Evidence Based Care Journal
http://ebcj.mums.ac.ir/

Investigating the Effect of Humor Therapy on Chronic Pain in the Elderly Living in Nursing Homes in Mashhad, Iran

Shohre Behrouz, Seyed Reza Mazloom, Hadi Kooshyar, Nahid Aghebati, Negar Asgharipour, Hamid Reza Behnam Vashani

The online version of this article can be found at
http://ebcj.mums.ac.ir/article_9145.html

Evidence Based Care Journal 2017 07:27 originally published online 01 July 2017
DOI: 10.22038/EBCJ.2017.24247.1529

Online ISSN: 2008-370X

Address: Mashhad Nursing and Midwifery School, Ebn-e-Sina St., Mashhad, Iran
P.O.Box: 9137913199
Tel.: (098 51) 38591511-294
Fax: (098 51) 38539775
Email: EBCJ@mums.ac.ir

Evidence Based Care Journal

Original Article

OPEN ACCESS JOURNALS

Investigating the Effect of Humor Therapy on Chronic Pain in the Elderly Living in Nursing Homes in Mashhad, Iran

Shohre Behrouz[1], Seyed Reza Mazloom[2*], Hadi Kooshiar[3], Nahid Aghebati[4], Negar Asgharipour[5], Hamid Reza Behnam Vashani[6]

Received: 13/06/2017
Accepted: 12/08/2017

Evidence Based Care Journal, 7 (2): 27-36

Abstract

Background: The prevalence of chronic pains in the elderly residing in nursing homes is high, which can bring about social isolation, depression, incidence of disabilities, as well as increased costs. Given the risks, medication therapy is not used for the elderly, and non-pharmaceutical methods, such as humor therapy as one of the complementary medicine techniques using thought distraction, have been advocated.

Aim: This study aimed to determine the effect of humor therapy on pain intensity in the elderly living in nursing homes in Mashhad, Iran.

Method: This two-group, randomized, controlled clinical trial was conducted on two groups of intervention (28 individuals) and control (27 individuals) at two similar nursing homes in Mashhad, Iran, 2016. Humor therapy was performed during six 60-minute sessions (once per week) using humorous methods such as video clip displays, games, music plays, as well as telling funny jokes. Then, pain intensity was measured via the Modified German Version of the Brief Pain Inventory before the study and after the 3rd and 6th sessions of humor therapy. Finally, the data was analyzed using Mann-Whitney U test in SPSS, version 22.

Results: The mean ages of the participants in the control and intervention groups were 73.9±4.3 and 73.9±5.8 years, respectively. The results of the Mann-Whitney U test also showed that pain intensity before the study in both groups was homogenous (P=0.15). Moreover, the mean scores of the highest, lowest, and moderate pain intensity after the 3rd (P<0.001) and 6th sessions (P<0.001) of humor therapy were significantly lower in the intervention group than those in the control group.

Implications for Practice: In this study, humor therapy was recognized as an effective nursing intervention influencing geriatric pain intensity that could be employed to reduce pain in this age group.

Keywords: Chronic pain, Humor therapy, Pain intensity, The elderly

1. MSc Student in Geriatric Nursing, Student Research Committee, Faculty of Nursing & Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran.
2. Instructor of Nursing, Department of Medical Surgical Nursing, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran
3. Assistant Professor of Gerontology ,Department of Medical- Surgical, Faculty of Nursing & Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran.
4. Assistant Professor of Nursing, Department of Medical Surgical Nursing, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran
5. Assistant Professor of Clinical Psychology, Research Center of Psychiatry and Behavioral Sciences, Mashhad University of Medical Sciences, Mashhad, Iran
6. Instructor of Nursing, Department of Pediatric Nursing, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran

* Corresponding author, Email: Mazlomr@mums.ac.ir

Introduction

Nowadays, increased life expectancy, declined fertility rates, as well as medical breakthroughs have increased the aging population across the world, and consequently the phenomenon of population aging has turned into one of the most important public health challenges in recent years (1). In this regard, the World Health Organization (WHO) has reported that population aging is the first successful event representing health-related, economic, and social developments (2). Considering that life expectancy rate has redoubled in the 21st century, individuals are able to live longer compared to the past 30 years, such that the elderly population can reach to two billion people across the world by 2050 (2, 3). According to the 2011 census records, about 8.2% of Iran's population was comprised of people over 60 years of age and it was predicted that the number of the Iranian elderlies would reach to 31.5% of the whole population (4).

