping with a chronic illness and the need to adapt to its existence often produce a variety of negative emotions such as fear, anger, and sadness, which can affect the well-being of patients.²⁷ Trial studies have shown that negative emotions are harmfully associated with health,²⁸ physiological processes,²⁹ neurological functions,³⁰ health behaviors, and more.³¹ The literature in coping and health has suggested that emotion-oriented coping strategies are sometimes characterized by maladaptation and can lead to mental issues such as depression and anxiety.³²

Avoidance and Repression Strategy

Emotional repression is about coping with threats and anxiety. The coping style of people in a state of repression is characterized by strategies that aim to prevent stimuli and anxious thoughts, for example, by reducing the importance or even negating the threat of the situation.²⁴ Preventative coping is a behavior that involves disengagement and denial. These strategies are characterized by avoidance of thoughts about the stressful situation and distraction from the stress. These coping strategies aim to protect against mental strain when one encounters an incredibly stressful situation.³³ Greater use of avoidant coping is associated with a higher level of depressive and anxiety symptoms.³⁴

An innovative intervention program has been developed based on a unique treatment model to help women diagnosed with FM cope with their disease and its symptoms. The following section describes the program.

THE FIBROTHERAPY INTERVENTION PROGRAM

The fibrotherapy intervention (FTI) program was developed by the rehabilitation center Ezra Le'Marpeh as a holistic program that seeks to address the body and mind and is designed to treat FM patients. The intervention plan is based on gradual aerobic exercise, empowerment, mental guidance, and a remedy to gain central pain relief (as opposed to anti-inflammatory treatment) to improve the patient's functional level. The intervention combines physiotherapy, Pilates, hydrotherapy, emotional response in intervention groups, gardening, cooking therapy, and a unique ceramics workshop that concludes patients' process in the center. The differentiative intervention is applied in 3 consecutive stages for 10 weeks each stage, whereas with each stage, the patients receive a different response—a total of 30 weeks.

MATERIALS AND METHODS

This study uses mixed-methods research that includes quantitative and qualitative research. The mixed-methods research has been described as an array representing the highest level of paradigms integration in which the author incorporated aspects from the qualitative and quantitative paradigms throughout the study and its various stages.³⁵ The data from each method were collected and triangulated: data from the questionnaires; data from the semistructured interviews; and review of colleagues who specialize in FM to confirm the reliability of the analysis. The study examined patients' subjective perceptions and clinical indicators that include background diseases, such as heart disease, blood clotting, malignant diseases, and more, and various symptoms that disrupt daily functioning, such as dizziness, emotional problems, and more. In addition, the study examined the relationship between FTI and problem-oriented coping. The mixed-methods analysis makes it possible to address these 2 elements. The development and establishment of both types of research as legitimate in the social sciences has led to the expansion of studies that use 2 methods of data collection.

The population of the quantitative analysis consists of 96 Jewish women ages 19 to 75 years who were diagnosed by their doctors as FM patients and have had FM symptoms for at least 1 year and reside in areas exposed to an ongoing security threat and have undergone FTI. The convenience sampling consisted of 100 women who visited the Ezra Le'Marpeh FT center and agreed to participate. After screening the patients who did not meet the criteria, 96 patients remained who agreed to fill out the questionnaires. Sixteen patients expressed their consent to participate in the qualitative study among this cohort. The assessment was made before the beginning of the program and at the end of the first stage—after 10 weeks.

We ensured maximum variability of the study sample by examining women who had been coping with the disease for several years and women who had been diagnosed in the past year. In addition, the sample included women of different ages, different marital statuses, and different religious affiliations. Table 1 presents the demographic breakdown of the quantitative research participants.

The population of the qualitative study consists of 16 women who were interviewed at the end of the FTI program (after 30 weeks). Table 2 presents the demographic breakdown of the qualitative research participants.

The questionnaires examined sociodemographic variables, the number of years that elapsed from the moment the disease was

TABLE 1. Personal Background Characteristics of All Women in the Sample (n = 96)

Variable	Values	n	%	M	SD	Range
Marital status	Single	9	9.4			
	Married	69	71.9			
	Divorced/separated	15	15.6			
	Widow	3	3.1			
Religious affiliation	Secular	33	34.4			
	Traditional	29	30.2			
	Religious	24	25			
	Orthodox	10	10.4			
Residence	City/town	65	67.7			
	Community village	2	2.1			
	Rural village	21	21.9			
	Kibbutz	7	7.3			
	Other	1	1			
Age				53.03	13.08	19–75
Years since diagnosis				7.94	6.34	1–30
No. children				3.55	2.01	0–10

diagnosed, how the subject coped, and demographic characteristics—personal data regarding age, sex, socioeconomic status, and religious beliefs were collected. Data on the subjects' medical conditions were collected to connect their medical condition and FM symptoms.

