Original Article

The effect of group singing on the happiness of older people

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Abstract

Context: Happiness is important for all age groups; however, it is more highlighted in elders.

Aims: The aim of the current study was to determine the effect of group singing on the happiness of older people.

Setting and Design: In this quasi-experimental study, sixty participants selected among elderly referred to two Day Care Centers of Mazandaran.

Materials and Methods: Samples were assigned to two groups of intervention ($n = 30$) and control ($n = 30$). The intervention group was assigned into three groups of 10. Each group selected a song from the list of songs and performed it for 10 min. This process was repeated one more time. The intervention was performed two times a week, for 3 weeks. In the control group, no intervention was performed and the elderly received the usual care. The happiness score of both groups, before and 1 month after the end of the intervention, was measured using the Oxford Happiness Inventory.

Statistical Analysis Used: Data were analyzed using independent t-test, Chi-square test, and ANCOVA.

Results: Before intervention, the mean scores of happiness in the intervention and control groups were 4.38 ± 0.48 and 4.53 ± 0.26, respectively ($P = 0.138$). One month after intervention, the mean scores of happiness in the intervention and control groups were 4.77 ± 0.37 and 4.35 ± 0.18, respectively ($P = 0.004$).

Conclusion: The results of this study showed that group singing was effective on the happiness of the elderly. More studies in day-care centers and other settings, especially nursing homes, are recommended. Implementation of such measures is recommended in the day-care centers.

Keywords: Elderly, Happiness, Singing

INTRODUCTION

The aging population of the world is on the rise.[1] Today, about 580 million people in the world are over 60 and the figure will reach 1 billion people by 2020.[2] In Iran, statistical indicators show that the older adults' population has also begun to rise, and according to the census of 2016, 7,228,367 people in the population were over 60. It is estimated that this number will reach 10 million in 2021.[3]

Happiness is important for all age groups; however, it is more highlighted for older people. The old-age tasks include adaptation to physical changes, adaptation to partner

changes, retirement and income changes, getting used to new social roles, and fulfilling obligations to society. These factors can affect the feeling of well-being.[4] Happiness is deeper than a good temporary mood. It includes positive emotions such as joy, peace, a sense of involvement, and enthusiasm.[5] Many psychologists believe that there are at least three fundamental elements of happiness, including emotional, social, and cognitive conceptions.[6] Researchers suggest that happiness can be linked to longevity.[7] The notion that participation in activities leads to happiness in life is one of the first pioneering biogerontology theories in successful aging.[8] If people are happy, they will see the world as a safe place and have a sense of cooperation and help others.[6] Although a fixed and stable level of happiness is hereditary, living conditions (such as geographical and cultural factors), demographic factors (such as age, gender, education, and income), and leisure activities (such as sports, recreational, and artistic activities) may also affect the level of happiness.[9,10]

Therapeutic dance, music therapy, and therapeutic poetry are the types of art therapy group activities that cause a person to grow.[11] Poetry encourages the creative empowerment of individuals.[12] The art of singing is common in most cultures, civilizations, and nations, and is in fact the basis of the basic principles of music of that nation culture.[13] Participating in social activities such as group singing is a positive attitude to mental health.[14] The positive psychological effects of amateur singing on individual health include a significant improvement of well-being and reduced negativism.[15] Learning a new song may make people feel happy and satisfied.[16] Group singing can be effective in the following ways: creating positive memories and hope, self-efficacy, social support, and network.[16] Singing also helps to promote the vocal health of the elderly. When singing, breathing is scheduled in accordance with the vocabulary, and with the participation of the audio system, the sound is stronger and its quality becomes more stable.[17] Singing can also play a role in the safety of the immune system.[18]

Although some studies have been done on the effect of singing on physical and mental health, especially in the elderly,[14-22] as far as the researcher has examined, its effect on the sense of happiness of the elderly has not been studied. Considering the increasing number of elderly people and taking into account the major role of physical, psychological, and social changes in stresses caused by reducing the happiness and enjoyment of the elderly, the aim of this study was to determine the effect of group singing on the happiness of older people, hoping to be useful.

