

# The correlation between problem-oriented coping and a sense of coherence among fibromyalgia patients who underwent the fibrotherapy model intervention programme

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## Abstract

### Objective

*This study sought to examine whether the sense of coherence (SOC) among fibromyalgia (FM) increased after participation in a fibrotherapy intervention programme (FTI) and whether SOC among FM patients who changed their coping strategies to problem-oriented coping, increased. The study was conducted among FM female patients who are exposed to security threats in order to examine the coping resources of these patients.*

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### Methods

*96 female patients aged 19-75 diagnosed with FM enrolled in the FTI programme led by Rabbi Firer in Sderot, Israel. Of this sample, 16 were interviewed for the qualitative part.*

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### Results

*The quantitative analysis found that there was a change in the level of SOC before and after participation in FTI and that an increasing trend in SOC was observed after participating in FTI, thus, confirming the first hypothesis. Also, a problem-oriented coping pattern emerged after participating in FTI. The data further show that according to the second study hypothesis, among problem-oriented patients, the levels of psychological distress decreased, and the physiological indicators (endurance) increased as well as an improved functional ability. In other words, following FTI, there was a positive improvement in the physical and mental health scores of problem-oriented patients. Participation in FTI has resulted in a comprehensive health improvement among the study sample.*

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### Conclusion

*Participation in FTI improved FM patients' SOC and coping strategies and provided them with tools to understand the meaning of the disease and thereby accept and manage it.*

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### Key words

fibromyalgia, fibrotherapy, sense of coherence, problem-oriented coping

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## Introduction

Fibromyalgia (FM) is a chronic pain syndrome characterised by diffuse pain, tenderness, sleep disorders, and fatigue. Despite a lack of specific biological markers in fibromyalgia patients (1), FM patients demonstrate disease-related symptoms such as morning stiffness, headaches, swelling, tingling sensation, irritable bowel syndrome, and psychological distress. The pain is chronic and is widespread in all parts of the musculoskeletal system (2-11). The symptom of FM significantly impairs the quality of life and functioning of patients who have it (8) on social, professional, and family aspects, which may also lead to depression and anxiety (12). The physiological manifestation of FM indicates strong intensities in pain modulation (2, 5, 6, 13, 14). The pain in FM is migratory, meaning the localisation of the maximum pain intensity may differ from day to day (15). The prevalence of FM increases with time. In the United States alone, there are about 10 million FM patients of whom 75–90% are women (16). FM is prevalent among 3.2% of the general population in Israel (17). This number increased from 2.6% in 2012 (18). A study conducted among teachers in Israel, showed that 11.4% of the study sample suffered from FM symptoms, most were female teachers (19).

Our study examines the contribution of FTI on coping resources and SOC of female patients with FM who live in the Gaza Envelope in southern Israel and are exposed to security threats. For over two decades, Israeli residents in this area have been facing incessant missile attacks (20, 21) and their lives have transformed from a normative routine to a life primarily conducted under emergencies and frequent escapes to the nearest shelters (22, 23).

The FTI was developed at the Ezra Le'Marpe (Help for Healing) Medical Centre, headed by Rabbi Avraham Elimelech Firer. The treatment plan includes physical activity, empowerment, and mental guidance sessions. The goal of the FTI is to improve the functional level among FM patients and provide them with an emotional response. The treatment plan lasts 30 weeks divided

into three treatment cycles, 10 weeks in each cycle. Each cycle seeks to provide a different response. In the context of living with FM, the narratives of these women may shed light on the contribution FTI had to their coping with the FM.

## Coping under stress

Life often summons situations and events that carry an element of stress created when the person experiences a disparity between the physical or psychological demands of the situation and the resources of his biological, psychological, or social systems (24, 25). Lazarus and Folkman (24) argued that the sense of stress is a subjective phenomenon influenced by the individual's assessment of the situation. According to the authors, stress is an interaction between the environment and human perception (26). The stress depends on the person's assessment according to a) the extent to which the event is perceived as threatening and b) whether he or she can cope with it. The stress responses depend on the extent to which a person values his or her abilities and resources as appropriate and sufficient in the face of a threat and stressful situation (24, 26). Folkman and Lazarus (27) mapped coping strategies to two main types of coping responses: Emotion-oriented coping and problem-oriented coping. Problem-oriented coping is aimed at changing or eliminating the source of stress. The authors identified three problem-oriented coping strategies: taking control, seeking information, and evaluating the pros and cons (28).