Chronic pain in the elderly is one of the most pervasive problems care providers encounter (5). This type of pain is a common and serious problem during old age, to the extent that its prevalence rate in community-dwelling older adults and those living in nursing homes is reported so high that one-third of the elderly population are suffering from chronic pains, which exacerbate with advancing age.

Geriatric chronic pain alludes to an unpleasant feeling and emotional experience associated with actual or potential tissue damage described using similar expressions by the elderly (6). In this regard, early chronic pain refers to the pain in one or more than one anatomic regions in the body that persists for more than 3 months and is accompanied by mental and emotional problems or disabilities in daily functioning as well as participation in social activities (7). Chronic pains usually have a certain pathology that causes changes throughout the nervous system and often deteriorate over time. Various factors are at play in chronic pains such as osteoarthritis, neuromuscular disorders, postoperative pain, and chronic diseases such as diabetes (8).

Likewise, the prevalence rate of pain among individuals ranges from 25% to 50%, and it has been reported more than 75% in the elderly with the mean age of 75 years. The American Society on Aging has also estimated that 45-80% of the elderly residing in nursing homes are suffering from pain (9). In 2006, the prevalence of chronic pain in the elderly aged 60-90 years was reported to be 67% in Iran, and this value was equal to 72% in older adults living in nursing homes (10).

The economic burden of chronic pains was estimated at 200 billion euros in Europe and 635 billion dollars in the United States in 2008 (8). The demands for healthcare services were 3 times higher in geriatric population than in the non-elderly population (11).

The chronic pains in old age often cause loneliness, social isolation, depression, impaired motor functioning, incidence of disabilities, and a sharp rise in health-related costs that can have a destructive role in the lives of the elderlies. It should be noted that lack of treatment for geriatric chronic pains could result in reduced quality of life and incidence of functioning disabilities (12).

Given the risks of poisoning and drug dependence, geriatric pain management is very difficult; thus, physicians try to make use of fewer analgesics for the elderly (13). Non-pharmaceutical pain management strategies include a wide range of interventions such as training programs, cognitive-behavioral therapy (CBT), sport programs, acupuncture, heat and cold therapies, massage therapy, as well as relaxation techniques (14).

The CBT approach for pain management focuses on the role of cognitive factors and their relationships with pain perception, and it seems reasonable that correcting an individual's cognitive state could affect the pain perceived by patients (15). Even though pain elimination is considered as an inaccessible target, Inoue et al. (2014) stated that proactive and multidisciplinary approaches (such as CBT) could mitigate pain (16). Most of the studies on this issue have similarly concentrated on the effect of the CBT techniques on chronic pain although CBT can also prevent the acute state of pains (17).

The CBT strategies for pain management involve the use of hypnosis, relaxation techniques with guided mental imagery, thought distraction, as well as employment of support groups (18). Specifically, thought distraction is considered as one of the important techniques used within CBT and humor is taken into account as one of the techniques of thought distraction for pain management. Based on the Gate Control Theory of Pain, cognitive dimension of pain is of marked significance, which can be influenced by humor therapy and assuage pain in the elderly individuals (19).

In this regard, humor and laughter are considered as regulators of the mind that help an individual cope well with painful and complicated conditions. Therefore, using humor and laughter as a therapy can lower pain perception by individuals and distract individual's mind in painful and stressful conditions (20).

