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Original Research Article

Massage Therapy and Quality of Life in Osteoarthritis of the Knee: A Qualitative Study

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Abstract

Objective. We hypothesized that participants receiving Swedish massage would experience benefits such as stress reduction and enhanced quality of life, in addition to the osteoarthritis-specific effects assessed in a randomized controlled clinical trial.

Design. Qualitative methods were used to explore a deeper contextual understanding of participants' experiences with massage and osteoarthritis, in addition to the quantitative data collected from primary and secondary outcome measures of the dose-finding study.

Setting. Two community hospitals affiliated with academic health centers in Connecticut and New Jersey.

Subjects. Eighteen adults who previously participated in a dose-finding clinical trial of massage therapy for osteoarthritis of the knee.

Methods. Face-to-face and telephone interviews using a standardized interview guide. Triangulation of qualitative and quantitative data allowed for a more thorough understanding of the effects of massage therapy.

Results. Three salient themes emerged from our analysis. Participants discussed 1) relaxation effects, 2) improved quality of life associated with receiving massage therapy, and 3) the accessibility of massage therapy in treating osteoarthritis.

Conclusions. Participant responses noted empowerment with an improved ability to perform activities of daily living after experiencing massage therapy. The majority of statements were consistent with their quantitative changes on standard osteoarthritis measures. Future research in pain conditions should include health-related quality of life assessments as well as outcomes related to perceived well-being, along with greater exploration of the concept of salutogenic side effects of an intervention in the context of complementary and integrative therapies.

Key Words. Massage; Osteoarthritis; Qualitative; Perceptions; Quality of life

Introduction

About 10% of the adult population in the United States suffers from osteoarthritis (OA) with concomitant effects on quality of life [1]. Older adults with osteoarthritis report compromised quality of life associated with pain, functional limitations, and depressed mood [2]. Pain at multiple sites tends to negatively impact mental health [3]. Standard treatment for knee OA includes pharmacotherapy, joint injections, physical therapy and assistive devices, exercise, weight management, and joint replacement surgery for end-stage disease [4–6]. Although each of these treatments provides some benefit, many patients with OA continue to experience pain,

functional limitations, and other symptoms, including compromised quality of life, even when utilizing multiple therapies [7–9].

Massage is an intervention with a high safety and low adverse event profile when administered by trained massage therapists [10]. It is acceptable to patients, reduces stress, anxiety, and pain [11]. Our previous studies of massage as a therapeutic intervention for osteoarthritis of the knee have demonstrated the feasibility, safety, and preliminary efficacy, with increased functionality and decreased pain persisting eight weeks following treatment cessation [12]. Swedish massage is the most prevalent form of massage therapy in North America, incorporating standard techniques such as effleurage (circular stroking movements with the palm of the hand), petrissage (compression or manipulation of soft tissue between the fingers and thumb), tapotement (percussion-based massage where hands strike soft tissue in a repetitive, rhythmic fashion), vibration, friction, and skin rolling [12].

Our dose-finding study of Swedish massage for osteoarthritis of the knee (clinicaltrials.gov, NCT00970008) utilized a manualized [13] protocol of Swedish massage involving 125 adults with osteoarthritis of the knee randomized to one of four eight-week regimens of a standardized Swedish massage (30 or 60 minutes weekly or biweekly) or to a usual care control. Outcomes included the Western Ontario and McMaster Universities Arthritis Index (WOMAC), visual analog pain scale, range of motion, and time to walk 50 feet, assessed at baseline, eight, 16, and 24 weeks. WOMAC Global scores improved significantly in both 60-minute groups; a 60-minute once-weekly dose was an optimal practical dose, balancing clinical response and practicality [14].

In qualitative studies of participants in multiple complementary and alternative medicine (CAM) interventions used for low back pain, Hsu et al. have reported a variety of unanticipated benefits not captured by standard quantitative outcome measures, including increased hope, ability to relax, positive emotional states, and ability to cope with pain. Specifically related to massage, participants reported an increased ability to relax [15].

The biological mechanisms of massage therapy are not fully elucidated. Relaxation effects may be modulated through reduction of cortisol and norephinephrine [16]. Other mechanisms may include increased tissue revascularization by upregulating vascular endothelial growth factor (VEGF), a signal protein that stimulates angiogenesis and vasculogenesis. Other possible mechanisms include modulating stem cell activity and inflammation [17].

Qualitative methods are well suited to generate rich data about phenomena in their context and can help develop hypotheses for further research, as well as inform the development of patient-centered interventions [18,19]. The purpose of this study was to explore whether participants experienced other effects besides the osteoarthritis-specific outcomes assessed in our dose-finding trial. Standard qualitative methods [20,21] were used to gather insights from the experiences of individuals receiving Swedish massage while participating in a randomized clinical trial and to explore a deeper contextual understanding of the participants' experiences with massage and osteoarthritis [20,21]. We hypothesized that participants receiving massage would experience benefits such as stress reduction and enhanced quality of life, in addition to the osteoarthritis-specific effects assessed in our clinical trial.

