

Original Article

The Effect of Music Therapy on The Sense of Loneliness of Elderly Living in Nursing Home

Duygu Kurt, PhD, MSN, RN

Lecturer, Department of Nursing, Trakya University Kesan Hakkı Yoruk School of Health, Edirne, Turkey E-mail: duygukurt@trakya.edu.tr

Sule Ecevit Alpar PhD, MSN, RN

Professor, Department of Nursing, Marmara University Faculty of Health Sciences, Istanbul, Turkey E-mail: salpar@marmara.edu.tr

Correspondence: Duygu Kurt, Lecturer, Department of Nursing, Trakya University Kesan Hakkı Yoruk School of Health, Edirne, Turkey E-mail: duygukurt@trakya.edu.tr

Abstract

Background: Loneliness is one of the important problems of the old age period and it is important to address and find solutions due to the negative effects it creates.

Aim: The aim of this study is to determine the effect of music therapy on the feeling of loneliness of the elderly living in the nursing home.

Material and Method: This research was carried out as a pretest-posttest control group design experimental study in a nursing home in Turkey. The population of the study consisted of 104 elderly individuals who stayed in the nursing home between the dates of the research, and the samples were 38 elderly individuals (19 interventions, 19 controls) who could communicate verbally and had no diagnosed psychiatric disease. As a pretest, Interview Form and UCLA Loneliness Scale were applied to the elderly individuals in both the intervention and control groups. Elderly individuals in the intervention group together listened to instrumental music for 30 minutes in the Rast makam with naked ear, in the sitting position, for 10 days, both in the morning and evening being 20 times in total, in the activity room of the nursing home. After the intervention group's music therapy application was completed, UCLA Loneliness Scale was applied to both the intervention and control groups as a post-test. Data were evaluated using descriptive statistical methods, Pearson chi-square test, Fisher-Freeman-Halton Exact Test, Wilcoxon test and Mann Whitney U test. Statistical significance limit value was accepted as $p < 0.05$.

Results: Elderly individuals in the intervention and control groups were found to be similar in terms of introductory features ($p > 0.05$). After the music therapy applied to the elderly individuals in the intervention group, it was determined that there was a statistically significant difference between the average of UCLA Loneliness Scale in the last measurement of the elderly individuals in the intervention and control groups ($p < 0.05$). Total mean score of UCLA Loneliness Scale was found to be significantly lower in the intervention group which was applied music therapy ($p < 0.001$).

Conclusions: It was determined that music therapy applied to elderly individuals living in nursing homes is effective in reducing the level of loneliness.

Key Words: Loneliness, music therapy, nursing home, old age, UCLA

Introduction

Old age is a natural, inevitable and universal phenomenon seen in every living being and it is defined as a process in which physical, mental and social functions decrease (Simsek, Ozturk and Kacmaz, 2018). As a result of the developments in medicine and technology in today's world, diseases are both prevented before they appear and can be treated successfully even

if they occur. Accordingly, the elderly population in the world is increasing gradually (Simsek, Ozturk and Kacmaz, 2018; Ocebe, Kolcu and Uzun, 2019). The increase in the elderly population requires addressing the problems specific to this period (Agirman et al., 2017; Simsek, Ozturk and Kacmaz, 2018).

Loneliness is one of the most common problems of the old age period and it is a situation that

affects the quality of life of the elderly and needs to be resolved (Simsek, Ozturk and Kacmaz, 2018). Elderly individuals may experience loneliness due to the loss of their relatives, their children leaving home by getting married, retirement, change in social roles, decrease in productivity and living in a nursing home (Ponisoovsky and Ritsner, 2004,; Prieto-Flores et al., 2011; Dalhberg et al., 2015; Djukanovic, Sorjonen and Peterson, 2015; Ong, Uchino and Wethington, 2016; Celik, Kin and Karadakovan, 2017).

