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Can Musical Activities Promote Healthy Ageing?

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ABSTRACT: *Background: As most of the baby boomer generation have now reached retirement age, there are increasing demands for long-term care services. Depression and psychological distress can be highly prevalent at advanced ages. Regardless of chronological age, it is important to have a decent quality of life as a human being by improving resilience. The present study aims to briefly look at the current evidence on the effects of musical activities on quality of life in older adults.* ***Methods:*** *A literature review was performed to explore current research evidence on different modalities of musical activities and outcomes among older adults. The search included English-language articles published in PubMed from January 1986 to May 2014. Studies were published in peer-reviewed journals and without country restriction. Supplementary searches were carried out and a – narrative synthesis was conducted.* ***Results:*** *Overall, musical activities such as listening to music, singing, and playing instruments can contribute to improving some aspects of quality of life in older people by increasing psychological wellbeing, life satisfaction, social health and decreasing anxiety and depression.* ***Conclusion:*** *There is a great potential for using musical activities as part of a cost-effective strategy to promote the well-being of healthy community-dwelling older people, as well as institutionalised older adults with dementia. Therefore, wider groups of older people with varying degrees of physical and mental capacities can be reached through more personalised musical activities. More studies using mixed methods are needed to confirm the economic benefits as well as to capture the richness of other dimensions for quality of life.*

Key words: *Mental health, older people, quality of life, community, dementia, well-being, life satisfaction*

INTRODUCTION

Today, the oldest old population is rapidly growing across the world. As many of the baby boomer generation have now reached retirement age, there are increasing demands for long-term care services. The costs of caring for frail older people will escalate unless we can find effective ways of encouraging older people to be as independent and active as possible. In later life, it is not uncommon that older people tend to feel lonely and socially isolated (Nyqvist, Cattan, Andersson et al., 2013) as they go through transitional periods in life such as retirement from paid employment, bereavement, and reduced vigour in their own body and mind as a result of functional declines. Depression and psychological distress can be highly prevalent at advanced ages and they are more likely to elevate the risks of physical and mental health problems (Park et al., 2014; Mcdaid, 2011). Regardless of chronological age, it is important to have decent quality of life as a human being by improving resilience. This short communication briefly looks at current evidence on whether musical activities can contribute to healthy ageing as one of the ways to enhance resilience for better quality of life at older ages.

METHODS

A literature review was performed to explore current research evidence on different modalities of musical activities and outcomes among older adults. The search included English-language articles published in PubMed from January 1986 to May 2014. Studies were published in peer-reviewed journals and without country restriction. Supplementary searches were carried out and a qualitative synthesis was conducted.

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RESULTS

Impacts on Quality of Life and Well-Being

There is strong evidence on the beneficial effects of including musical components in programmes to improve the quality of life and well-being of older people, although the definitions and dimensions of quality of life varied from study to study, using various methods. In this section, the main focus is to explore the impacts on psychosocial aspects of quality of life.

Standard reminiscence programmes have been found to be effective in delaying cognitive decline and enhancing quality of life in older people (De Souza & Grundy, 2007; Carlson et al., 2008). However, it is rare to find studies using innovative approaches combining reminiscence with music. A study comparing novel forms of song-based reminiscences with traditional story-based reminiscence showed significant improvements in life satisfaction in three groups of older people: secular song group ($p=0.005$), religious song group ($p=0.018$), and story reminiscence groups ($p=0.01$) at post-programme assessment (Haslam, Haslam, Ysseldyk et al., 2014). However, although forty Canadian older adults were recruited from three different living arrangements such as independent living, retirement living, and assisted care, the outcomes were not reported separately. It is difficult to know if there was any difference in terms of effect sizes by different living environment. All songs dated from the 1920s to the 1970s. Thirteen older adults participated in the secular song reminiscence arm, singing along with popular music,

followed by brief conversations related to the songs. Thirteen older people took part in the religious song-based reminiscence arm with Christian songs, selected by a chaplain. In total twelve sessions were held with each session lasting half an hour twice per week for 6 weeks. Fourteen older people in the control arm had twelve typical story-telling reminiscence sessions twice per week. Each session lasted 30 minutes. The main activity was talking about past memories and their experiences with others within the group using prompts to trigger their memories. Interestingly, the largest -improvement in well-being from pre-test to post-test, measured by the Satisfaction with life Scale (Diener, Emmons, Larsen, & Griffin, 1985) was found in the religious song group from 3.8 to 4.0, followed by a smaller improvement in the secular song group from 4.5 to 4.6 and no change in the story group from 3.9 to 3.9. It is worth noting that those in the secular song group already had the highest level of life satisfaction before starting the programme.

