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Limbic reflexology for the management of fibromyalgia: A qualitative investigation of a non-drug treatment

Marcia Edwards [a], Joanna McParland [b,*], Samah Naseem [c]

[a] Francis-Hartwell Limited, Bellshill, UK
[b] Department of Psychology, Glasgow Caledonian University, 70 Cowcaddens Road, G4 0BA, Glasgow, UK
[c] MSc Counselling Student, Abertay University, Bell St, Dundee DD1 1HG, UK

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ABSTRACT

Introduction: The European Alliance of Associations for Rheumatology (EULAR) in their 2017 paper recommended that an update be conducted after five years to determine whether further trials had been conducted for therapies which had scored low and whether any new therapies had emerged for the management of fibromyalgia. Limbic reflexology is a reflexology approach which targets specific problems that arise from altered function of the limbic brain network and nuclei. The aim of this study was to explore the potential of limbic reflexology as a non-drug treatment for the management of fibromyalgia, through (1) assessing if a person's experience of living with the fibromyalgia symptoms of pain, fatigue and sleep quality changed after receiving an initial course of six to eight weekly limbic reflexology sessions, and (2) assessing whether any changes in symptoms were maintained with regular maintenance sessions.

Methods: A purposive homogenous sample was used to include participants who were aged 18 and over, had a diagnosis of fibromyalgia and had completed a course of between six to eight weekly limbic reflexology sessions prior to the study. Semi-structured interviews were used for data collection, the interviews were audio recorded, transcribed verbatim, and anonymised. Interpretative phenomenological analysis was then used for the data analysis.

Results: Three women with fibromyalgia were interviewed to gain a detailed account of the impact of six to eight weekly limbic reflexology sessions, plus maintenance sessions on symptoms of fibromyalgia and its impact on their experience of pain, fatigue, and sleep quality. The following themes were identified "The experience of fibromyalgia", "The experience of limbic reflexology", and "The holistic impact of limbic reflexology". Participants reported limbic reflexology improved their symptoms with less pain, reduced fatigue, and more restful sleep. This improvement in symptoms was maintained with regular sessions.

Conclusion: This qualitative study provides new insight into the impact of limbic reflexology on physical and mental function among women living with fibromyalgia. These initial findings provide an invaluable start for further research to determine limbic reflexology's potential as a non-drug treatment for the management of fibromyalgia symptoms.

1. Introduction

Fibromyalgia (FM) is a complex, chronic health disorder which is characterised by widespread musculoskeletal pain, usually accompanied by a wide range of symptoms which includes fatigue, poor sleep [1,2], depression, anxiety, and irritable bowel syndrome [1]. According to Macfarlane et al. [3] two percent of the world's population are living with FM of which approximately 1.5 – 2 million people are living with FM in the UK [4].

The European Alliance of Associations for Rheumatology, EULAR in their 2017 paper made ten intervention recommendations for the management of FM [3]. The five pharmacological and five non-pharmacological recommendations were scored from one star meaning it has limited evidence to four stars meaning it is supported by a

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Abbreviations: European Alliance of Associations for Rheumatology, (EULAR); Fibromyalgia, (FM); Limbic Reflexology, (LR); Interpretative Phenomenological Analysis, (IPA); Limbic Reflex Therapist, (LRT).

* Corresponding author.

E-mail addresses: marcia@pathway2wellbeing.com (M. Edwards), J.McParland@gcu.ac.uk (J. McParland), 2204595@abertay.ac.uk (S. Naseem).

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lot of evidence [3]. Aerobic and strengthening exercise was the only recommendation which scored four stars. The poor long-term efficacy of pharmacological interventions means many people turn to complementary and alternative medicines to help in the management of fibromyalgia [5]. Part of the recommendations made by the EULAR were for an update to be conducted if further trials had been conducted for therapies which had scored low and to determine whether any new therapies had emerged for the management of FM [3].

Reflexology is a complementary therapy which is based on the theory that different points on the feet, lower legs, hands, face, or ears correspond to different areas of the body [6]. It is a touch therapy and by working these points or areas (reflex areas) reflexology can be effective at promoting deep relaxation and wellbeing [6]. As a complementary therapy, reflexology can be used safely alongside standard healthcare [7].

There are different reflexology methods depending on whether foot, hand, facial, or ear reflexology is being used. Two internationally recognised foot reflexology methods are the Ingham method (which is also used for hand reflexology) and the Rwo Shur method [8,9]. For facial reflexology, an internationally recognised method was developed by Lone Sorensen [10]. Auricular reflexology stems from auricular acupuncture and auriculotherapy which were developed by Dr Paul Nogier [11]. Dr Paul Nogier found that the outer ear had exceptional reflex properties, and that each point in the ear was related to a specific part of the body [12]. Over time this research enabled him to publish extremely detailed maps, showing the locations of different parts of the body including the nervous system on the external ear [12]. Auricular reflexology uses charts of the body interpreted on the ear as presented by Dr Paul Nogier [11]. Auriculotherapy has been found to be beneficial in several areas, including pain management, anxiety, stress, and depression [13,14]. In addition to these methods, there are reflexology techniques / approaches which have been developed and can vary from using a very light touch to much deeper work [15]. These techniques / approaches can be used as part of a treatment or as a complete treatment, such as precision reflexology and advanced reflexology techniques [9].

