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"Now I see a brighter day": expectations and perceived benefits of an Iyengar yoga intervention for young patients with rheumatoid arthritis

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Abstract

Rheumatoid arthritis (RA) is a chronic disease characterized by inflammation of joints and associated fatigue, deteriorated range of motion, and impaired psychosocial functioning. Young adults with RA are at a particular risk for compromised health-related quality of life, and there is a need for safe, effective complementary treatment in addition to traditional medical approaches. The aim of the present study was to use face-to-face participant interviews, conducted before and after an Iyengar yoga (IY) program, to examine mechanisms through which yoga may be beneficial to young adults with RA.

This pilot study utilized a single-arm design where all participants received the intervention. Classes were taught twice per week (1.5 hours each) for 6 weeks by an IY teacher qualified in therapeutics. Interview themes included participants' baseline expectations about yoga and viewpoints as to how their functioning had been impacted by the IY intervention were examined. Five young adults with RA aged 24- 31 years (mean = 28; 80% female) completed the yoga intervention. Participants consistently reported that yoga helped with energy, relaxation and mood and they discussed perceived mechanisms for how yoga impacted well-being. Mechanisms included physical changes such as range of motion and physiological awareness, and psychospiritual developments such as acceptance, coping, self-efficacy and mindfulness. Though the study is limited, participants' responses provide compelling evidence that IY for RA patients is an intervention worthy of further exploration. The mechanisms and outcomes reported by participants support a biopsychosocial model, which proposes that yoga benefits patients through both physiological and psychospiritual changes.

Keywords: Iyengar yoga; Rheumatoid arthritis; Qualitative data

Introduction

Rheumatoid arthritis (RA) is a chronic autoimmune disorder associated with pain, swelling, stiffness and loss of joint function. Health-related quality of life (HRQOL) may be compromised, especially when arthritis develops in childhood and adolescence [1,2]. Young people with arthritis or rheumatism often have increased depression and pain, are more likely to use health-care services, and are less likely to attend school compared to healthy controls and to adolescents with other chronic diseases [1]. The present study examined the perceived expectations and benefits of Iyengar yoga (IY), a novel adjunct treatment, in young patients with RA.

The maintenance of physical functioning is important in young patients with arthritis. To prevent osteoporosis and wheelchair dependency, increasing range of movement, strength, and ambulation should be targets in rehabilitation efforts [3]. An additional concern is the potential challenge for young people with RA to meet normative developmental milestones, including adult levels of independence. Pain and debilitated functioning may leave many young people with RA in a socially and emotionally compromised state [4] with difficulties persisting into later adulthood. Young people with arthritis are at long-term risk of compromised physical and social functioning, including decreased rates of employment in the future [2]. Because patients facing the transition to adulthood may encounter exceptional difficulties dealing with their illness, interventions targeting young adults with RA are warranted.

Despite the need for physical and psychosocial treatment strategies aimed at young people with RA, traditional approaches can be limited [5]. Although current medications are useful in preventing disease progression and in lessening pain and stiffness, adverse events such as gastrointestinal problems can occur [6]. Even for patients who respond well to drugs, a multi-pronged treatment strategy is recommended including rehabilitation efforts that promote a range of physical outcomes including ambulation, muscle strength, and balance [3]. Patients who exercise regularly report decreased pain and improved functioning [7].

Iyengar yoga (IY) may be suited to meeting the rehabilitation and exercise needs of people with RA, as poses designed to increase the strength and mobility of joints and muscles can be individualized for each patient's abilities and needs. Yoga also has the potential advantage of addressing the patient's psychological functioning, which may further reduce risk of disability. IY may be a particularly suitable form of yoga for patient populations [8]. The focus on correct anatomical alignment, use of supportive props designed to relieve compromised areas of the body and rigorous, systematized teacher training support its use within the medical field. Further details regarding the intervention are discussed in the Methods section below.

A limited number of studies have focused on the use of yoga for musculoskeletal conditions, and few have examined young people.