Methods

Study Design and Sample

Purposive sampling [20] was used to recruit individuals who participated in the Exploring Massage Benefits for Arthritis of the Knee (EMBARK) study, a randomized clinical trial with four treatment arms and one usual care arm, designed to assess the effects of eight weeks of a standardized Swedish massage protocol provided at four distinct doses [14]. Recruitment solicited participants who were adherent to the intervention and study procedures and were open to sharing their thoughts and feelings about their experiences in a brief interview. Recruitment focused on participants that were relatively independent, ambulatory, and believed to be articulate and willing to participate. By nature of participating in the prior clinical trial, participants were known to the investigative team prior to this study. Enrollment continued until theoretical saturation was obtained, i.e., the point at which no new concepts were emerging in well-characterized and differentiated categories [18]. Demographic data was previously collected from study subjects and included sex, age, race/ethnicity, height, and weight. Subjects were told that the aim of the study was to gain insight into their experiences in receiving Swedish massage during our prior study and to help inform the design of future massage and osteoarthritis research.

Strategy of Inquiry

An interview guide was created based on prior studies of Hsu et al. [15]. Participants were queried on their pre- and postintervention experiences and perceptions of massage and osteoarthritis, as well as any lifestyle changes made as a result of receiving the massage intervention in the dose-finding study (reproduced in Table 1).

One-on-one, semistructured interviews were conducted by three investigators (AA, LR, and CM) either in person at Griffin Hospital in Derby, Connecticut, or at Saint Barnabas Medical Center in Livingston, New Jersey, or over the telephone. Interviews occurred at a single session, and detailed notes were taken by the investigators. Participants were compensated with a $25 gift card.

Table 1 Interview guide

1. Overall, what effect, if any, has massage had on you? For example, this might include your thoughts, feelings, reactions, or activities.
2. Is there anything else you'd like to tell us?
3. Have you changed the way you think about your osteoarthritis as a result of having received massage?
4. (If yes, please explain how the way you think about OA has changed.)
5. Have you changed anything you do as a result of having received massage?
6. (If yes, please explain what you have changed.)
7. Is there anything else you would like to tell us? (If yes, please explain.)
8. While receiving massage, did you notice any changes in your health or life in addition to those directly related to osteoarthritis?

Data Analysis

Transcripts were analyzed using standard methods of content analysis [18,20]. After completing the interviews, transcripts were read by two investigators (AA and LR) for an overall understanding to identify emergent themes [22]. As the transcript review process continued, findings were categorized as potential themes [20].

Our quantitative data was previously analyzed using SAS software (Version 9.1, SAS Institute, Cary, NC, USA). Repeated-measures analysis of variance using linear mixed model regression was used to determine between-group changes in all outcome measures and changes in domain-specific (i.e., pain, stiffness, and functionality) quantitative measures, controlling for time-dependent variables. In all analyses, a two-tailed α of less than 0.05 was considered statistically significant. Duncan's multiple range test (a multiple comparison test) was used to determine whether means differ significantly across treatment groups.

Between-method triangulation [23] of quantitative outcomes from the clinical trial and participants' statements of their attitudes, feelings, and experiences was chosen to establish external validity of our qualitative data and allowed for a more thorough understanding of the effects of massage therapy.

Ethics Statement

The study protocol, consent form, and all recruitment materials were approved by the Institutional Review Boards at Griffin Hospital (Derby, CT, USA), St. Barnabas Medical Center (Livingston, NJ, USA), and the University of Medicine and Dentistry of New Jersey (Newark, NJ, USA). The original clinical trial was registered at clincaltrials.gov (NCT00970008).

Results

Recruitment

Interviews were conducted with 18 participants who expressed an interest in discussing their experiences with massage therapy: 10 participants from the New Jersey site and eight participants from the Connecticut site. All participants received Swedish massage during the clinical trial (at varying doses). The majority of participants were white and female, with a mean age of 65 years. Demographic data can be found in Table 2.

Table 2 Demographic characteristics and baseline values

Variable	Frequency	%
Race		
White	15	83.3
African American	2	11.1
White/Asian	1	5.6
Gender		
Female	14	77.8
Male	4	22.2
Age, y, mean ± SD	64.7 ± 10.9	
Body mass index, kg/m^2, mean ± SD	33.1 ± 7.6	

Themes

Three salient themes emerged from our analysis. Subjects discussed 1) relaxation effects, 2) improved quality of life associated with receiving massage therapy, and 3) the accessibility of massage therapy in treating osteoarthritis.