Limbic reflexology (LR) is a reflexology approach which targets specific problems that arise from altered function of the limbic brain network and nuclei [16]. According to Yeo et al. [17] the limbic brain network, or limbic system is one of the main networks in the brain. The limbic system maintains the body's internal balance (homeostasis), and regulates vital bodily functions such as stress, immune responses, autonomic and endocrine functions [18,19]. The limbic system also plays a crucial role in chronic pain as it regulates emotional and motivational responses, pain processing and pain experience [20]. According to Kong et al. [18] FM is associated with altered functional connectivity within the limbic system.

Whilst Dr Paul Nogier's work is related to the auricle, Hamish Edgar's work with LR concentrates on the hallux or big toe [16]. During a LR treatment, the focus is on >30 limbic areas via corresponding reflex areas mapped on the hallux [16]. These include reflex areas for the insula (or insula cortex), amygdala, hippocampus, subiculum, hypothalamus, and pituitary [16]. Whilst some of these reflex areas such as the insula are not primarily limbic, they have a significant limbic function [21]. In addition, the reflex area relating to the adrenals, are included as the adrenals are an integral component of the body's response to stress, and the spinal reflex area so that the whole of the central nervous system is included [18].

When delivering LR, the pressure and speed of working are crucial [16]. Limbic reflex areas are precision areas and often very small [16]. Slow even pressure is required to ensure detection and to avoid missing those precision areas [16]. Pressure and variation in pressure is controlled by both the fingers of the holding hand and the fingers of the working hand [16]. Working techniques in LR are an adaption of some of the techniques reflexologists would already use such as 'thumb walking' [15]. Edgar [16] states that much of the development of LR involved working with individuals who have FM. The main aim of LR when working with individuals with FM is to target those reflex areas that signify altered function, and to help correct this and consequently, the problems resulting from that altered function [16]. Any altered limbic function could have wide ranging consequences such as sleep disturbance [22], cognitive problems [20], emotional disturbance such as anxiety [18] and exaggerated experience of pain and chronic pain [18–20]. An initial block of six to eight sessions of weekly LR could result in an improvement of the symptoms experienced, with monthly sessions being used to maintain that improvement [16].

It has been found that touch therapy treatments can promote relaxation, comfort and a sense of wellbeing [23]. The medical community has recognised the beneficial therapeutic effects of touch on health and wellbeing [23,24]. With hands-on care being recommended for a range of musculoskeletal conditions [23]. Quantitative studies have shown that reflexology has been effective in the reduction of pain in patients with AMI, arthritis, and fibromyalgia [25–27], reduction in fatigue in patients with cancer and multiple sclerosis [28,29] and improving sleep quality through a meta-analysis and meta regression of randomised controlled trials and in patients after kidney transplantation surgery [30,31]. However, to assess how a person experiences an intervention a qualitative study is required [32]. Arnon et al. [33] qualitative study found that reflexology during labour improved the physical and emotional wellbeing of the women. Gunnarsdottir and Peden-McAlpine [34] found their qualitative study showed using a multiple case study analysis gave reflexology research a new insight into the experiences of fibromyalgia. Gunnarsdottir and Peden-McAlpine [34] recommended the use of qualitative approaches when researching complementary and alternative therapies.

The effects of LR on fibromyalgia symptoms have not been reported in previous studies. This leaves an important gap in reflexology research which can be addressed by assessing an individual's lived experience of LR for fibromyalgia, leading to a better understanding of LR. The aim of this research paper was to explore the impact of LR among people with FM by examining the impact of living with pain, fatigue, and sleep quality. The specific research questions are: (1) Does a person's experience of living with pain, fatigue, and lack of quality sleep change after an initial course of six to eight weekly LR sessions? If so, how? (2) Are any changes a person experiences of living with pain, fatigue, and lack of quality sleep maintained with regular LR maintenance sessions?

2. Methods

2.1. Study design

This qualitative study involved conducting semi-structured interviews with interpretative phenomenological analysis (IPA). The primary goal of an IPA researcher is to investigate how people make sense of their major life experiences [35]. The idiographic approach in IPA explores an in-depth analysis of an individual case before producing any general statements [36]. The researcher can make specific statements about a participant because the analysis is based on a detailed case study [36]. The researcher did this for each participant.

2.2. Participants

2.2.1. Recruitment

Participants were recruited to the study by the first author contacting limbic reflex therapists (LRTs), reflexologists who had training in LR via social media. Only those LRTs who had clients with fibromyalgia would have posted the advert on their website and social media platforms.

2.2.2. Inclusion criteria

Participants were eligible to take part in the study, if they were aged 18 or over and had a diagnosis of FM. Participants were also required to have completed a course of between six and eight LR sessions. It was also important that the LR sessions had been carried out by an LRT.

2.2.3. Sample

The sample was selected purposively, instead of using a probability technique to offer insights into a particular experience, in this case LR [35]. It was also important for the sample to share similar characteristics (homogenous) for this study, people who fit the inclusion criteria [35]. For a detailed analysis and time-consuming analysis of each participant's data to be carried out, IPA studies are usually small [36]. Smith, Flowers and Larkin [35] state that the sample size partly depends on the degree of commitment to the case study level of analysis and reporting; the richness of the individual cases; and the organisational constraints the researcher(s) are operating under. This study was based on the first author's research degree project so was under time constraints, taking place in 2020 during the covid-19 lockdown.