The reasons such as transition from patriarchal family structure to nuclear family structure, increased urbanization, physiological changes due to old age, deterioration of health, problems with children, economic difficulties and death of one of the spouses make it difficult for elderly people to be cared at home. Accordingly, the number of elderly individuals living in the nursing homes is increasing (Fessman and Lester, 2000; Taube et al., 2015; Simsek, Ozturk and Kacmaz, 2018; Ocebe, Kolcu and Uzun, 2019). It is reported that loneliness is observed in the society by 39.4% in the elderly and 56% in the elderly who live in the nursing home, and the elderly living in the nursing home feel more lonely than the elderly living in the home (Rautasalo et al., 2006; Dragest, Kirkevold and Espehaug, 2011; Goktas et al., 2014).

Health professionals have an important role in helping the elderly who live in a nursing home to cope with the feeling of loneliness (Dereli et al., 2010). Music therapy, which is applied to elderly individuals by health professionals, is a complementary and alternative application that can help them cope with the feeling of loneliness (Ocebe, Kolcu and Uzun, 2019).

The method of treatment, which is performed under a regular method in order to adjust the physiological and psychological effects of musical tunes and melodies according to various mental disorders, is called music therapy (Ak, 2006). Today, music therapy is used safely in all areas of health and has no side effects on human health (Karamizrak, 2014). Music therapy is an application that reduces pain, nausea, vomiting, anxiety, and depression, thus provides relaxation, and improves quality of life and comfort (Yener, 2011; Karamizrak, 2014; Ocebe, Kolcu and Uzun, 2019).

Music therapy in Turks is as old as Turkish history. Music has been used by our ancestors for

therapeutic purposes since ancient times. Farabi has classified Turkish music maqams according to their effects on the soul, and accordingly, the Rast maqam give people joy and peace (Yener, 2011; Karamizrak, 2014). Elderly individuals who are lonely in the nursing home can be played music in the Rast maqam, and they can be saved from loneliness and brought joy and peace together. With this study, it was aimed to determine the effect of music therapy on the feeling of loneliness of the elderly living in the nursing home. The answer to the question 'Does music therapy have an effect on the sense of loneliness of the elderly living in the nursing home?' was sought and the hypothesis of the research was determined as follows.

H₀: Music therapy has no effect on the sense of loneliness of the elderly staying in the nursing home.

H₁: Music therapy has an effect on the feeling of loneliness of the elderly staying in the nursing home.

Material and Method

The research was made as a pretest-posttest control group experimental study in a nursing home between October-December 2012 in Turkey. The population of the study consisted of 104 elderly individuals who stayed in the nursing home between the dates of the research, and the sample was 38 elderly individuals (19 interventions, 19 controls) among this population who could communicate verbally and have no diagnosed psychiatric disease. Interview Form, UCLA Loneliness Scale and music CD were used to collect the data.

Data Collection Tools

Interview form: The interview form which was developed by the researchers in line with the literature consisted of 11 questions to obtain information about the introductory characteristics of elderly individuals (Khorshid et al., 2004; Dereli et al., 2010; Bilgili, Kitis and Ayaz, 2012).

UCLA Loneliness Scale: The validity and reliability of the scale, which was developed by Russel et al in 1980, was made in Turkish language by Demir in 1988. The scale consisted of 20 questions and had a four-point Likert (1=never, 2=rarely, 3=sometimes and 4=often) type. 10 items of the scale (1,4,5,6,9,10,15,16,19,20) included positive statements showing satisfaction from social relations and 10 items (2,3,7,8,11,12,13,14,

17,18) included negative statements showing dissatisfaction from social relations. The total score obtained from the scale varied between 20-80, and as the score increased, the intensity of the loneliness experienced by the individual also increased. In the study of Demir, the Cronbach alpha value of the scale was found to be 0.96. In this study, the Cronbach alpha value of the scale was found to be 0.91 (Demir, 1988).

