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Healthy Aging: A Review of Complementary and Alternative Medicine Modalities that Increase Quality of Life in Older Adults

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Abstract

Complementary and alternative medicine (CAM) practices are frequently used in the U.S. by older adults for helping to improve quality of life (QOL); however, little attention has been paid to research on CAM modalities and QOL in older adults. We reviewed the literature to help determine CAM modalities that increased QOL in older adults. Due to the paucity of literature the authors also included reviews on CAM modalities that helped improve sleep and pain in older adults, understanding that both are important factors in QOL. The research showed promising results for chiropractic, massage therapy, and yoga as positively impacting QOL. Other CAM modalities such as acupressure, acupuncture, auricular acupuncture therapy, hypnosis, mindfulness meditation, music therapy, reiki therapy, tai chi, and transcutaneous electrical nerve stimulation (TENS) are potentially viable CAM options for certain older adults in positively impacting pain and sleep. Limitations to the research included small samples sizes, difficulty in follow-up research designs to understand the long-term effect of CAM practices, and insufficient randomization and/or control groups. With the tremendous growth in the U.S. geriatric population over the next decade more attention to QOL and CAM modalities might become a significant factor in healthy aging, which is an important next step in health care. The electronic version of this manuscript has links to educative resources on the Internet for practitioners and individuals interested in learning more about specific CAM modalities; the bolded topics are links to online definitions.

Keywords: Complementary and alternative medicine; Quality of life; Older adults; Geriatrics; Elderly; Pain; Sleep

Introduction

To help improve Quality of Life (QOL), many U.S. elderly are turning to Complementary and Alternative Medicine (CAM) not only as a consequence of poor health, but also as supportive to their values and beliefs about health and lifestyle [1]. Recent surveys found that 54% of persons aged 65 or older had used a CAM therapy or practice [2]. When prayer is included, surveys reveal that CAM usage range from 67-88% in older adult communities [1].

The National Center for Complementary and Alternative Medicine (NCCAM), part of the National Institute of Health (NIH), defines CAM "as a group of diverse medical and health care interventions, practices, products, or disciplines that are not generally considered part of conventional medicine" [3]. The NCCAM categorizes CAM into two broad categories for purposes of research: natural products or mind and body practices [3]. For the purposes of this review the focus is solely on mind and body practices.

Little is known about CAM use in the elderly population and its effect on QOL and disease prevention. More attention in CAM research is paid to improving poor health or using CAM practices for specific diseases. QOL in older adults measures all aspects of life in overall health, and can be defined as covering four areas of one's life: physical, mental, social and spiritual [4]. Attention to QOL in older adults is an important healthcare measure for providers, family members and older adults as aging might be correlated with chronic diseases [3], but does not have to lead to poor QOL. Outlined in this review are specific CAM practices that have been shown to be supportive to increasing QOL in older adults.

This review focuses on articles that discuss CAM practices that improved QOL and articles that addressed other factors related to QOL such as sleep and pain that are used by a more general elderly population [5]. The authors, when possible, used studies for the review that were randomized and controlled, with the exceptions of the nature of certain CAM modalities that make randomization and control groups difficult. Although QOL has been a challenge to measure and quantify, instruments have been developed to be able to study overall QOL. Some of the studies reviewed used QOL measurements such as the Medical Outcomes Study Short Forms (SF-12 and SF-36) to quantify the Health Related Quality of Life (HRQOL) assessing both physical and mental wellbeing, and the World Health Organization Quality of Life (WHOQOL)-BREF instrument that assesses physical health, psychological health, social relationships and environmental-related well-being [6].

CAM Modalities that Increase QOL

Previous studies have found that people with a poor QOL are more likely to use CAM modalities, as they are more motivated to seek methods of increasing their QOL [1]. Only recently has the literature shown however, that certain CAM modalities may actually increase for some older adults overall QOL. Nguyen et al. [1] performed a

