

Effects of connective tissue massage and kinesiotaping in patients with fibromyalgia

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ABSTRACT

Background: Fibromyalgia (FM) is a common soft tissue rheumatic disease. There is no established treatment plan for FM. Current treatments primarily focus on controlling symptoms and improving the quality of life. The aim of our study was to determine how connective tissue massage (CTM) and kinesiotaping (KT) affect pain and depression in patients with fibromyalgia, and to compare their effects on quality of life.

Methods: Thirty-four patients diagnosed with fibromyalgia were included. Participants divided into two groups. Group 1: CTM (n = 17, mean age = 35.47 ± 6.84 years), Group 2: KT (n = 17, mean age = 34.00 ± 5.46 years). This study was initiated by obtaining sociodemographic information. Pain (Visual Analogue Scale (VAS)), pain characteristics (McGill Pain Questionnaire), disease impact on patients (Fibromyalgia Impact Questionnaire (FIQ)), depression (Beck's Depression Inventory (BDI)), and quality of life (Short Form-36 (SF-36)) were evaluated. All participants received electrotherapy (TENS and infrared treatment) for 25 min, 5 days a week for 4 weeks. CTM was applied 3 days a week, KT was applied 2 days a week for 4 weeks.

Results: A significant improvement with very large effect size was found in VAS, McGill, FIQ, BDI, and SF-36 variables in both groups (p < 0.05). The change after 4 weeks of treatment was similar between groups in terms of all parameters (p > 0.05).

Conclusion: Both CTM and KT improved pain, disease effects depression, and quality of life. These two interventions, which are not superior, can be added to the treatment program for patients with fibromyalgia.

1. Introduction

Fibromyalgia (FM) is a common soft tissue rheumatic disease worldwide (Bhargava and Hurley, 2022; Berardi et al., 2021; Cabo-Meseguer et al., 2017). There is no known cause or pathophysiology for FM, despite years of investigation. It is referred to as a syndrome that is characterized by widespread chronic musculoskeletal pain (lasting longer than three months) and hyperalgesia at specific “tender points” (Häuser and Fitzcharles, 2018; Wolfe et al., 2016). It is also common to see accompanying psychosomatic symptoms such exhaustion, sleep difficulties, anxiety, depression, sadness, cognitive dysfunction, headaches, and gastrointestinal issues (Góes et al., 2012). These causes have been linked to a decline in the patients’ functional capacity as well as

their quality of life (Álvarez-Gallardo et al., 2019; Wolfe et al., 1990).

There is no established gold standard FM treatment plan. Current treatments primarily focus on controlling symptoms and improving quality of life (Yunus, 2008; Lladser et al., 2022). The treatment strategy of fibromyalgia requires a comprehensive multidisciplinary approach consisting of pharmacological measures, lifestyle changes, and complementary approaches. Pharmacological therapy is one of the most recommended, but it produces some side effects (Tzadok and Ablin, 2020). Studies with non-pharmacological treatments focusing on physical therapy have become alternative treatments with lower or no side effects to patients in recent years (Macfarlane et al., 2017).

FM is treated with a variety of physical therapy techniques including massage, acupuncture, biofeedback, thermal and electrophysiological