MATERIALS AND METHODS

This is a quasi-experimental study conducted in the day-care centers of Saraye Arshad in Sari and Kheradvarzan in Ghaemshahr, in 2017. This study was approved by the Ethics Committee of Mazandaran University of Medical Sciences with code IR. Mazums.Rec.1396-6180. Two above centers were selected out of seven day centers, which were similar in terms of educational, sports, recreational, artistic, and cultural activities. Then, one was randomly considered as an intervention group and the other as a control group. After visiting these centers, the contact list of the elderly was taken. Individuals were randomly selected using the Excel RANDBETWEEN n software output numbers and entered the study if they had the inclusion criteria. The purpose of this study was explained to the elders and told them, they could be excluded, whenever they wanted. All participants were assured that the information obtained will remain confidential, and the oral and written informed consent was obtained from them.

The questionnaires were completed by face-to-face and in-person interviews.

The inclusion criteria were at least 60 years old, membership in the day-care center, reading and writing skills, ability to attend meetings, interest in singing, absence of cognitive and psychological disorders based on score 7 and above in the Abbreviated Mental Test (AMT), absence of hearing and speech impairment to an extent that can interfere with singing ability, such as severe hearing impairments that cannot be corrected with hearing aids, and speech abnormalities that interfere with the pronunciation of words, absence of the use of any neurological medications,[17] absence of advanced respiratory and cardiovascular disease,[15] and absence of moderate-to-severe depression based on the Geriatric Depression Scale (GDS) score below 9. Exclusion criteria included absence for more than one session.

Based on the following formula and the results of pilot study on ten participants, the minimum sample size was calculated 13 people in each group: $\mu 1 = 4.48$, $\sigma 1 = 0.4$, $\mu 2 = 4.14$, $\sigma 2 = 0.2$, $\alpha = 0.05$, $1-\beta = 0.8$, the minimum sample size was calculated 13 people in each group. Parametric statistical methods based on the central limit theory were used for more suitable response and two groups of 30, and a total of 60 people were selected.

$$n = \frac{\left[Z_{1-\frac{\alpha}{2}} + Z_{1-\beta} \right]^2 \left[\sigma_1^2 + \sigma_2^2 \right]}{(\mu_1 - \mu_2)^2}$$

The intervention group was informed about the time and number of sessions, and the program was adjusted in coordination with the director of the center and communicated through the social messenger before each session. Demographic-medical characteristics, GDS, and Oxford Happiness Questionnaire were completed by the elderly in both groups.

The intervention was performed two times a week, for 3 weeks[23] at the day-care center of Sari. The intervention group was assigned into three groups of 10. Each group selected one song from the list of songs and performed it for 10 min (5 min of practice and 5 min of singing), and then, the above-mentioned process was repeated in each group. Therefore, each session lasted 60 min. The type of vocal was chosen from among the words of old folk songs and folklore, under the supervision of a clinical psychologist, a vocalist, and a gerontologist. The song was approved by the experts, including the Ethics Committee. To measure reliability, Cronbach's alpha was used, which was 0.84. At the beginning of each session, the original singer was first listened to, and then, each line was read by a researcher and the seniors were asked to sing it in group together. The control group received the usual care. One month after the end of the intervention,[23] again the Oxford Happiness Inventory was completed by both groups.

Data were collected using three questionnaires:

Demographic-medical questionnaire
The variables of this questionnaire included age, gender, marital status, education, income, living arrangement, membership in the sports group, membership in the religious group, chronic disease, the type of chronic disease, number of medications, body mass index, and the artificial denture.