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prospective study to identify CAM modalities that were predictive of improving physical and mental HRQOL as well as functional status. The sample size included 1,683 adults aged 55 and older who had participated in the 2002 National Health Interview Survey and the 2003 Medical Expenditure Panel Survey 2003 (MEPS) conducted as computer-assisted interviews. The measures of health outcomes of functional status, physical HRQOL, and mental HRQOL were assessed. Functional status was assessed using six lower-body strength items from the established Nagi self-report measure. HRQOL was assessed using the MEPS 12-item short form of the Medical Outcomes Study questionnaire (SF-12). The SF-12 instrument measures eight health concepts including physical functioning, physical role limitations, emotional role limitations, pain, general health, vitality, social functioning and mental health [1]. The results of the study showed that the use of manipulative and body-based therapies, such as chiropractic and massage therapy, improve physical and mental HRQOL as well as functional status. This longitudinal analysis is the first review to support CAM in increasing QOL in the elderly. The study shows the importance of evaluating multiple outcome measures in participants because different types of CAM have specific effects or no measurable effects. It also cautions against claiming efficacy of CAM based on this prospective study and that further randomized trials are needed. In addition, the sample type may not have been able to detect associations with HRQOL, functional status, and specific CAM therapies for two reasons: (1) the large number of specific CAM therapies that older adults use, and (2) the six subgroups that the CAM therapies were grouped for the purposes of the survey. Furthermore, the study had a short follow up period (1-year), and more research is needed on the effects of CAM on long-term health.

The effect of yoga on QOL in the elderly has also been assessed. Oken et al. [7] found in a 6-month, parallel-group, randomized, controlled trial performed in relatively healthy adults aged 65-85 years that yoga use in the older adult population had significant improvements in QOL [7]. The authors randomized subjects to 1 of 3 experimental groups (yoga, exercise class or wait-list control group). Eighteen Iyengar yoga poses were taught to participants over a 6-month span in one class per week, followed up with self-led home practice. Education through illustration of specific poses was provided to subjects to help with their home practice. Similar to the yoga group, the aerobic intervention consisted of 1 class per week along with self-led home exercise. The study used the SF-36 QOL survey and found that the yoga group had measurable improvement in vitality, fatigue, physical role functioning, bodily pain, social role functioning, and the physical composite scale. It also showed significant physical outcome measures such as one-legged standing and forward flexibility. Some limitations of the study are the results of improvement in QOL may not relate directly to the yoga postures and that potential mechanisms such as socialization, placebo, and self-efficacy could relate with the increase in QOL. The exercise arm of the study had less of a structured format, which could infer less socialization occurred among participants. In addition, there might have been some disappointment in the exercise and wait-list group as the majority of participant's desired placement in the yoga group. Less socialization of the exercise group and disappointment of the wait-list group could have influenced the QOL responses of participants leading to increased QOL results in the yoga group.

Another study assessed a yoga-based intervention on QOL and sleep in the elderly [8]. The 6-month randomized controlled trial recruited 120 older adults 60 years or older. Participants were randomized to either 1) yoga intervention or 2) wait-list control group. The WHOQOL-BREF was used to assess QOL and Pittsburgh Sleep Quality Index to assess sleep. Participants in the yoga group received 1-hour of yoga instruction per day for one month, followed by 1-hour weekly in the months 2 and 3. Subjects were encouraged to practice yoga every day for the entire 6-month period. However, subjects were not given supervision for the months 4,5, and 6 of the trial. Subjects in the wait-list group received no intervention during the 6-month period. Results of the study indicate beneficial effects of yoga in total quality of sleep and on physical health, psychological health, and social relationships of QOL in elders. Limitations to the study include the increase in socialization of the daily and then weekly yoga instructions could have potentially influenced the increased QOL measurements. Also a limitation of the method was the lack of yoga supervision for months 4,5 and 6 of the trial that instead relied on self-reports of personal yoga practice that are potentially less accurate; therefore, which might have effected the overall results of the study.

Sleep

Improvements in sleep might also lead to better QOL for some older adults. In recent reviews of CAM and sleep in the elderly, acupuncture, auricular acupuncture therapy, acupressure music therapy, tai chi, massage therapy, and yoga were found to improve sleep in older adults [2,9].

Acupuncture

There are very few studies done on the effects of acupuncture on sleep in the elderly. A recent Cochrane Database System Review of acupuncture and insomnia in all populations found that the studies had high levels of heterogeneity, used poor methods, and reflected publication bias, which led to insufficient evidence to make any recommendation on acupuncture and insomnia [10]. Recently, Kwok et al. [11] studied 22 people aged 55-90 with dementia and showed that acupuncture treatment led to some increased rest time and sleep time [11]. Although several mechanisms have been proposed for acupuncture as a treatment of insomnia such as decreasing stress, regulating neurotransmitters, increasing blood circulation to the brain, and regulating melatonin release, there is a paucity of clinical research addressing acupuncture for insomnia in the elderly.