## Salutogenic theory and a sense of coherence

The term salutogenesis is related to a variety of meanings presented by Antonovsky in his book *Health, Stress, and Coping* (29). Salutogenesis suggests that life experiences help shape a person's SOC in its most meaningful sense. Life is perceived as meaningful, comprehensible, and manageable. Salutogenesis is a medical approach that focuses on factors that support human health and well-being and not on factors that cause diseases (pathogenesis). Hence, the salutogenic model

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addresses the relationship between health, stress, and coping (29). Similar to the approach by Lazarus and Folkman (24), the salutogenic theory on which the present study is based holds that the person has the power to adapt, adjust and even maintain personal optimism in the face of adverse events, difficulties, and pressures he or she encounters in a lifetime (30, 31). Coherence is seen as an internal coping resource that helps people cope positively with stressful situations and thus helps maintain their mental and physical health (30). SOC addresses the person's approach to situations and stressors, their strength, and their perception of their internal and external world in light of the events and life experiences they accumulate during their life. It is also a fundamental element in the personality that guides the person about all the stimuli they encounter (29, 30). SOC consists of three super-components that contain emotional, cognitive, and behavioural components:

- **Meaningfulness:** the motivational component that expresses the individual's perception of life as having emotional significance. It addresses the extent to which a person's external and internal worlds are perceived as rational, consistent, and predictable;
- **Comprehensibility:** the cognitive component that addresses the extent to which a person perceives the world, and within it, the stress, coping, demands and stimuli that he or she experiences during their life as having cognitive significance (32). A person can create "cognitive sense" and thus perceive the world as a place with an inner order and a particular predictive ability;
- **Manageability:** the behavioural component that addresses the extent to which a person feels he or she has available resources that are compatible with the demands of stressful stimuli they face (30).

Antonovsky (33) argued that coping resources can be internal but can also be "legitimate other": spouses, friends, God, culture, and anything else the person trusts. SOC is a vital resource for promoting health that strengthens

resilience and adaptability and develops a positive state of health (34). The study examines the correlation between SOC and problem-oriented coping among FM patients participating in the FTI to examine whether problem-oriented coping affects SOC and thus affects health metrics. We hypothesise that there will be a positive correlation between problem-oriented coping and SOC so that patients who use problem-oriented coping strategies will report a higher SOC after participating in FTI. Another hypothesis is that after participating in the FTI, psychological distress and physiological indicators (increase in endurance) will decrease, while the functional ability among women who use problem-oriented coping strategies will improve.

#### **Material and methods**

The study was conducted with the mixed methods approach, including quantitative and qualitative analyses. This approach promotes methodological integration or a combination of quantitative and qualitative data in a single study. The origin of studies employing mixed methods is in the social sciences and has expanded into health and medical sciences, including nursing, family medicine, social work, mental health, and such (35).

#### *Quantitative sample*

A cohort of 96 FM female patients aged 19–75 participated in the quantitative research. The study participants have been diagnosed with FM for over a year and live in the Gaza Envelope area. All participants underwent the FTI programme. Sampling women guaranteed the maximum variance with different durations of FM and different ages, religious statuses, and marital statuses.

The criteria for inclusion in the quantitative research included women diagnosed with FM, who lived in an area under a security threat, and who participated in 10 or more sessions of the FTI programme.

The criteria for exclusion include patients who were not diagnosed with FM and those who did not attend at least 10 FTI sessions.

#### *Qualitative sample*

The qualitative research population consists of 16 FM female patients ages 29–64 who participated in the qualitative research. All patients were diagnosed with the disease for a year or more, lived in the Gaza Envelope area, and participated in the fibrotherapy programme at the "Ezra Le'Marpe" rehabilitation centre headed by Rabbi Firer. All of the participants in this section also participated in the quantitative research. The maximum variance was guaranteed by sampling women with different FM durations of FM, different ages, different religious statuses, and different marital statuses.

The criteria for inclusion in the quantitative research included women who also participated in the quantitative research attended the entire FTI programme (30 sessions).

The criteria for exclusion include patients who did not participate in quantitative research and patients who participated in quantitative research but did not complete the FTI programme.

#### *Socio-demographic data*

##### *- Sense of Coherence Scale questionnaire (SOCs)*

SOC was measured with 13 items questionnaire with predictive validity (30). The reliability of the questionnaire in similar studies showed that Cronbach's alpha coefficient is 0.85 (36).

##### *- Health Survey (SF-36)*

The short-form health survey measured patients' quality of life. The questionnaire has eight aspects of health status: physical functioning, social functioning, handicaps stemming from physical health state, handicaps due to emotional problems, physical pain, mental health, vitality, and general perception of health. The questionnaire was tested and validated (37). Cronbach's alpha coefficient of its dimensions ranged from 0.76–0.93.

##### *- The scale of the Psychological Distress questionnaire*

The abbreviated version of the scale of psychological distress questionnaire (38, 39) has six items on a four-point scale that examines stress and psychological distress and addresses the fre-

quency and occurrence of known psychosomatic symptoms. Five items are from Langer's scale (40) for measuring psychological equilibrium. A reliability test of the questionnaire in similar studies revealed that Cronbach's alpha coefficient is 0.75.

