

Full-Length Article

The Use of a Music Therapy Choir to Reduce Depression and Improve Quality of Life in Older Adults – A Randomized Control Trial

Bill Ahessy¹¹Health Service Executive, Dublin, Ireland

Abstract

Depression in older adults is prevalent and often undiagnosed and untreated.

This study sought to assess if participation in a music therapy choir intervention could reduce depressive symptoms and improve quality of life and cognitive functioning in older adults. In this mixed method study, 40 participants were assessed pre- and post-intervention for depressive symptoms (Cornell Scale), quality of life (Cornell Brown) and cognitive functioning (Mini Mental State Examination). The treatment group (n=20) actively participated in a music-therapist led choir for 12 weeks, while the control group (n=20) received standard daily care. Mean depressive symptoms in the music therapy group were reduced by 54% (p=0.004), mean quality of life score improved by 57% (p= 0.0004) and there was a statistically significant increase in cognitive functioning (p= 0.011). Results from self-administered questionnaires highlighted perceived benefits of the intervention. 67% (n=17) reported improved mood, while 40% reported physical gains. Other themes included increased social interaction and memory improvement. The results of this controlled study indicate that the intervention significantly reduced depressive symptoms, improved quality of life and increased cognitive functioning.

Keywords: *music therapy, choir, singing, depression, quality of life, older adults, cognitive function*

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Introduction

Singing positively affects a person's emotion, breath, and physicality [1] acting in part through cortisol-mediated effects on the immune system [2,3,4] often after acute exposure as brief as a single choral rehearsal [5]. There has been increased community choral support for groups of individuals with varying health needs, such as acquired brain injuries ['the CeleBRation Choir', New Zealand], Parkinson's disorder ['the Skylarks', UK], people with dementia and their family members ['the Unforgettables', New York] [6] and people who have experienced stroke and their carers ['Singing Together Measure by Measure', New York] [7]. Evidence of a

beneficial effect is largely based on qualitative research, subjective impressions of participants, articulated usually through self-administered questionnaires, with means of verification [5, 8-14]. The positive effects of choral singing on well-being and mental health are well-illustrated by a study in which participants with low psychological well-being (WHO-BREF) reported that singing provided support in coping with health issues and life difficulties [12,13] and by another in which singing promoted recovery and maintained wellbeing in people with enduring mental health challenges [14]. In a choral study of cancer survivors and their carers, self-reported improvements included vitality, social functioning, mental health, and bodily pain with a trend of reduced anxiety and depression [15]. There were similar considerable well-being benefits from choral singing for a small sample of homeless men and also in studies in disadvantaged and privileged communities [10, 11].

Choral singing may also improve work environment psychosocial health. For example, it improved well-being and health, increased workplace involvement and generated a better work environment among 700 employees in 2 Norwegian hospitals [9]. A longitudinal study on older adults found that choral singing resulted in improved health and reduced medication over 1 year. There were also reduced falls,

PRODUCTION NOTES: Address correspondence to:

B. Ahessy, E-mail: billahessy@gmail.com | COI statement: The author thanks the Meath Foundation (The Adelaide and Meath Hospital, Dublin, Incorporating the National Children's Hospital) for funding this research. The author has no conflict of interest to declare.

decreased depression, less loneliness and increased morale [16]. Cohen maintains that such arts-based interventions foster ‘sustained involvement because of their beauty and productivity...keeping participants involved...compounding positive effects’ [16]. Few of these studies conform to the requirements of a controlled trial, although it must be stated that was never the intention. A comprehensive review of singing and well-being [17], concluded that although much of the research was promising there were many methodological weaknesses in quantitative studies such as such as ‘lack of control groups, small sample sizes, and potential selection bias’ and in qualitative studies such as ‘unclear methods of recruitment and analysis [17] (p.22). A more rigorous approach is necessary to test the hypothesis that choral singing has therapeutic benefits or at least enhances a sense of well-being.

In an emerging area a few recent studies have examined singing’s effects on lung function and quality of life in patients with COPD [18-22]. In one study led by a music therapist, singing interventions were experienced as acceptable, enjoyable and feasible [21]. There were some respiratory improvements associated with the interventions [18, 22], however most improvements were to be found in well-being and quality of life [23]. The research in this growing area is promising but further investigation is required [23].