2.2.4. Interview schedule

The semi-structured interview schedule was developed by the first author, with feedback provided by the second author. The interview schedule (Appendix A) was constructed following guidelines contained in Smith et al. [35] book and consisted of open questions split into three parts. The first part of the interview was used to build up a picture of what the participants life was like living with FM before LR. Questions in the second part of the interview were to gain a detailed account of participants experiences of having LR. The initial questions in this second part were to gain insights into the first LR session received and if there were any changes in symptoms experienced in subsequent sessions. The third part concentrated on participants experiences of FM symptoms after receiving LR. The final question was used for the participant to add anything extra about FM or LR. Each interview was audio recorded, transcribed verbatim, anonymised and analysed.

2.3. Procedure

This study was reviewed by the School of Health and Life Sciences Psychology, Social Work and Allied Health Sciences departmental committee at Glasgow Caledonian University and given ethical approval on 7th October 2020 under the approval code, HLS/PSWAHS/20/012.

Potential participants who contacted the first author after seeing the study advertisement received an email with the participant's information sheet and an email consent form attached. The first author scheduled the interviews on receipt of the consent email. Interviews were scheduled during lockdown restrictions so zoom video conferencing software was used. Participants were contacted the day before the interview to confirm they were happy to proceed.

At the start of interviews, participants were asked to provide consent again for the interview to be recorded. Participants had the choice of keeping their camera off, if they wanted to, the first author kept the camera on. Participants were thanked for taking part and were informed that they would be emailed a debrief sheet. The debrief sheet provided clear contact details for the first author, the second author and someone out with the study team.

Each interview was recorded and transcribed verbatim by the first author. All transcripts were fully anonymised.

2.4. Data analysis

The Smith et al. [35] guide to conducting IPA analysis was used for each transcript in isolation. IPA is useful when looking at topics which are complex, ambiguous, and emotionally laden like pain which is a personal experience [37]. Each transcript was initially read several times whilst also listening to the audio recording and taking initial notes. Exploratory commenting was then used on these noting descriptive, linguistic, and conceptual comments building up a detailed set of exploratory notes. These notes were then used to create themes by picking out what was important in the comments made for a piece of transcript, highlighted words, and phrases. Similar themes were then grouped together to form themes within and then across transcripts. The themes included in this study are those which gave the most detailed account of the participants experiences of LR.

2.5. Trustworthiness, rigour and reflexivity

In IPA, the researcher is an integral part of the analysis, becoming part of the research process [38]. To ensure that the analysis is rooted in the data, the researcher must engage in a reflexive process. The first author was the interviewer as part of her research degree project. The first author is a qualified reflexologist and LRT. Whilst the first author did not know the participants before the interviews took place, the participants most likely would have known that the interviewer was a reflexologist and LRT due to the nature of the recruitment process.

To establish credibility of the analysis, two researchers (first and third authors) developed themes separately. The themes were then discussed with the other researcher until an agreement was reached. To establish transparency of the research process, the interview schedule is included in this manuscript and a link to the anonymised transcribed interviews is provided in section 6.3.

3. Results

This was a qualitative IPA study. A total of five potential participants expressed interest by contacting the first author via email and were sent the information sheet and consent form. Three participants sent back the consent form. The other two potential participants did not send back the consent form. Three participants were interviewed regarding their experience of LR in the context of managing their FM symptoms. Interviews lasted between 41 min and 52.5 min. These participants results will be reported using pseudonyms. The first participant was Anna who was 54 years old. The second participant was Sarah who was 44 years old, and the third participant was Ellie who was 54 years old. See Table 1 for the participant information.

The three themes identified are outlined below

Theme	Overview
3.1 The experience of fibromyalgia	This theme concentrates on the three main symptoms of pain, fatigue and sleep quality and participants experiences of these symptoms before and after starting LR sessions.
3.2 The experience of limbic reflexology	This theme looks at participants experiences of having weekly and maintenance LR sessions
3.3 The holistic impact of limbic reflexology	This theme looks at the holistic impact LR had on the participants.

3.1. The experience of fibromyalgia

The symptoms of pain, fatigue/lack of energy and sleep quality and other experiences will be discussed below within the context of FM, and how the participants experience these symptoms before and after they have started LR sessions.

The below quotes from Anna help to illustrate the various ways the illness impacted her body and mental health. The first quote shows how pain manifests itself and is felt, including the impact pain has on her mental health, Anna's tone seems to suggest her annoyance regarding pain. Anna uses the analogy of a flat battery to describe the lack of energy she feels, so she is unable to start her day, as even the thought of doing the basic things such as getting out of bed or having a shower, is too much for her some days. Finally, the quote about sleep which seems to suggest the unpredictability and lack of quality sleep, being another impact of FM on her health:

> *"…so obviously the pain which you know can vary in intensity vary where about it is on your body mainly it is my back and my neck, but I also get*

Table 1
Participant information.
Table 1 provides summary information about each of the participants, such as, age, work-status, the number of years they have lived with pain (Pain Duration), time in years since their fibromyalgia diagnosis, time in years since they had their initial six to eight weekly limbic reflexology sessions. Any other fibromyalgia symptoms which they were experiencing and additional conditions they may have.