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One study for RA did include young people, however, the age range was too broad (aged 15-72 years) to determine the specific utility of the findings for young people(9). Despite the small number of participants in this study (10 in each of the yoga and control groups), yoga was found to significantly improve handgrip strength. Several other studies examining yoga for arthritis have reported beneficial effects [10-12]. Most recently, a controlled trial using Raj yoga for adults with RA found significant improvements in disease activity (including an inflamed joints count), and arthritis functioning in 26 yoga completers compared to the group of 21 control patients [13].

The previous literature has demonstrated that yoga is promising for older people with RA, yet thus far young people have been largely ignored. With the exception of our recent mixed-methods paper examining the quantitative outcomes and pain reports of people with RA [14], there have been no studies focused specifically on young RA patients. In addition, no prior studies that we are aware of have used qualitative methodology to examine experiences of a yoga intervention for people with RA. Research exploring the mechanisms of yoga remains limited, and a complete model depicting how yoga may impact functioning is yet to be tested [15]. Asking patients to explore possible changes in functioning after undertaking yoga is important in documenting a full range of patient experiences and to identify variables to test as mechanisms in future quantitative work.

The main aim of the present study was to use participant interviews to explore potential mechanisms of change as a result of participating in an IY intervention. It was anticipated that the interviews would provide a valuable forum for participants to openly discuss ways in which their functioning may have been impacted, thus addressing the need to develop and describe a model that accounts for the physiological and psychospiritual mechanisms through which yoga may benefit individuals [15].

Method

Participants

Out of 16 interested participants, 8 met inclusion criteria and were enrolled in the study. Three participants could no longer commit to the study during the first week of classes. Reasons included a prior injury and scheduling conflicts. The age range of the remaining 5 participants was 24- 31 years (mean = 28; 80% female). The duration of RA symptoms ranged from 8 to 28 years (mean = 16 years). Two participants identified as Hispanic and three as Caucasian non-Hispanic.

Procedure

Participants were recruited through advertisements in rheumatology offices and arthritis support group newsletters. Inclusion criteria included diagnosis of RA for at least 6 months according to the revised 1987 ACR criteria, aged between18-35 years, concomitant use of disease-modifying antirheumatic medications was permitted provided doses were stable for 8 weeks, concomitant use of NSAIDs and low dose corticosterioids stable for 4 weeks, ability to provide written informed consent, and ability to speak and understand English. Ethical approval was received from the UCLA Institutional Review Board (IRB).

After screening, eligible participants completed face-to-face interviews. All interviews were conducted by experienced research assistants who received training in interview techniques from one of the study co-investigators, a senior sociologist. Items in the initial interview included questions related to participants; current and past RA symptoms, perceptions of yoga and their expectations of yoga. After the IY program participants completed another interview in which their experiences during the intervention were explored. Topics included perceptions of the impact of the IY program on functioning including any changes in pain, symptoms or mood, whether the program met participants' expectations, social effects, what was/was not helpful and whether the intervention was a good match for RA.

Iyengar yoga intervention

The IY program lasted six weeks, comprising two 1.5 hour sessions of yoga per week (total dose = 18 hours). One make-up class was available for those participants who missed one of the regular, scheduled classes. An experienced IY teacher taught the intervention along with a qualified assistant. A senior teacher served as an advisor. The poses include supine poses, passive backbends, standing poses, and supported inversions, completed with the use of props and modifications as needed. IY is a tradition of yoga that employs therapeutic sequences for patients with specific medical conditions, uses supportive props such as blankets, bolsters and props, and places an emphasis on alignment to protect joints. Focus on the breath and non-judgmental awareness of tension and symptoms in the body is thought to provide meditative benefits. Teachers must have at least 7 years teaching experience before being certified to work with patients, suggesting that IY is a reliable approach and that teachers have appropriate knowledge of patient populations.