A randomized controlled trial in Hong Kong also found significant improvements in quality of life ($p<0.006$), as a result of listening to preferred music loaded to MP3 players (Lee, Chan, & Mok, 2010). Mental health dimensions including vitality, social functioning, and emotional role were measured using the Hong Kong version 2.0 of the SF-36 between those in the experimental arm and controls over 4 weeks. Thirty-one community-dwelling older Chinese adults, who were aged 65 up to 90 years old, participated in listening to music with a selection of five genres of music such as meditative music, Chinese classical, Asian classical, Western classical and slow jazz for half an hour. The participants were given opportunities to choose preferred music out of a total of 62 musical pieces, loaded onto the MP3 player. Thirty-five people were allocated to the control arm without music listening.

In contrast, an American study (Belgrave, 2011) found that there was no significant improvement in psychological well-being through musical activities. Based on a randomised controlled trial, the impacts of an intergenerational music programme were explored for twenty-six older adults, living in a retirement facility and twenty-one children aged ten to eleven at elementary school. The programme lasted 3 months, including 10-sessions each lasting half an hour and consisting of singing, moving to music, structured communication, and instrument playing. Those in the control group did not attend the music therapy intergenerational sessions. However, they continued to attend other non-intergenerational activities at their respective school and adult living facility as usual. In pre and post- tests, older adults reported no significant changes in their psycho-social wellbeing as measured using the Loyola Generativity Scale and perceived sense of self-worth on the Self-Esteem Scale. However, most participants perceived the intergenerational music programme to be enjoyable. Regarding attitudinal outcomes, no children reported negative descriptions about older people after three weeks. The authors interpreted that the musical activities contributed to more positive views on ageing.

Similarly, non-significant impacts on quality of life were reported in a non-randomised controlled study from Spain (Solé, Mercadal-Brotons, Gallego, & Riera, 2010). In a pre- and post-test evaluation without a control group, it was found that there were non-significant improvements in social and emotional outcomes such as making new friends, satisfaction with self, perceived usefulness, and optimism. The authors indicated that the statistically non-significant results could be attributed to the baseline characteristics of the participants, who were already sufficiently healthy at the beginning of the programmes. Thus, they had little room for further improvements. However, the authors mentioned that the musical activities could be helpful at least in keeping them healthy. 83 healthy older adults on low incomes, with an average age of 72, took part in three musical activities including singing in a choir, music appreciation, and preventive music therapy at leisure centres. For a nine- month period, older adults in the weekly choir group met to prepare for their performance in a concert. In the music appreciation group, older people took part in educational sessions to learn about music on a weekly basis. In the preventive music therapy group, older people practiced and rehearsed functional skills through musical activities to keep their functions.

Interestingly, another study explored whether beneficial effects on mood and quality of life could be achieved by learning music and practicing the piano in later life (Seinfeld, Figueroa, Ortiz-Gil, & Sanchez-Vives, 2013). As part of a randomised controlled trial, piano lessons took place in group settings with each lesson, lasting one hour and a half at a community centre. Thirteen Spanish older adults aged 61 to 84 took part in the piano programme lasting more than four months under the supervision of a professional pianist, who taught them how to read music and practice the piano every day, as well as encouraging them to do homework exercises for at least 45 minutes for five days per week. Sixteen older adults aged 63 to 80 were allocated to the control group, participating in other leisure activities such as physical exercise, painting classes, yoga, and computer lessons. At follow-up assessments, it was found that taking piano lessons resulted in significant improvements in social health and psychological well-being, measured by the World Health Organisation Quality of Life Brief Questionnaire (Kuyken, Orley, Power, & Herrman, 1995). However, while those taking other leisure activities showed increased social health, there was a slightly decrease in psychological health.