Research participant	Age	Previous works tatus	Work status at time of interview	Pain duration	Time since fibromyalgia diagnosis	Time since initial weekly course of limbic reflexology	Fibromyalgia symptoms & other conditions in addition to pain, sleep quality and fatigue
Anna	54	Full-Time	Part-Time	25 years	4–5 years	1 year	Depression, IBS*
Sarah	44	Full-Time	Full-Time	9 years	8.5 years	8 years	Anxiety, IBS*, Depression Memory issues
Ellie	54	Full-Time	Self-Employed	27 years	21 years	3 years	Fibro-fog, ME*, Nausea, Hypersensitivity to noise and light

Notes* IBS – Irritable Bowel Syndrome ME – Myalgic Encephalomyelitis.

> *other areas of my body erm…I have irritable bowel I have suffered a long time with depression erm… probably as a result of always being in pain [scoffs]" Anna*

> *"…just absolutely no energy at all to even sort of get out of bed could take me ages to you know sometimes I can't even contemplate to stand in the shower and just absolutely it's like your battery is completely flat. You know like there is no energy there at all" Anna*

> *"… erm [sighs] sleep is never it's … I either seem to sleep a lot, or I don't sleep much at all and when I have slept, and I get up I still feel just as tired as when I went to bed…you know it's not … I don't get rest, restful sleep" Anna*

The quotes below from Sarah shows that she has a similar experience of FM symptoms to Anna, with a lack of energy and quality sleep, and gives a full account below of how the pain feels to her:

> *"your actual fibro can be dull, intense … an ache more than a sharp pain … it's like when you feel like you have a graze … and it gets quite hot sometimes … it's like you've grazed it on concrete or tarmac and feels quite raw sometimes. I suffer a lot with my lower back and…erm more recently erm across my sciatic area … It can twinge quite quickly with the slightest of movement" Sarah*

> *"No…very few days I feel like I have energy" Sarah*

> *"…well, I could literally sleep all day erm…if I'm laid down and I close my eyes…erm…that's me…erm and I can wake up but then the second I shut my eyes again you know I back to sleep…so I could literally sleep for 24* h*" Sarah*

Ellie's quotes below, regarding their own experience of FM are like Anna and Sarah. Ellie mentions having pain flares, where the increase in pain felt is worse than the chronic pain, she usually experiences. When the pain is that intense, she has no option but to stay in bed:

> *"I had 15 years of being absolutely chronic, hardly being able to walk, sick, very fatigued, constant pain … I also used to go into pain flare so my pain flares would if I over did it the pain would be exacerbate so much and then to the point I would be in bed or I would and that would last up to about three weeks" Ellie*

> *"I was absolutely exhausted couldn't stop I just was sick all the time, dizzy, fatigue was terrible" Ellie*

> *"I remember years and years and years of not being able to not ever getting proper sleep" Ellie*

These quotes illustrate how similar their experiences of FM were, and the overall negative impact it had on all the participants physical and mental health.

The following quotes from each of the participants summarise what living with FM means to them. For Anna that she tries to ignore the negative symptoms of FM and the effects it is having on her health, by concentrating on the things that are important to her:

> *"I try to be positive as much as I can I don't want to be a moaner I don't want to be thinking about it or focused on it too much there is a lot more things going on in life I like to try and focus on you know my family and my friends and my job and stuff I think if you think too much about it brings you down" Anna*

Sarah was diagnosed very quickly from the onset of her symptoms (see Table 1) compared to Anna and Ellie, so it seems to her that having FM means that her ability to do things continues to deteriorate:

> *"…I strongly believe that fibro is degenerative even though they say it's not… I do believe it gets worse over time…" Sarah*

For Ellie, who was unable to work for so many years, with her symptoms being so severe resulting in her having to stop work for a long period of time. It may have felt that she would never recover and also knowing that she cannot go back to her previous life must have felt devastating:

> *"I think you know people theorise and theorise about fibromyalgia like they would with any condition erm but for me something as gone out something and it may not be obvious medically but something has changed to make someone who has a very active life to be just do nothing, just not able to do anything and also within that you have a massive grief of a life that you have lost or a life that you could have had" Ellie*

This theme also illustrates how accessing LR treatment affected their experience of FM symptoms. All the participants felt it had a positive impact on their symptoms, in various ways. For Anna LR had a positive impact on their FM symptoms by reducing the pain felt, increasing their energy levels, and an improvement in the quality of sleep.

> *"Pain levels erm you can see that they decrease because (the LRT) gets me to fill out sheets every week with my mood and to do with my pain and what I can do and what I have trouble with. You can see it starts off at a level and then it will slowly come down and then once we get to that point you can maintain it, so it really does help" Anna*

> *"I suppose I have more good days than bad now you know there is an improvement there, there, is an improvement there as well but it is not ideal still sleep" Anna*

> *"Yes, yep yes definitely more energy" Anna*

> *"I was also able to decrease my anti-depressants mentally that was I think the first thing that we noticed, and my depression and my bit of anxiety just really dropped down it was just, is incredibly really" Anna*

As Anna has previously stated that they have struggled with their mental health, therefore as illustrated in the above the LR sessions had also allowed them to be able to decrease their anti-depressants, which is a positive for them.