Music CD: In the research, TÜMATA (Turkish Music Research and Development Group) was interviewed for the selection of the music played for the elderly. In accordance with the TÜMATA interview and literature information, the CD of Rast maqam was used in the research.

Research Process: Elderly individuals who meet the inclusion criteria for the research were informed about the aim and application method. The elderly who agreed to participate in the study signed the informed consent form. Interview Form and UCLA Loneliness Scale were applied as a pre-test for both individuals in the intervention and control groups. This application was carried out in the activity room of the nursing home by face-to-face interview method and took an average of 45 minutes. After the pretest application was completed, the elderly individuals in the intervention group were played instrumental music for 30 minutes in the Rast maqam with naked ear, in the sitting position, for 10 days, both in the morning and evening being 20 times in total, in the activity room of the nursing home.

The maqam, length, application and the frequency of the music to be played was decided by negotiating with TÜMATA. After the intervention group's music therapy application was completed, UCLA Loneliness Scale was applied to both the intervention and control groups as a post-test.

Limitations of the Research: The limitations of the research are the low number of elderly people who meet the sample criteria in the nursing home and the research was carried out in a single nursing home since there was no other nursing home in the province where the research was conducted.

Statistical Analysis: The data were evaluated in SPSS (Statistical Package for Social Sciences for Windows, Version 22.0) package program. In the examination of distribution of the introductory characteristics of the elderly individuals within

the research; descriptive statistical methods (mean, standard deviation, median, number, percent) Pearson chi-square test and Fisher-Freeman-Halton Exact Test were used. Wilcoxon test was used to determine the difference between repeated measurements, and Mann Whitney U test was used to compare quantitative continuous data between two independent groups. Statistical significance limit value was accepted as $p < 0.05$.

Ethical Issues: In order to conduct the research, ethics committee approval dated 03.09.2012 and numbered 10 was obtained from the Marmara University Institute of Health Sciences Non-Interventional Clinical Research Ethics Committee. In addition, in order to collect research data, institution permission was obtained from the institution where the research was conducted. In accordance with the Helsinki Declaration of Human Rights, patients who voluntarily participated in the study were informed about the aim of the study and they were informed that the participation was voluntary and the personal information and privacy of the participants would be protected. Informed volunteer consent form was obtained in written form.

Results

In the study, it was determined that 36.8% of the elderly individuals in the intervention group were 71-78 years old, 84.2% were male, 89.5% were single, 63.2% were primary school graduates, 57.1% were low on income, 63.2% of them had social security, 63.2% of them liked Turkish Folk Music music, 42.1% of them had been living in the nursing home for 5 years or more, 47.4% of them came to a nursing home because it was difficult to live alone, 47.4% of them had regular visitors and 84.6% of them had visitors who were family members (Table 1).

In the control group, 47.4% of the elderly individuals were found to be 71-78 years old, 73.7% were male, 89.5% were single, 52.6% were primary school graduates, 57.1% were low on income, 57.1% had social security, 68.4% liked Turkish Folk Music, 36.8% of them had stayed in the nursing home for 2-4 years, 47.4% came to a nursing home because it was difficult to live alone. 42.1% had visitors sometimes, and 76.9% of them had visitors who were family members. It was determined that there was no statistically significant difference between the groups in terms of introductory characteristics ($p > 0.05$), and the elderly in the intervention and

control groups had similar features in terms of introductory characteristics. (Table 1).

The total mean score of UCLA Loneliness Scale of the elderly individuals in the intervention group was 52.63 ± 11.04 in the first measurement before music therapy and 43.26 ± 7.72 in the last measurement after music therapy, and the low total mean score of the scale in the last measurement was statistically significant ($Z = -3.734$, $p < 0.001$) (Table 2).

The total mean score of UCLA Loneliness Scale of the elderly individuals in the control group was 51.63 ± 11.68 in the first measurement before music therapy, and 50.42 ± 9.00 in the last

measurement after music therapy, and the total mean score of the scale in the first measurement and last measurement showed no significant difference ($Z = -1.399$, $p > 0.05$) (Table 2).