Abbreviated Mental Test
Cognitive status was measured using AMT (Hodkinson, 1972). This is a 10-item scale, in which a 1 score is given to each correct answer. A score ≤6 indicates the presence of cognitive impairment (0–3 indicates severe cognitive impairment and 4–6 indicates moderate cognitive impairment). The ideal cutoff point of the Iranian version has been identified 6 and its sensitivity and specificity were 85% and 99%, respectively.[24]

Geriatric Depression Scale
Depression symptoms were assessed using the GDS (Yessavage *et al.*, 1983), which has 15 yes–no question items. Validity and reliability of this questionnaire were performed in Iran, with the cutting point of 8 and sensitivity and specificity of 0.9 and 0.84, respectively.[25]

Oxford Happiness Inventory
The Oxford Happiness Inventory was developed by Michael Argyle and Peter Hills and includes 29 statements. The inventory is scored using the Likert scale score from 0 to 3 with four options. In 2002, Michael Argyle and Peter Hills changed their Likert scale to six options of 0–6: strongly disagree (1), moderately disagree (2), slightly disagree (3), slightly agree (4), moderately agree (5), and strongly agree (6). Items 1, 5, 6, 10, 13, 14, 19, 23, 24, 27, 28, and 29 are scored in reverse. The total score of 29 items is assigned to 29. Hence, the range of scores is between 1 and 6, in which the higher score represents the more happiness. Hills and Argyle reported an internal reliability of 0.9%.[26] The Oxford Happiness Inventory in Iran was translated by Alipoor and Noorbala in Persian, and the translation was verified by eight experts with the Cronbach's alpha of 0.98 and the statistical reliability of 0.92. Furthermore, the test–retest reliability after 3 weeks was reported 0.79.[27]

Data analysis was performed using descriptive statistics (mean and standard deviation) and analytical (independent *t*-test and Chi-square test), and also for the elimination of confounding variables, ANCOVA and regression tests were performed.

RESULTS

The mean age of the intervention group was 63.9 ± 3.4 and in the control group was 73.6 ± 0.5 ($P < 0.001$). According to Tables 1 and 2, two groups had significant differences in terms of gender ($P = 0.002$), marital status ($P = 0.001$), living arrangement ($P < 0.001$), membership in the sports group ($P = 0.028$), membership in the religious group ($P < 0.001$), and the presence of dentures ($P = 0.002$) [Tables 1 and 2].

The mean score of happiness before the group singing in both intervention and control groups was not statistically significant ($P = 0.138$); however, there was a significant difference between intervention and control groups after group singing ($P = 0.004$) [Table 3].

The analysis of covariance showed that intervention significantly could increase the happiness of the elderly [Table 4].

The comparison of correlation between happiness score and the research variables showed that happiness score had a significant correlation with group and education ($P = 0.001$). Finally, the backward linear

regression model was performed, indicating that three factors of education, body mass index, and group singing are happiness predictors [Table 5]. Examining the coefficients showed that the predictive power of group singing was more than any other variable [Table 6], and three variables of education, singing, and body mass index altogether predicted 26.4% of happiness.

DISCUSSION

Before comparing the findings of the current study with other findings, it should be noted that, despite a lot of searches in available databases, no similar domestic or foreign research was found, so in this section, we refer to the findings of studies with the maximally similarity with the current research.

The findings of the current study showed that group singing was effective on the happiness of the elderly. This finding is consistent with that of Mathew *et al.* and Sakano *et al.*[18,22]

Mathew *et al.* investigated the effect of group singing on the depression score and loneliness feeling of the elderly living in the nursing homes. The intervention group (40 people) received a group session for 3 weeks each day. The duration of each session was 30 min. The control group (40 people) did not receive such an intervention. Initially and every week, the GDS and loneliness scores of the University of California Los Angeles were recorded in both groups. At the end of 3 weeks, there was a significant difference between the scores of the two groups (P < 0.001).[22]

Sakano *et al.* studied the effectiveness of singing on mental health and safety of 44 elderlies aged 60 years and older (10 men and 34 women) using blood and saliva tests and a questionnaire before and after singing. The convenience sampling method was used and the research setting was a clinic. The intervention included singing three selected consecutive songs for 3 min and 50 s. The findings showed that after singing, salivary levels increased and cortisol levels decreased. Visual Analog Scale scores improved for the sensation of refreshing, comfort, and pleasure (P < 0.001).[18]