Ellie's quotes further illustrate the positive impact having LR treatment has had on their FM symptoms by calming their body down, allowing an incremental improvement in their symptoms after each session:

> *"… my whole body it had a sedative effect I'd say and the whole body and it improved slightly symptoms it improved slightly again the next week it improved slightly again and so on" – Ellie.*

> *"I started to describe as was feeling a core energy whereas before I was just exhausted whereas I actually felt a level of some sort of core energy that stayed in, stayed with me" Ellie*

Sarah's quotations are further evidence of the positive way LR treatment has helped their FM symptoms alongside their mental health, as they reported feeling more energised and positive after treatment:

> *"…(the LRT) does something to reset my sleep pattern, I don't know what it is but (laughing) (the LRT) always asks how I'm sleeping and when I say not well (the LRT) does something to try and rectify that yeah so for a similar time there after I sleep a lot better" Sarah*

> *"Like I am walking on a cloud erm other than my feet being sore erm I am energised erm I don't ache erm yeah, I feel good I feel positive erm mentally as well I feel positive erm probably for around well I don't know six, seven days." Sarah*

> *"I don't like to miss too much because I feel like mentally, erm psychologically I feel like it puts me back a bit physically it doesn't." – Sarah.*

For Sarah, one of the main impacts of having LR has been on their mental health as shown from the above quote

Participants also attributed other positive changes in their life to LR. Anna had previously reported before having LR that a good day would be meeting up with family or friends, but even then, she was only able to see family and friends for a short period of time, before having to go home, as she found trying to keep up with conversations draining. Since having regular LR sessions, she is now able to spend more quality time with people who are important to her as highlighted in the quote below:

> *"…since having the treatments, I can do things for longer now and feel okay… for example I went to [home furnishing store] with [family], we walked all round that place [laughs] which is like a maze, and you know I was fine. Then I went out in the evening, a year ago there is no way I could have contemplated doing all that in one day" – Anna*

Sarah is the only participant who still works full-time, both Anna and Ellie previously worked full-time but now work part-time and self-employed respectively. Sarah has also been having LR the longest. Sarah believes that she is still able to have a full-time job because she is having regular LR sessions as shown from the quote below:

> *"Well to be honest … I put it down to my reflexology I really do" – Sarah*

With her belief that FM is degenerative, she may also feel that she wants to keep on working full-time as long as she possibly can.

Whilst having FM was not directly responsible for Anna not working full-time anymore the quotes below illustrate that in their previous role, they struggled to work due to the pain they were experiencing because of FM and in their new role, the flexibility in the role has meant that they have been able to manage their symptoms better.

> *"…previously I worked at *** for ten years and so you are on your feet all day and you quite a lot of heavy lifting and things like that I really did struggle with that job I loved the job but erm I really struggled with it with my pain, and you know just being absolutely exhausted all the time" Anna*

> *"…it's so much better for me that because I can get up and move around erm or I can sit down if I need to but there is a lot more flexibility in that role for me … I have been able to you know my sickness as really dramatically dropped erm which is really good, and I believe that is also you know from the reflexology helping me" Anna*

Ellie also had difficulties with being able to work full time as per the quote below:

> *I got some level of improvement to the point I started studying whereas I had actually stopped working completely before" Ellie*

In the quotes below it seems that LR has impacted almost every part of her life. For Ellie LR seems to have given her the ability to help recover from illness, not experience any pain flare-ups, and more energy.

> *"I was busy unfortunately two years ago I then I think possibly because I was working too hard in hot conditions I got ***…it ended up in three operations and lots of medication and while I 'm very grateful for painkillers when you are screaming in pain, but antiseptics flared the fibromyalgia back up, so I went back to limbic and that helped me recover lots" Ellie*

> *"…very tired, tired in pain and nauseous, vomiting erm and then, then I started having limbic again about every three, every two weeks and it did just… I just have improved and improved and I'm back, I'm back at work now, erm and things are better again, but I'm having it just to keep that pain just nicely controlled" Ellie*

> *"…limbic has stopped the flares because its limbic I've had more in terms of those every three weeks I do it as a top-up and I am realising that if I have done too much and my pain is worst, if I, I can sleep better now and if I sleep better then, it's a bit better the next day you know" Ellie*

3.2. The experience of limbic reflexology

This theme looks at participants experiences of having the initial LR session, subsequent and maintenance sessions.

The participants first experience of LR seemed to take them by surprise and was not what they were expecting. They all found the session painful, describing sharp, intense pain. All the participants could describe the pain from the LR session was different to the pain felt from FM.

> *"I couldn't believe how painful my toes could be, I could not believe the pain" Anna*

> *It's a sharp pain, it's very sharp and very intense in a very small area almost like someone is sticking a needle in you and you know it can shoot out pains through your foot… I mean it is eye watering some of it (laughs), it really is so painful…very intense" Anna*

These quotes from Anna illustrate just how painful she had found the first session of LR. The repetition of words to emphasis the pain felt. The quotation conjures an image of a very intense localised type of pain being felt. This type of imagery is also seen in Sarah and Ellie's experience of LR for the first time.