*- The Brief Cope*

The Brief COPE (41) questionnaire has 28 statements on coping with stressful situations. The reliability of the questionnaire in similar studies is problem-oriented - 0.85; emotion-oriented - 0.67; mental disengagement - 0.65 (42).

*- Exposure to stressful events*

The degree of exposure to stressful events was measured by five items, in which patients were asked to answer "yes" or "no". A scale for the level of exposure was constructed by connecting the items (36).

*- Fibromyalgia Impact Questionnaire-Revised (FIQR)*

FIQR measured the FM symptoms on fields of action, overall impact, and symptoms and included: memory, tenderness to touch, balance, and environmental sensitivity statements. All questions are rated on a scale of 0–10. Cronbach's alpha coefficient for FIQR is 0.95, with correlations between items ranging from 0.56 to 0.93 (43).

*- 6mw Test*

The cardiopulmonary endurance test provides a global assessment of response to exercise, objective determination of ability and functional impairment, the appropriate strength required for prolonged exercise, quantification of exercise-limiting factors, and the definition of basic pathophysiological mechanisms such as the contribution of the various organ systems involved. The 6mw test examines the total distance the patient walked. In some clinical states, the 6 mw test provides information that may better measure a patient's ability to perform daily activities as a correlation to formal quality of life measurement (44).

*- Semi-structured interviews*

Qualitative data collection was con-

ducted through in-depth semi-structured interviews. The in-depth interview allows the interviewer to delve deeper into social and personal matters (45–48). These interviews may provide information on a wide range of research questions, including the question concerning this study, how pain is perceived by patients with chronic disease (49).

*Data analysis*

The data obtained from the questionnaires were coded in the SPSS software. The hypotheses were first tested using correlations by Pearson tests regarding the study variables among the sample. Regressions were then performed for each of the dependent variables. Patients who did not respond to certain variables were not included in the analyses referring to these variables.

The qualitative research layout is based on the narrative of the disease. Therefore, the phenomenological-narrative research method was selected for this study (50).

**Results**

In conclusion, the findings matched the hypothesis in psychological distress, so that problem-oriented patients reported a decrease in psychological distress after FTI. However, it should be noted that this decrease was not unique to this group of patients since a significant decrease was also reported by patients who were not problem-oriented.

The improvement that occurred after FTI among problem-oriented patients in functional ability scales can be confirmed: There was a decrease in FM symptoms (which occurred among the two groups) and an increase in quality of life-related to health that was unique to the group of problem-oriented patients. Apart from the VAS scale that was measured before FTI, all the physiological scales measured before and after the FTI showed a significant improvement among the problem-oriented patients, which also occurred among the group of patients who are not problem-oriented.

*Qualitative results*

*- The meaningfulness of the disease*

The first component is the meaningfulness of the disease, how vital recov-

ery and coping are for the patient, and whether the demands pose challenges worthy of engagement and coping, alongside the belief that life's events are valuable and there is a good reason, or purpose, to care about what takes place. FM is characterised by widespread pain. We can learn from the interviewees that they feel pain in different places in their bodies.

*"When I say to myself that it hurts me, I also say, 'a certain area hurts me', such as my hand hurts, my back hurts me." (Interviewee 1)*

Interviewee 2 also focused on the meaning of pain and its essence, *i.e. pain* and not *suffering*:

*"At first for me, it was suffering. I was suffering, it felt as though I was suffering at every moment of my life. Now I'm not suffering, it just hurts." (Interviewee 2)*

By referring to the pain, the patients could transform it into a physical state rather than a mental state of suffering. The space allocated to the choice (to cope with the pain) was more expansive than the space the pain captured in their life.

The core concept of the meaningfulness of the salutogenic theory (29, 33, 51) is manifested in the power of decision:

*"I decided that I would not be this grandmother, the one who has no strength to stand up. I want to be there for my grandchildren. And now I am." (Interviewee 3)*

*- The comprehensibility of the disease*

Comprehensibility considers whether stimuli are perceived as orderly, coherent, structured, and transparent information instead of chaotic and distorted information. One of the main issues the interviewees faced was comprehending the disease. Their difficulty in comprehending stemmed mainly from a lack of comprehending the course their lives will take from now on and their difficulty in accepting their physical condition. Thus, they chose to refrain from sharing it with their surroundings. When they began FTI, which prompted them to accept the disease and share it with others, and as they realised that other women are in a similar state, they



**Table I.** Socio-demographic characteristics of the quantitative study sample (96 patients).

Age	Religiousness	Marital status	n. of children	Years of diagnosis					
19-30	6	Secular	33	Single	9	0	9	1	6
32-40	12	Traditional	29	Married	69	1-2	20	2-5	40
42-50	19	Religious	24	Divorced / Separated	15	3-5	52	6-10	31
51-60	29	Orthodox	10	Widow	3	5+	16	11-30	19
61-70	22								
71-75	8								

**Table II.** Mean differences in SOC before and after FTI according to the level of change in coping patterns (n=96)<sup>1</sup>.