Data analysis

Phenomenological analysis was used to identify themes within the interview data. A codebook was created based on the variables identified as having likely importance, including changes in physical and psychospiritual functioning. The qualitative data recorded on audiotape was transcribed and entered into Microsoft Word. After the interviews had been read in detail twice by two different researchers, main themes were identified and coded according to the main variables. Corresponding quotes were entered into Microsoft Excel to create tables identifying the main themes. The process is iterative, and code categories were revised, expanded, and created as the research progressed.

Results

Expectations

Baseline interviews focused on participants' symptom history and expectations regarding the yoga intervention, including previous experience with yoga. The majority of participants expressed some hesitance regarding their suitability; this included being unfamiliar with what yoga involved and being concerned about 'disqualification' due to a lack of flexibility or an inability to perform certain poses. For example, a number of participants mentioned difficulty sitting 'Indian style' and wondered if this would limit their ability to participate. There was also concern that they would be asked to do things that might hurt or impair their joints, such as jumping. Other participants had seen or tried yoga classes before and their apprehension was apparent.

I saw people at gym doing it (yoga) and you're like 'yeah right' I'm never going to be able to do that I'm not even gonna try…at first, I didn't even consider it. You hear yoga and arthritis and you just don't think the two mix.

Despite such reservations, there was an overall sense that the yoga classes would be useful. It was felt that yoga would help with range of motion, flexibility, energy and the alleviation of symptoms. One

participant mentioned that she had desired to try yoga for a long time, but her range of motion issues prevented her from attending regular classes. An intervention tailor-made for people with RA had given her the courage to attempt yoga: "I feel like it'll be more of a safe environment being that it's a study for arthritis and everyone in the class may have some issues."

The post-study interviews revealed that participants were satisfied with the way yoga had been made accessible to them. They expressed that their fears quickly subsided after the first class and found the supportive props and individual attention particularly helpful. Participants were also appreciative of the careful selection of therapeutic sequences and the inclusion of modifications and teachers trained to work with students with health needs. Not only were patients able to practice yoga, but the Iyenagr tradition allowed them to hold a range of poses, even those they questioned, without fear of strain to joints.

It just seemed different because…somehow with the regular yoga, it seems like it's all about 'Look, how strong I am; look at these interesting positions I can make my body into.' Whereas this seemed more like they actually cared about your health and how to make you feel better, and you know, let's try and get you into a position that's going to help you and relax you at the same time, which seemed a lot more pleasant.

Participants' expectations regarding whether the intervention would be helpful were generally met. Their ideas about which aspects of functioning would be improved, such as energy and range of motion, were realized. Details regarding the benefits following yoga are described below.

Experiences and perceived benefits

Participants mentioned a variety of benefits after participating in the IY program. These included physiological benefits such as increased strength, improved posture, and awareness and alignment of body structures. Psychospiritual benefits were also mentioned, and included confidence and self-efficacy, the use of postures as a skill-based coping strategy, positive mood and mindfulness. Other benefits were improved sleep and energy levels, a sense of relaxation and fewer general aches and pains. No adverse events were reported.

Overall, participants reported 'feeling better' and the most common experiences they reported informed the corresponding themes that follow.

Relaxation and energy

An enhanced ability to relax and greater energy were the most consistently reported benefits. Participants greatly appreciated the time to be peaceful, away from stressors and daily hassles.

I really enjoyed it. I found it to be really relaxing and prior to this particular experience, I never knew how to relax. I've never had that moment of pure quiet, like a quiet mind because I live in my head. It was nice to find something that actually got me that quiet in my own head.

This participant went on to describe how her relaxation practice had generalized to other settings. A recent vacation had provided an opportunity to take stock of developing relaxation skills and the myriad of associated benefits including an enhanced experience: "I guess I was just in a different mind set and so I actually enjoyed myself a lot more which is rare for me." Perhaps in part due to improved relaxation skills, many participants also noted better sleep quality.

