



Review Article

Mindfulness and its Application for Older Adults with Chronically Painful Osteoarthritis

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Citation: Marks R (2022) Mindfulness and its Application for Older Adults with Chronically Painful Osteoarthritis. Int J Geriatr Gerontol 6: 131. DOI: 10.29011/2577-0748.100031

Received Date: 31 May, 2022; Accepted Date: 10 June, 2022; Published Date: 16 June, 2022

Abstract

Osteoarthritis, a chronic condition resulting in considerable disability, particularly in later life, not only impacts life quality significantly and severely, but is associated with intense bouts of chronic pain and pain flares. The first aim of this review article was to summarize, synthesize, and examine the research base concerning the nature of osteoarthritis, followed by evidence that mindfulness as applied to aging adults with this condition, is likely to be highly efficacious for improving their life quality and joint status in general. A second aim was to provide directives for health educators and others who work or are likely to work with this population at this time and in the near future in the event no effective cure or approach is forthcoming. The article specifically focuses on examining the idea and possible efficacy of various forms of mindfulness as an adjunctive intervention strategy for minimizing arthritis disability, and for fostering independence and life quality. To this end, the author attempted to include a broad overview of all relevant articles published in the English language on the topic, rather than any systematic review. Collectively, these data reveal that while more research may be helpful, mindfulness practiced widely in Asia for many centuries—may be a useful intervention strategy for older adults in the community diagnosed as having osteoarthritis. They specifically suggest health educators and others working with people diagnosed as having osteoarthritis can safely recommend this approach to most people with this condition with the expectation that consistent practices will be protective in multiple ways, as well as heightening their life quality and overall health status.

Keywords: Aging; Disability; Intervention; Mindfulness; Life quality; Osteoarthritis; Pain

Context

Osteoarthritis, a term used to describe the most common form of arthritis is a highly disabling chronic health condition affecting one or more of the freely moving joints of the body due to its impact on pain that is very challenging to ameliorate safely and without surgical intervention. Known to be a highly prevalent condition among older adults worldwide, the condition, which commonly affects the joints of the lower limb, spine, and hands, thus continues to create an immense personal as well societal burden due to its generally progressive nature, and tendency to advance from being a manageable disease of a single joint to a highly impairing disease of one or multiple joints along with multiple complex pathological cellular and molecular joint tissue alterations over time [1].

Consistently associated with varying degrees of joint

stiffness and swelling as a result of associated damage to affected joint structures and its lubrication mechanisms, the associated factors of obesity, and cardiovascular comorbidities that often accompany this disease render this group of older adults not only at heightened risk for premature morbidity, but possible mortality in its own right, along with an increased risk of being unable to live independently and a need for possible pain alleviating opioid-based medications. Moreover, even if the individual can manage to perform basic life affirming tasks, this group of older adults may still struggle due to possible social isolation, fear, depression, and anxiety and lack of confidence impacts, among others. In turn, they may be especially prone to worse pain, as well as sleep challenges, the onset of some form of metabolic disease, and challenges with weight control, especially if they remain symptomatic with no relief in sight.

On the other hand, intervention efforts designed to minimize symptomatic osteoarthritis and that can reduce its debilitating impacts as a result of any unremitting pain may help to overcome any associated unwillingness or pain associated barriers to

exercise, which is of special significance in the context of ameliorating pain and its associated symptoms in osteoarthritis. Appropriately designed, a carefully tailored intervention approach that affords some degree of pain relief may also help to improve the overall health status of the older adult with osteoarthritis, who is commonly in poor health, including the presence of poor overall endurance, feelings of fatigue and despondency that can further heighten pain perceptions, plus overall functional and health status negatively and significantly. As well, an intervention approach that can be carried out in the home as well as other venues at minimal cost may yet help to reduce the burden or the perceived burden of the demands of managing the disease, and in the face of possible limited visits from home visiting nurses, and family members, among others in the post COVID-19 era.

A practical form of intervention with proven results is especially desirable in efforts to minimize the mental health and other burdens commonly found among older community dwelling persons currently affected by osteoarthritis (Box 1). Those that involve little financial investments, are safe and can help the affected individual to maximize their wellbeing without undue compromise, excess effort and excessive physical stress are especially indicated.