Camic *et al.* conducted a study entitled "The impact of group singing on the quality of life of mild cognitive impaired elderly and their care givers." Ten patients with cognitive impairment (five males and five females) and ten caregivers (nine spouses and one daughter) participated in the pre- and postprocedure. Each group (couple) was received instruction separately in about 30 min on how

Table 1: Comparison of qualitative variables among two groups

Demographic variables	Control (n=30), n (%)	Intervention (n=30), n (%)	P
Age			
60-75	16 (53.3)	30 (100)	<0.001
75-90	14 (46.7)	0	
Gender			
Female	12 (40)	24 (80)	0.002
Male	18 (60)	6 (20)	
Living with			
Spouse	18 (60)	4 (13.3)	<0.001
Spouse and children	1 (3.3)	25 (83.3)	
Alone	11 (36.7)	1 (3.3)	
Marriage			
Widow	11 (20)	1 (3.3)	0.001
Married	19 (80)	29 (96.7)	
Exercise group			
Yes	10 (33.3)	3 (10)	0.028
No	20 (66.7)	27 (90)	
Religious group			
Yes	16 (53.3)	3 (10)	<0.001
No	14 (46.7)	27 (90)	
Denture			
Yes	19 (63.3)	7 (23.3)	0.002
No	11 (36.7)	23 (76.7)	

Table 2: Comparison of quantitative variables among two groups

Variable	Mean±SD		P
	Control (n=30)	Intervention (n=30)	
Depression	1.27±0.45	2.3±1.89	0.007
BMI	25.14±2.58	3.54±26.89	0.033

SD: Standard deviation, BMI: Body mass index

Table 3: Comparison of happiness scores before and after group singing among two groups

Happiness	Mean±SD		P
	Control (n=30)	Intervention (n=30)	
Before	4.53±0.26	4.38±0.48	0.138
After	4.53±0.18	4.77±0.37	0.004

SD: Standard deviation

Table 4: Tests of between-subject effects

Source	Sum of squares	df	Mean square	F	Significant
Pretest	2.54	1	2.54	59.29	<0.001
Group	1.59	1	1.59	37.06	<0.001
Error	2.4	56	0.043		

the work was done, and then, the standard questionnaires were completed; besides, the participants' behavior was considered during the course of the intervention, including 90 min per session for 10 weeks. Preferred songs for patients and caregivers were used. The results showed that the progression of the cognitive impairment was delayed, but the caregivers' quality of life remained relatively unchanged, and the level of interaction in the group was very high with a very good attendance at the sessions.[14]

Faraji and Fallahi Khoshknab showed that group poetry therapy is effective on the depression of the elderly living

Table 5: Linear regression model (backward)

Model	SE	β	t	Significant
Model 1				
Constant	1.04	-	5.75	<0.001
Education	0.055	0.272	2.07	0.044
Age	0.116	0.039	0.248	0.805
Gender	0.108	0.158	0.943	0.350
Marriage	0.213	−0.135	−0.499	0.620
Income	0.088	−0.120	−0.914	0.365
Living	0.066	−0.148	−0.607	0.547
Exercise group	0.111	−0.248	−1.71	0.093
Religious group	0.107	0.093	0.589	0.558
BMI	0.013	−0.289	−2.26	0.029
Denture	0.089	0.116	0.827	0.413
Depression	0.029	−0.136	−1.03	0.138
Group	0.152	−0.441	−1.83	0.073
Model 9				
Constant	0.448	-	12.56	<0.001
Education	0.048	0.318	2.77	0.008
Exercise group	0.088	−0.212	−1.84	0.070
BMI	−0.011	−0.254	−2.22	0.030
Group	0.078	−0.422	−3.4	0.001

BMI: Body mass index, SE: Standard error

Table 6: Coefficients

Model	β	t	Significant
1			
Constant	-	28.56	<0.001
Education	0.418	3.5	0.001
2			
Constant	-	22.01	<0.001
Education	0.342	2.87	0.006
Group	−0.285	−2.39	0.020
3			
Constant	-	13.19	<0.001
Education	0.329	2.83	0.006
Group	−0.353	−2.92	0.005
BMI	−0.236	−2.02	0.048