In the last measurement after the music therapy of the elderly individuals in the intervention and control group, there was a statistically significant difference ($MW = 101.0$, $p < 0.05$) between the total mean scores of the UCLA Loneliness Scale. In the last measurement, the level of loneliness of the elderly individuals in the intervention group who were applied music therapy was found to be significantly lower (Table 2).

Table 1. Introductory characteristics of elderly individuals

		Intervention group (n=19)	Control group(n=19)	Test value; p
		n (%)	n (%)	
Age	63-70 Years old	5 (26.3)	5 (26.3)	$X^2=0.583$ $p=0.747^{++}$
	71-78 Years old	7 (36.8)	9 (47.4)	
	79-86 Years old	7 (36.8)	5 (26.3)	
Gender	Male	3 (15.8)	5 (26.2)	$X^2=0.633$ $p=0.346^+$
	Female	16 (84.2)	14 (73.7)	
Marital Status	Married	2 (10.5)	2 (10.5)	$X^2=0.000$ $p=0.698^+$
	Single	17 (89.5)	17 (89.5)	
Educational Status	Illiterate	4 (21.1)	5 (26.3)	$X^2=7.293$ $p=0.121^{++}$
	Literate	3 (15.8)	-	
	Primary school graduate	12 (63.2)	10 (52.6)	
	Secondary school graduate	-	2 (10.5)	
	Bachelor's Degree	-	2 (10.5)	
Income level	Low	11 (57.1)	11 (57.1)	$X^2=0.000$ $p=0.628^+$
	Middle	8 (42.9)	8 (42.9)	
Social security	Have	12 (63.2)	11 (57.1)	$X^2=0.110$ $p=0.500^+$
	Don't Have	7 (36.8)	8 (42.9)	
Favorite music genre	Turkish Classical Music	7 (36.8)	6 (31.6)	$X^2=0.117$ $p=0.500^+$
	Turkish Folk Music	12 (63.2)	13 (68.4)	
Time spent in nursing home	1 Year or Less	8 (42.1)	6 (31.6)	$X^2=2.171$ $p=0.338^{++}$
	2-4 Years	3 (15.8)	7 (36.8)	
	5 Years or More	8 (42.1)	6 (31.6)	
Reason for coming to the nursing home	Difficult to Live Alone	9 (47.4)	9 (47.4)	$X^2=0.291$ $p=0.962^{++}$
	Family Issues	2 (10.5)	2 (10.5)	
	Being in Need of Care	5 (26.3)	6 (31.6)	
	Retirement Pension is not Adequate	3 (15.8)	2 (10.5)	
Visitor Status	Regular	9 (47.4)	5 (26.3)	$X^2=2.476$ $p=0.290^{++}$
	Sometimes	4 (21.1)	8 (42.1)	
	Never	6 (31.6)	6 (31.6)	
The Relationship Degree of Visitors	Family Members	11 (84.6)	10 (76.9)	$X^2=0.248$ $p=0.500^+$
	Close Friends or Friends	2 (15.4)	3 (23.1)	

⁺⁺Fisher-Freeman-Halton Exact Test, ⁺ Pearson chi-square

Table 2. Distribution of UCLA Loneliness Scale mean scores of elderly individuals

In-Group Mean Score						Significance Between Groups	
INTERVENTION GROUP (n=19)			CONTROL GROUP (n=19)			First Mea.	Last Mea.
First Mea. Mean±SD	Last Mea. Mean±SD	Test value; p	First Mea. Mean±SD	Last Mea. Mean±SD	Test value; p		
52.63±11.04	43.26±7.72	Z= -3.734 p<0.001*	51.63±11.68	50.42±9.00	Z= -1.399 p>0.05*	MW=169.5 p>0.05**	MW= 101.0 p<0.05**

Mea=Measurement, Sd=Standard deviation, *Wilcoxon Test, **Mann Whitney U Test

Discussion

Loneliness, which can occur in every period of life, is felt mostly in old age (Ponizovsky and Ritsner, 2004; Simsek Ozturk and Kacmaz, 2018). Loneliness is one of the important problems of the old age period and it is important to address and find solutions due to its physical, emotional, behavioral and cognitive effects (Taube et al., 2016; Simsek Ozturk and Kacmaz, 2018; Cam, Atay and Isikli, 2018).