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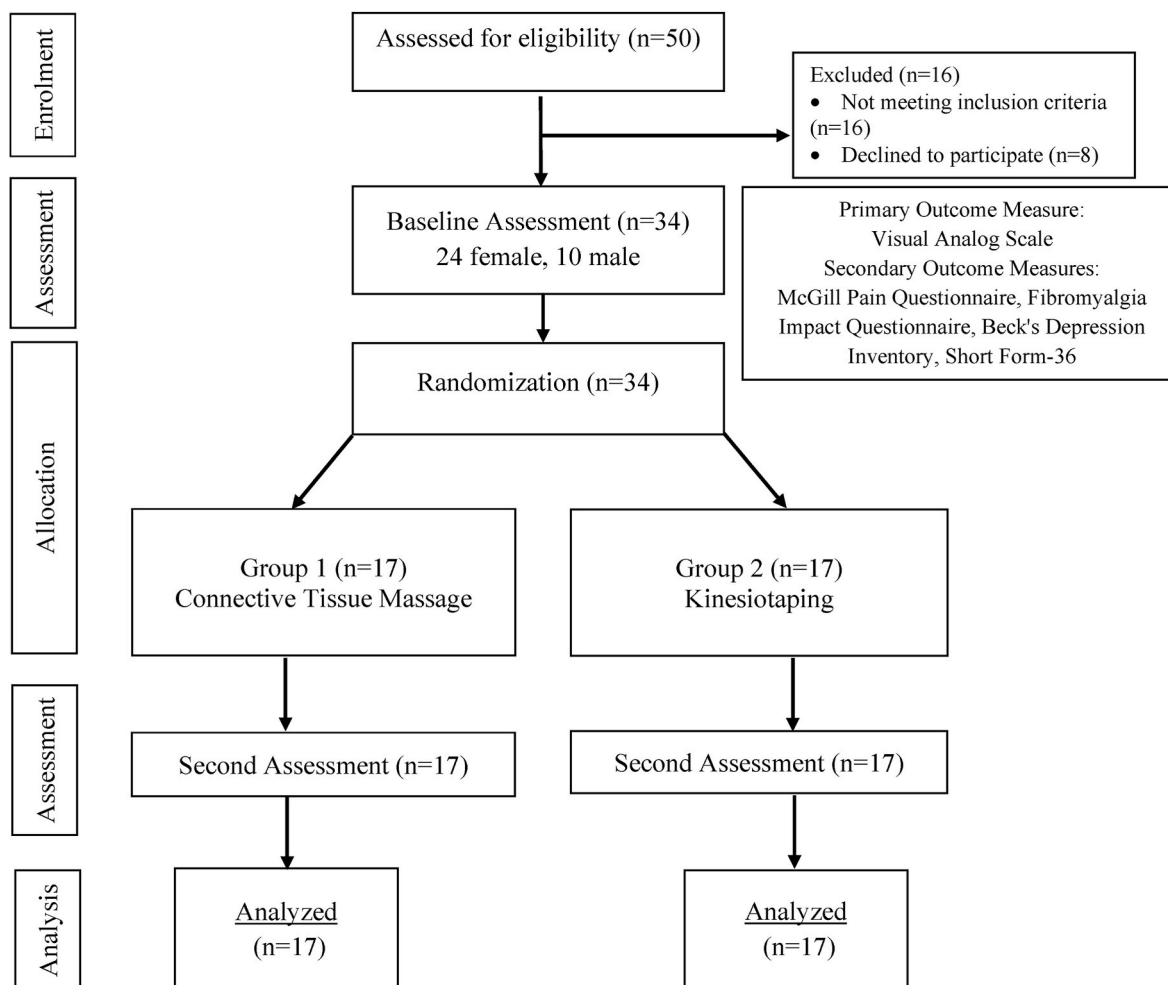


Fig. 1. Flow diagram for subjects.

agents, hydrotherapy/spa therapy, kinesiotaping (KT), and therapeutic activities (Celenay et al., 2020). Connective tissue massage (CTM), a complementary physical therapy intervention, is known to facilitate the treatment of some soft tissue pathologies (Goats and Keir, 1991). CTM, which differs from traditional massage in terms of both its technical and physiological effects, is considered a treatment that reduces the tension of the connective tissue and increases the endorphin in plasma (Akbayrak et al., 2001). The manipulation of skin and subcutaneous tissues also positively affects other tissues. Increased blood flow through neuronal reflexes in the affected area (Akbayrak et al., 2002), may reduce the pain. KT is a therapeutic taping technique that is applied to the treatment of several diseases in the literature (Jaron et al., 2021). It is hypothesized that KT provides effects like pain relief, edema reduction via improving local blood flow, and joint alignment correction (Ouyang et al., 2018). Although the effects of KT on musculoskeletal or soft tissue disorders have been widely studied (López-Ruiz et al., 2019), only a few studies have investigated the effects of KT on FM. The aim of our study is to investigate CTM and KT applications' effects on pain, disease impact, depression, and to compare their effects on quality of life in patients with fibromyalgia.