Music Therapy & Depression in Older Adults

Music therapy uses music and its elements as the therapeutic agent to address clinical goals by adopting a more analytical approach and there is much evidence supporting music’s effect on depression. Receptive techniques (music listening) have been promising in decreasing depressive symptoms, blood pressure, heart rate and respiratory rate [24] and individualised music therapy has improved symptoms of depression and anxiety and general functioning [25]. A Cochrane review of five studies found that music therapy is accepted by people with depression and improves mood [26]. Three of the five studies concerned older adults [27-29]. Depression is a major public health burden and the most frequent mental health problem among older populations [30-33]. Depression in later life is probably multifactorial and that no single risk factor is responsible [34,35]. Furthermore, depressive episodes are almost twice as frequent in nursing home residents when compared to older adults living at home (30% as opposed to 10%-15%) [36,37] and depressive symptomatology can affect up to 50% [38-40].

In older populations music therapy may be a supportive treatment for depression and dementia-specific conditions [41-46]. Depression in later life is associated with disability, increased mortality; poorer outcomes from physical illness and can have devastating effects on quality of life [47]. Compared to younger cohorts, older people with depression typically report less sadness and more physical symptoms

such as appetite loss, weight loss, sleep disturbances, lack of energy and retardation of movement [48-50]. They are also more likely to experience anhedonia, cognitive impairment, memory complaints and psychosis [51,52]. While depressive symptoms can imply a persisting impairment on psychosocial functioning and health management in older adults, Clair [53] emphasizes that an effective way to manage depressive symptomatology is by involvement in meaningful interventions such as music therapy.

Music therapy with older adults improves both self-esteem and feelings of belonging [45] and the behavioral symptoms of depression [46]. Collaborative approaches (music therapy and dance movement therapy) result in improved energy levels, sleep cycles and better appetites as well as significant decreases in depression [54]. Group music therapy interventions significantly increase cognitive functioning, in particular, short-term recall [44].

The general belief that depression is a normal part of ageing is not only flawed but also unethical according to Anderson [55] and multiple health problems often account for any initial association between depression and old age [34,51]. Depression is a major contributor to healthcare expenditure (up to 50% higher), due to premature immobility and other associated problems [56-58]. It is often unrecognized and untreated in older populations due to societal attitudes and the fact that depression is masked by dementia or comorbid with other health conditions [59,60]. Therefore medication is often the first line of treatment, but older adults and particularly those with dementia are more sensitive to adverse effects or overtreatment that may cause impaired cognitive and physical functioning [61,62]. “Music therapy has the potential to serve as an adjunct to, or facilitator of, medication, may reduce the amount of medication administered, or can even serve as a method of choice instead of medication” [63p.9]. Music therapy’s positive effects on depression are prompt [43,44,64]. For example, a significant decrease in depressive symptoms was reported after a five-day intervention of reminiscence-focused music therapy [64], or in depression after one music therapy session [44].

Choir Interventions in Music Therapy

Group music therapy involving singing with older adults are well documented, however the more formalized arrangement of choir interventions has only recently emerged from the literature [65-76]. Group singing in music therapy for patients with neurological conditions is relatively new in the field and current research has shown high potential for choral singing on health including socialization, maintaining voice in Parkinson’s Disease and improved quality of life [70,71]. Music therapists outline ‘Choral Singing Therapy,’ an accessible model used to address communication rehabilitation and improve quality of life for people with neurological conditions [70,71].

Much research on the effectiveness of group music therapy on older adults with depressive symptoms involves group singing or improvisation but rarely with a music therapist-led choir as the therapeutic method. Music therapists Zanini and Leao highlighted choral singing as a positive outlet for self-expression for older adults with implications for self-esteem, sense of identity and optimism about the future [65]. Others have drawn attention to the value of the method for maintaining memory, physical functioning and socio-emotional health [68,69]. Although there has been a lack of rigorous studies in the field examining positive effects of choral singing on older adults, music therapists from both Australia and Canada have recently contributed valuable studies to the growing evidence base.

In a pilot study with nursing home residents, Robertson-Gillam found a choir intervention mitigated symptoms of depression and was more effective than reminiscence [66]. Qualitative results also revealed increased social interaction and improved communication, mood, motivation and attention. In a later study with a nursing home population with severe dementia, depression was significantly decreased, as well as significant increases in measures of responsiveness such as expression of feelings, positive mood changes and engagement [67]. In a more recent mixed methods, randomized control trial with middle-aged adults with depression living in the community, Robertson-Gillam showed a significant drop in depression and an increase in wellness [72]. This research was supported by a pilot study using quantitative electroencephalography (QEEG) with 9 randomly allocated participants from the larger sample [73].