In our study, 47.4% of elderly individuals in both the intervention and control groups came to the nursing home because it was difficult to live alone (Table 1). In studies similar to our study findings, the reason for elderly individuals to come to the nursing home was that it was difficult to live alone (Kahraman et al., 2011; Eskimez et al., 2019). In the old age, individuals may have difficulty living alone for various reasons and prefer to stay in a nursing home. The nursing home is an unknown environment for the elderly person and the individual can feel excluded by his family and the loneliness he experiences may increase (Eskimez et al., 2019). In the literature, it was reported that elderly people living in nursing homes experienced more loneliness than elderly people living in homes (Acharyya, 2012; Goktas et al., 2014).

In this study, the loneliness levels of the elderly individuals in the intervention and control groups were evaluated using the UCLA Loneliness Scale. In scoring of the scale, the score that could be obtained from the scale varied between 20 and 80, and as the score reached to 80, the level of loneliness increased (Demir, 1988). In the first

measurement prior to music therapy, it was found that the total mean score of the UCLA Loneliness Scale of the elderly individuals in the intervention group was 52.63±11.04 and the elderly individuals in the control group was 51.63±11.68 and the loneliness levels of both groups were moderate and similar (p>0.05) (Table 2). Similar to our study finding, loneliness levels of elderly individuals in the nursing homes were moderate (Khorshid et al., 2004; Dereli et al., 2010; Kahraman et al. 2011; Akyil et al., 2018; Andrew and Meeks, 2018; Eskimez et al., 2019). In a study conducted with elderly individuals in the UK, it was found that 38.3% of the elderly individuals had moderate loneliness (Dalhberg and Mckee, 2014).

Although music plays an important role in every period of human life, it has many positive psychological and physical effects in old age as well (Ocebe, Kolcu and Uzun, 2019). In our study, it was found that the UCLA Loneliness Scale mean score of the intervention group was 43.26±7.72 in the last measurement performed after the music therapy applied to the elderly individuals in the intervention group, and the mean score of the control group in which no intervention was applied was 50.42±9.00. It was determined that the level of loneliness decreased in the intervention group in which music therapy was applied, and this decrease created a significant difference between the intervention and control groups (p<0.05), (Table 2).

Although there were no studies in the literature investigating the effect of music therapy on the feeling of loneliness of elderly individuals, there

were studies examining the effect of music therapy on different situations related to elderly people living in nursing homes. In these studies, it was determined that the music therapy applied to the elderly living in the nursing home provided a significant decrease in depressive symptoms, anxiolytic and antipsychotic medication use, behavioral disorders and systolic blood pressure, and a significant increase in sleep quality. (Bekiroglu, 2013; Sarikaya and Oguz, 2016; Werner, Wosch and Gold, 2017; Thomas et al., 2017)

In the past, elderly people were preferred to be taken care at homes generally. Nevertheless, the elderly care in nursing homes has increased due to socioeconomic, technological and cultural changes that are experienced today (Fessman and Lester, 2000; Taube et al., 2015; Simsek, Ozturk and Kacmaz, 2018; Ocebe, Kolcu and Uzun, 2019). Elderly individuals feel happy and safe when they live with their families. Living in a nursing home can make older individuals feel abandoned and lonely. Therefore, complementary and alternative applications such as music therapy, which will attract the attention of elderly people living in nursing homes and make them feel good, is needed. (Eskimez et al., 2019; Ocebe, Kolcu and Uzun, 2019). In this study, the fact that music therapy reduced the level of loneliness of elderly individuals in the intervention group suggests that nurses can reduce the sense of loneliness experienced by elderly individuals in the nursing home by the help of music therapy. One of the hypotheses of the research, "Music therapy has an effect on the sense of loneliness of the elderly who stay in the nursing home" hypothesis is supported.