	SOC before FTI (n=96)		SOC after FTI (n=96)		t (df)
	M	SD	M	SD	
Do not use problem-oriented strategies	4.04	0.78	4.07	0.63	0.194-39
Use problem-oriented strategies	4.12	1.49	4.43	1.18	2.463-55

<sup>1</sup>The comparison analysis indicated a significant difference between SOC before and after FTI among problem-oriented patients (t (55)=2.46, p=0.02), so these patient reported a higher SOC after FTI. No significant difference was in SOC before and after FTI among patients who are not problem-oriented (p=0.85). Hence, the first research hypothesis was confirmed.

**Table III.** Mean differences in the psychological distress scores before and after FTI according to levels of coping patterns (n=96)<sup>1</sup>.

	Before FTI (n=96)		After FTI (n=96)		t (df)
	M	SD	M	SD	
Problem-oriented patients	3.19	0.58	3.00	0.42	1.882
Psychological distress					(39)
Patients who are not problem-oriented	3.01	0.70	2.78	0.61	2.831**
					(55)

<sup>1</sup>The differences in the psychological distress scores indicate that problem-oriented patients showed a decrease in the level of psychological distress after FTI (t (55)=2.83, p=.006), while patients who are not problem-oriented did not demonstrate a significant decrease in psychological distress (p=0.08). \*\*p<0.01.

began to experience order, as opposed to the chaos they experienced before. Moreover, they also began to design a pathway to cope for themselves from this order.

*“Before [FTI], I didn’t know how to pinpoint what causes me this. Not only the mental stress but also the physical stress. It was difficult for me to explain it all the time”.* (Interviewee 4)

*“I kept asking myself, where does it hurt? I’ve gone through a change in perception. Now I understand my body how it works. Thus, I can also help myself, and I understand the place within me where I found it difficult to ask for help.”* (Interviewee 5)

The interviewees emphasised the significance of group meetings in comprehending the disease and in helping to alleviate the feelings of loneliness that accompanies coping with the disease:

*“I was able to open up and learn from everyone. Each person coped differently. I tried to learn other ways to cope as well. The group meetings helped me a lot. It made me feel that I’m not alone, that I’m not the only one who is having these effects.”* (Interviewee 6)

*- Manageability: the management of the disease*

Disease management is an essential process for people affected by a chronic health condition to have the skills and resources they need to manage their disease on a day-to-day basis better. Disease management organises day-to-day coping and allows the patients more control over their lives.

The interviewees said that now they manage the disease by themselves:

*“I try to manage [the disease] since once I got to know my body and my*

*pain, I can cope with it.”* (Interviewee 8)

*“Most of the time, I manage it. I’m meticulous about taking my medication and about gymnastics and my agenda. I’m also conscientious about my rest”.* (Interviewee 9)

*“I believe that I’m in control.”* (Interviewee 10)

Disease management is part of what drove the interviewees. They were aware that living with FM is a chronic state, and therefore they accepted the frequent changes in their body, which are most often manifested in pain. Most described an agenda of activities as a way of managing the disease:

*“Once I realised that water benefits me, and helps me when I’m in pain, I continued from there with full force, I went back to the water, took a grip on myself and tried to adopt a healthy lifestyle and proper nutrition.”* (Interviewee 11)

The management of the disease stemmed from the insight that surviving in the face of the disease is a constant struggle daily:

*“I won’t let it run my life.”* (Interviewee 12)

*“There are times when I feel fatigued for a day or two, but in the end, I make myself get up”.* (Interviewee 13)

*I don’t allow the fatigue to take hold of me.”* (Interviewee 14)

The interviewees refused to fall back into the same condition that they were before FTI since they wanted to avoid going back to the times when they felt depressed:

*“I keep saying to myself ‘I will go against the pain; I won’t let it break me because I don’t want to go into depression and stay in bed.”* (Interviewee 15)

The interviewees communicated that they were in a constant struggle to manage the disease:

**Table IV.** According to coping pattern levels, mean differences in functional ability scores (functional difficulty) before and after FTI (n=96).<sup>1</sup>

	Before FTI (n=96)		After FTI (n=96)		t (df)
	M	SD	M	SD	
Patients who are not problem-oriented FM symptoms	7.37	1.23	6.66	1.23	5.015*** (39)
problem-oriented patients	7.11	1.33	6.38	1.64	5.101*** (55)
Patients who are not problem-oriented Quality of life-health	91.95	7.5	93.48	7.87	0.968 (39)
problem-oriented patients	89.61	7.99	95.39	4.19	4.869*** (55)

\*\*\*p<0.001.