2. Material and method

2.1. Study design and participants

Our study received ethical approval with the number 123, of the Clinical Research Ethics Committee of Marmara University, and was

conducted in accordance with the Declaration of Helsinki. The clinical registration number for the study was obtained from [ClinicalTrials.gov](https://clinicaltrials.gov), the online registration system of clinical studies (CTR No: NCT05897931).

The study was designed as single blind, randomized controlled study. The inclusion criteria were being aged between 25 and 55 years, having no problem in communicating and understanding, not having received any treatment for fibromyalgia in the last 6 months, and volunteering to participate in the study. The volunteered patients visiting the outpatient clinic of the Department of Physiotherapy and Rehabilitation, Faculty of Health Science, Yeditepe University, were recruited to participate in this study. All participants signed informed consent forms.

34 patients are diagnosed by a specialist physician as meeting the fibromyalgia diagnostic criteria of the ACTTION-APS Pain Taxonomy (AAPT) were included (male:4, female:30) (Wolfe et al., 2016). Inclusion criteria were being diagnosed with FM between the ages of 25–55, be a volunteer participant in the research, being able to communicate comfortably, acting independently. Exclusion criteria were having had a surgical operation within the last year, having a skin disease currently, accompanied by other diseases, being addicted to drugs or alcohol, and using medicine (etc. antidepressants) and patients who did not comply with the treatment program.

2.2. Sample size calculation

We calculated the sample size with the G*Power program. We chose 90% power and 0.05 significant level with effect size (dz) 0.52 (Chen



Fig. 2. Connective tissue massage.

et al., 2017) for VAS as the primary outcome. We found 34 for the total sample. We divided participants into two groups with 1:1 randomization using the single block method: Group 1: Connective Tissue Massage (n = 17), Group 2: Kinesiotaping (n = 17).

2.3. Randomization

In order to eliminate the gender effect, we divided the volunteer male and female patients into two groups equally. The groups were determined by selecting a paper from the randomization box containing 24 papers numbered from 1 to 24 to divide the female subjects and 10 papers numbered from 1 to 10 to divide the male subjects. Numbers 1 to 12 formed the CTM group (for females), the numbers 13 to 24 formed the KT group (for females), the numbers 1 to 5 formed the CTM group (for males), and the numbers 6 to 10 formed the KT group (for males). Enrollment, randomization, assessment, and analysis steps showed in Fig. 1.

3. Outcomes

The study was initiated by obtaining the sociodemographic information. Then, the pain (Visual Analogue Scale (VAS)), characteristics of pain (McGill Pain Questionnaire), disease's impact on patients (Fibromyalgia Impact Questionnaire (FIQ)), depression (Beck's Depression Inventory (BDI)), and quality of life (Short Form-36 (SF-36)) were evaluated in both groups before and after 4 weeks-treatment.

3.1. Sociodemographic attributes

To collect information about the subject's age, height, weight,

gender, diagnosis duration, presence of fibromyalgia history in the family, educational status, and occupation were recorded to form prepared by researchers.

3.2. Visual Analogue Scale

A reliable assessment tool 10-cm lined Visual Analogue Scale (VAS) was used to assess pain severity ($r \geq 0.96$, 95% CI 0.92–0.97) (Cheatham et al., 2018). On the line, “0” shows no pain, and “10” shows the most severe pain situation. The subject was asked to mark the pain intensity on the line that he feels during the rest and activities. The point marked by the subject was measured in cm with a ruler and the value found was recorded as pain intensity.