Conclusion

In line with the results of the research; it was determined that music therapy applied to elderly individuals living in nursing homes was effective in reducing the level of loneliness of elderly individuals in the intervention group. Considering that loneliness is one of the problems that can be experienced in old age, providing the use of music therapy which is a complementary and alternative medicine method, conducting studies with more comprehensive and larger samples in order to evaluate the effects of music therapy on the feeling of loneliness in the elderly, including the music therapy that will be applied with Rast maqam in the activity programs of the nursing homes and training the

health team members working in the nursing homes about loneliness in old age to provide holistic care to the elderly staying in the nursing homes are suggested.

Acknowledgements: Thank you to all nursing home and elderly people who contributed to this study.

The place where the work was done: Edirne Nursing Home, Tel: +90 (284) 212 09 70-71

References

- Acharyya, A. (2012). Depression, loneliness and insecurity feeling among the elderly female, living in old age homes of Agartala. *Indian Journal of Gerontology* 26(4):524-536.
- Agirman E., Gencer M.Z., Arica S., Kaya E. & Egici M.T. (2017). Depression and loneliness levels among the older people, a comparison between living alone, living with family or living at nursing home. *Journal of Contemporary Medicine* 7(3):234-240.
- Ak AS. (2006). The historical development and applications of music therapy in European and Turkish-Islamic civilization. Otuken Publications, Istanbul, Turkey.
- Akyil R.C., Adibelli D., Erdem N., Kirag N., Aktas B. & Karadakovan A. (2018). Relationship of the level of loneliness and perceived social support and happiness in elders staying at home and nursing home. *Journal of Anatolia Nursing and Health Sciences* 21(1):33-41.
- Andrew N. & Meeks S. (2018). Fulfilled preferences, perceived control, life satisfaction, and loneliness in elderly long-term care residents. *Aging & Mental Health* 22(2):183-189.
- Bekiroglu T., Ovayolu N., Ergun Y. & Ekerbicer H.C. (2013). Effect of Turkish classical music on blood pressure: A randomized controlled trial in hypertensive elderly patients. *Complementary Therapies in Medicine* 21(3):147-154.
- Bilgili N., Kitis Y. & Ayaz S. (2011). Assessment of loneliness, quality of sleep and affecting factors in elders. *Turkish Journal of Geriatrics* 15(1):81-88.
- Cam C., Atay E. & Isikli B. (2018). Loneliness and quality of life in elderly. *Turkish World Implementation And Research Center Public Health Journal* 3(2):50-67.
- Celik A., Kin O.K. & Karadakovan A. (2017). Loneliness status and healthy life style behaviors of nursing home residents. *İzmir Katip Celebi University Faculty of Health Sciences Journal* 2(3):17-23.
- Dahlberg L. & McKee K.J. (2014). Correlates of social and emotional loneliness in older people: evidence from an English community study. *Aging & Mental Health* 18(4):504-514.
- Dahlberg L., Andersson L., McKee K.J. & Lennartsson C. (2015). Predictors of loneliness