Auricular acupuncture therapy

An alternative form of acupuncture using magnets applied to the ear has shown some improvement in sleep for older adults. A double blind randomized controlled study in adults over 60 years of age compared the difference of auricular magnetic therapy to herbal therapy and to sham acupuncture [12]. The auricular magnetic therapy group showed improved quality and quantity of sleep. In addition, another study showed long-term sleep benefits of auricular acupuncture therapy in older adults with insomnia [13]. The follow-up measured objective sleep outcomes at 1-, 3-, and 6-month intervals. The results revealed mean sleep time and sleep efficiency remained constant over the 6-month follow- up period suggesting that auricular therapy may have long-term benefits for sleep in some older adults [13]. However, more trials specific to the elderly population are needed to assess auricular therapy's benefits.

Acupressure

A randomized study on institutionalized older adults revealed statistically significant improvements in both the sleep quality and the amount of nocturnal waking in the intervention group compared to the sham acupressure and conversation placebo groups [14]. Acupressure may have promise in improvement in sleep, especially in the older adult

population, given the non-invasive nature of the modality that can be easily taught and performed by caregivers and family members [2]. More research is needed to support the findings.

Music therapy

Music therapy has also showed it might benefit in improvement of insomnia for some older adults. After 15 days of music therapy in 58 patients with insomnia more than 80% of subjects, in comparison with a placebo group, showed positive effect to the music therapy [15]. Another study found that older adults with insomnia, who used music therapy improved in the measurable outcomes of sleep quality, sleep duration, sleep efficiency, sleep latency and sleep disturbances. Interestingly the quality of sleep was found to improve over the time of treatment, suggesting a possible cumulative effect of music therapy [16]. In addition, a study found music therapy to produce sleep improvements and less pain 3 days post-operatively in 96 coronary artery bypass graft surgery patients [17].

Massage therapy

Most of the literature on massage therapy relates to sleep disorders in children, infants, and the critically ill [2]. More trials are needed to assess its efficacy in the healthy older adult population. In one randomized trial, massage therapy with the critically ill was compared to a placebo and revealed an increase in sleep time by one hour for the massage therapy group [2].

Yoga

A small study has also suggested improvement in sleep with yoga for some older adults [18]. In a 6-month randomized control study, 69 participants attended 1-hour yoga sessions 6 days a week with a 15-minute evening session. The yoga intervention participants were compared to Ayurvedic therapy (an herbal remedy) and a wait-list control. Assessment of self-reported sleep measures found a 1-hour increase in total sleep duration compared to pretreatment, which proved to be significantly higher than the Ayurveda and wait-list groups [18]. Therefore, yoga in the elderly that focuses on postures, relaxation techniques, and breathing techniques may have some positive benefits on increasing total sleep duration for appropriate elders.

Tai Chi

Tai chi may also prove to be beneficial for some older adults suffering from insomnia. In a randomized control study of 118 older adults aged 60 to 92, comparing tai chi to low-level exercise found that 60-minute tai chi sessions, 3 times per week, over a 24-week intervention period decreased sleep onset latency by 18 minutes and increased sleep duration by 48 minutes [19]. In addition, tai chi participants had significant decrease in daytime sleepiness as well as improvement in sleep quality, sleep efficiency, and sleep disturbances. Also, the tai chi group showed significant improvement in the SF-12 physical summary scores, and both groups showed improvement in the SF-12 mental summary scores [19]. This suggests that tai chi may be beneficial for sleep and improves general HRQOL for some older adults.

Chronic Pain

Chronic pain is debilitating for many elderly, significantly affecting their QOL. In a recent review on CAM and managing chronic pain in older adults, Hashefi and Katz found that yoga, music therapy, transcutaneous electrical nerve stimulation (TENS), tai chi, and massage therapy revealed some potential improvement in participants' pain ratings [20]. Other CAM modalities including reiki therapy, mindfulness meditation, and hypnosis have also been shown to improve pain rating for some individuals in small studies [21-23].

Yoga

Although prior studies have been shown to improve symptoms of chronic low back pain in adults [17,24], very few studies have been done using yoga as an intervention in the geriatric population. Hashefi and Katz found that yoga qualitatively improves pain and depression in older adults with musculoskeletal pain as well as degenerative and inflammatory disorders [20]. Oken et al. as mentioned above, showed improved pain scores in older healthy adults after a 6-month yoga intervention [7.] However, Park et al. [25] recently performed a pilot study assessing an 8-week chair yoga program in community-dwelling older adults with osteoarthritis and found that physical functioning and overall stiffness improved but pain and symptoms of depression did not ameliorate [25].

Music therapy

There are very few studies that look at music therapy specifically in older adults. In one randomized, controlled study, 124 patients aged 65 years and older undergoing elective hip or knee surgery were randomized to hear 1-hour of selected music four times a day during the post-operative period versus standard post-operative care. Music therapy showed some benefit postoperatively with decreased pain medication use and decreased pain rating, as well as reduced acute confusion and improved ambulation after hip and knee surgery [26].