Physical challenges
Altered central pain processing*
Chronic pain*
Deformity
Dependency*
Frailty
Joint inflammation and swelling*
Muscle hyperalgesia*
Muscle weakness, wasting, and fatigue
Increased falls risk
Joint instability
Limited joint flexibility and joint stiffness
Limited mobility and function*
Loss of joint lubrication
Overweight and obesity*
Poor bone health
Poor endurance and aerobic capacity
Poor posture
Possible autonomic nervous system dysregulation [2]
Reduced balance/walking capacity
Psychological outcomes*
Changes in cognitive attention processes
Coping difficulties
Depression and anxiety

Diminished overall life quality and poor self-image
Feelings of helplessness
Lack of confidence in prevailing abilities to function, control pain
Lifestyle and mental health changes
Stress, fatigue, and lack of energy
Sleep disturbances
Social outcomes
Reduced ability to work or socialize
Social isolation
Other
High risk of acquiring one or more comorbid health conditions
Immense economic costs and financial effects
Possible opioid overdose* [3, 4]
Premature mortality

Box 1: Selected Problems Commonly Faced by People with Osteoarthritis of One or More Joints. *Features That May Respond To Various Mindfulness Approaches.

Unfortunately, despite the numerous and considerable challenges associated with osteoarthritis among the older population shown in Box 1, plus decades of related research, there is as yet, no effective non pharmacologic nor safe pharmacologic remedy that has been shown to limit or eliminate the symptoms of this condition in a significant manner [5]. Moreover, while some medications may help temporarily, most may be more injurious than not to joint tissues and others and may inadvertently increase the risk for future joint destruction, rather than mitigating this process, as well as excess rates of premature mortality. In addition, while useful in restoring function and ameliorating pain in severe cases of the disease, not all cases of osteoarthritis can tolerate prescribed exercises such as walking, and many may not be able to safely undergo artificial joint-replacement surgery, for example if the individual has severe osteoporosis and/or respiratory problems or obesity and who cannot tolerate anesthesia. Thus some alternatives to living with pain, as well as alternatives that can minimize inputs of noxious stimuli from the periphery, as well as inflammatory pain, pain beliefs, and chances of pain catastrophizing, and anxiety, which increases pain sensitivity [6,7], seem strongly indicated. As observed following the 2020 COVID-19 pandemic, where even elective surgery for osteoarthritis and designed to relieve pain was often restricted or not offered in some cases, one can expect such cases who remain untreated to be suffering unduly from pain, as long as services remain limited. Even if not the case, since surgery does not eradicate pain entirely in the long-term, and when even the shortest exercise bout may cause pain and leave the osteoarthritis patient with more, rather than less pain, the application of multiple cognitive behavioral therapies, such as mindfulness or associated mind-body approaches has been advocated as having some potential to mitigate osteoarthritis pain [5,6].

Aims

This current introductory paper aimed to establish if results of representative current studies that discuss the efficacy of the mindfulness approach, appear promising for mitigating the pain experienced by most older adults diagnosed as having osteoarthritis. Mindfulness, which has been defined as the intentional and non-judgmental conscious awareness of the present moment is a potential strategy for ameliorating osteoarthritis pain that is often exacerbated by human behaviors and negative thoughts that are found to induce a cognitively altered cortical processing and transmission mechanism that sensitizes many individuals to neuropathic types of pain experiences [7].

The specific aim was to estimate the value of this possible adjunctive mode of intervention that embraces the application of attention to behavioral choices, plus the negation of negative thoughts, coping mechanism that are stress relieving, while actively generating positive cognitive attributes, a favorable self-image, and uplifting rather than anxious or depressed perspectives, among other strategies. A further aim was to estimate how its consistent and thoughtful application may be further advanced in the context of research and practice. Whether the value of this information for health providers and others is of merit, and can be extended to the operative forms of pain ameliorating interventions in end stage osteoarthritis, as well as in surgical cases was examined as well.

Rationale

Mindfulness, a self-generated mechanism is a possible largely unused strategy for modulating the pain experience associated with one or more forms of osteoarthritis as this impacts the older adult. While many approaches have been implemented for several decades to offset osteoarthritis pain, to date, one can safely say none are found to uniformly reduce the degree of pain experienced by this group significantly and permanently in the long-term, even if surgery is implemented to replace the diseased joint. In this respect, mindfulness, an approach that originated in the East, has not truly been viewed as a strategy that may be harnessed to complement other intervention approaches in Western medicine even though some compelling data indicate mindfulness is a well established system of cognitive exercises developed over many years with consistent potential to induce positive effects on pain perceptions and various cognitive forms of dysfunction, such as anxiety, even though older adults are not commonly studied in this regard, along with those who may have one or more chronic health conditions [8,9]. As societies age, many adults in all parts of the world are expected to suffer highly from the unremitting degree of pain and dysfunction inflicted by osteoarthritis joint destruction processes. Any mechanism that can safely and cost-effectively impact this degree of mass suffering that arises from the interaction of multiple physical, psychological, emotional, and social correlates and that can be lessened in any one of these domains appears worthwhile to investigate.