- among older women and men in Sweden: a national longitudinal study. *Aging & Mental Health* 19(5):409-417.
- Demir A. (1988). Validity and Reliability of UCLA Loneliness Scale. *Turkish Journal of Psychology* 6(23):14-18.
- Dereli F., Koca B., Demircan S. & Tor N. (2010). The investigation of loneliness level of elderly individuals residing in rest home. *The New Journal of Medicine* 27:93-97.
- Djukanovic I., Sorjonen K. & Peterson U. (2015). Association between depressive symptoms and age, sex, loneliness and treatment among older people in Sweden. *Aging & Mental Health* 19(5):560-568.
- Drageset J., Kirkevold M., & Espehaug B. (2011). Loneliness and social support among nursing home residents without cognitive impairment: a questionnaire survey. *International Journal of Nursing Studies* 48:611-619.
- Eskimez Z., Demirci P.Y., Tosun I.K., Öztunç G. & Kumaş G. (2019). Loneliness and social support level of elderly people living in nursing homes. *International Journal of Caring Sciences* 19:465-474.
- Fessman N. & Lester D. (2000). Loneliness and depression among elderly nursing home patients. *International Journal of Aging & Human Development* 51(2):137-141.
- Goktas S., Yildirim G., Sen G., Yıldız T. & Kose S. (2014). The impact of living conditions of aged individuals on their daily routines and state of loneliness: case of Turkey. *International Anatolia Academic Online Journal* 2(2)-1-11.
- Kahraman S., Zincir H., Kaya Z. & Esen F. (2011). Effects of separate living of old women and men on their's loneliness and life satisfaction in a nursing home. *Journal of Sociological Research* 14(2):1-16.
- Karamizrak N. (2014). Healing Effects of Sound and Music on the Organs. *Koşuyolu Heart Journal* 17(1):54-57.
- Khorshid L., Eser I., Zaybak A., Yapucu U., Arslan G.G. & Cinar S. (2004). The evaluation of loneliness level of elderly individuals residing in rest homes. *Turkish Journal of Geriatrics* 7(1):45-50.
- Prieto-Flores M.E., Forjaz M.J., Fernandez-Mayoralas G., Rojo-Perez F. & Martinez-Martin P. (2011). Factors associated with loneliness of noninstitutionalized and institutionalized older adults. *Journal of Aging and Health* 23(1):177-194.
- Ong A.D., Bert N. Uchino B.N. & Wethington E. (2016). Loneliness and health in older adults: a mini-review and synthesis. *Gerontology* 62(4):443-449.
- Ocebe D.K., Kolcu M. & Uzun K. (2019). Music therapy and elderly health. *University of Health Sciences Journal of Nursing* 1(2):112-115.
- Ponizovsky A.M. & Ritsner M.S. (2004). Patterns of loneliness in an immigrant population. *Comprehensive Psychiatry* 45(5):408-414.
- Routasalo P.E., Tilvis R.S. Standberg T.E. & Pitkälä K.H. (2006). Social contacts and their relationship to loneliness among aged people-a population-based study. *Gerontology* 52:181-187.
- Sarikaya N.A. & Oguz S. (2016). Effect of passive music therapy on sleep quality in elderly nursing home residents. *Journal of Psychiatric Nursing* 7(2):55-60.
- Simsek N., Ozturk G.K. & Kacmaz H.Y. (2018). Old age and loneliness. *The Journal of International Social Research* 11(58):496-499.
- Taube E., Kristensson J., Sandber M., Midlov P. & Jakobsson U. (2015). Loneliness and health care consumption among older people. *Scandinavian Journal of Caring Sciences* 29:435-443.
- Taube E., Jakobsson U., Midlov P. & Kristensson J. (2016). Being in a bubble: the experience of loneliness among frail older people. *Journal of Advanced Nursing* 72(3):631-640.
- Thomas, K., Baier, R., Kosar, S., Ogarek J., Trepman A. & Mor V. (2017). Individualized music program is associated with improved outcomes for U.S. nursing home residents with dementia. *The American Journal of Geriatric Psychiatry* 25:931-938.
- Werner J., Wosch T. & Gold C. (2015). Effectiveness of group music therapy versus recreational group singing for depressive symptoms of elderly nursing home residents: pragmatic trial. *Aging & Mental Health* 21:147-155.
- Yener A.Y. (2011). The effects of music on children and the elders. *Pamukkale University Journal of Education* 29:119-124