> *"really painful (laughing) yeah, I thought I would get a nice rub on my feet, but I was pleasantly surprised (laughing)" Sarah*

You can see the quotes from Sarah, she thought LR would be a nice foot massage, instead when she says she is pleasantly surprised that it was causing pain, which meant it could be doing some good.

Ellie seems to have had a similar experience as the other participants from the quotes below

> *"I do remember it being very sharp like a sharp pain almost like a needle and then it would change so like a needle going in and I mean, (the LRT) is amazing and I know it, (the LRT) does have nails (laughing) and I know it wasn't anything to do with that (still laughing)" - Ellie*

> *"I thought I had glass in my toes (laughs). I mean it's amazing actually I don't think I have ever had glass in my toes, but I would oh my god that feels like there is literally glass going in …" - Ellie*

The imagery being produced from all the quotations seems to show that all of them have experienced a similar type of pain when first starting LR. Importantly it seemed that they could easily distinguish the pain felt whilst receiving LR from the pain felt from FM.

> *"…so the pain from the reflexology was more like there are a few different techniques that make it there is a different pain erm one of them feels like*

> *you've been cut with glass across the top of your toe there is another one that feels like a sting or a needle or a pin being put in there and there is the other one that just feels like you have knocked something with your toe almost like a bruised feeling so them quite acute them pains erm where as your actual fibro can be dull, intense…an ache more than a sharp pain " - Sarah*

In the above quote Sarah clearly describes the distinct types of acute pain she experienced having LR, such as 'sting, or a needle or a pin' which would correspond to the different working techniques the LRT would have used to work the hallux, in comparison to the pain experienced from FM.

> *"So, fibromyalgia pain for me kind of smarts away it kind of does that unless you are in the pain flare and then it's overwhelming pain for me it's muscle kind of bruised tenderness but the … limbic points, very sharp like and at the worse I would say it's like I thought I had glass in my toes (laughs)" - Ellie*

However, not all the reflexes in the first LR session were painful, some of the reflex areas were deeply relaxing too as shown in this quote by Anna:

> *"…at the end just the feeling of being so relaxed it was just such a lovely feeling, and it carries on with you for the rest of the day and generally when I have had that it will help me to sleep" Anna.*

Ellie found some of the LR reflexes were so relaxing that she wanted to sleep

> *"…some of those points were literally were almost putting me to sleep … some of those points were very soothing and relaxing … almost like I was being a bit hypnotised (laughs) – Ellie*

> *"so, I had two very different effects, there so a couple of my points would have been sharp, sharp glass and a lot of my points my limbic points were literally like in the nicest possible way being drugged, I do remember lying there and my eyes just would like closing and closing that switching off" – Ellie*

All participants had continued to have regular sessions, after the initial six to eight weekly (or fortnightly) sessions. Participants talked about the accumulative effect of LR so that the more sessions they had the changes they were seeing in symptoms were being maintained. The quotes from Anna below seem to show that the initial weekly sessions she had, the pain felt from FM reduced, to the point that she could then change from weekly sessions to having LR every four weeks and she was still feeling the benefits. Until due to the covid lockdown restrictions she was not able to have LR for some months, and the pain felt from FM intensified.

> *"so always when (the LRT) does the limbic which is on the two big toes that part of it is always intense and painful but as those treatments went on the pain got less it was less and it got to a point yes it was a bit painful but it was not horrendous at all so we got to a really good place with it so I was able to increase the time between treatments and still feel the benefit from it" – Anna*

> *"I went to [the LRT] every four weeks and… it just worked really well, it just worked really well, the pain was never that bad when I had the limbic but then we went into lockdown" – Anna*

> *"so [the LRT] was not able to give treatment for quite a while and so when I started back with [the LRT] the pain has been really intense again and so you know there is a certain length of time you can leave between treatments and it's still effective" – Anna*

In the quote below from Sarah, they describe LR like taking medication:

> *"…there is the odd month that gets missed due to erm… I don't know it's not convenient or more recently the lockdowns and then there are times as I have said when I have had to call (the LRT) early … because I can feel that I'm just getting bad…but I think now that…it is almost like taking medication isn't it? You've got a build-up now in the body" – Sarah*

In the quotes below Ellie, talks about the initial weekly sessions and how the pain and other symptoms of FM she was experiencing reduced:

> *"I think it probably took about four sessions, I would say four or five for my pain to drop significantly but it dropped incrementally it never went back" – Ellie*

> *"so, each week I would go back in [the LR session], and I would have the same symptoms, but they would never return to where they were" – Ellie*

3.3. The holistic impact of limbic reflexology

This theme relates to the deeper and more holistic impact LR had on the participants.