The Brief Cope questionnaire³⁶ was designed to examine coping tendencies in a person. The questionnaire contains 28 statements regarding ways of coping with stressful situations. Checking the reliability of the questionnaire according to Cronbach α in similar studies was found to be problem-oriented (0.85), emotion-oriented (0.67), and avoidance (0.65).³

The research tool used for the qualitative analysis was an in-depth semistructured interview to allow the interviewees in this study to introduce the researcher into their world. The dialogue between the researcher and the interviewees focused on the interviewees' experiences regarding their coping strategies. The interviews aimed to perceive the subjects' experiences, points of view,

and perceptions of their coping strategies. This tool was the most appropriate for the current study design, as it allowed the discovery and description to be exhausted and helped the researcher exhaust the differences between interviewees.³⁷

RESULTS

Quantitative Findings

We hypothesized that after participating in the intervention program, the problem-focused level of coping would increase. A χ^2 test was conducted for the quality of the correlation to examine the comparison in the distribution rates between the levels of change in coping patterns.

Different ratio distributions were found between the levels of change in coping patterns after subjects participated in the FTI ($\chi^2(2) = 29.25; p < 0.001$), so more than half of the study sample testified that they used a problem-oriented coping strategy after participating in the intervention program, approximately a quarter of them changed their behavioral pattern to an emotion-oriented or avoidance strategies. Only approximately 15% continued to act out of avoidance or emotion-oriented coping strategies (Table 3).

Following the hypothesis, a χ^2 test for the quality of the correlation was conducted to test the levels of change only among the women who indicated that they used problem-oriented coping strategies after participating in FTI. Analysis of the findings indicated that there is a different ratio distribution between the sample groups ($\chi^2(2) = 5.78; p = 0.016$), so that approximately two thirds of them used a problem-oriented coping pattern, both before and after the intervention, compared with approximately one third of the women in the sample (and one fifth of the sample) who changed from an avoidant or emotion-oriented coping pattern to a problem-oriented coping pattern after participating in the program (Table 4).

Over half of the subjects used problem-oriented coping patterns after participating in the intervention program; hence, the central research hypothesis was confirmed. However, it should be emphasized that approximately two thirds of these women testified that their preintervention coping patterns were problem-oriented and did not change after that.

TABLE 2. Demographic Characteristics of the Participants in the Qualitative Study

ID	Age	Marital Status	No. Children	Years Since Diagnosis
01-AV	54	Widow	4	4
02-OR	44	Married	3	2
03-DO	48	Married	4	5
04-DA	56	Married	5	5
05-HA	63	Married	3	10
06-HE	29	Single	0	3
07-TI	42	Married	3	4
08-YA	55	Married	6	2
09-YO	42	Married	3	3
10-LI	30	Divorcee	2	10
11-MI	61	Married	3	5
12-NA	30	Single	0	5
13-NA	34	Divorcee	0	4
14-NI	57	Separated	4	5
15-RE	60	Married	7	4
16-SH	64	Married	7	11

TABLE 3. Distribution of Change Levels of Coping Patterns After the Intervention Program (n = 96)

Levels of Change in Coping Patterns	n (%)	$\chi^2(2)$
Did not change avoidance or emotion-oriented patterns	14 (14.6)	29.250 ^a
Changed to avoidance or emotion-oriented patterns	26 (27.1)	
Continue or changed to a problem-oriented patterns	56 (58.3)	

^a*p* < 0.001.

Qualitative Findings

The qualitative analysis is divided into themes according to the following categories: physical phenomena after the missiles attack, coping before FTI, and coping after FTI (see Supplemental Digital Content 1, <http://links.lww.com/RHU/A468>, which demonstrates the qualitative analysis).

In conclusion, the process that the interviewees went through after the FTI was, first and foremost, a process of acceptance—acceptance and coming to terms with having the disease. Then began a process in which they learned to cope with the disease in a more focused way, and from a place where the disease had run their entire lives, they became the managers of the disease, reduced its presence, and made themselves available to the other aspects of their lives as well. This point is crucial for them to achieve peace in their lives and thus not continue to be managed by the disease. When one takes control of one's life, the adverse circumstances are no longer threatening and marginal to the optimal sense of well-being and peace. The goal, in the end, is to move from a sense of helplessness to a sense of control over the body as well as well-being and calmness.

The interviewees underwent a significant process that affected their coping strategies. Before entering the intervention, they coped with the disease in what may be seen as obsessive, mainly due to a lack of understanding and support from their surroundings, family and friends did not understand their state because, apart from pain, nothing else seemed to cause the disease, and therefore the responses they received did not help them accept the disease. Feelings that arose were betrayal by the body and rejection of the disease. After the intervention, a change was created that was essentially an acceptance of the disease. Moreover, the growth also started, and they began coping with the problem itself and not with the mental agony it caused. The interviewees perceive the FTI as having a positive effect on managing their disease and the change in the coping strategies they have adopted as a result of it.