<sup>1</sup>The findings show that there was a decrease in the level of difficulty caused by FM symptoms after FTI among problem-oriented patients (t(55)=5.101, p<0.001) and also among patients who are not problem-oriented (t(39)=5.015, p<0.001). In the analysis of the second measurement of functional ability, health-related quality of life assessment, significant differences were found among problem-oriented patients (t(55)=4.87, p<0.001), so that among this group, there was an improvement in health-related quality of life assessment among women who are not problem-oriented (p=0.34).

**Table V.** Mean differences in physiological scores—first measurement (pre-exertion) before and after FTI by the level of coping patterns (n=96).<sup>1</sup>

		Before FTI (n=96)		After FTI (n=96)		t (df)
		M	SD	M	SD	
Patients who are not problem-oriented	Distance	368.93	88.23	394.45	89.83	4.058*** (39)
Problem-oriented patients		363.84	105.84	386.41	91.33	3.484*** (55)
Patients who are not problem-oriented	VAS	7.15	2.15	6.2	1.98	4.251*** (39)
Problem-oriented patients		5.75	2.38	5.68	2.14	0.27 (55)
Patients who are not problem-oriented	MBS	9.55	2.72	8	2.65	3.827*** (39)
Problem-oriented patients		9.81	2.97	8.65	2.91	2.850** (55)

\*\*p<0.01, \*\*\*p<0.001.

<sup>1</sup>The findings showed that after FTI, there was an increase in the distance scale pre-exertion among problem-oriented patients (t(55)=3.48, p<0.001) and also among patients who are not problem-oriented (t(39)=4.06, p<0.001). The findings show that after FTI, there was a decrease in the physiological scale - VAS pre-exertion among patients who are not problem-oriented (t(39)=4.25, p<0.001), but no significant difference was among problem-oriented patients (p=0.78). However, it should be noted that problem-oriented patients had a significantly lower scale of VAS before and after FTI than patients who are not problem-oriented. Perhaps the findings can be explained by the qualitative findings that showed that problem-oriented patients reported a high practice of physical exercises.

The findings show that after FTI, there was a decrease in the physiological scale - MBS pre-exertion, among problem-oriented patients (t(55)=2.85, p<0.01) and also among patients who are not problem-oriented (t(39)=3.83, p<0.001).

*“I try [to manage the disease] it starts every day anew” (Interviewee 16).*

However, within this struggle, they emerge victorious since they no longer succumb to pain and disease but have taken control of their lives and managed them.

**Discussion**

This study sought to examine whether SOC among FM problem-oriented

patients increased after participation in FTI and whether SOC among FM patients who changed their coping strategies to problem-oriented coping increased. The quantitative analysis found a change in the level of SOC before and after participation in FTI. An increasing trend in SOC was observed after participating in FTI, thus, confirming the first hypothesis. Also, a problem-oriented coping pattern

emerged after participating in FTI. The data further show that according to the second study hypothesis, among problem-oriented patients, the levels of psychological distress decreased, and the physiological indicators (endurance) increased and improved functional ability. In other words, following FTI, there was an improvement in problem-oriented patients’ physical and mental health scores. Participation in FTI has resulted in a comprehensive health improvement among the study sample.

These findings are partially consistent with Weissbecker *et al.* (52), who demonstrated that SOC does not mediate the effects of FM symptoms on psychological distress. However, our study found that the SOC scores improved after FTI. Antonovsky (29) argued that SOC develops between childhood and age 30 and is less likely to change after that. According to the author, it is utopian to expect that a session, or a series of therapy sessions, could significantly change SOC. FTI, in effect, fulfilled Antonovsky’s utopian vision that a series of therapy sessions can change SOC. The findings are in line with other studies which found that SOC can change over time and psychotherapy sessions can improve SOC (53, 54). One of Antonovsky’s SOC (30) components is meaningfulness, the belief that there are valuable things in life worth striving for, which is reflected in one of the interviewee’s copings with FM when she first became a grandmother. Most of the participants in the interviews are mature women over the age of 40, and it is evident that they have come a long way and transformed their coping strategies to problem-oriented coping while also demonstrating salient components of SOC. The comprehensibility component, for example, is manifested in the fact that the interviewees terminated the war they were waging on their bodies and realised that their bodies did not betray them but rather was betrayed by them, primarily by ignoring the signs of pain. The interviewees were aware that they manage the disease most of the time. Tattersall (55) found that patients’ knowledge and experience can become treatment resources and improve their

**Table VI.** Mean differences in physiological scales—second measurement (post-exertion) before and after FTI according to the levels of coping patterns (n=96)<sup>1</sup>.