Furthermore, humor and laughter can contribute to releasing endorphin as a normal morphine in the brain, and thus, help in pain management (21).
Some studies such as the one by Asghari Ebrahim Abad (2016) found cognitive pain management programs effective in depression, anxiety, and stress treatment in women with chronic musculoskeletal pains (22). Moreover, the study by Tse et al. (2010) revealed the positive impact of humor therapy as a type of CBT on chronic pains in the elderly (23). Ghodsbin et al. (2014) also shed light on the effect of laughter therapy on geriatric general health (24).
Today, humor therapy is deemed as one of the complementary and alternative therapies in medical sciences (25). It should be noted that humor is regarded as a comprehensive nursing intervention (26) that can have effects on all biological, cognitive, psychosocial, physical, and spiritual dimensions within an individual. Accordingly, nursing interventions can be accepted and tolerated by patients provided that they are humor-based (27).
Given the chronic pains in the elderly and considering the new report released by the WHO highlighting the relative shortage of experimental data in the domain of pain, particularly in low- and moderate-income countries (28), there is a need to design research studies in this context. Meanwhile, the review of the extensive literature in this domain yielded only one study examining the impact of humor therapy on chronic pains in older adults living in nursing homes in Korea (23). Since it has been emphasized that individuals' sense of humor can be affected by their religion and culture (29), it is necessary to examine the effect of humor within different societies. The impact of this therapy on the elderly has not been already reported in Iran. Unlike a large number of nursing treatments and actions, humor therapy is known as a simple and inexpensive intervention accessible in all cultures in any place and time without any special prohibitions. Further, the use of humor and laughter for geriatric care nursing is an obligation at the time of medical actions (30). With this background in mind, we attempted to investigate the effect of humor therapy on chronic pains in the elderly residing in nursing homes in Mashhad, Iran.

Methods

This study was a two-group, randomized clinical trial conducted following obtaining approval of the Research Ethics Committee of Mashhad University of Medical Sciences, Mashhad, Iran, and submitting the letter of introduction written by the State Welfare Organization of Iran to the respective authorities in geriatric nursing homes. To conduct the study, the research objectives and procedures were initially explained to the authorities and the elderly living in the nursing homes or to their lawyers. Among the nursing homes affiliated to the State Welfare Organization of Iran in the city of Mashhad, two nursing homes were selected which were identical in terms of geographical location, number of older adults and caregivers, as well as facilities and equipment based on the rating offered by the State Welfare Organization of Iran, and then they were randomly (picking by chance) assigned to intervention and control groups.
The inclusion criteria in this study were aged 60-85 years, minimum reading and writing literacy, at least 3 months residence in nursing homes, at least 3 months of non-cancer chronic pains, no major visual and hearing impairments, and lack of depression or any other cognitive disorders. The exclusion criteria included being absent in more than 2 sessions of humor therapy program, leaving the nursing home, and having a sudden illness or physical problem disabling them to attend the sessions.
To determine the standard sample size and due to lack of a similar study, we used the results of the pilot study on 10 individuals in each group and the worst, least and average pain intensities on the basis of comparison of means formula (31) with 80% test power and 95% confidence level. The maximum sample size associated with the highest pain intensity was estimated at 27 individuals in each group. Considering the possibility of sample attrition, a total number of 63 elderly individuals meeting the inclusion criteria were randomly (based on the nursing homes they were living in) divided into two groups of control (n=32 individuals) and intervention (n=31 individuals). Within the control and interventions groups, 5 and 3 individuals were respectively excluded due to being absent for more than 2 sessions, leaving the nursing homes, or contracting physical illnesses. After excluding the elderly lacking the inclusion criteria, 28 and 27 individuals remained in the intervention and control groups, respectively.
One day before the first session of the humor therapy, a demographic information form, 15-item Geriatric Depression Scale (15-GDS), Montreal Cognitive Assessment (MoCA), as well as a written

consent form endorsed by signature and fingerprints were completed by the researchers in both nursing homes.

The level of depression in the elderly was measured by the 15-GDS, and the older adults receiving depression scores below eight were allowed to participate in the study. The reliability of this instrument was already confirmed in the literature using Cronbach's alpha (α=0.89) (32) and its content validity was approved by conducting a survey in 10 professors.

The cognitive disorders were also measured using the MoCA, and the elderly individuals who had scored above 26 out of 30 were allowed to take part in the study. The reliability of this instrument was also confirmed using Cronbach's alpha coefficient (α=0.83) in previous studies (33). Besides, the validity of this instrument was endorsed via content validity by conducting a survey in 10 professors.

The pain intensity was also measured using the Modified German Version of the Brief Pain Inventory administered on elderly residents in nursing homes through interviews. The given questionnaire determined the worst, least and average pain intensities in the past 24 hours using three separate items. Each item was scored between 0 and 10. The pain intensity was measured in both intervention and control groups before the first session, 24 hours after the 3rd session, and 24 hours following the 6th session. The reliability of the English version of this instrument had been already established through Cronbach's alpha (α=0.91) (34). In this study, the given instrument was translated into Persian by a specialist, and its content validity was confirmed by conducting a survey in 10 professors and its reliability was approved using test-retest method on 10 elderly individuals with chronic pains with a 0.92 correlation coefficient.