Anna has been living with the symptoms of FM without having a diagnosis the longest time out of the three. She therefore had tried the most interventions; both pharmacological and non-pharmacological and was even prepared to have high risk surgery to alleviate the pain she was experiencing. Through all the interventions tried, she feels better able to manage FM symptoms by having LR sessions:

> *"…at one point I was going to have an operation on my lower back my L4 and 5 and I was all prepped and ready to go down to surgery and the erm surgeon came in and said he wouldn't operate on me so that was that {laughing} and I waited years for it erm but he said it was too much risk …" Anna*

> *"I've tried erm you know physio and again you know they give you exercises to do, and it tended to aggravate it rather than to help … and with osteopath … they did a lot of work on my neck and at one point it seem to do more damage than good … I've tried acupuncture and my body reacts to that so I can't… I haven't found anything that has helped me like this as" Anna*

> *"I feel stronger from it gives me strength, I don't know how it works but it makes me feel stronger and it makes me feel better able to cope with things. You know I still have the pains; I still feel tired … but I can cope better with it… I think that is the main thing of it and to be able to reduce the medication is great" - Anna.*

> *"I feel like reflexology treats you much more like a whole person instead of just concentrating on my one back pain, it treats the whole thing you know mentally and physically its really yes its absolutely brilliant" Anna*

Sarah feels that she is managing her FM symptoms with her medication and LR sessions, however she would be still open to try new treatments if she felt they would improve her symptoms:

> *"…but I couldn't tell you the last time I saw anyone medical for fibromyalgia yeah, I think it is controlled with my reflexology and erm my medication…" Sarah*

> *"if somebody said that I could do it any different and I might benefit from it then absolutely I would give it a go but I am happy where things are at the minute erm obviously there are bits I'm not satisfied with, but I am happy with how things are it that doesn't sound like a contradiction" Sarah*

As illustrated from the above quotes, which also states an acceptance of the treatments available as well.

For Ellie, the only participant, who was unable to work for several years and had to retrain, the following quotes show that she had tried so many things but then learnt to only use the interventions which were working for her creating her own healing programme, which includes having quick LR sessions when required:

> *"I was just super wanting to get better and doing lots and lots of things which probably was a little bit too much for the body so I then learnt to be a bit more discerning and then just take things that helped and then put it into a healing programme erm, but I can identify that limbic helps so much because I say it … because I am noticing it in a session and it's staying, staying improved." Ellie*

> *"… more recently I've basically had it and its interesting because I noticed the effect very quickly now whereas if you take … yeah … take me back to the initial ones I felt improved and I enjoyed it and my … whole body knew it was relaxed … my whole body it had a sedative effect I'd say and the whole body and it improved slightly symptoms it improve slightly again the next week it improved slightly again and so on … but it did take a block for me to really say oh I am getting somewhere, whereas now … I can have 15* min *of it and go yeah that's really helped me " Ellie*

4. Discussion

The aim of this study was to explore the potential of LR as a non-drug treatment for the management of FM. This study examined participants experiences and perceptions of living with symptoms of FM such as, pain, fatigue and lack of quality sleep, before and after completing six to eight weekly LR sessions, followed by regular LR maintenance sessions.

Three participants were interviewed once, and their data was analysed using IPA. The three themes identified were (1) The experience of fibromyalgia, (2) The experience of limbic reflexology and (3) The holistic impact of limbic reflexology.

The first theme, experience of fibromyalgia, looked at participants experiences of FM symptoms before and after having LR. Before the participants started having LR sessions, they talk about their experiences of pain, sleep quality and fatigue. Pain seemed to be the most dominating symptom in the participants lives as reflected in the length of time they had been living with pain, from 9 – 27 years. Pain is described in detail, how it felt and the impact it had both on their physical and mental health, how it could vary in intensity, which could result in pain-flares, where it manifested in the body and was always constant. These findings are consistent with Lempp et al. [39] study of 12 people with FM, indicating that the description of pain (i) spread from head to toe, affecting most of their joints and muscles; (ii) took its toll physically and mentally; (iii) triggered behaviour change; and (iv) seemed constantly present.

All participants reported not having restful or refreshing sleep, either sleeping too much or too little, could sleep all day and not have a proper restful sleep for years. This lack of quality sleep is supported by Lempp et al. [39] where all participants complained about the lack of restful sleep for many years.

The impact of chronic pain and poor sleep has resulted in chronic fatigue for all participants, describing no energy, having to stay in bed, and being exhausted. Previous qualitative studies have described fatigue as the most disabling aspect of FM [39–41] where the constant pain and lack of restful / refreshing sleep has resulted in chronic fatigue.

Work was another area of the participants life which seem to have been impacted by FM, including having to stop work, finding a full-time job a struggle, finding a job where they had more flexibility. These findings are consistent with Ashe et al. [40] study of 14 people living with FM work was impossible for many of the participants. The participants described finding work which was paced so that energy could be conserved for time outside of work too [40].

All three of the participants experiences of FM symptoms seem to improve after having LR. Participants reported reduced pain, having more energy, more restful sleep, improvements in their mental health, and supporting their ability to work. LR's aim when working with people with FM is to target specific problems that arise from altered function of the limbic brain [16]. The following study may support this view, Kan et al. [42] study on the effect of the three-week exercise therapy on fibromyalgia found that symptoms improved and suggested that these improvements in symptoms were because of functional alterations of the brain, including the mesocorticolimbic system. This study also showed that it significantly improved depression and anxiety in patients with fibromyalgia, suggesting that exercise therapy normalises the impaired functioning of the mesocorticolimbic system [42]. Semba and Kemi [43] also found that chronic pain involves a dysfunction of the mesocorticolimbic system. LR works on discreet limbic reflex areas including the insula, amygdala hippocampus and nucleus accumbens [16]. The mesocorticolimbic system consists of the reward system (the Nucleus Accumbens), the amygdala, hippocampus, and medial prefrontal cortex [42,43].