DISCUSSION

The data reveal that female patients with FM who face a security threat use emotion-oriented or avoidance coping patterns, undergo a change during the intervention, and learn to use a problem-oriented coping strategy.

The study examined the extent of the effect of FTI. The participants in this study were women with FM who, due to their

residency in the proximity of the Gaza Strip, undergo an ongoing security threat of missile attacks and the sound of siren alarms as part of their daily life. The quantitative study consisted of 96 women with FM who live in the Gaza Envelope. Of these, approximately 16 women were interviewed for the qualitative research.

A previous study¹⁵ found that chronic patients exposed to an ongoing security threat increased the intensity of physical pain and the sensory component. Moreover, as early as 1997, it was found that FM disease can break out after trauma and stressful situations.⁶ The interviewees in the current study described physical states that included pain and stiffness during the sirens to the point of entering a state of physical paralysis, long hours even after the threat had passed. There seems to be a clear link between the security threat and FM symptoms. Thus, the issue of FM patients' coping becomes even more valid when they are under security threat. This study does not examine whether an outbreak of the disease has occurred due to the security threat, and it may be necessary to examine this in further studies. The present study examines the disease as a given condition and coping with it before and after the FTI.

The research hypothesis was that, after the FTI, patients with FM who have adopted emotion-oriented and avoidance strategies will begin to use a problem-oriented coping strategy. The quantitative findings show that although a significant number of subjects adopted a problem-oriented coping strategy even before they arrived at the rehabilitation center, after the intervention, this number increased significantly. Subjects who used emotion-oriented and avoidant coping strategies changed to problem-oriented ones. It should be noted that such a large number of subjects (approximately half) have adopted a problem-oriented strategy even before the intervention can be explained by the notion that coming to the center for treatment is a large part of this strategy.

Some studies found that problem-oriented coping strategies revolve around adjusting to external stresses by changing or eliminating patients' difficulties due to chronic illness. These include familiarity with the situation, planning for potential obstacles, and maintaining physical activity.³⁸ The interviewees demonstrated that once they understood their state and accepted the disease, it improved their quality of life because they took a more assertive approach and began disease management activities instead of being submissive and feeling as though the disease was managing them. After the beginning of the intervention, many interviewees described a “before and after” state—a switch of change from

TABLE 4. Distribution of Change Levels of Patterns of Patients That Used Problem-Oriented Patterns After the Intervention Program (n = 96)

Levels of Change of Problem-Oriented Coping Patterns	n (%)	$\chi^2(2)$
Used problem-oriented patterns before and after the intervention	37 (66.1)	5.786 ^a
Changed from emotion-oriented/avoidance patterns to problem-oriented patterns	19 (33.9)	

^a*p* < 0.016.

being subjugated by a sense of suffering 24/7 to a state of focusing on the pain. The change was also semantic. Interviewees spoke first about suffering and then about pain. Pain is a physical event, whereas suffering is a state of mind. Thus, their main change was in their state of mind, which led to a more positive attitude and management of the disease.^{25,26} The change that has taken place was essentially an understanding of the pain. Chen et al²³ presented a situation where understanding and having information about the stressful situation helps overcome stress. Hock and Kohlmann²⁴ found that operational planning is part of a problem-oriented strategy. The interviewees also presented events in which they planned their steps with realistic goals in short time units.

A decisive contribution to the change of strategy is participating in group therapy as part of the intervention. In sociology, participation means being part of something and gaining from participating in a group and thus, collaborating with the group members.³⁹ Participation occurs through interactions of dialogue and decision-making.⁴⁰ Group therapy has contributed to changing attitudes among the interviewees, from a sense of hopelessness to an optimistic attitude. The interviewees, who, until participating in the group therapy, felt that they were coping with the disease alone, felt that they finally reached a place where they all share the same objective and, in essence, have similar experiences, both physically and mentally.

An interesting finding from the study is that one of the interviewees adopted a problem-oriented strategy before participating in the intervention, and during the intervention, she switched to an emotion-oriented strategy as part of her therapeutic process. In the case of this specific interviewee, it seems that this was a strategy that helped her because she could unlock her mental barriers, and by doing so, she completed the treatment herself. As mentioned, disagreements in the literature regarding this strategy show that, although some authors advocated that it is a strategy that leads to adverse outcomes of avoidance and convergence within negative emotions, some authors have argued that this strategy is emotional processing and emotional expression, and hence a positive strategy.

CONCLUSIONS

Using FTI for FM patients in a perceptual change of coping strategies has immense significance. Specifically, undergoing the intervention has driven many women to adopt a problem-oriented coping strategy, whereas previously, they had engaged in coping strategies that have caused them to be preoccupied with the existence of the disease rather than managing it. When they entered the program, the sharing and sense of shared experience also led them to adopt disease management strategies and take active actions such as physical exercises to improve their quality of life in the shadow of the disease.

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