Clements-Cortes most recently conducted a 3-phase study investigating the benefits of singing for older adults with mixed cognitive abilities in music therapist led choirs [74-76]. The first pilot study involved participants from a day care program and assessed the impact of singing on social factors of health and quality of life [74]. Five themes emerged from the qualitative data: friendship and companionship, simplicity, happiness and uplifting and positive feelings, relaxing and reduced anxiety, and fun. In the second study with residents in along term care facility, singing in the choir was found to improve mood, happiness, and energy and decrease pain and anxiety, with the statistical significance achieved in the first four indicators [75]. Qualitative results identified themes including community building, special moments, a positive climate, the therapeutic value of music, increased mood energy and alertness [75]. The final study expanded its range to include residents in a long-term care facility and their care givers or significant others [76]. Results indicated statistically significant reductions in pain perception and increased energy and mood for both groups. Qualitative themes indicated the intervention encourages maximized participation, facilitated interaction and bonding, promoted enjoyment and fun, encouraged improved mood and attitude, facilitated energy and motivation and promoted stress release

and relaxation [76]. These studies are of particular interest to practicing music therapists.

Although there is a growing body of research from music therapy and related disciplines on choral singing and health [68], there remains a need for further research investigating the effectiveness of choral interventions with older adults and in particular with music therapist-led choirs [76,77].

A recent review on the clinical effects of singing on older adults calls for further research using samples with varying levels of cognitive impairment as well as studies including control groups [77]. Furthermore, recommendations in Cochrane reviews also highlight the need for high quality trials and more sophisticated research on the effects of music therapy on depression and older adults [68]. It was timely and appropriate to conduct a controlled study to investigate whether active participation in a choral music therapy intervention would reduce depressive symptoms and increase quality of life and cognitive functioning in a group of older adults with mixed cognitive ability in a long-term residential facility and day-care service.

Methods

Procedure

The study was funded and ethically approved by the Meath Foundation (Adelaide and Meath Hospital Incorporating the National Children's Hospital, Dublin). Clients from the long-term residential unit and day-care centre in Dublin were approached and asked if they would like to participate in the study. Confidentiality and anonymity were ensured and participants received detailed information sheets and a verbal explanation about the study. After verbal and written consent was obtained, participants were randomly assigned to two groups; a treatment (choir) group (n=20) who would actively participate in the choir for 12 weeks and a control group (n=20) who would receive standard nursing care. The control group were informed that they would receive four choral sessions once the study had terminated. Equal numbers of participants from the residential unit and the day care centre were included in the study. The participants were interviewed for baseline demographic data; and then all participants were given a Mini Mental State Examination [MMSE] [79] to assess cognitive functioning, the Cornell Scale for Depression in Dementia [CSDD] [80] and the Cornell Brown Scale for Quality of Life [CBS] [81] before and after the intervention. The treatment group were also given an optional choir evaluation questionnaires [CEQ] to complete after the study. All data received was made only available to the researcher.

Participant Flow

Attrition in geriatric research can be high due to death, illness or withdrawal [82]. There was low attrition in this study considering the frailty of the population and that many of the sample had chronic health problems. Three participants from the choir group were excluded due to illness/hospitalization and death, and in the control group 1 participant was excluded due to illness. These participants were excluded once they had missed 5/12 music therapy sessions.

Data Collection

The researcher administered all assessments 1-2 weeks before the intervention began and then after the intervention terminated in week 13 and 14. All assessments were carried out at the same time of day in both the pre and post-tests to control for circadian effects and improve reliability.

- Mini Mental State Examination (MMSE)

The MMSE [79] is the most commonly used instrument for screening cognitive function, validated in a numerous populations. It provides measures of orientation, registration, short-term memory and language functioning and is brief and efficient. The MMSE is scored out of 30. Scores of 25 – 30 are considered normal, 18 – 24 indicate mild to moderate impairment, and scores of 17 or less indicate severe impairment.

- Cornell Scale for Depression in Dementia (CSDD)

The CSDD [80] is a 19-item scale that uses information from interviews with patients and the nursing team to assess depression in five domains. The CSDD is the only depression-rating instrument that has been validated with clients with and without dementia. This was highly relevant for this study, as both the choir group and the control group contained people with and without dementia. The score range is from 0 to 38; with a total score of 8 or more indicating significant depressive symptoms.

- Cornell Brown Scale for Quality of Life in Dementia (CBS)

The CBS [81] was adapted from the CSDD, but its goal is to provide a global assessment of quality of life in patients diagnosed with dementia. The score range is from -38 to +38. Aggregate negative scores indicate that negative ratings outweigh positive ratings and are presumed to indicate a poorer quality of life (and vice versa). Because the CSDD had already been validated with both groups, the CBS was considered most appropriate QOL tool for this mixed sample.

- Choir Evaluation Questionnaire (CEQ)

The CEQ, a self-administered questionnaire was designed in order to elicit data on participant's feelings and thoughts regarding the choir intervention, music therapy and particularly the effect of singing on health. It included a mixture of closed and open questions.