In end of life care, music therapy provided as a complementary medicine measure to analgesics also showed potential benefit in lowering pain [20].

TENS

TENS use for chronic pain is widespread; however, data is still inconsistent to make any recommendations on the use of TENS. There are few studies looking at TENS use specifically in the elderly population. Barr et al. assessed 16 assisted living residents with a mean age of 76 and determined that with the use of TENS, pain was decreased by 23-32%, compared to a 9% decrease with a control [27]. Grant et al. [28] studied 60 patients aged 60 and older with at least 6 months of low back pain, and randomized people to 4 weeks of either TENS or acupuncture, showing that at study completion both groups had decreased pain scores and a lower number of analgesic medications consumed; at the 3 month follow-up the TENS group maintained significantly decreased pain scores and pill count compared to baseline [28]. Therefore, in this study, TENS not only showed beneficial in reduction of localized pain in older adults but importantly also resulted in limiting or eliminating the use of systemic analgesic medications. For TENS use a 30-day trial period is recommended due to the varied responses to the therapy.

Tai Chi

In three randomized controlled trials on tai chi and lower extremity osteoarthritis in older adults, tai chi showed significant and sustained improvements of arthritis symptoms, overall satisfaction with health, and functional mobility [29-31]. More randomized trials are needed to support the findings.

Massage therapy

Mitchinson et al. assessed the efficacy of massage therapy in a post-operative population with the mean age of 64 [32]. The authors performed a randomized control trial in 605 patients and found that, compared to the control group, the massage therapy group experienced

CAM Type	Professional Web Site	Online Video Resources
Acupressure	http://www.ahhablog.org	https://nccam.nih.gov/training/videolectures
Acupuncture	http://www.aaaomonline.org/	https://nccam.nih.gov/training/videolectures
	http://nccam.nih.gov/health	http://nccam.nih.gov
		http://nccam.nih.gov/video/acupuncture
Auricular therapy	http://www.aaaomonline.org/	
	http://nccam.nih.gov/health/magnet/magnetsforpain.htm	
Chiropractic	http://www.acatoday.org/	http://nccam.nih.gov
	http://nccam.nih.gov/health	
Hypnosis	http://nccam.nih.gov/health/hypnosis	https://www.youtube.com
Massage therapy	http://www.amtamassage.org/	http://nccam.nih.gov
	http://nccam.nih.gov/health	
Mindfulness meditation	http://www.umassmed.edu	https://nccam.nih.gov/training/videolectures
	http://nccam.nih.gov/health	http://nccam.nih.gov/node/5984
Music therapy	http://www.musictherapy.org/	
	http://nccam.nih.gov/health/sleep/ataglance.htm	
Reiki therapy	http://www.iarp.org/	
	http://nccam.nih.gov	
Tai Chi	http://www.americantaichi.org/	http://nccam.nih.gov
	http://nccam.nih.gov	http://nccam.nih.gov/video/taichi
Transcutaneous Electrical Nerve Stimulation (TENS)	http://www.americanpainsociety.org/uploads/pdfs/npc/npc.pdf	
Yoga	http://www.yogaalliance.org/	http://www.youtube.com
	http://nccam.nih.gov/health/yoga	https://nccam.nih.gov/training/videolectures
		http://nccam.nih.gov/video/yoga-intro

Table 1: Online Resources for Additional Information about Complementary and Alternative Medicine (CAM) Practices for Increasing Quality of Life in Older Adults.

decrease in pain intensity, pain unpleasantness, and anxiety. However there was no difference in pain medication usage between groups [32]. Specific trials targeted at the geriatric population are needed to make conclusive statements on the results of massage therapy.

Reiki therapy

A recent randomized controlled trial using reiki therapy in people older than 55 who received 30-minute Reiki treatments weekly for 8 weeks found significant improvement of pain, as well as depression and anxiety, with no change in heart rate or blood pressure compared to a control group [33]. The limitations to the study are a small sample size and no long-term follow-up of outcome measures. More trials are needed to support the efficacy of reiki in older adults.