Responses indicated a balance in energy systems, such that a decrease in stress through relaxation occurred along with an increase in physical and psychological vitality. This enhanced energy was felt almost immediately upon beginning the program.

I really didn't think my energy would increase, you hear that talked about but I really didn't think that would happen and it definitely did, almost immediately.

Physical vitality was evident by waking feeling refreshed, accomplishing more without fatigue, and needing fewer day-time naps; psychological vitality was seen in an ability to stay focused in school and work for longer periods and feeling 'less drained.' Being 'energized' extended throughout the week and generalized to many facets of living: "(Yoga) just in general helped my energy level so that helped across the board with life."

Perceived physiological mechanisms

Participants reported a number of changes that pertained to their biology, whether it was to their structural body, physiological arousal or endocrine systems. They noted an expanded awareness that extended from an internal knowledge of their stress response to a structural awareness of how their bodies, including affected joints, may be misaligned. One young woman described that she had "never been that in tune with my body that I could feel the physical reaction of my stress" but over the course of the yoga intervention, was increasingly able to note her arousal levels and associated spikes in pain. Others noted a new awareness of long-term tension in their bodies and the development of a misaligned stance or body posture in an attempt to accommodate painful joints.

I always feel like my body is caved inward. I'm always trying to protect my joints, and I've sort of learned and feel that after every class, I feel more open.

In fact, every participant noted this sense of being more aware of body posture, alignment and flexibility. More than simply being mindful of it, participants noted that they now had the resources and knowledge to take corrective actions.

I can see how yoga can correct your body position if you keep on doing that…I'm more aware of how I can do that with my muscles too; lifting up your leg to make it straighter instead of letting your legs do whatever they want.

Although discussion of being psychologically mindful is included in the section below, evidence of expanded awareness was present in many aspects of functioning. This included being more knowledgeable of RA symptoms, with at least one person commenting on an increased awareness about which body areas were most affected by RA.

Strength and flexibility were also noted by many, as was a release in affected joints. Participants were becoming knowledgeable about which particular poses had an action on corresponding body areas, further demonstrating the uses of awareness.

Some of those poses, like opening the legs up or even stretching them, helped a little bit with my range of motion and it relaxed around my joints, especially the ones that hurt the most.

While feeling straighter, stronger and more supple were common to almost everyone, participants expressed that these physical changes were only beginning to occur. In order to see more profound and long-lasting physiological and structural improvement, they felt a longer intervention would be required.

Finally, participants also noted changes in their psychophysiological

functioning, including stress and 'feel good' hormones. Some participants attributed at least part of their sense of well-being to 'a lot of endorphins running through your body,' consistent with the rush reported by many people who perform high energy exercise, including running. Participants seemed to note these endorphins more commonly after performing challenging inversions such as supported headstand.

The development of relaxation skills, as discussed above, could also be considered a strategy for modulating the autonomic nervous system, and a potential psychophysiological mediator of the impact of yoga on functioning.

Perceived psychospiritual mechanisms

Awareness extended to psychospiritual functioning. Thus, participants reported being more connected to themselves and others around them, with some even describing spiritual transformations. One person reported a sense of enlightenment and that this would be accessible to anyone undertaking yoga. Before the intervention she "felt like I was not a yoga person and now I can see anybody can be a yoga person." Another participant described an entirely different outlook on life and pain following yoga:

I felt like I found this inner peace within me. I found a side of myself that I didn't know I had before….You let go of everything when you're there doing yoga…I forgot about the pain sometimes.

A sense of 'letting go' was a common underlying theme. Thus, learning to relax was about releasing from stress, while developing the confidence to try some of the more challenging poses was about letting go of fear. Once participants overcame their hesitation and tried the poses, their delight at having accomplished something difficult was palpable. Many surprised themselves with the level of skill they achieved. One participant suggested he would like a picture of himself in the more 'extreme' poses as a record of what he was able to achieve.