Intervention

The choir group attended the therapy session weekly on Friday mornings for approximately 1 hour. The room was quiet and peaceful and participants sat in a semi-circle around the piano. The participants were required to attend a minimum of 8 out of the 12 sessions to be included in the study. The control group received standard nursing care for the duration of the study and equal amounts of time was spent with this group where possible. In considering the duration of the intervention previous Cochrane reviews on music therapy and depression and dementia were consulted [78,26]. Studies included in these reviews specified a minimum of 5 week's duration to allow for therapeutic change to occur [78].

Choir Methodology

The principles of adult social learning in which mistakes are ignored and efforts are noted and encouraged, the 'no mistake approach' [83] were used in the sessions, which were arranged essentially after Robertson-Gillam [66]. The choir methodology with approximate durations is explained in *Table 1*.

Each choir session was facilitated by a qualified music therapist who led all the singing and accompanied on a digital piano. There were 5 parts to the session as follows:

1. Meditation & relaxation *Duration – 5 minutes*

- The session started with mindful breathing and gentle stretches. Then a guided meditation was used with visualizations, which incorporates postural, and breathing exercises.
 - The aim was to relax the mind and body and regulate breathing.
 - The meditation focused and centered the clients in preparation for singing and promotes confidence in their voices.
 - Exercises that focus specifically on inhalation and exhalation are beneficial to older adult singers and may increase the vital capacity of the lungs [84].
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2. Vocal improvisation *Duration – 5 minutes*

- This followed the meditation and involved choir members humming, singing and toning freely with their eyes closed. The music therapist often modeled sounds to encourage people and get them started.
 - This was often supported with a simple ostinato, chords or a drone on the piano, played by the therapist to support singers.
 - The aim was to encourage clients to explore their voices, expressing inner feelings while being supported by the group. It also promoted
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trust between group members.

- ‘Vocal improvisation facilitates spontaneous and emotional connection to self and other’ [1].

3. Singing & articulation exercises *Duration – 10 minutes*

- A range of exercises were used including oral motor and respiratory exercises, rhythmic and melodic articulation exercises, scales and arpeggios.
- Call and response pieces, tongue twisters and rounds/canons were used to stimulate cognition and improve concentration and attention.
- Participants particular enjoyed exercises that involved humour for example singing “taut tight tutus” in broken triads or “As one black bear backed up the back the other black bear backed down” to the melody of “John Brown’s Body.”
- Singing and articulation exercises are vital to warm up the vocal chords, improve articulation, pitch, range and projection.

4. Learning & singing repertoire *Duration – 35 minutes*

- Many genres were included including: popular, jazz, Irish traditional, gospel, classical and contemporary songs. All songs were accompanied by the piano.
- Well-known songs were used, but new and unknown songs were taught to challenge and extend skills. Members of the choir also contributed songs.
- Songs were sung in unison and in simple two-part harmony.
- Songs were also taught in different languages to provide further cognitive challenges for example: Italian, Swahili, French and a Maori dialect.
- Songs were selected from lists compiled from books from a previous music therapy choir the researcher and been involved with. Participants were asked to select preferred songs. Then the researcher added some canons/rounds and new songs. Some songs included: ‘Somewhere Over the Rainbow (1939), Amazing Grace (1779), ‘What a Wonderful World’ (1967), ‘Alexander’s Ragtime Band’ (1938), ‘Danny Boy’ (1915), ‘Santa Lucia’ (1835), ‘Catch a Falling Star’ (1957), ‘You’ll Never Walk Alone’ (1945), ‘Tulips from Amsterdam’ (1958), ‘Po Atarau’ (1915), ‘Lean on Me’ (1972) and ‘Dublin Saunter’ (unknown).
- All songs were accompanied by the music therapist on a keyboard. Sometimes handheld instruments such as drums, tambourines, shakers and kazoos were included to stimulate, rhythmic awareness, physical activity and coordination.
- Singing the repertoire provided further opportunities to address ‘breathing, pitch accuracy, vocal range, rhythmic accuracy, dynamics and projection in the context of meaningful music’ [71].

5. Concluding song *Duration – 5 minutes*

- The choir session finished with a final song to bid farewell and close the session. Sometimes that was a song with a slow tempo, such as “Now is the Hour” (1927) providing opportunity to reflect. On other occasions it was a more rousing song with a goodbye theme such as “Goodnight Sweetheart,” (1953) “Show Me the Way to Go Home,” (1925) or “We’ll Meet Again.” (1939). These songs were accompanied by the piano.

Table 1. Choir methodology

The experimental design of the study is summarised in *Table 2*.