		Before FTI (n=96)		After FTI (n=96)		t (df)
		M	SD	M	SD	
Patients who are not problem-oriented	Distance	365.5	98.74	390.93	100.8	3.988*** (39)
Problem-oriented patients		365.73	103.85	386.43	90.21	3.438** (55)
Patients who are not problem-oriented	VAS	7.83	2.05	6.43	2.27	4.820*** (39)
Problem-oriented patients		7.57	1.76	6.93	1.7	2.624* (55)
Patients who are not problem-oriented	MBS	9.28	2.84	8.4	3.22	1.925* (39)
Problem-oriented patients		10.2	2.8	9.05	2.79	3.623** (55)

<sup>1</sup>The findings show that after FTI, there was an increase in the distance scale post-exertion among problem-oriented patients (t(55)=3.44, p<0.01) as well as among patients who are not problem-oriented (t(39)=3.99, p<0.001). The post-exertion VAS scale showed a decrease in its level after FTI among problem-oriented patients (t(55)=2.62, p<0.05) and also among patients who are not problem-oriented (t(39)=4.82, p<0.001). The findings show that after FTI, there was a decrease in the physiological scale - MBS post-exertion among problem-oriented patients (t(55)=3.62, p<0.01), and marginal significance was among patients who are not problem-oriented (t(39)=1.92, p=0.06):

quality of life when disease management enables them greater control over their lives.

Antonovsky (33) argued that the component of meaningfulness in SOC is essential as it motivates the individual to give meaning to their environment and empowers him or her, and therefore, SOC can positively affect coping scores (56, 57). Although the quantitative study sample did not show a significant level of SOC after FTI, they did show a significant level of problem-oriented coping following the intervention, which reduced the indicators of psychological distress and improved the health indicators. According to the quantitative findings in our study, FM patients have a low SOC. However, after a series of FTI meetings designed to empower them, their SOC increased. Empirically, the level of SOC that increased was not significant, but the qualitative findings show a very high SOC among the interviewees. This gap can be explained by the fact that the SOCS questionnaire does not provide complete answers to a wide range of situations in which the three components of SOC can be expressed. Thus, in contrast, the interviews provided a platform for the study participants to expand and elucidate their experiences and narrate their feelings and emotions in detail. It reinforces

the idea that mixed methods research can provide a broader prism for a given phenomenon, support the quantitative findings and provide them with an additional perspective.

**Conclusion**

It can be concluded that although FM is still an “ambiguous region” in the context of the factors of the disease’s outbreak, as there are no tailored empirical tests yet and the diagnosis is made mainly by negating parallel diseases, FM patients can still be helped by intervention programmes. The study participants, who are FM patients, not only showed an improvement in their health condition, but during the emotional process, they were able to explore their feelings, talk about the disease and accept it. Thus, there is a theoretical breadth to examine intervention programmes that will engage in empowerment and encouragement to develop problem-oriented coping strategies among FM patients.

It can further be concluded that participation in the FTI can improve the coping strategy of FM patients as well as provide them with tools to understand the meaning of the disease, comprehend it and manage it. By developing these three SOC components, the study’s patients who reported feeling a

lack of control over their medical condition and their lives in particular also reported improved physical and mental health metrics and restored significant control over their lives.

Although empirically we found a change at a lower-than-expected SOC level following FTI among FM patients, after adding the insights from our qualitative analysis, we can observe a significant cognitive and behavioural change expressed in meaningfulness, comprehensibility, and management of the disease. Thus, to understand the meaning of chronic disease for patients, one must take, alongside the empirical tests, the feelings, and perceptions of the patients. A perspective encompassing both levels of research serves to better interpret the disease picture.

**References**

1. SARZI-PUTTINI P, GIORGI V, ATZENI F *et al.*: Fibromyalgia position paper. *Clin Exp Rheumatol* 2021; 39 (Suppl. 130): S186-93.
2. ARROYO JF, COHEN ML: Abnormal responses to electrocutaneous stimulation in fibromyalgia. *J Rheumatol* 1993; 20: 1925-31.
3. BUSKILA D, NEUMANN L, ODES LR, SCHLEIFER E, DEPSAMES R, ABU-SHAKRA M: The prevalence of musculoskeletal pain and fibromyalgia in patients hospitalized on internal medicine wards. *Semin Arthritis Rheum* 2001; 30: 411-7.
4. CLAUW DJ, ARNOLD LM, MCCARBERG BH: The science of fibromyalgia. *Mayo Clinic Proceedings* [Internet]. 2011 [cited 2020 Nov 22];86(9):907–11. Available from: /pmc/articles/PMC3258006/?report=abstract
5. GIBSON SJ, LITTLEJOHN GO, GORMAN MM, HELME RD, GRANGES G: Altered heat pain thresholds and cerebral event-related potentials following painful CO2 laser stimulation in subjects with fibromyalgia syndrome. *Pain* 1994; 58: 185-93.
6. KOSEK E, HANSSON P: Modulatory influence on somatosensory perception from vibration and heterotopic noxious conditioning stimulation (HNCS) in fibromyalgia patients and healthy subjects. *Pain* 1997; 70: 41-51.
7. LORENZ J, GRASEDYCK K, BROMM B: Middle and long latency somatosensory evoked potentials after painful laser stimulation in patients with fibromyalgia syndrome. *Electroencephalogr Clin Neurophysiol* 1996; 100: 165-8.
8. SLUKA KA, CLAUW DJ: Neurobiology of fibromyalgia and chronic widespread pain. *Neuroscience* 2016; 338: 114-29.
9. YUNUS MB: Towards a model of pathophysiology of fibromyalgia: Aberrant central pain mechanisms with peripheral modulation. *J Rheumatol* 1992; 19: 846-50.
10. FINAN PH, ZAUTRA AJ: Fibromyalgia and Fatigue: Central Processing, Widespread Dysfunction. *PMR* 2010; 2: 431-7.