Impacts on Depression and Anxiety

There is moderate evidence on the benefits of music on depression. The Spanish piano practice study (Seinfeld, Figueroa, Ortiz-Gil, & Sanchez-Vives, 2013) discussed earlier had positive results for depression in the intervention group, although the magnitude of the benefits and relative effects found in the control were only slightly different. There were improvements in mood for both the intervention and the control groups when using the Beck Depression Inventory (Beck, Ward, Mendelson et al., 1961). Interestingly, using the Profile of Mood States (McNair, Lorr, & Droppleman, 1971), while those in the control group had an increase in depression, psychological distress level decreased in the piano group. In addition, a Singaporean randomised controlled trial showed a statistically significant decrease in the level of depression after following up 24 older people who listened to their preferred music for half an hour on a weekly basis for 8 weeks, relative to 26 controls in non-music activities (Chan, Wong, Onishi, & Thayala, 2012). It was also found that a non-randomised controlled study for choir, music appreciation, and preventive music therapy sessions for healthy older adults at leisure centres (Solé, Mercadal-Brotons, Gallego, & Riera, 2010) had a significant improvement in depression on Yesavage's depression scales (Yesavage, Brink, Rose et al., 1982) from pre- and post- assessments ($p<0.05$).

Regarding anxiety, in a randomised controlled trial in Taiwan, Sung and colleagues (Sung, Chang, & Lee, 2010) investigated the effects of a group-based music intervention using musical instruments to alleviate anxiety and agitation in older adults with dementia in a long-term care facility. Each session consisted of three sections starting with a gentle warm-up with muscle stretching and breathing for five minutes, followed by encouraging older people to play percussion instruments such as tambourines, maracas and loop bells with familiar Taiwanese or Chinese songs from the 1950s to the 1970s for twenty minutes in a group, and then finishing by cooling-down for five minutes. Over 6 weeks, the intervention was held twice per week with each session lasting half an hour. In the music group, there was a significant reduction in anxiety levels measured by the rating on the Anxiety in Dementia Scale, relative to those in the control group who received routine care without a music element.

Moreover, an observational study from the USA investigated the impacts of intergenerational structured musical activities between

preschool aged children and older people aged 66 to 95 living in a residential care setting (Ward, Kamp, & Newman, 1996). The programme comprised music and movement activities such as singing songs and playing games with music. The programmes were carried out in two settings when twenty-one older adults undertook the same activities twice, once with and once without the children being present. A recreational music therapist facilitated the weekly sessions, which lasted half an hour each week. After 6 months, it was found that when older adults took part in the musical activities with children as a team they showed a lower level of anxiety and agitation, than when they took part by themselves.

Are they Intervention Effects or Social Club Effects?

Overall, this short communication suggests positive benefits of musical activities utilising various modalities in terms of improved quality of life contributing to reduced depression and anxiety levels. Musical activities include music appreciation, singing songs, moving and swaying to music and playing musical instruments mostly in group settings. It is questionable, however, whether the effects resulted from music interventions per se or from social club effects.

There are studies, which have attempted to explain how biological and physiological mechanisms such as brain wave synchronisation could lead to health benefits via musical activities. For instance, beneficial effects could be achieved through the synchronisation of body rhythms with music, with alpha waves of the brain stimulated by the music, in turn inducing positive hormonal changes in physical and mental health states (Schneck & Berger, 2006; Bhaskar, 1994). More recent studies exploring the link between brainwaves and the rhythms of music have indicated that some newly developed musical technologies such as the "scale-free brainwave music" may have positive implications for neurofeedback therapy and a potential role to play in promoting healthy ageing (Wu, Li, & Yao, 2009; 2013). Indeed, specific effects of interventions were found in some randomised controlled studies, using active control groups. When other types of leisure activities without a music element were compared to musical activities (Seinfeld, Figueroa, Ortiz-Gil, & Sanchez-Vives, 2013), there were programme effects, which were particularly associated with music, compared to other non-music activities (Sung, Chang, & Lee, 2010). Similarly, this was also shown in song-based reminiscence vs. typical story-telling reminiscence (Haslam, Haslam, Ysseldyk et al., 2014).

In addition, while learning to play a musical instrument such as the piano, a coordinated approach of particular parts of the brain related to motor functions, concentration, and capacity to remember is required. This might have spill over benefits transferred to improve cognitive functioning and some aspects of mental health, while playing instruments can be rewarding experiences in terms of "auditory feedback" (Seinfeld, Figueroa, Ortiz-Gil, & Sanchez-Vives, 2013) and this can give a sense of achievement to the players. In addition, another study exploring the impacts of music training on the brain and cognitive function showed some beneficial effects in terms of verbal, visual and spatial functions in children, as well as indicating a positive relationship between the intensity and length of instrumental music training among adults when comparing professional musicians and non-musicians (Schlaug, Norton, Overy, & Winner, 2005).