3.2.1. McGill Pain Questionnaire

The characteristic of the pain felt by the patients was evaluated with the reliable self-rated tool Short Form McGill Pain Questionnaire (SF-MPQ) ($r = 0.83$, 95% CI 0.76–0.88) (Yakut et al., 2007). The questionnaire consists of 3 sections. First section, which is accepted as main section and assesses the pain sensation, includes 15 descriptive adjectives (11 sensory and 4 perceptual). These descriptors are rated on an intensity scale from 0 to 3 (0 = none, 1 = mild, 2 = moderate, 3 = severe). A total of three pain scores are obtained in the scale: sensory pain score, perceptual pain score and total pain score. The sensory pain score is between 0 and 33, the perceptual pain score is between 0 and 12, and the total pain score is between 0 and 45. An increase in the score indicates an increase in pain. In the second section, there are five-word groups ranging from “mild pain” to “unbearable pain” to determine the severity of the patient's pain verbally. In the third section of the questionnaire, the patient's current pain intensity was assessed using a



Fig. 3. Kinesiotaping.

visual analogue scale.

3.3. Fibromyalgia Impact Questionnaire (FIQ)

FIQ has been developed to measure the functional status of individuals having fibromyalgia (Burckhardt et al., 1991). The reliable scale consists of 20 questions that measure physical function, well-being, difficulty in doing work, not being able to go to work, fatigue, stiffness, morning fatigue, pain, anxiety, and depression ($r = 0.81$) (Sarmer et al., 2000). Low scores indicate improvement or less effect of disease except for well-being section. While an average fibromyalgia patient scores 50 points, 70 points or more are considered severely affected by fibromyalgia.

3.4. Beck's Depression Inventory

The Beck's Depression Inventory (BDI) is a 21-item self-assessment scale that evaluates the symptoms that occurs in depression. The severity of the patient's depression is indicated by higher total score. It has been suggested that those who score 17 and above on the BDI may constitute an at-risk group. The Cronbach's alpha value for the used version of BDI was 0.80 (Hisli, 1989).

3.5. Short Form-36

To assess the quality of life, valid and reliable scale Short Form 36 (SF-36) was used (Cronbach alpha = 0.73–0.76) (Koçyiğit et al., 1999). The SF-36 consists of 36 items evaluated in 8 subscales. Physical functioning, role limitations due to physical health, role limitations due to emotional problems, energy/fatigue, emotional well-being, social functioning, pain, general health are the subscales of form. The score from each subscale is between 0 and 100, and a higher score means better health.

3.6. Interventions

All participants received electrotherapy (TENS and infrared treatment) for 25 min, 5 days a week for 4 weeks.

3.7. Connective tissue massage

After electrotherapy modalities, connective tissue massage (CTM) was applied. CTM was started from the lumbosacral region, continued with the lower thoracic region, and finished after applying it to the scapular region, intrascapular region and cervicooccipital region. All

Table 1
Sociodemographic and baseline characteristics of the participants.