Theme 1: Relaxation Effects Associated with Massage Therapy

Many (44%) study participants stated that they felt the massage intervention was relaxing. Of those eight participants, half of them noted that the relaxed state produced by massage affected their thoughts, feelings, reactions, or activities. One participant noted that she felt relaxed and that the massage sessions allowed her

to "'unplug'—which was a true benefit" (Participant 41GR).

Some (11%) participants expected that the primary effect of massage would be relaxation. Participating in the study resulted in the unanticipated benefits, however, of improving knee pain and range of motion. One participant stated that "massage therapy is fabulous, very soothing, and restful." However, she also expressed that a 30-minute session was too short, explaining that "you would start to relax [but] then time was up"(Participant 41GR). This participant experienced improvement in the WOMAC global score (7.4 points) after eight weeks of massage at 30 minutes weekly; the magnitude of change was less than that of this treatment arm, which improved by a mean 17.4 points [14]. One participant noted that the relaxation effect "does actually help" with osteoarthritis (6900), while another noted that massage "promotes a general feeling of well-being, and that's a very important thing for me. Oh, I feel good, I can do things, and that makes me feel happy." (02GR)

Theme 2: Improved Quality of Life with Massage

Besides the measured outcomes of the dose-finding study (pain, range of motion, knee function), many (44%) participants noted improved mood, mental and emotional status, outlook on life, and overall well-being.

Participant 02GR stated, "I saw [osteoarthritis] as more manageable because of the massage therapy, that it didn't have to overwhelm me." She also noted that massage "promotes a general feeling of well-being and that's a very important thing for me. . . . I can do things, and that makes me feel happy." This participant experienced a larger improvement in WOMAC global scores (31.4 points) compared with her treatment arm's (60 minutes twice weekly) improvement of 22.8 points.

Other participants noted an increased ability to perform daily activities. One participant stated that she was able to walk longer distances, over stairs, and participate in more outdoor activities (Participant 0100), while another participant found that the relief associated with receiving massage gave her increased mobility, ability to travel, and engagement in more activities, and that it improved her social life (Participant 3700). These participants also experienced greater improvements in WOMAC global scores at eight weeks (0100–67 points and 3700–41.9 points) in relation to the mean changes in their treatment arms (24 and 17.4 points, respectively).

One participant reported reduced need for nonsteroidal anti-inflammatory drugs (NSAIDs) to control pain during the course of the study (44GR). This participant (44GR) experienced an improvement in their WOMAC global score (30.2 points) after eight weeks of massage (at 60 minutes weekly) greater in magnitude than their treatment arm, which improved by a mean 24.0 points [14]. Despite improving less than the mean change in their treatment arm (15.7 vs 24.0 points), another participant (2300) learned that "there are options other than surgery for pain relief."

One participated stated that "massages once a week does help in your daily life" (Participant 6900) despite demonstrating a decline in WOMAC global scores (44.5 points) after eight weeks of massage at 60 minutes twice weekly.

Theme 3: The Accessibility of Massage as a Treatment for Osteoarthritis

Of the participants reporting symptomatic relief with massage (N = 14), five noted short-term pain relief. One participant (04GR) stated, "When I did come to the study, the massage really helped. It was a great thing that helped me at the time, but now I have to consider what I need to do." This positive view contrasts with the participant experiencing less relief than others in the same treatment arm (7.4 vs 18.4 points on WOMAC global scales). Thirteen participants stated that they felt massage was an effective treatment for osteoarthritis.

A number of participants explained that they found benefit from massage therapy during the course of the clinical trial, but expressed regret that insurance coverage for massage is currently unavailable. One participant noted that they "love to get massages but can't afford them" and that they would appreciate receiving massage "on a regular basis to help with life issues, immune system, and osteoarthritis" (41GR), despite this participant experiencing a modest benefit (7.4 points vs 18.4 points on WOMAC global scores in the 30 minutes twice weekly group).

One participant (3500) commented that they would be more apt to get massage treatments for their osteoarthritis, but they can't believe massage for medical necessity is not covered by insurance. Of the 10 participants who were asked if massage would be utilized if covered by their insurance plans, all replied in the affirmative.

Discussion

In this qualitative study of subjects in a manualized clinical trial of massage therapy, a number of themes emerged. Participants reported relaxation effects, improved quality of life, and symptomatic relief, possibly beyond increased functional status and pain scores as found in our clinical trial [14]. Our interviews revealed statements noting empowerment, with an improved ability to perform activities of daily living. These findings are consistent with Hsu et al., who reported increased awareness of treatment options and/or hope, increased ability to relax, and positive emotional changes with a number of CAM therapies used in clinical trials of back pain [15]. Similar findings have been found with other interventions such as Qigong and exercise therapy [24].