Listening to songs that are familiar to the participants, in particular, has been shown to be effective in reducing anxiety levels in older people with dementia (Chan et al., 2012; Sung et al., 2010). Old songs from bygone times in their own language (Chinese) reminded the older people of past memories and experiences in distant time periods, which also effectively utilised the intact part of their memories. Older adults with dementia tend to have decreased levels of tolerance to stress over time, based on the Progressively Lowered Stress Threshold model (Smith, Gerdner, Hall, & Buckwalter, 2004). The lack of capacity to process external stimuli may cause more stress to older people with dementia and make them more anxious. However, familiar songs can play a role as positive stimuli by helping them to recall positive feelings related to the songs and to feel more relaxed within their comfort zone of stimuli.

Similarly, innovative song-based reminiscence programmes have been associated with greater improvements in life satisfaction, compared with typical story-telling reminiscence without music. Importantly, religious song-based group participation was associated with greater quality of life, partly due to a lower number of older people reporting a lack of familiarity with religious songs than those in a secular song group (Haslam, Haslam, Ysseldyk et al., 2014). Therefore it may be better to give participants an opportunity to choose songs that they would like to listen or play during the programmes or to express their preferences of songs before implementation. Interestingly, in the Hong Kong study (Lee, Chan, & Mok, 2010), four older people, initially allocated to the music intervention group, withdrew from the study as they did not like the music prepared by the organisers. It indicates the importance of reflecting on service users' preferences by involving them in the programme planning stage, which would be helpful to increase their motivation levels and attendance rates. More personalised approaches are needed to maximise programme specific effects.

It is worth noting that most musical interventions were implemented as group-based activities. Group dynamics could have positively contributed to the programme specific effects as group-based activities have additional benefits of enhancing social cohesion, improving group identify. As shown in the Canadian study (Haslam, Haslam, Ysseldyk et al., 2014), the religious song group showed the strongest group identity and the greatest life satisfaction. Attending classes as a group, in particular, can provide older adults with regularity of life and chances for re-engaging in productive activities after retiring from paid employment. In addition, older people considered the music sessions an opportunity to meet new people and make friends. Social health was improved in a group-based piano programme. However, no significant difference in cognitive function has been found when piano lessons were taken individually (Bugos, Perlstein, McCrae et al., 2007). More studies are required to confirm the degree to which the group dynamics could enhance the effectiveness of the programmes using various modalities of musical activities.

CONCLUSION

Implications for Research

More studies are needed to determine whether allocation methods can make a difference in programme effects. Usually those, who self-assign are more likely to have higher motivation levels than randomly-assigned members. Cross-over study designs can be utilised more.

It is also important to ensure continuity of programme at the implementation stage. As shown in the intergenerational multi-component music programme, discontinued sessions might have influenced the intensity of the programme and led to non-significant improvements in psychological well-being (Belgrave, 2011). The authors indicated that the sessions did not take place in a consecutive manner as there were interruptions due to holidays and the Christmas break during the academic year. So designing the programme to make sure of session continuity may lead to better outcomes in future projects.

Implications for Policy

Musical activities could contribute to improving some aspects of quality of life in older people by increasing psychological

wellbeing and decreasing anxiety and depression. There is a great potential using music as part of a cost-effective strategy to promote the well-being of healthy community-dwelling older people as well as institutionalised older adults with dementia. Participating in musical activities, from simply listening to music to more active engagements in singing or playing musical instruments, can be one of the most effective non-verbal communication methods for older people with varying degrees of physical and mental capacities. This is an activity that can be enjoyed by older people, with or without cognitive problems. Therefore, wider groups of older people can be reached through more personalised musical activities, even if they may have some difficulties in communicating in a verbal way.

In the UK, it is encouraging to see that a protocol of a cost-effectiveness study, incorporating a quality adjusted life year measure into the evaluation of a community-based singing programme as a health promotion initiative for older adults (Skingley, Clift, Coulton, & Rodriguez, 2011). More studies using mixed methods are needed to confirm the economic benefits, as well as to capture richness of other dimensions for quality of life. These would facilitate more optimal allocation of resources for successful ageing.

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