	CTM (n = 17) Mean $\pm$ SD/n (%)	KT (n = 17) Mean $\pm$ SD/n (%)	p
Age (years)	35.47 $\pm$ 6.84	34.00 $\pm$ 5.46	0.617
Body Mass Index (kg/m ²)	24.41 $\pm$ 1.66	24.12 $\pm$ 1.45	0.611
Duration of Fibromyalgia Diagnosis (months)	20.35 $\pm$ 10.32	26.12 $\pm$ 12.17	0.172
Gender			
Female	12 (70.6%)	12 (70.6%)	0.593
Male	5 (29.4%)	5 (29.4%)	
Fibromyalgia History in Family			
Yes	6 (35.3%)	6 (35.3%)	1.000
No	11 (64.7%)	11 (64.7%)	
Education			
Elementary	2 (11.8%)	–	0.346
High school	8 (47.0%)	9 (52.9%)	
Bachelor	7 (41.2%)	8 (47.1%)	
Occupations			
Housewife	4 (23.6%)	6 (35.3%)	0.079
Officer	5 (29.4%)	9 (52.9%)	
Worker	3 (17.6%)	1 (5.9%)	
Others	5 (29.4%)	1 (5.9%)	
VAS Rest	7.24 $\pm$ 0.75	6.94 $\pm$ 0.82	0.288
VAS Activity	8.29 $\pm$ 0.68	8.18 $\pm$ 0.72	0.638
McGill	90.18 $\pm$ 7.69	90.06 $\pm$ 4.33	0.717
FIQ	67.05 $\pm$ 4.73	67.20 $\pm$ 4.18	0.823
Beck Depression SF-36	24.94 $\pm$ 4.40	23.88 $\pm$ 3.90	0.342
Physical Functioning	48.23 $\pm$ 7.89	47.94 $\pm$ 9.85	0.860
Role Limitations Due to Physical Health	26.47 $\pm$ 24.15	25.00 $\pm$ 19.76	0.928
Role Limitations Due to Emotional Problems	17.64 $\pm$ 26.66	25.49 $\pm$ 27.71	0.357
Energy/Fatigue	31.76 $\pm$ 5.28	31.47 $\pm$ 7.23	0.593
Emotional Well-being	49.64 $\pm$ 5.48	49.88 $\pm$ 6.01	0.958
Social Functioning	32.35 $\pm$ 12.54	33.08 $\pm$ 15.27	0.799
Pain	23.08 $\pm$ 9.29	28.08 $\pm$ 11.67	0.247
General Health	30.58 $\pm$ 4.63	32.64 $\pm$ 6.15	0.259

CTM: Connective tissue massage, KT: Kinesio taping, VAS: Visual Analogue Scale, FIQ: Fibromyalgia Impact Questionnaire, SF-36: Short Form-36, SD: Standard deviation, n: Number.

applications are shown in Fig. 2. CTM was applied 3 days a week for 4 weeks (Ekici et al., 2009).

3.8. Kinesiotaping application

Before the taping, the individual was informed about the kinesiotape. Allergy test was performed by sticking a 3 cm long piece to the arm of the individual to detect allergic condition as a precautionary assessment, although the tape was not allergic. Kinesio tape application was applied 2 days a week after each electrotherapy sessions with 2 days interval for 4 weeks. The participants were asked to remove the tapes the day before the next taping application. In the literature, since pain and tenderness are reported most frequently in the neck and shoulder muscles in patients with FM (Celenay et al., 2020), taping was performed on the levator scapula and trapezius muscles, which are the muscles in these regions. A “Y” shape tape with 25% tension was applied on levator scapula and upper trapezius muscles while the participants were in an upright position. Then, the “C” shaped tape was adhered to with 50% tension from the middle fibers of the trapezium to the last rib in the same position. All applications are shown in Fig. 3.

3.9. Statistical analysis

The data was analyzed with ‘Statistical Packages for the Social Sciences’ version 24.0. The normality test was performed at the pre-analysis period. According to the Kolmogorov Smirnov Test results, the nonparametric tests were decided to use for the data analysis.

Table 2

Pre- and post- intervention changes by groups for assessment parameters.