Methodology

To examine the degree of support for the application

of mindfulness as a form of therapy for older adults with osteoarthritis, data for this strictly narrative overview of this topic were sought from those available on the PUBMED, PubMed Central, PsychINFO, and Google Scholar electronic database sources. These data sources were selected, given their immense coverage of medical and psychology oriented research journals and that are peer reviewed and considered valid and clinically sound and relevant. The years searched ranged from January 1980-June 2022 and key words included mindfulness and osteoarthritis, mindfulness and chronic pain, mindfulness meditation and mindfulness and its impact as selected by the author. After all potential articles were carefully scanned for relevance, excluded were non-English based articles, or study proposals, or articles that did not focus on osteoarthritis or its analogues or mindfulness in any way. All forms of mindfulness and mindfulness measures were deemed acceptable. As well, all forms of osteoarthritis were deemed acceptable and relevant reports were accepted regardless of design issues or publication format.

Results

General observations

The current search revealed the present topic is largely in its infancy, and theoretical, rather than solid, while appearing promising. As well, it is challenging to delineate a clear overall set of perspectives from the reviewed data bases because the method of cataloguing the articles in these relative to the key words employed is not at all precise. In this sense, it is safe to say, there is little topical information to date, and in all instances many articles posted are unrelated to osteoarthritis or mindfulness or both. Of those posted, the majority are reviews of various sorts or study proposals. For example, not only do many of these posted articles in the realm of the employed key words focus on conditions other than osteoarthritis, they also focus on forms of intervention other than mindfulness. However, among the most salient articles, various authors indicate that higher degrees of 'mindedness' said to embody the awareness that arises when considering an issue non judgmentally, lucid attention, or bare awareness, among other attributes, and that may involve visualization, meditation, acceptance related thoughts, and others [10] tends to show and be associated with some favorable associations in support of integrated efforts to guide the use of mindful self-management approaches to control the presence of chronic pain [5,11], pain perceptions [12], health behaviors linked to osteoarthritis presence [10], weight control, and sleep, and thus to thereby improve overall physical health, as well as mental health and possibly biological health outcomes through regular practice, even though more research is needed.

Specific observations

Despite limited supportive evidence, even at its most basic level, mindful meditative practices are consistently found to potentially improve the chronic pain experience to a greater extent than standard approaches [13], even if the improvement is only moderate [5]. Other favorable benefits reported over time are its

promise in alleviating other symptoms of painful osteoarthritis due to their possible impact on the autonomic nervous system, which appears to be dysregulated in the context of osteoarthritis disease progression. Hence, further research on whether rebalancing autonomic function through mindfulness applications may lead to a valuable adjunctive therapeutic strategy for moderating osteoarthritic pain has been discussed [2]. Also discussed has been the probable application of mindfulness practices, which have been consistently linked to higher levels of physical activity participation [14], the cultivation of a tranquil and relaxed mindset through its intentional as a practical as well as useful approach among the diverse recommended processes of disease self-management and the persistent challenging thoughts and noxious body perceptions, fatigue and sleep challenges [15] associated with multiple behavioral issues that are linked to osteoarthritis pathogenesis [10].

Empirical evidence of mindfulness as an intervention for people suffering specifically with chronic pain such as that occurring in osteoarthritis is indeed generally supportive of this line of intervention, despite a lack any large scale well-controlled studies with diverse as well as adequate samples [13,16]. Theories of why mindfulness can affect favorable outcomes specifically among older adults who suffer from osteoarthritis of one or more joints, are seemingly grounded in some of the empirical data published to date and include but are not limited to its ability to target negative thoughts, help the affected adult to appraise threats more realistically, attend to the nature of one's activities from a safety perspective, assist with overcoming emotionally derived eating and/or catastrophizing, and reduce anxiety and depression, as well as stress and stress arousal status, among other key osteoarthritis features such as multiple functional limitations [16-18].

Additional reports show mindfulness appears to represent a type of awareness that can apparently enhance acceptance of one's situation, while fostering an open and non-judgmental approach to this in spite of the oftentimes highly negative disease moment-to-moment disease experiences. In addition, its thoughtful application may provide a possible means of fostering openness to change, rather than beliefs in the inevitability of disability, and that is found to reduce or attenuate pain, stress, anxiety, and depression, as well as improve self-confidence, life quality [10,19], cellular status, and longevity [17,18]. Thus rather than engendering a bleak outlook that is grounded in prevailing disease beliefs as well as aging myths that can evoke stress, regardless of age or state of health, available research implies that those older adults who report higher levels of mindfulness, and practice this regularly, if this is not an inherent trait, will tend in the long run to report less depression and stress as well as greater self-efficacy and overall quality of life as proposed by Morgan, et al. [19].