Being proud of accomplishments was also associated with an improvement in patient self-efficacy, or the belief in their capacity to meet goals. Most participants reported negative prior experiences with yoga, whether it was sitting at the back of a class because they weren't able to complete the poses, or walking past a gym and seeing able-bodied people performing difficult postures that seemed impossible. However, participants reported being unanimously "impressed" with Iyengar yoga, with one person "singing its praises to everyone." Yoga practiced in this way equipped participants with the tools to see themselves as efficacious and capable of managing their functioning.

I just learned that always try new things, not to think you can't do it and keep on going in life like that…don't be scared…find a way that you can do it.

This self-efficacy extended to physical activity in general for at least one person, who reported "every morning I try to stay more active now…even if I have some pain."

Yoga provided a skill-based coping strategy for these young patients, which contributed to their sense of confidence and self-efficacy. The poses showed a way to take charge of their bodies and determine the way they felt.

I learned that even if the joint hurts, even if my hips hurt, I can still do different poses, I can still relax them even if they're hurting. I can do different things with my hips.

Along with a belief in themselves as capable, participants seemed to feel kinder towards their bodies. In contrast to old habits which saw participants focusing on their limitations, the resounding feeling was that yoga was empowering. Yoga taught with the support of tools and tailored modifications seemed to bypass physical limitations and participants could be more forgiving: "I learned to accept my body and not just stay at home in bed if I'm in pain."

Participants' expressed that there were social benefits of attending the yoga classes. Everyone expressed that they appreciated being in a class rather than receiving individual lessons, with some mentioning social interaction as a notable effect. Two people said they had developed a friendship from the classes, while others noted that it was helpful to see people with similar limitations accomplishing the poses. This point is important to note, as it is possible that at least part of the benefit from the yoga program may have been due to nonspecific effects such as group membership.

For many, yoga had the greatest impact on emotional well-being and mood. "It was very helpful for my mind more so than anything." Improvements in depressive and anxious symptoms were commonly reported, which impacted multiple sources of functioning.

Before doing the yoga, I was having some troubles at home. Very depressing. So I was in bed a lot more….I just locked myself up and stayed in my room but now I've noticed that I'm outside of my room now, I'm out with my family, in the kitchen with my mom, I'm visiting my friends, I'm not staying home like I was before. I still get sad a little bit but it's not like the depression that used to haunt me a lot more before.

She went on to report "Now I see a brighter day. I'm looking forward to tomorrow, and the next day whereas before I wouldn't even look."

Discussion

This qualitative study explored the experiences of a young group of people with RA undertaking a 6-week course of yoga. As anticipated, the interviews proved to be a rich source of viewpoints regarding how functioning and well-being had been impacted. Baseline questions asking about expectations proved to be fruitful in understanding patient barriers to pursuing yoga. Follow-up interviews revealed changes in patient expectations regarding their suitability for yoga, as well as perceptions of physical and psychospiritual benefits of yoga practice.

Before the intervention, participants anticipated that yoga had much to offer practitioners, but they did not feel that a regular yoga class, full of supple and able-bodied students, could provide the level of support and medical expertise they would require. While some participants had considered attending a regular class, this had resulted in sitting at the back for the duration of the class or wandering by a class and leaving disheartened. This was in contrast to patient experiences undertaking the IY intervention in the present study. By the completion of the program participants realized they could practice yoga, provided that sufficient props, modifications and teacher expertise were available. Indeed, some participants noted a change in their expectations that yoga could only benefit those without physical limitations after the first class.

An important distinction exists between yoga practiced in the Iyengar tradition and other styles of yet available. Yoga is one of the fastest growing activities in the exercise industry and currently 6.1% of the adult US population practices yoga [16]. There has been little comparative work examining the safety and suitability of the various traditions offered. Not all yoga classes provide an assurance of rigorous

and systematized teacher training, supportive props and modifications for health conditions that patients with chronic conditions such as RA require. It may be argued that the initial reservations held by patients regarding the suitability of yoga for their health issues are justified. It is possible that without a sufficiently trained teacher knowledgeable about RA, patient safety may be compromised. Therefore we caution against generalizing the study findings to classes not within the IY tradition or other suitable medical classes.