11. BAZZICHI L, GIACOMELLI C, CONSENSI A *et al.*: One year in review 2020: Fibromyalgia. *Clin Exp Rheumatol* 2020; 38: S3-8.
12. BUSKILA D, ABRAMOV G, BITON A, NEUMANN L: The prevalence of pain complaints in a general population in Israel and its implications for utilization of health services. *J Rheumatol* 2000; 27: 1521-5.
13. KOSEK E: Disturbances of Pain Perception in Fibromyalgia. In: LAUTENBACHER S, FILLINGIM RB (Eds.): *Pathophysiology of Pain Perception*. Springer, 2004; 77-91.
14. PETZKE F, CLAUW DJ, AMBROSE K, KHINE A, GRACEY RH: Increased pain sensitivity in fibromyalgia: Effects of stimulus type and mode of presentation. *Pain* 2003; 105: 403-13.
15. VAILLANT GE: Ego mechanisms of defense: A guide for clinicians and researchers. *American Psychiatric Association*, 1992.
16. MATALLANA L: Lynne Matallana Interviews Dr. Afton Hassett for Awareness Day 2021 I [Internet]. The National Fibromyalgia Association. 2021. Available from: <https://fmaware.net/lynne-matallana-interviews-dr-afton-hassett-for-awareness-day-2021/>
17. GREENBAUM H, WEIL C, CHODICK G, SHALEV V, EISENBERG VH: Evidence for an association between endometriosis, fibromyalgia, and autoimmune diseases. *Am J Reprod Immunol* 2019; 81: e13095.
18. ABLIN JN, OREN A, COHEN S *et al.*: Prevalence of fibromyalgia in the Israeli population: A population-based study to estimate the prevalence of fibromyalgia in the Israeli population using the London Fibromyalgia Epidemiology Study Screening Questionnaire (LFESSQ). *Clin Exp Rheumatol* 2012; 30: 39-43.
19. BUSKILA Y, BUSKILA D, JACOB G, ABLIN JN: High prevalence of fibromyalgia among Israeli school teachers. *Clin Exp Rheumatol* 2019; 37: S21-6.
20. ORTAL E: Israel's strategic border challenge – the growth of the tunnel threat under the cover of rockets. *Res Militaris* 2019; ERGOMAS: 1-14.
21. ORTAL E, PELEG D: "That which is small shall become big": Missing the formations at the General Staff: The tunnels threat and the subterranean network as a test case. Among the Poles: *The IDF Journal of Martial Arts* 2016; 22-23: 34-61.
22. ELRAN M, ISRAELI C, PADAN C, ALTCHULER A: Resilience in the Gaza strip in protective edge operation. *Army and Strategy* 2015; 7: 5-26.
23. SOLOMON Z, YITZHAKIL, LEVIN J: Living in the shadow of missiles: Assessment of needs and effectiveness of intervention. Tel Aviv, Tel Aviv University; 2016.
24. LAZARUS RS, FOLKMAN S: Stress, appraisal, and coping. New York, NY: Springer Publishing Company; 1984.
25. CASALE R, SARZI-PUTTINI P, BOTTOR *et al.*: Fibromyalgia and the concept of resilience. *Clin Exp Rheumatol* 2019; 37 (Suppl. 116): S105-13.
26. SARAFINO EP, SMITH TW: *Health Psychology: Biopsychosocial Interactions*. 9th ed., John Wiley & Sons Inc, 2017.
27. FOLKMAN S, LAZARUS RS: Coping as a mediator of emotion. *J Pers Soc Psychol* 1988; 54: 466-75.
28. HARRINGTON R: *Stress, health & well-being thriving in the 21st century*. Wadsworth Cengage Learning, 2013.
29. ANTONOVSKY A: Health, stress, and coping. The Jossey-Bass social and behavioral science series. Jossey-Bass, 1979.
30. ANTONOVSKY A: Unraveling the mystery of health: how people manage stress and stay well. In: MARKS DF (Ed.): *The Health Psychology Reader*. Jossey-Bass, 2002: 127-39.
31. ANTONOVSKY A: The salutogenic model as a theory to guide health promotion. *Health Promot Int* 1996; 11: 11-8.
32. KRISTOFFERZON ML, ENGSTRÖM M, NILSSON A: Coping mediates the relationship between sense of coherence and mental quality of life in patients with chronic illness: a cross-sectional study. *Qual Life Res* 2018; 27: 1855-63.