The second theme on the experience of LR, looks at participants experiences of having the initial LR session, subsequent and maintenance sessions. All participants found the first LR session very painful, and seems that they could clearly distinguish the pain felt from these sessions and the pain experienced due to FM. This is consistent with Babadi et al. [44] study which found that pain perception was the most important part of the pain experience, which includes aspects of sensory, emotional perception alongside with pain assessment and the perception of other pains. Participants describe how the effects of LR sessions on their FM symptoms emerged gradually. How the benefits, they were experiencing were maintained with regular maintenance sessions, describing an accumulative effect. They also reported if the time between these maintenance sessions was too long any beneficial effects could be lost or reduced such as during covid lockdown. These findings are supported by Samuel and Ebenezer [45] who state that reflexology produces antinociceptive effects meaning the time before experiencing the first sensation of pain is increased. The participants report of the pain gradually reducing in intensity and having maintenance sessions working well. These findings are supported by two previous reflexology studies looking at pain for patients with FM showed that reduced pain was experienced and that it also reduced in its intensity [27,34]. This decreasing trend continued in the first and sixth weeks of the intervention, implying a cumulative effect [27]. This suggests that reflexology should be used over periods of at least six weeks, further supporting the results shown here that the initial block of six to eight weekly sessions, had a cumulative effect on FM symptoms [27].

The third theme looks at the holistic impact LR had on the participants. All participants felt they were able to cope better with the FM symptoms when they were having LR sessions. Using a non-drug treatment is recommended by Macfarlane et al. [3] stating that management of FM should focus first on non-pharmacological treatments. This recommendation being based on availability, cost, safety issues and patient preference [3].

All the participants continued to have LR sessions, so far between one and eight years, meaning they see LR as an intervention that can be used long-term to help with their FM symptoms. This is supported by Ashe et al. [40] which states to develop an intervention which will meet patients' needs and enjoy long-term adherence, it is essential to understand the perspectives of an individual and their lived experience of an intervention. .

Limitations of this study include that it was a sample size of three. Pietkiewicz and Smith [36] state there are no rules regarding how many participants should be included in an IPA study. IPA studies have been published with one participant [46], three participants [47], four, nine, fifteen participants [36]. This study is based on the first author's research degree project during covid restrictions; participants were recruited to the study by LRTs advertising the study on their websites and social media platforms. This may have caused participant selection bias, as only potential participants with an online presence may have seen the study advertised. This study also had no access to any measurements of pain, fatigue, and sleep quality which may have been taken before and after the LR sessions so is unable to determine how effective LR is for FM symptoms and also whether there was a difference in those who had six weekly sessions compared to those who had eight. In future, it may also be more appropriate if the interviews were conducted by a researcher who was not an LRT to reduce any undue bias. It is also not clear whether, the LR sessions were part of a treatment, or the complete intervention used. For any future research looking at the effectiveness of LR, this should be used as the complete intervention.

With IPA, the aim is to produce an in depth examination of certain phenomena, and not to generate a theory to be generalised over the whole population [36]. This study's intention, by using IPA, is to look at the potential of LR as a non-drug treatment to manage FM symptoms, thereby starting LR's research journey. To continue investigating LR's potential would require further research. A mixed-method approach would be recommended for future studies of this complementary therapy. The quantitative research stage so that some outcome measure data such as the Revised Fibromyalgia Impact Questionnaire could be collected to see how effective LR is [48]. The qualitative stage to increase the number of participants being interviewed. This may lead to more confidence about the transferability of findings [36].

5. Conclusion

This qualitative study provides new insight into the impact of limbic reflexology on physical and mental function among women living with fibromyalgia. These initial findings provide an invaluable start for further research in this area to determine limbic reflexology's potential as a non-drug treatment for the management of fibromyalgia symptoms.

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Declaration of generative AI and AI-assisted technologies in the writing process

During the development of this manuscript, no generative AI or AI assisted technologies were used in the writing or editing process.

Data availability

Data associated with this project is currently available in the Table 1, appendix A and the following data file containing the three anonymised transcripts: Edwards, Marcia (2025), "Limbic Reflexology Research Qualitative Study for Fibromyalgia - Participant Transcribed Interview Data ", Mendeley Data, V1, doi: 10.17632/hg3yrcn4hp.1 https://data.mendeley.com/datasets/hg3yrcn4hp/1.

CRediT authorship contribution statement

This study is based on the first author's research project completed as part of a Master of Research (MRes) Programme in 2021. **Marcia Edwards:** Conceptualisation, Methodology, Formal analysis, Investigation, Data curation, Writing – original draft, Writing – review & editing, Visualisation, Project administration; **Joanna McParland:** Conceptualisation, Methodology, Validation, Writing – review & editing, Supervision; **Samah Naseem:** Formal analysis, Writing – review & editing, Visualisation. All authors provided final approval of the manuscript and agree to be accountable for the work.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

Whilst the first author is a reflexologist and limbic reflex therapist, working for Francis-Hartwell Limited, none of the research participants were known to her before the start of this study. Other 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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Supplementary materials

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