The post-intervention interviews revealed a number of favorable outcomes. Participants consistently reported improved range of motion, energy, relaxation, sleep and mood. These benefits translated into enhanced daily functioning for the group, including relative ease in work, school and home life. The depth of participants' responses offered clues as to possible underlying mechanisms explaining the association between yoga and enhanced well-being in this group. Participants expressed both physical and psychospiritual changes underpinning their improved functioning. Common physical changes that were reported included increased strength and flexibility which likely impacted range of motion and the perceived release of 'feel good' hormones which may have impacted states of relaxation indicative of parasympathetic system activation. Potential psychospiritual mechanisms evoked by participants' responses included a new found sense of self-efficacy and acceptance of oneself, as well as elevated mood. Improved mood was evident in reports of feeling emotionally uplifted, hopeful and less depressed. Participants' self-efficacy not only related to increased confidence in performing yoga poses and taking charge of their bodies; at least one participant demonstrated self-efficacy for other forms of exercise. This finding is consistent with research suggesting that yoga practice leads to improved confidence to engage in general physical activity [17].

An emerging sense of awareness or mindfulness was also evident and extended from physical functioning – in the form of being mindful of escalating stress and correcting body posture - to psychospiritual awareness such as feeling more 'enlightened' and letting go of fear, pain and stress. In yoga practice, increased mindfulness is indicative of progress, as developing the skills to be aware of tension in the body and mind allows one to release this tension and associated pain [18]. A significant increase in trait mindfulness following yoga has been reported previously in healthy individuals [19], and the present results suggest a similar process for people with physical limitations.

The outcomes and perceived mechanisms reported here are consistent with our recent work conceptualizing the beneficial action of yoga on functioning [20]. Our model, based on the extant yoga research and derived from the biopsychosocial view of pain and health, posits that yoga confers benefits on disease-specific and general health-related outcomes through physiological/structural and psychospiritual changes. The present study supports the relevance of such mechanisms as autonomic nervous system regulation, endocrine balance, musculoskeletal strength and flexibility, and a host of psychospiritual developments. We caution that this study is small and focuses on only one disease population, although the consistency with which participants reported such perceived mechanisms in response to open-ended questions regarding general functioning is initially compelling. The mechanisms identified by participants, including mind-body awareness, should be explored in future studies understanding how yoga may impact functioning.

One area that particularly deserves further investigation is the role of biological changes following yoga. In order to provide the level of evidence and understanding required for yoga to be recommended alongside conventional medicine, research needs to elucidate physiological mechanisms. Tests of autonomic nervous system arousal and disease markers are needed to understand how yoga impacts stress and disease activity within this population. Nevertheless, patient self-reports of improved well-being have an important place in the determination of treatment efficacy. Self-reported HRQOL is perhaps the most significant construct in monitoring a chronic disease's impact [21]. Improvements in HRQOL may be more telling than traditional medical symptoms such as joint counts and sedimentation rates when evaluating treatments for arthritis [22]. The present findings, while limited to a small sample, therefore indicate the promise of IY for improving quality of life in young people with RA.

Although further research is required using a larger sample size and a randomized controlled design to rule out possible improvements due to nonspecific effects such as group membership and patient expectations, the present study underscores the promise of IY in addressing the physical and psychospiritual functioning of young people with RA. Previous research has found beneficial effects of yoga for older patients, but this is the first time we are aware of research documenting young patient experiences. These qualitative findings are consistent with our quantitative outcomes related to improved functioning, energy, mental health, and self-efficacy with this group [14]. Given the open-ended nature of the interviews, the present findings provide a detailed, rich account of how yoga may impact well-being. It is our intention that the mechanisms identified by patients in this study highlight the importance of qualitative work – particularly for emerging research – and will help drive the selection of quantitative measure in future yoga research.

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