Mindfulness meditation

A randomized, controlled study was performed using 37 adults aged 65 years and older to determine the effects of mindfulness meditation on chronic low back pain (CLBP) [22]. Subjects were randomized to an 8-week mindfulness meditation program or to a wait-list control group. 8-week and 3-month follow-up measures of were assessed. Compared to the control group, there was significant improvement of CLBP after an 8-week mindfulness-based meditation class. The intervention group displayed significant improvement in the Chronic Pain Acceptance Questionnaire Total Score and Activities Engagement subscale and SF-36 Physical Function at 8-weeks. Although the physical function scale in the SF-36 showed statistical improvements the total QOL scale did not. Interestingly, the study showed that the control groups' pain worsened during the waiting period, possibly due to the distress of waiting for their 8-week program to begin [22]. This study suggests the potential efficacy of mindfulness meditation on CLBP in some elders; however, much more research is needed to support the results.

Hypnosis

Hypnosis might be supportive in the management of chronic pain for appropriate older adults. Gay et al. randomized 36 older people with a mean age of 65 into 3 groups to compare hypnosis versus progressive muscle relaxation versus a control group for osteoarthritis [21]. The hypnosis intervention included 8-sessions lasting 30-minutes each. The relaxation group also received 8-sessions of guided relaxation. At the end of the study both the hypnosis and relaxation group had significantly improved pain scores as well as a decrease in pain medication usage compared to the control group. At 3-months follow-up, the hypnosis group maintained a significant improvement in the participants' pain scores that later normalized at 6-months [21]. This study suggests hypnosis as a possible CAM practice in the elderly population, giving promise to its potential to reduce participants' report of pain. Despite these results more randomized trials are needed specific to the elderly population to make conclusive statements.

Discussion

Elderly people continue to use CAM, and preliminary studies show that certain CAM modalities may improve functional status, pain, and sleep, as well as QOL (Table 1). The geriatric population is interested in CAM not because of dissatisfaction with conventional medicine, but because it is more congruent with their health and lifestyle values [9]. Elderly people with poor QOL tend to use CAM in an attempt to increase QOL, and poor QOL is highly associative with mortality rates, suggesting that improved education about and more research on CAM and QOL is an important next step beyond functional status or improvement of physical disorders [1].

With the common occurrence of polypharmacy in elders, the results of CAM modalities limiting or eliminating the use of systemic analgesic medications is promising. In addition, CAM practices are relatively benign and non-interventional in nature, with few negative side-effects. These practices seem to complement pharmacologic treatment, and in some instances be a complete alternative.

Also noteworthy, is certain CAM modalities' requirement of self-led home practice; potentially the personal practice boosts the modality's positive effect in participants. There may be a correlation between home practice in combination with a CAM practice and subsequent increase in QOL. For example, do personal insights or practices learned in continued home practice account for long-term effects of CAM, or do long-term changes occur without continued effort on the part of the participants?

Questions for Future Research

Lacking in the literature is research on the spiritual component of CAM modalities that might partly account for the geriatric populations' interest in CAM and improving QOL. It is possible that the spiritual dimensions of CAM assists the geriatric population in the meaning-making and life-review tasks of the second half of life. This could account for continued CAM usage and increased QOL results among the elderly. The literature touches on the spiritual components of CAM when it identifies increased body/mind awareness gained through some CAM practices and in regard to elders' continued home practice of certain meditative practices, but to date the spiritual dimension of CAM among the elderly is not well researched.

More research is also needed to prove the safety and efficacy of varying the CAM modalities. CAM practices occasionally need to be adapted for use in the geriatric population. Therefore, individuals may respond differently to CAM modalities; this suggests that research that assesses and determines sub-populations of people that may be more prone to specific modalities would be beneficial.

The home practice component of CAM practice needs further research. Some CAM trials mentioned above required home practice of participants in combination with CAM practices that might have affected the increased QOL results. However, future trials should include intervention groups with and without home practice to understand better its short-term and long-term effects.

Despite the need for future research, studies on CAM are difficult to conduct given that longer follow-up periods are required and the need for mixed methods study design that can yield quantitative and qualitative multiple outcomes. Acupuncture, for example, has been shown to possibly take full effect up to 6-24 months post initial treatment [23,34]. More emphasis needs to be placed on longer follow-up periods and larger sample sizes specific to the geriatric population, CAM, and QOL, with additional measurements of spiritual and social well-being scales.

CAM Online Educational Resources

This review is also intended to better provide healthcare providers, family members, and older adults of the option of CAM to increase QOL in older adults. For more education on CAM practices the NCCAM offers an Online Continuing Education Series to inform consumers and health providers about CAM. As a part of the series NCCAM offers CME and CEUs to health care professionals at no cost. More educative resources are located at the National Institute of Health Senior Health (NIHSeniorHealth) that includes definitions on CAM and pictures specific to the CAM practices (See Table 1 for more online resources specific to CAM modalities mentioned in this review). Additionally, the National Institute of Aging offers educative resources such as videos and more definitions about CAM.

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