Findings from multiple clinical trials have established that patient expectations can influence treatment outcomes in a number of conditions, especially in chronic pain [25,26], though positive expectations do not always lead to enhanced outcomes [26,27]. Expectations may be more pronounced in the context of CAM therapies where elaborate therapeutic rituals are part of care, in contrast to pharmacotherapy [28,29].

Patient expectations of CAM interventions (yoga, chiropractic, acupuncture, massage) can change over time. For example, Eaves et al. noted increased acceptance of chronic pain and the need to proactively strategize on how to prevent symptomatic exacerbations during the course of treatment [30]. Furthermore, treatment priorities can also change over time, as elucidated by Cheraghi-Sohi et al. in a qualitative study of osteoarthritis patients [31]. Other studies have found that CAM practitioners tend to understand the role of expectations in modifying outcomes and attempt to manage these expectations to enhance patient engagement [32].

In our study, participants noted a lack of accessibility of massage therapy, namely the lack of insurance coverage for routine care contrasted with the free availability of massage therapy during the course of the clinical trial. Our participants enjoyed massage and most wanted to continue to receive massage therapy, but the lack of insurance coverage was a significant barrier to ongoing treatment.

To foster third-party payer coverage, the cost-effectiveness of any therapy needs to be established. This is particularly relevant for CAM therapies that tend to be in widespread practice but are often unattainable to those unwilling or unable to pay out-of-pocket [33]. Consequently, we are formally assessing cost-effectiveness of massage in a multisite efficacy trial (clinicaltrials.gov NCT01537484) focusing on the health system (payer) perspective.

In a systematic review of 338 economic evaluations of CAM therapies, nearly 30% of the 56 comparisons made in the studies demonstrated cost savings; better health outcomes (than usual care) were achieved at lower costs. Cost savings and improvements in quality-adjusted life-years were reported across a number of populations for a wide array of CAM therapies, including acupuncture, manual therapy, combination therapies, tai chi, and nutritional supplementation. Given that economic evaluations tend to be setting specific with low generalizability, Herman et al. recommended higher-quality studies with detailed reporting of methodology, which could then be adaptable to other settings [34].

In our study, participant statements tended to be consistent with their quantitative changes on standard osteoarthritis measures; the primary outcome in the clinical trial was change in Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) global score [35–37]. One participant noted minor improvements in their WOMAC global score (7.4 points), but the magnitude of change was about 50% of what others in the same study arm (30 min weekly) experienced—14.3 points. Thus, in this case, relaxation may have been the primary benefit of massage therapy. Another participant noted positive changes and a general improvement in daily life with massage despite showing a substantial decline in WOMAC global scores after eight weeks; that is, this participant was demonstrably worse in terms of WOMAC scores, but noted a subjective improvement in her quality of life. This paradoxical finding may be analogized to results from a clinical trial by Kaptchuk and colleagues in which patients with asthma who were treated with sham acupuncture reported subjective benefits despite not demonstrating objective improvement [38]. Pain assessment is generally subjective [39]; the WOMAC is a validated self-report instrument and among the most widely used instruments in arthritis research [40]. Nevertheless, the challenges of reliable data in self-report instruments are well acknowledged, as pain reports can be affected by social factors, modeling, time of day, and the language and orientation of paper scales [41].

Despite our participants noting multiple benefits from massage therapy, the massage therapists delivering the intervention noted philosophical challenges when balancing the individualized approach of clinical massage therapy with rigorous clinical trial methods [42].

Limitations of our study included a small sample consisting of predominantly white women; a larger and more diverse sample may elucidate other findings, as pain perception can be affected by socioeconomic status [43] and race [44]. As our sample was nonrandom, selection bias may have affected the overall themes and conclusions. Interviews were documented in real time, leading to the paraphrasing and summarizing of responses. Audio recordings to ensure verbatim transcriptions, a standard method in qualitative studies, would better capture nuanced statements and could help minimize reporting bias from the interviewer [45]. Furthermore, multiple investigators interviewed the participants; a single investigator performing all interviews would ensure more consistency in data collection methods. Moreover, using validated health-related quality-of-life measures (such as the SF-36 or others) would facilitate quantitative assessments of any association between quality of life and WOMAC scores.

Future studies of massage interventions for disease treatment should include health-related quality-of-life assessments as well as outcomes related to perceived well-being [46]. In studies of chronic pain disorders, we recommend that specific comorbidities such as insomnia and stress be assessed along with standard clinical outcomes, as sleep [47] and stress [48] can impact quality of life and perceptions of well-being. Furthermore, the concept of salutogenic [49] side effects of an intervention in the context of complementary and integrative therapies could be further explored in clinical trials.

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