Although they did not initially find any significant association between measures of mindfulness and pain or function, even though mindfulness moderated the effect of pain on stress, and suggested mindfulness may be helpful for diminishing pain, especially if gratitude elements are involved [20], Lee, et al. [11]

later concluded that knee osteoarthritis cases with higher total mindfulness were more likely to respond favorably to exercise interventions than those with limited mindfulness. Studies in older adults with osteoarthritis have not only shown multiple life affirming benefits from exercise participation, but that mindfulness training in its own right does appear to offer benefits as far as control perceptions as well as longevity is concerned among older adults that appears valuable to examine closely in future endeavors [21].

Dowsey, et al. [22] who strove to evaluate the efficacy of Mindfulness-Based Stress Reduction in improving pain and physical function following total joint arthroplasty in people with arthritis, found the intervention did improve post-surgical pain and function in those cases with psychological distress undergoing the surgery.

According to Ahn, et al. [8] favorable cognitive responses among osteoarthritis cases may be expected to ensue if coupled with transcranial stimulation, even if this is not proven. It was also suggested mindfulness meditation may reduce recurrent episodes of reactive depression [23,24] and increase physical activity [24], thus fostering the ability to target the interactive biological, mechanical and psychological mechanisms of osteoarthritis progression. As such, and tentatively supported by Morgan, et al. [19], plus findings that mindfulness appears to mediate between social support and psychological distress in persons with chronic pain [25], it was suggested there may be a synergistic interaction between mindfulness, adaptive thinking, positive psychology and healthy living skills that can be harnessed to slow the progression of symptomatic osteoarthritis by reducing pro-inflammatory cytokine expression and promoting optimal mechanical loading of cartilage.

As per Hall, et al. [26], mindfulness based interventions can conceivably be designed to teach adults who suffer from chronic pain to notice and respond to their thoughts and emotions with non-judgmental awareness and compassion. This group hence sought to be the first to examine the acceptability of a mindfulness oriented intervention for people with osteoarthritis-related knee pain and secondly to see whether the approach yielded any clinical benefits. They chose this approach based on published successes of mindfulness applications in multiple chronic pain syndromes. In addition, Zou, et al. [27] propose that mindfulness-based Baduanjin exercise may not only be effective for alleviating musculoskeletal pain, but also for improving overall sleep quality in people with chronic illness. As opposed to studying pain, Sannigrahi, et al. [28] found waist/hip ratios to be significantly lessened in a group practicing mindfulness-based meditation as compared to a control group who did not undertake the stress relaxation exercises, a finding that could underpin pain relief due to inflammation and mechanical factors.

As such, even though the research base is limited, the current literature presently reviewed tends to imply that this is a field of considerable promise that may be largely untapped, especially in Western medicine contexts. Linking mindful behaviors, gratitude,

and thoughts with more insightful measures of joint inflammation, degrees of pain sensitivity and magnitude, plus rates of disease progression, physical symptoms of associated co-occurring health conditions, and psychological distress is hence likely to prove highly valuable and relevant to the osteoarthritis sufferer and caregiver [13,29]. [Box 2 for proposed benefits].

Activity tolerance
Affective status
Arthritis self-efficacy
Aerobic capacity
Cardiovascular health
Coping ability
Degree of fatigue
Fears of disablement, falling
Functional ability
General health status
Inflammation
Opioid addiction
Pain
Quality of life
Sleep/related biological impacts
Social wellbeing
Stiffness
Stress levels
Weight control

Box 2: Specific outcomes mindfulness could promote among older adults with osteoarthritis that should be studied prospectively in the future, especially among vulnerable older adult osteoarthritis subgroups, for example those with depression.

Discussion

Although modern medicine has been successful in managing infection and saving victims of trauma, traditional medicine to counter or prevent disability associated with osteoarthritis, the most common chronic condition and progressively destructive form of arthritis remains very limited. In light of the associated public health burden of this condition, which affects older adults, who often have co-occurring medical conditions, more readily than young adults, new treatment and preventive approaches for this mitigating this growing worldwide disabling health condition are sorely needed, especially to overcome the sedentary tendencies imposed by the disease, as well as high rates of overweight, depression, drug overdoses and poor self-efficacy. Since osteoarthritis often occurs in only a single joint, does not occur in all aging adults, can occur in young adults, and has been found to be amenable to some degree of retardation or mitigation at times, and pain symptoms are often not well correlated with radiographic tests, efforts to harness those attributes that afford

joint protection and attenuate joint destruction among older adults are highly sought.