Assessment Parameters	CTM Group (n = 17)			p	KT Group (n = 17)			p
	Before Treatment Mean ± SD	After Treatment Mean ± SD	99% CI		Before Treatment Mean ± SD	After Treatment Mean ± SD	99% CI	
VAS Rest	7.24 ± 0.75	2.24 ± 1.03	(0.000–0.000)	< 0.001* 6.66 [†]	6.94 ± 0.82	2.29 ± 0.84	(0.000–0.000)	< 0.001* 5.65 [†]
VAS Activity	8.29 ± 0.68	3.65 ± 1.32	(0.000–0.000)	< 0.001* 6.82 [†]	8.18 ± 0.72	3.12 ± 0.85	(0.000–0.000)	< 0.001* 7.01 [†]
McGill	90.18 ± 7.69	41.53 ± 6.49	(0.000–0.000)	< 0.001* 6.32 [†]	90.06 ± 4.33	35.82 ± 6.15	(0.000–0.000)	< 0.001* 12.52
FIQ	67.05 ± 4.73	29.91 ± 3.20	(0.000–0.000)	< 0.001* 7.85 [†]	67.20 ± 4.18	32.70 ± 3.70	(0.000–0.000)	< 0.001* 8.25 [†]
Beck Depression	24.94 ± 4.40	12.18 ± 2.40	(0.000–0.000)	< 0.001* 2.90 [†]	23.88 ± 3.90	12.24 ± 1.75	(0.000–0.000)	< 0.001* 2.98 [†]
SF-36								
Physical Functioning	48.23 ± 7.89	84.72 ± 6.91	(0.000–0.000)	< 0.001* 4.62 [†]	47.94 ± 9.85	87.35 ± 6.87	(0.000–0.000)	< 0.001* 4.00 [†]
Role Limitations Due to Physical Health	26.47 ± 24.15	79.41 ± 22.07	(0.000–0.000)	< 0.001* 2.19 [†]	25.00 ± 19.76	73.52 ± 22.48	(0.000–0.000)	< 0.001* 2.45 [†]
Role Limitations Due to Emotional Problems	17.64 ± 26.66	82.35 ± 20.80	(0.000–0.000)	< 0.001* 2.42 [†]	25.49 ± 27.71	72.54 ± 35.81	(0.001–0.003)	0.002* 1.69 [†]
Energy/Fatigue	31.76 ± 5.28	61.76 ± 4.98	(0.000–0.000)	< 0.001* 5.73 [†]	31.47 ± 7.23	60.88 ± 2.64	(0.000–0.000)	< 0.001* 4.06 [†]
Emotional Well-being	49.64 ± 5.48	73.17 ± 5.79	(0.000–0.000)	< 0.001* 4.29 [†]	49.88 ± 6.01	69.17 ± 3.08	(0.000–0.000)	< 0.001* 4.89 [†]
Social Functioning	32.35 ± 12.54	77.94 ± 12.12	(0.000–0.000)	< 0.001* 3.63 [†]	33.08 ± 15.27	75.73 ± 11.24	(0.000–0.000)	< 0.001* 2.79 [†]
Pain	23.08 ± 9.29	74.26 ± 5.21	(0.000–0.000)	< 0.001* 5.50 [†]	28.08 ± 11.67	73.23 ± 7.94	(0.000–0.000)	< 0.001* 3.86 [†]
General Health	30.58 ± 4.63	64.11 ± 6.43	(0.000–0.000)	< 0.001* 7.24 [†]	32.64 ± 6.15	62.64 ± 6.87	(0.000–0.000)	< 0.001* 4.87 [†]

CTM: Connective tissue massage, KT: Kinesio taping, ES: Effect Size, SD: Standard Deviation, n: Number, CI: Confidence interval, VAS: Visual Analogue Scale, FIQ: Fibromyalgia Impact Questionnaire, SF-36: Short Form-36, [†]: large effect size, *: $p < 0.05$.

Continuous variables were given as mean, standard deviation, and categorical variables as numbers and percentages. The baseline variables were compared with the Chi-squared (categorical variables) and Mann-Whitney U (continuous variables) tests between groups. In the analysis of the pre-to-post-treatment differences between the groups, the Mann-Whitney U test was used. The pre- and post-treatment values of the groups were compared with the Wilcoxon test. The effect sizes were calculated for the intragroup changes with a formula: “Effect size = difference between the pre-post assessments/standard deviation of the first assessment.” Effect size was interpreted as 0.2–0.5 “small”, 0.51–0.80 “medium”, 0.81–1.2 “large”, 1.3 and above as very large (Sullivan and Feinn, 2012).