Humor therapy was administered on the intervention group during six 60-minute sessions (once a week). The humor therapy sessions were held between 10 and 12 a.m. in order not to disturb prayers, breaks, or even medication therapy for the elderly or to interfere with other programs at the nursing home auditorium. Prior to each session, the environment of the auditorium was prepared in terms of facilities, data projector, sitting layout, as well as the necessary tools for humor and laughter games and other implements and equipment required to start the sessions. The environment was also prepared in terms of light, sound, heat, and installation of humorous banners in the whole auditorium.

The content of the humor therapy program was designed through a review of the related literature and the final program was presented after approval of the geriatric experts, psychologists, as well as professional and experienced individuals in humorous affairs in the city of Mashhad, Iran. The content presented during humor therapy included humorous video clips, humor games, comic stories, humorous music, as well as jokes.

To administer the intervention in a better and appropriate manner, a professional host (presenter) experienced in humorous activities and within the same age range with the elderly individuals was recruited. The presenter first received explanations about the research objectives as well as the mood and belief characteristics of the older adults before the implementation of the intervention.

During all the therapy sessions, the same host was recruited to help the elderly individuals establish good and friendly relationships. This host started each session wearing local costumes and encouraged the older adults to participate in the therapy sessions through implementing predetermined programs and performing funny gestures. The time of each humor therapy session was divided into three parts. The first 10 minutes included introduction of the elderly, introduction of the researcher, inspiration to the elderly individuals to work well together, stimulation by the host to encourage the older adults to participate in clapping and laughing, delineation of the benefits of laughter and joy, as well as cheerleading. The last 10 minutes of each session were also allocated to giving encouragement to the elderly to express their feelings and cheer the host and other older people, shaking hands with the elderly individuals, saying goodbye to them, and distributing sugar-free chocolates and gifts for 6 sessions in the same manner. The 40-minute middle part of each session as the most important one was associated with a special program considering the Iranian culture and customs as well as the conditions of the elderly individuals. This part included reciting funny poetry and prose, playing funny games containing scenes of falling and slipping on a large display screen, closed-eye painting game, reading funny proverbs by the professional host using different dialects, playing happy and fun music in the yard, playing a variety of different laughing sounds by children and the elderly and encouraging the older adults to laugh along with it, playing movies on mimicry in local dialects, funny game of painting on air using fingers by the older adults and guessing the design by other individuals, game of finding the sounds of animals, game of

finding the first names for girls or boys with special letters, encouraging the elderly to laugh like an airplane or a waterfall and giving gifts to those with the best demonstration, as well as game of throwing coins into a glass of water. After performing the games and competitions, gifts, which were funny and humorous in nature such as comic books, comic poetry books, cartoon stickers, or clown masks were given to the elderly individuals to encourage them to participate in the given competitions and play an active role in the sessions.

In order to analyze the data, Chi-square test, Mann-Whitney U test, Friedman test, analysis of covariance (ANCOVA), two-way analysis of variance (ANOVA), and multiple regression analysis were used in SPSS, version 22. P-value less than 0.05 was considered statistically significant.

Results

The mean ages of the control and intervention groups were 73.9±4.3 and 73.9±5.8 years, respectively. It terms of gender, 20 (74.1%) individuals in the control group and 19 (67.9%) in the intervention group were women. Other demographic characteristics as well as the results of their homogeneity were shown in Table 1.

The worst pain observed immediately before the start of the first session of the humor therapy were respectively 9.1±0.6 and 9.3±0.9 in the control and intervention groups, which was not significantly different (P=0.15). However, the worst pain 24 hours after the 3rd session of the humor therapy in the intervention group was significantly lower than that in the control group (7.9±1.0 vs. 9.4±0.5; P<0.001). Additionally, the given intensity 24 hours after the 6th session of the humor therapy in the intervention group was equal to 6.5±0.9, which was significantly lower than that in the control group (9.7±0.5; P<0.001).