Group	Pre-test	Intervention	Post-test
Choir Group (n=20)	Cornell Scale		Cornell Scale
	<i>Depression</i>		<i>Depression</i>
	Cornell <i>Brown Scale Quality of Life</i>	12 x 1 hour weekly choir sessions led by a music therapist	Cornell <i>Brown Scale Quality of Life</i>
	MMSE <i>Cognitive Functioning</i>		MMSE <i>Cognitive Functioning</i>
			Choir Evaluation Surveys
Control Group (n=20)	Cornell Scale		Cornell Scale
	<i>Depression</i>		<i>Depression</i>
	Cornell <i>Brown Scale Quality of Life</i>	Standard Daily Care No Music Therapy for 12 weeks	Cornell <i>Brown Scale Quality of Life</i>
	MMSE <i>Cognitive Functioning</i>		MMSE <i>Cognitive Functioning</i>

Table 2. Experimental design of the study

Data Analysis

Before and after scores for the CSDD, CBS and MMSE were tested with a paired *t*-test. Inter-group comparisons were tested with an unpaired *t*-test. Differences occurring with the probability less than 0.05 were considered significant. The data from the questionnaires were summarized and expressed as proportions of respondents. Participant’s responses to open ended questions were presented under the theme heading of the question. An independent statistician analyzed all data.

Results

Participants

The demographic data from the participants is presented in *Table 3*. All participants were Caucasian and of Irish decent. There was a male to female ratio of 5:31. The age range was from 72 to 99 years old with similar age range and mean age in both groups. Just under half of both groups had some previous musical experience or exposure to music in school. Only 3/36 participants were familiar with music therapy, but had never engaged in a session.

	Choir Group n=17	Control Group n=19
Gender		
Male	2	3
Female	15	16
Age		
Age Range	72 – 94	72 – 99
Mean age	83	84
Marital status		
Married	1	2
Divorced	0	1
Widowed	11	13
Single	5	3
Education		
Primary/Nationa l	17 4	19 2
Secondary 3 rd Level	1 0	0
Religion		
Catholic (Religious)	16 18	19 16
(Not religious)	1	3
Protestant (Religious)	1 1	0 0
Musical Experience	8	9
Music Therapy	2	1

Table 3. Demographic profile of participants

Demographic characteristics for the choir group and the control group were well matched and the difference between the pre-treatment tests scores for the two groups for their depressive symptoms, quality of life or cognitive functioning were not significant, See table 4.

Pre-treatment	Choir	Control	
Depressive Symptoms	6.88	5.37	P = 0.88, ns
Quality of Life Score	11.47	10.68	P = 0.25, ns
Cognitive Functioning	25.4	23.52	P = 0.28, ns

Table 4. Participant’s pre-treatment scores (ns=not significant)

Depressive symptoms

The intervention significantly improved scores on CSDD. The choir’s mean depressive symptoms score decreased by almost 54% from 6.88 at the start of the study to 3.17 at the end. The control group showed no such improvement but rather had a slight non-significant increase in depressive symptoms with the mean score moving from 5.37 to 6.53, a 21.6% increase. From the statistical analysis we can see that there was significant difference between the pre-treatment and post-treatment and the post-treatment and post-control (Figure 1.)

The Choir Intervention Reduced Depressive Symptoms

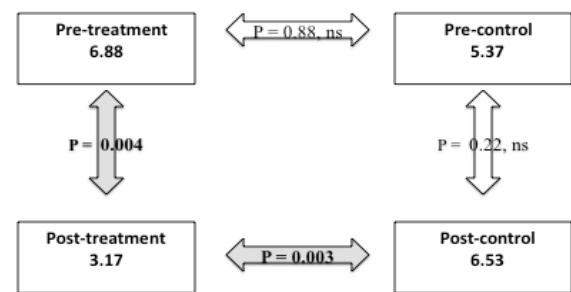


Figure 1. Mean pre and post-test depression scores in both groups (ns=not significant)

There was much variability in the individual depression scores. In the choir group 8/17 (47%) displayed depressive symptoms at the beginning of the study with a score of 8 or more on the scale. After the intervention no choir member displayed depressive symptoms of more than 8. In the control group 7/19 (36.8%) participants displayed depressive symptoms to begin and by the end of the study that had increased to 10/19 or 52.6% (an increase of 16% in the number showing significant depressive symptoms). In total 74% (n=14) of the control group participant’s depressive symptoms stayed the same or increased over the twelve weeks.