4. Results

The sociodemographic data and baseline assessment results of the subjects in groups were shown in Table 1. There was no significant difference in terms of the baseline values ($p > 0.05$).

Intra-group comparisons of baseline and post-treatment evaluations are given in Table 2. Each group had a significant difference and very large effect size for all assessment parameters ($p < 0.05$).

Calculated pre- and post-intervention change scores and

comparisons between groups are shown in Table 3. There was no significant difference between the groups for all assessment parameters ($p > 0.05$).

5. Discussion

The aim of this research was to compare the two different physiotherapy application including KT and connective tissue massage in the patients suffering from fibromyalgia. A significant improvement with very large effect sizes was found in pain, disease impact score, depression score and quality of life variables in all groups. In addition, the changes after 4 weeks of treatment were similar for groups in terms of all parameters.

Keskin et al. reported that CTM applied with exercise for 6 weeks decreased the number of painful points compared to exercise applied alone in women with FM (Keskin et al., 2020). Similarly, Ekici et al. stated positive improvements in pain, disease impact on daily life (FIQ), and health-related quality of life after 3 weeks-treatment of CTM in women with fibromyalgia (Ekici et al., 2009). CTM reorganizes the hemostasis between the parasympathetic and sympathetic two systems of the autonomic nervous system by stimulating autonomic nerve endings (Çağlar and Yüksel, 2019). The impulses derived with the

Table 3

Comparison of groups differences in pre- and post- intervention change scores for all outcome measures.

Assessment Parameters	CTM Group Δ Mean (SD)	KT Group Δ Mean (SD)	Z	p
VAS Rest	−5.00 (1.22)	−4.64 (0.99)	−0.744	0.457
VAS Activity	−4.64 (1.41)	−5.05 (1.08)	−0.983	0.326
McGill	−48.64 (9.06)	−54.23 (8.04)	−1.913	0.056
FIQ	−37.14 (4.89)	−34.50 (5.08)	−1.585	0.113
Beck Depression	−12.76 (4.00)	−11.64 (3.14)	−0.762	0.446
SF-36				
Physical Functioning	36.48 (10.08)	39.41 (12.10)	−0.263	0.793
Role Limitations Due to Physical Health	52.94 (38.40)	48.52 (32.44)	−0.387	0.699
Role Limitations Due to Emotional Problems	64.70 (38.13)	47.05 (45.73)	−1.091	0.275
Energy/Fatigue	30.00 (7.28)	29.41 (8.07)	−0.214	0.831
Emotional Well-being	23.52 (7.19)	19.29 (7.24)	−1.336	0.181
Social Functioning	45.58 (19.73)	42.64 (18.78)	−0.460	0.645
Pain	51.17 (8.24)	45.14 (17.33)	−0.903	0.367
General Health	33.52 (8.05)	30.00 (9.35)	−1.194	0.233

CTM: Connective tissue massage, KT: Kinesio taping, VAS: Visual Analogue Scale, FIQ: Fibromyalgia Impact Questionnaire, SF-36: Short Form-36, Δ: Change Scores, SD: Standard Deviation, * = $p < 0.05$.

application reach the autonomic centers and enable some endocrine responses. Blood flow increases in the application area, beta-endorphin release increases and inflammatory chemicals are removed from the tissues following the CTM. Following this, muscle spasms and soft tissue stiffness are reduced (Çitak-Karakaya et al., 2006). With these mechanisms, CTM is thought to be effective in reducing pain.