The average Pain directly prior to the onset of the first session of the humor therapy were also reported respectively 5.1±0.9 and 6.0±1.0 in the control and intervention groups, which was significantly different (P=0.002) and the given groups were not homogenous in this respect. Nevertheless, the average Pain 24 hours after the 3rd session of the humor therapy in the intervention group was significantly lower than that in the control group (4.6±0.9 vs. 5.6±0.7; P<0.001) and the given intensity was equal to

Table 1. Comparing the demographic characteristics of the elderly individuals in terms of their groups

Variable	Control group Mean±standard deviation	Intervention group Mean±standard deviation	Test results
Age (year)	73.9±4.3	73.9±5.8	*P =0.98
Gender	Number (percentage)	Number (percentage)	
Male	7 (25.9)	9 (32.1)	**P =0.61
Female	20 (74.1)	19 (67.9)	
Education			
Primary school	16 (59.3)	19 (67.9)	
Middle school	8 (29.6)	5 (17.9)	**P =0.67
High school diploma	3 (11.1)	2 (7.1)	
Higher than high school diploma	0 (0.0)	2 (7.1)	
Duration of residence in nursing homes			
6 to 12 months	6 (22.2)	10 (35.7)	
Between 12 and 24 months	15 (55.2)	10 (35.7)	**P =0.70
More than 24 months	6 (22.2)	8 (28.6)	
Use of analgesics			
No	2 (7.4)	4 (14.3)	
Opioid	5 (18.5)	2 (7.1)	**P =0.66
Non-steroidal anti-inflammatory drugs (NSAID)	21 (77.8)	22 (78.6)	
Non-pharmaceutical method of pain relief			
No method	17 (63.0)	15 (53.6)	
Massage therapy	3 (11.1)	4 (14.3)	**P=0.39
Heat therapy	2 (7.4)	0 (0.0)	
Herbal medicine	5.(18.5)	9 (32.1)	

*T-test**Chi-square test

3.4±0.7 in the intervention group 24 hours after the 6th session of the humor therapy, which was significantly lower than that in the control group (6.0±0.8; P<0.001).
Considering the least Pain measured before the start of the first session of humor therapy, the values of 0.7±0.6 and 1.3±0.8 were obtained for the control and intervention groups, respectively, which were significantly different (P=0.001), and they were not homogenous; however, the least Pain 24 hours after the 3rd session of humor therapy in the intervention group was 5.6±0.7, which was significantly lower than that in the control group (0.5±0.5; P<0.001). The given intensity was also equal to 0.0±0.0 in the intervention group 24 hours after the 6th session of the humor therapy, which was significantly lower than that in the control group (0.7±0.6; P<0.001; Table 2).
Given the scores of average pain and the least Pain and with regard to the fact that the groups were not homogeneous prior to the first session of humor therapy, ANCOVA was used to eliminate the effect of scores before the intervention. Thus, the results showed that the mean scores of average pain after the 3rd session of humor therapy and removal of the effect of the average pain score before the first session were significantly different in both groups (P<0.001). The modified mean score for pain in the intervention group was 4.4± 0.1, while this value was 5.9±0.2 in the control group. Moreover, the means for average pain following the 6th session of the intervention and eliminating the effect of the score of average pain before the first session were significantly different in both groups (P<0.001). The modified mean scores in the intervention and control groups were 3.3±0.1 and 6.1±0.2, respectively.
Furthermore, the results of ANCOVA for the least Pain after the 3rd session of humor therapy and removal of the impact of the score of the least Pain before the first session revealed a significant difference in both groups (P<0.001). It should be noted that the modified mean score in the intervention group was equal to 0.2± 0.1 and this value was 0.7±0.1 in the control group. In addition, the means for the least Pain after the 6th session of the intervention and eliminating the effect of the least Pain score before the first session were reported significantly different in both groups (P<0.001). Thus, the modified mean scores for the intervention and control groups were 0.03±0.1 and 0.7±0.1, respectively.
Considering the results of two-way ANOVA and given the variables of gender, age, education, use of analgesics, and non-pharmaceutical methods of pain relief, only the variable of duration of residence in nursing homes showed a significant relationship with the moderate pain intensity in both groups (P<0.001). Thus, longer residence in nursing homes among the elderly individuals was linked with more chronic pains. In this respect, multiple regression analysis was used to evaluate the simultaneous effect of the given variables on the moderate pain intensity, and the results revealed no significant linear relationships between the above-mentioned variables and the moderate pain intensity after the intervention (R=0.17, P=0.961). In other words, the effect of duration of residence in nursing homes was related to other variables.