Quality of life (QOL)

Quality of life scores increased significantly after the intervention. The mean QOL scores in the choir group increased by 57% from 11.47 to 18, and 76% of the group had some increase in QOL score. By contrast, the control group did not show this improvement. In fact their score decreased non-significantly from 10.68 to 8.95 (a decrease of 16%). From the statistical analysis in Figure 2, we can see that there

was significant difference between the pre-treatment and post-treatment and the post-treatment and the post-control.

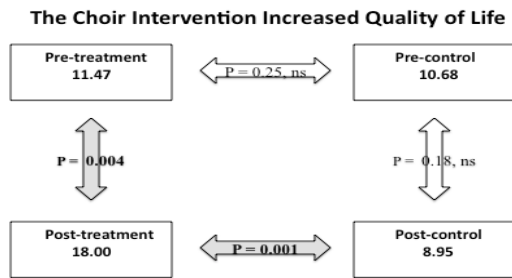


Figure 2. Mean pre and post-test quality of life scores in both groups (ns=not significant)

Again there was much variability in the choir group's individual scores and 13/17 (76.4%) participant's quality of life scores improved over the intervention. There was also much variability in the control group where 13/19 (68.4%) quality of life scores dis-improved over the course of the study.

Cognitive functioning

While MMSE scores ranged from 8 to 30, the mean pre-scores in both groups were not different. There was a significant increase in cognitive functioning in the choir group from 25.4 to 26.27 (p = 0.011: Figure 3), while the control group's score did not change (23.53 at the start of the study and 23.47 at the end). There was no difference between the post-treatment and post-control.

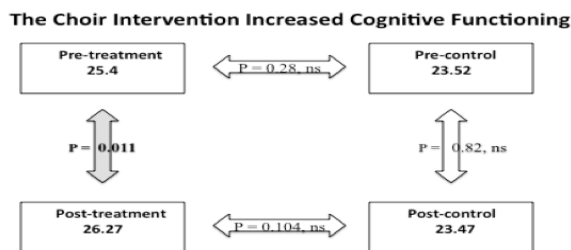


Figure 3. Mean pre and post-test cognitive functioning scores in both groups (ns=not significant)

Results from the CEQs

Fifty-five percent of the choir group rated their health as fair or poor. Over 23.5% (n=4) stated they suffered from depression and loneliness. Almost 40% (n=7) reported physical problems (including speech problems and breath control) and 17% (n=3) reported isolation and stress. Figure 4. reveals the perceived benefits participants experienced from the choir. The most common response was learning new songs (n=16). Over two-thirds (n=12) reported social

interaction as a benefit and almost 40% (n=7) reporting physical benefits including improved speech and breath control. Over one-fifth reported enhanced mood, improved memory and confidence. Only two members rated improving their voice as a gain.

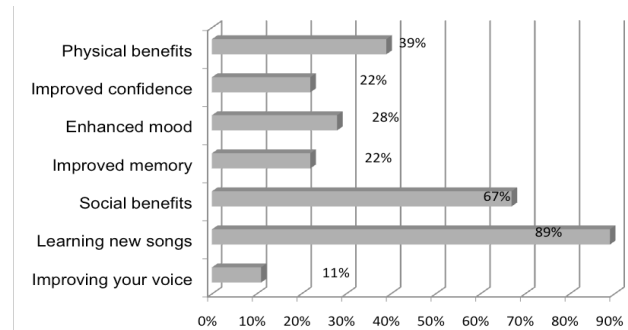


Figure 4. Perceived benefits from participating in the choir study

All participants (n=17) reported they thought that singing was good for them and over three-quarters (n=14) of felt that singing affected their health in some capacity. One member with Parkinson's disease said "With my health condition it really helps me with my breathing and my voice." Participant's perceived effects of singing on their health are presented in Figure 5.

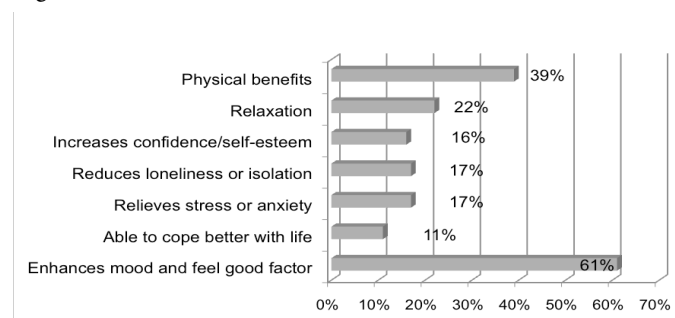


Figure 5. Perceived Effects of Singing on Participant's Health

When asked about how the choir members felt after music therapy sessions there were many responses. The theme of community and interaction was very prominent, improved or positive mood was also obvious. A selection of the responses is presented in Table 5.