Kinesio taping, which provides muscle facilitation/inhibition, regulates blood and lymphatic fluid flow, increases proprioception by stimulating cutaneous mechanoreceptors (Wu et al., 2015), and is thought to provide pain inhibition by stimulating the central nervous system according to the gate control theory (Wu et al., 2015). A study investigating the effects of kinesiotaping on fibromyalgia showed that a 6-week application produced positive improvements in pain, symptom severity, disease impact on daily life, depression, and quality of life (Suh and Choi, 2017). It was stated that taping applied in addition to stabilization exercises reduced pain and fatigue more than those who only exercised and improved some sub-parameters of quality of life more (Toprak Celenay et al., 2020). Another study reported that kinesiotaping applied for 3 weeks was effective in improving pain and neck-shoulder comfort (Espí-López et al., 2019). Consistent with the literature, both CTM and KT applications were effective in pain intensity, disease impact on daily life, depression, and quality of life in our study.

The long- and short-term treatment programs were effective in improving health status in FM. There are many studies with data in accordance with our findings in terms of improvement in health status as measured by FIQ following either long-term (Häuser and Fitzcharles, 2018) or short-term (Clauw, 2014) multidisciplinary treatment programs with significant improvements in total FIQ scores at both post-treatment and/or at long-term follow-ups (between 6 and 12 months) or at short-term follow-ups (between 1 and 4 months). (Çaglar and Yüksel, 2019).

KT can be used to control pain, edema, muscle function, and reduce fascial dysfunction for a lot of diseases (Çaglar and Yüksel, 2019).

However, there are no more studies about the effects of KT on FM (Çitak-Karakaya et al., 2006). Espi-Lopez et al. stated that KT with the muscle technique for relaxation of the upper trunk muscles and with the mechanical correction technique for the upper trunk have positive effects on pain and comfort in neck regions (Wu et al., 2015). Vayvay et al. found that KT with the muscle technique applied to the thoracic and cervical paravertebral muscles, levator scapula, and the upper trapezius muscle improves pain, function, and health status in patients with FM. This study shows that applying KT decreased pain, and depression score and improve QoL (Suh and Choi, 2017).

Although myofascial release is the most used modality in the literature on the FM, the level of evidence of the studies ranged from very low to moderate, mainly due to the inconsistency and inaccuracy of the results (Suh and Choi, 2017). Despite this, Sanchez et al. showed that 20 weeks myofascial release therapy improved pain, anxiety, sleep quality, and QoL in FM (Espí-López et al., 2019). In the meta-analysis study by Yuan et al. shows that myofascial release had large effects on pain and medium effects on anxiety and depression, narrative analysis suggests that there is moderate evidence that CTM, one of myofascial releases, improves depression and quality of life (Martin et al., 2014). Celenay et al. found that 6 weeks exercise and CTM decrease pain, fatigue, and sleep problem and improves health status and QoL ($P < 0.05$). They suggested that although exercises with and without CTM could be effective in reducing pain, fatigue, and sleep problems, improving health status and quality of life in patients with FM, exercises with CTM were more effective in improving fatigue, sleep problems and role limitations related to physical health (Kroese et al., 2009). In this study, while KT and CTM showed significant effects on pain, depression, and quality of life parameters within the group, no difference was found between the groups. There is no studies in the literature compared the effect of KT and CTM in FM. However we attribute the reason for the inability to find a difference between the groups because the treatment period was short with no long follow up procedure to obtain effective results in depression and QoL.

Despite the limitations which were absence of a control group with no long follow up period and the non-blinded procedure, this study provides treatment options with different materials and application methods as an alternative with similar effective results.

6. Conclusion

Current evidence of different therapy in patients with FM; KT and CTM, decreased pain status, and depression scores and improving quality of life. In this study, it was revealed that the two most used methods in myofascial release can be used in fibromyalgia.

CRedit authorship contribution statement

Gizem Turksen: Methodology, Data curation, Conceptualization. **Eylul Pinar Kisa:** Writing – original draft, Supervision, Methodology, Conceptualization. **Begum Kara Kaya:** Writing – original draft, Methodology. **Kiymet Muammer:** review, editing, Conceptualization. **Rasmi Muammer:** Writing – review & editing, Writing – original draft, Methodology, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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