Table 2. Comparison of the means and standard deviations of the worst, average and least pain intensities in the elderly based on groups

Pain Intensity		Control group	Intervention group	Between-group
		Mean±standard deviation	Mean±standard deviation	test results
Pain worst	Before the first session	9.1±0.6	9.3±0.9	*P=0.15
	After the third session	9.4±0.5	7.9±1.0	*P<0.001
	After the sixth session	9.7±0.5	6.5±0.9	*P<0.001
	Intra-group test result	**P=0.003	**P<0.001	
Pain average	Before the first session	5.1±0.9	6.0±1.0	*P=0.002
	After the third session	5.6±0.7	4.6±0.9	*P<0.001
	After the sixth session	6.0±0.8	3.4±0.7	*P<0.001
	Intra-group test result	**P<0.001	**P<0.001	
Pain least	Before the first session	0.7±0.6	1.3±0.8	*P=0.001
	After the third session	0.5±0.5	0.4±0.6	*P<0.001
	After the sixth session	0.7±0.6	0.0±0.0	*P<0.001
	Intra-group test result	**P=0.43	**P<0.001	

*Mann-Whitney U test **Friedman test

Discussion

Since the prevalence of geriatric chronic pains is on the rise and the management of such pains is a big challenge for the health community, the present study investigated the effect of humor therapy on chronic pains in the elderly residing in nursing homes.

In this study, moderate pain intensity before the humor therapy intervention in both groups was reported higher than 5, which was consistent with the results of other studies suggesting that the elderly individuals living in nursing homes were often suffering from chronic pains (35). For example, the investigation conducted by Tse et al. (2010) on the Korean elderly residing in nursing homes revealed that the administration of an 8-week humor therapy could significantly lower pain intensity (23), which was in line with the results of the present study. However, the number of the humor therapy sessions in the study by Tse et al. was more than those held in the present investigation, such that the 8-week humor therapy could lead to a 37% reduction in pain intensity in the study by Tse et al., while the 6-week humor therapy in the present study resulted in a 43% decline in the moderate pain intensity. These results indicated that the impact of humor therapy in this study was stronger than that in the similar study conducted in Korea despite lack of homogeneity of both groups in the present investigation in terms of moderate pain intensity prior to the intervention (the moderate pain intensity in the intervention group was higher than that in the control group). This difference could probably be associated with differences in quality of life and sense of humor in the elderly, as well as implementation of the humor therapy protocol that included various aspects of humor.

The majority of the participants in this study (89.1%) were using pharmaceutical agents such as analgesics to reduce their pains. These findings were not consistent with those of other studies; for instance, the results of the investigation by Tse et al. showed that only 32% to 39% of the elderly people were taking analgesics (23). Pain acceptance and tolerance in the older adults is considered as one of the important factors affecting search for and use of pharmaceutical and non-pharmaceutical methods of pain relief and several other factors including race, religion, personal differences, and quality of life can influence pain acceptance in the elderly. One of the reasons for such discrepancies in the results of studies was associated with the Iranian culture and lifestyle of the older adults. Most of the elderly individuals in the present study (58.3%) were not using non-pharmaceutical methods for pain relief such as yoga and cold therapy, but 45.4% of them had practiced methods such as massage therapy, heat therapy, and herbal medications in the past. These results were in agreement with the findings of the related literature in Europe, wherein the prevalence rates of cold therapy, acupuncture, massage therapy, and heat therapy were reported 3%, 13%, 30%, and 9%, respectively (36).

A study was conducted by Ghodsbin et al. (2014) on the effects of laughter therapy on the general health of the elderly living in the Jahandidegan Retirement Center, Shiraz, Iran. The sessions of laughter therapy in that investigation included doing respiratory funny activities as well as sport activities along with laughter. Their results for the intervention group showed a significant increase in physical health and total general health following the sessions of laughter therapy, suggesting that humor and laughter could have a considerable impact on boosting physical and general health (24).