33. ANTONOVSKY A: The Salutogenic model as a guiding theory in health promotion. *Trends* 1998; 39: 171-81.
34. ERIKSSON M, LINDSTRÖM B: Antonovsky's sense of coherence scale and the relation with health: A systematic review. *J Epidemiol Community Health* 2006; 60: 376-81.
35. CRESWELL JW, PLANO CLARK VL: *Designing and conducting mixed methods research*. 3rd ed., Sage Publications, 2017.
36. BRAUN-LEWENSOHN O: Prevalence of post-traumatic stress and emotional and behavioral problems among Israeli adolescents exposed to ongoing terrorism. *Int J Psychol Res* 2010; 5: 117-44.
37. LEWIN-EPSTEIN N, SAGIV-SCHIFTER T, SHABTAI EL, SHMUELI A: Validation of the 36-Item Short-Form Health Survey (Hebrew Version) in the adult population of Israel. *Medi Care* 1998; 36: 1361-70.
38. BEN-SIRA Z: A scale of psychological distress. *Psychol Psychiatry Behav* 1979; 4: 337-56.
39. SAGY S, DOTAN N: Coping resources of maltreated children in the family: a salutogenic approach. *Child Abuse Negl* 2001; 25: 1463-80.
40. LANGER P: Compulsivity and response set on the Structured Objective Rorschach Test. *J Clin Psychol* 1962; 18: 299-302.
41. CARVER CS: You want to measure coping but your protocol's too long: Consider the brief COPE. *Int J Behav Med* 1997; 4: 92-100.
42. SAGY S, BRAUN-LEWENSOHN O: Adolescents under rocket fire: when are coping resources significant in reducing emotional distress? *Glob Health Promot* 2009; 16: 5-15.
43. BENNETT RM, FRIEND R, JONES KD, WARD R, HAN BK, ROSS RL: The revised fibromyalgia impact questionnaire (FIQR): Validation and psychometric properties. *Arthritis Res Ther* 2009; 11: 1-14.
44. CRAPO RO, CASABURI R, COATES AL *et al.*: ATS statement: Guidelines for the six-minute walk test. *Am J Respir Crit Care Med* 2002; 166: 111-7.
45. ADAMS WL, MCILVAIN HE, LACY NL *et al.*: Primary care for elderly people: Why do doctors find it so hard? *Gerontologist* 2002; 42: 835-42.
46. CHIRBAN JT: *Interviewing in depth: the interactive-relational approach*. Sage Publications, 1996.
47. JOHNSON JM: In-depth interviewing. In: GUBRIUM J, HOLSTEIN J (Eds.): *Handbook of Interview Research*. Sage Publication, 2002: 103-19.
48. RUBIN HJ, RUBIN IS: *Qualitative interviewing: The art of hearing data*. 2nd ed., Sage Publication, 2005.
49. DICICCO-BLOOM B, CRABTREE BF: The qualitative research interview. *Med Educ* 2006; 40: 314-21.
50. SHKEDI A: *Words that try to touch: theory and application*. Ramot Publishing (Hebrew), 2007.
51. ANTONOVSKY A: The structure and properties of the sense of coherence scale. *Soc Sci Med* 1993; 36: 725-33.
52. WEISSBECKER I, SALMON P, STUDDTS JL, FLOYD AR, DEDERT EA, SEPTON SE: Mindfulness-based stress reduction and sense of coherence among women with fibromyalgia. *J Clin Psychol Med Settings* 2002; 9: 297-307.
53. CALLAHAN LF, PINCUS T: The sense of coherence scale in patients with rheumatoid arthritis. *Arthritis Rheum* 1995; 8: 28-35.
54. BINDER HP, MESENHOLL-STREHLER E, PAß P, CHRISTIAN ENDLER P: Sense of coherence (SOC) among psychotherapists in Austria, differentiated according to number of individually completed training therapy sessions. *Sci World* 2006; 6: 2196-9.
55. TATTERSALL R: The expert patient: A new approach to chronic disease management for the twenty-first century. *Clin Med* 2002; 2: 227-9.
56. HAMMOND A, NIEDERMANN K: Patient education and self management. In: DZIEDZIC K, HAMMOND A (Eds.): *Rheumatology: Evidence-Based Practice for Physiotherapists and Occupational Therapists*. Churchill Livingstone, 2010: 77-97.
57. KAPLAN G: Biomedicine. In: KEMPF-LEONARD K (Ed.): *Encyclopedia of Social Measurement*. Elsevier Inc., 2004: 189-201.