How the Participants Feel After a Choral Therapy Session

- 'I feel happy, I feel part of the community'
- 'In a nutshell, happy, the songs brighten me up.'
- 'I feel good; I really like the feeling of having achieved something.'
- 'I feel very refreshed, I feel good after the company.'
- 'I feel like singing the whole way home.'
- 'It's a great hour; I forget all my worries and troubles.'
- 'I feel great! I'm getting so much out of it, especially meeting new friends.'
- 'I feel relaxed, I feel very happy. I get so much pleasure from it, and I always

come out in good humor.
It lifts your spirits for the whole day.'

Table 5. Participants describe how they feel after a music therapy session

All participants attributed these positive feelings to the choir. Furthermore, exactly half (n=9) of the participants reported that the positive feelings lasted the whole day. Over one-quarter (n=5) said a few days and 17% (n=3) stated the feelings lasted a week or more. The participants were asked to state in their own words what the choir means to them. Many said how they found the choir to be an enjoyable experience and how it made them feel part of the community. Other's commented on improved mood and feeling valued. A selection of these answers is presented in Table 6.

What the Choir Means to the Participants

- 'I've been here for 7 years and the choir really gives me a lift. Everyone looks forward to it.'
- 'It means an awful lot to me. I enjoy mixing with different people from the community.'
- 'I always enjoy the choir. It is something I would never have done in my life.'
- 'It makes me look forward to every Friday.'
- 'The community element is the best. Singing music that I like really makes me feel joy.'
- 'It's a kind of musical family. The people are very important., I would miss the choir if it wasn't on.'
- 'I really enjoy it. If you sing more often you don't feel depressed. It makes you forget.'
- 'It brightens up your day. You forget all your worries when you're singing.'
- 'It's good to be able to be active, I am happy to be able to take part.'
- 'I didn't think I'd enjoy it, but then I loved it. The music helps people to gel together.'
- 'It's good for your health. It gives you a different outlook.'
- 'It's great that we are such a happy group. Social well-being and interactive benefits.'
- 'It's the best thing that has happened to us. It makes us feel important.'

Table 6. Participant's describe what the choir means to them

All the participants (n=17) affirmed that 'singing is good for you.' One participant referred to it as "a tonic." When asked if they would like to continue with the music therapy choir after experiencing it for 12 weeks 94% (n=16) said yes.

Discussion

The present study was a controlled experiment and from the results it is clear that the choir intervention reduced depressive symptoms and improved quality of life and had a secondary outcome of increased cognitive functioning. Both treatment and control groups were selected at random and from the outset were not different from one another (as presented in their pre-treatment scores). Twelve weeks after the intervention however, they differed significantly. Thus

robust conclusions may be drawn. In the CSDD pre-tests 47% (n=8) of the choir group displayed depressive symptoms, however in the CEQs only 22% of the participants rated themselves as having depression. This however may be due to the broad range of depressive symptoms, which are often unacknowledged or reported in older adults [85]. There was an association between lower quality of life score of those living in residential care in both groups. The depression scores and the fact that the depressive symptoms actually became worse in the control group over the 12 weeks supported this.

The fact that the participants chose 'learning new songs' as the main benefit of the choir demonstrates that older adults are still eager to learn new skills and supports the theory that human beings are always looking for novelty in order to keep their lives purposeful and meaningful until death [86]. In fact, as participant's confidence grew they requested songs and in the questionnaire when asked for suggestions two comments included: "We could all improve our voices" and learn more songs in different languages." Social interaction has been identified as a recurring theme in many recent studies on singing and health [76] and in this instance was the second most perceived benefit. This is important because many of the group, whom almost 90% of were female, reported loneliness and isolation as issues affecting their health. A high level of loneliness has been noted to be a relevant risk factor for mental ill health and has more frequently been found among older women than older men [88]. Physical benefits (breath control) were as a prime benefit from participation in the choir. This was mirrored in a study with seniors in the United Kingdom where improved breathing was reported as the most common physical benefit [87]. Breathing exercises have also been linked to improved respiratory well-being by participants in another [74].

When reporting on singing's effect on health participants stated that singing had the greatest effect on their mood, and this was also reflected in their own comments in Figure 6. This supports the quantitative results that show that the intervention had a significant effect on mood in the choir group. The choir participants also reported positive feelings felt after sessions lasting from one day to a full week.

When asked what the choir meant to the participants, taking part and achieving was seen as very important but the most prominent theme was that of community. The choir provided a creative vehicle for integration, where cognitive deficits or physical disabilities became invisible and clients from both (residential and day-care) communities interacted creatively with each other. The clients from the day care centre strengthened and energised the group stimulating, supporting and encouraging those less able to engage productively. Indeed it could be said both groups enjoyed a sense of purpose and agency. Working therapeutically with a group of people with varying health conditions from different care regimes can be challenging. Fogg & Talmage highlight these challenges in meeting the needs of a mixed group, but

also the opportunities to focus on strengths and group support [6].