Unfortunately, although some progress has been made, as a result of psychosocial and educational efforts, these are currently poorly studied when compared to those focusing on exercise, analgesics, anti-inflammatory drugs, steroids, and surgery.

In a search for alternatives to assist in reducing osteoarthritis disability in older adults suffering from this condition, this current article examined a prevailing idea that the application of one or more carefully selected mindfulness practices may provide some degree of pain and cognitive relief to an older adult suffering from intractable pain of one or more joints, as well as heightening autonomy and self image. Although not studied here, it is possible more mindful primary care efforts to enhance early disease recognition followed by insightful carefully tailored health recommendations along with mindful follow up visits may similarly slow or avert a more serious disabling later state, including the possibility of allaying the oftentimes immense emotional distress, insomnia, and loss of independence, along with a possible acquired dependence on opioids and other substances and their multiple harmful consequences [30, 31].

On the patient side, mindfulness, including reappraisal, acceptance, thought stopping or substitution, and the adoption of positive psychology attributes and self-compassion, is a self-care strategy that can support pain management [32] and behavior changes safely and effectively and that could prove helpful, for example in decreasing pain catastrophizing, advancing healthy eating behaviors, and pain perceptions. In addition to mindful strategies shown to reduce pain suffering, mindfulness can be harnessed and self-directed if needed in our view in the context of joint protection, sleep health, stress control, the use of home modifications, pacing, and injury avoidance-all strategies commonly indicated as efficacious at all disease stages as well as post-surgery. The expected result in most cases would be a heightened sense of control, less pain or greater pain tolerance, less overall functional impairment and excess disability, and reactive health challenges that engender possible excess suffering and costs for many. As well, resilience and improved social and economic perspectives and life quality may be realized [33], along with a reduced need for surgery, or more rapid surgical recovery if indicated, and better weight control, with few adverse impacts are demonstrated. Agreed upon by most authors to a high degree, this realm of study clearly has considerable value in multiple health and wellbeing dimensions of relevance to chronic osteoarthritis sufferers [34-38]. In addition, even though more high quality and insightful studies are needed here, health and overall wellbeing, which may well improve with prolonged practice, should be studied further. It is also possible group approaches conducted with the addition of social support can likewise foster more able coping among this large group of older adults than has been conceptualized in most community wide educational oriented efforts to date.

In short, although no cure exists for disabling progressively

developing osteoarthritis, and notwithstanding the low number of well designed high quality studies, it appears from the available body of literature that active mindfully directed thoughtful practices to offset distressful stimuli such as pain from the earliest point in time, may help to make the difference between incurring prolonged years of immense suffering and a reasonable life of adequate duration and quality all things considered.

Emerging knowledge also reveals that the mechanisms thought to be impacted by mindfulness may be those inducing aversive states in the older adult suffering from osteoarthritis, including cellular responses [17]. Its ability to minimize or attenuate pain, the symptom of most concern to such a patient, is especially salient, given recent evidence of the possible failure of most medications to alter the disease process safely and alleviate pain effectively. At the same time, equally important is future 'mindful' research of high quality and attention to the current literature by all professionals involved in and dedicated to supporting the older high-risk adult with osteoarthritis, as well as those at risk.

In the meantime, those adults suffering from intractable pain and who are instructed carefully to pursue mindful based self-management practice and thoughts about their situation may well find their pain is either reduced or more bearable, they may experience less suffering, and need for harmful addictive medications. They may be able to avoid or delay surgery, incur better and more rapid recoveries from surgery, and improve their personal confidence, as well as overall wellbeing as per Box 2. They may respond more favorably to exercise, as well as adhere to their recommended treatment plans, while incurring multiple favorable biological perceptual, social, and clinical benefits.

Conclusions

To ensure all avenues of possible osteoarthritis disease mitigation are not overlooked, we conclude concerted efforts to apply what is known of mindfulness associated practices as well as insightful research to address whether the multiple attributes of painful osteoarthritis experienced by most older adults can be allayed to some degree as a result of mindfulness practices, carefully construed research and research designs are not only desirable, but are likely to verify current positive results that have been discerned to date. As such, no delay should be forthcoming in this regard, especially as the approach requires little long term investments and could prove of immense benefit to many who are and continue to suffer and are strongly encouraged and advocated.

Ethical Statement

The author is accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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