BMI: Body mass index

in nursing homes. The sample size was 72 participants after application of the inclusion criteria. For the division of the samples into the intervention and control groups, four randomized blocks were used and the samples were randomly assigned to two interventions groups (39 individuals) and controls (33 individuals). The intervention included group poetry therapy performed for 6 weeks (two times a week) and each time for 60 min. The control group, such as the intervention group, sat down and talked, but no specific intervention was performed on them. The analytical findings included the comparison of mean depression before and after the intervention and 1 month later between the two intervention groups. The results showed that the mean depression score of the intervention group decreased from 7.6 before intervention to 6.5 at the postintervention stage ($P < 0.004$), whereas in the control group, there was no significant difference ($P > 0.87$) before and after the intervention. Researchers believed that, given the deep link between literature and people, the active presence and motivation of the poetry sessions resulted in increased sense of usefulness and self-esteem in the elderly, resulting in the reduction in anxiety levels and depression.[11]

However, in the study conducted by Yousefi *et al.*, group reminiscence therapy effects on the happiness of the elderly showed the similar to the simple gathering of the elderly in the control group. They selected 64 elderlies referred to the elderly club using the convenience sampling method and assigned them into intervention and control groups. The memory recall sessions were held in a working group of eight participants at a time determined by participants' agreement in 3 weeks, each week two sessions for 1 ½ h. Happiness scores were measured before, during, at the end, and 1 month after intervention. The control group also gathered in six sessions within 3 weeks, with the difference that they went to a group discussion about the day's issues and subjects of their interest in the group. Data were collected by the Oxford Happiness Inventory and a brief psychological examination test. The findings of the study showed that in both groups, happiness scores increased with time, and there was no significant difference between the scores of the two groups ($P = 0.28$).[23] In this study, both in the intervention and control groups, there was an interaction with the group of peers. In the intervention group, the exuberance of the bitter and sweet memories of the past encouraged them to communicate with the listeners. Participants in the control group who were discussing issues of interest could share their experiences with each other during a group work. The authors believed that the mechanism of memory recalling was to resolve mental conflicts with the past. When these issues arise in a familiar group with similar internal concerns, they can help to cope with the past and future problems and living in the present.[23]

In the current study, both groups had interaction with the group of peers, but singing, in addition to reminding past memories and deep links with literature, has numerous complex effects on the brain and neural networks. Its effects no limited to the specific regions of brain (such as the frontal, parietal, and temporal lobes, limbic system, basal nucleus of the thalamus, and cerebellum). The singing of a group, which is an active form of music therapy, helps to improve the mood by neurobiological-modifying (known or unknown) activities in the brain. Its antidepressant effects appear to mediate through the central serotonergic mimics and the neurotrophic factor derived from the brain hippocampus. However, other mechanisms may also exist.[22] Apart from the benefits of relaxation, active participation in group singing also improves many aspects of health, including emotional, social, spiritual, and safety.[15] Singing has many positive benefits to breathing

and cardiovascular physiology, as well as some of the neurological disorders of aging such as Parkinson's disease and aphasia.[20] Therefore, positive effects of group singing therapy on depression in the elderly seem multifactorial.[22]

CONCLUSION

In the previous studies, the effect of group singing was assessed on the outcomes which were different from our study, such as depression, quality of life, mental health, or physical conditions. The art of singing is common in most cultures, civilizations, and nations, and is in fact the basis of the basic principles of music of that nation culture. Regarding the importance of aging and its psychological problems, and given the results obtained in this study and the effects of group singing on the happiness of the elderly, one can learn from their skill sets and their learning abilities to help solve psychological problems, increasing the level of satisfaction of life and mental well-being of the elderly. Hence, it is suggested that such studies be taken in the day care centers and other settings, especially nursing homes, by attracting the attention of planners and specialists in this regard, to have active and happy elderlies in the community.

Conflicts of interest
There are no conflicts of interest.

Authors' contribution
All authors contributed in this study.

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