Having a music therapist lead the choir intervention had many benefits in supporting people at different cognitive levels, creating a therapeutic environment and checking in on people who may have had emotional responses to certain songs. The positive impact of the music therapist in facilitating choirs has been highlighted in the literature for facilitating reminiscence, discussion and fostering social interaction through a positive and engaging environment [76,77].

The choir was a positive experience for the participants who all acknowledged that singing is good for them and all except one wished to continue attending the choir after the study finished. The desire to continue with this form of therapy and improve one's quality of life has also been echoed in other studies [74]. The choir provided a social community based on creativity, respect and trust. The importance of social interaction and community is very important and a significant mental health-promoting factor among older adults is social capital, which encompasses social networks, social support, reciprocity and trust [89]. In contemporary society, the original geographical communities that existed, especially in the inner cities are often fragmented. The concept of 'belonging' has been identified as being important in contemporary communities and that these communities must be 'performed' [90]. The music therapy choir provided a therapeutic platform where participants were responsible for, creating and 'performing' their community. Group-based music therapy in aged care settings provides valuable 'social and psychological stimulus.' The 'presence of others can reassure us, spur us on to greater efforts and provide support and comfort' [91]. The choir have become a cohesive group with a sense of purpose, as they contribute to the on-going life within the unit and the community. We are hardwired for creativity no matter what age we are. 'When we sing together, we affirm and celebrate each other's existence and that is a most worthy song' [92].

Limitations & Future Research

Due to funding restrictions it was not possible to offer the control group on going music therapy after the study. Control group participants may have felt disappointed not being chosen for the singing group and this could result in negative outcomes.⁷⁷ Taking this into consideration the control group were informed that they would receive four choral sessions with the music therapist once the study terminated. An obvious limitation in this study was the dual role of the author as the principal researcher and clinician. If replicating the study it would be desirable to have a larger research team where these roles are separate, ensuring the post-test evaluations were blind. In further research, it would be important to examine in detail and identify what were the

variables associated with the responses of the individuals in the study. It is crucial to understand why and how the treatment worked and that involves a more in-depth analysis of the post-test results. Furthermore, it would be desirable to replicate the music therapy study with a new treatment and control group. This would strengthen the reliability and verify that the results are consistent. Considering the 'inherent social nature of choral singing' [93], it would also be of interest to compare the music therapy group with a social group with no music to examine the mechanisms of change beyond a social event to look forward to. The lack of controlled trials exploring the health benefits of choral singing on older adults has been highlighted and further studies would greatly contribute to the growing evidence base. It would also be of use to compare the differences between a music therapist-led choir and a non-music therapist led choir with this population.

Conclusion

The results of this study indicate that the use of a music therapist led choir is an effective psychosocial intervention for reducing depression and improving quality of life in older adults. It may have a secondary outcome of increased cognitive functioning. The choir's mean depressive symptoms were reduced by 54% and where 8/17 displayed significant depressive symptoms at the beginning of the study (scoring 8 or more on the CSDD), none of participant scored with significant depressive symptoms after 12 weeks. The mean QOL scores in the choir group increased by 57% and 76.4% of participants experienced an overall improvement in QOL. There was also a statistically significant increase in cognitive functioning as measure by the MMSE.

Participants identified learning new songs (89%), socialization (67%) and physical benefits (39%) as the main benefits of singing in the music therapy choir, where when considering the benefits of singing for health in general they identified enhanced mood and feel good factor (61%), physical gains (39%) and relaxation (22%). Comments made by participants demonstrate how choral singing had a positive impact on their physical health and mood. They emphasized the importance of the social benefits and the sense of community as well as feeling valued. The need for more rigorous research on the effectiveness of choral singing and more specifically the use of a music therapist-led choir as a psychosocial intervention for older adults has been highlighted. Thus, this study is timely, relevant and delivered within an experimentally controlled paradigm. The music therapy choir is an efficient and cost-effective treatment option to support older adults with depressive symptoms in residential and community settings, which may be a more desirable alternative to pharmacological interventions.

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Note

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Biographical Statements

Bill Ahessy NMT, MMT, PGD MT, BMus is a senior music therapist working in Dublin for the Health Service Executive with older adults and the City of Dublin Educational Training Board with children who have visual impairment and multiple disabilities. He is a guest lecturer at Trinity College Dublin and the University of Limerick and past council member of the Irish Association of Creative Arts Therapists.