The relationship between chronic pains and general and physical health could also be observed in the study by Astrand (1987) revealing a direct relationship between chronic pain and general and physical health. In that study, pain was taken into account as a factor disrupting physical health (37). Findings of Ghodsbin were in agreement with our results in that laughter therapy as a geriatric nursing intervention could have a positive impact on general health, and consequently reduce pain. In addition, laughter therapy in the investigation by Ghodsbin were only limited to doing respiratory funny activities and sport activities along with laughter, while all the dimensions of humor and laughter in the elderly were considered in the present study.

In the present study, the lowest pain intensity and moderate pain intensity before the onset of the intervention were not homogeneous in the two groups. Of the main reasons for this heterogeneity was the nature of the lowest and moderate pain intensities, which were respectively with 0-1 and 1-5 in terms of pain scoring with a heterogeneous nature. Furthermore, the impact of humor therapy after 6 sessions in the intervention and control group was 100% and 43%, respectively, despite lack of initial homogeneity in the two groups (the lowest and moderate pain intensities in the intervention group were higher than those in the control group).

Another study was conducted by Gholchin et al. (2011) on the impact of CBT on coping mechanisms and reduced pain in women with chronic back pain and demonstrated that using thought distraction in

CBT could relieve pain. It was noted that patients' coping mechanisms were enhanced through reducing worry about pain (38). Moreover, the study by Maghsoudi et al. (2016) stressed the effect of thought distraction (dough playing and bubble making) as a CBT on venipuncture pain intensity in children and showed that dough playing and bubble making had a significant impact on reducing pain in children compared with a control group (39).

In this regard, Dunbar et al. (2011) suggested that watching comedies could augment pain tolerance threshold in individuals; moreover, their results demonstrated that the changes in pain threshold in those watching documentaries alone were significantly lower than the variations in the group seeing comedy videos. However, the individuals who had watched comedies by themselves were not significantly different from those who had seen documentaries alone (40). Since humor and laughter had enhanced pain tolerance threshold in these individuals, it was concluded that humor and laughter could also reduce perceived pain; these results could confirm the findings of the present study. In addition, it should be borne in mind that humor therapy is considered as an appropriate method in social groups of the elderly such as nursing homes because the effect of humor therapy on pain has been reported to be stronger collectively rather than individually.

It can be concluded that humor therapy as a complementary and alternative medical intervention could have an impact on the cognitive aspects of chronic pains and affect pain intensity. Moreover, given that humor therapy is taken into account as a geriatric nursing intervention, especially in the cognitive and psychiatric domains of nursing, with no side effects and requirement for special skills, it can be employed in social groups of the elderly individuals such as the nursing homes.

Among the limitations of this study were lack of analgesia withdrawal by the older adults during this investigation to observe ethical considerations, which could impact the results of this study; however, since this procedure was considered in both groups and the consumption rate of analgesics was similar, the effects could not be significant. Moreover, the level of precision of participants and their mental and psychological conditions could affect their answers to the questionnaires, which could not be completely controlled. However, there were attempts to create the same time conditions and an appropriate environment in order to control this limitation. Given that pain is a sense reported using a questionnaire and considering that pain threshold is not the same in all individuals, a pre-test/post-test design was used in this study to determine the changes in pain in each elderly individual. Considering the differences in the sense of humor and willingness towards laughter and participation in the participants, the researchers also used varied methods to engage all these individuals (taking turns, telling jokes, or selecting the elderly randomly to participate in the competitions) and controlled the given limitation to some extent.

Implications for Practice

Overall, this study showed that humor therapy could have a positive impact on reducing chronic pains in the elderly people living in nursing homes. Thus, the respected authorities of the geriatric nursing homes and the officials of the State Welfare Organization of Iran are recommended to use humor therapy as an uncomplicated and cost-effective method requiring no professional staff and skills to improve the general health of the elderly and employ the given method in conjunction with other leisure time activities by the elderly and their families. It is also suggested to conduct further studies using localized pain assessment tools in order to relieve geriatric chronic and acute pains.

Acknowledgments

This study was derived from a Master's thesis in Nursing at Mashhad University of Medical Sciences, which was approved by the regional Research Ethics Committee at Mashhad University of Medical Sciences with the code number 941358 and dated on the 8th of May, 2016. This study was recorded in the Iranian Registry of Clinical Trials with the code number IRCT2016041027317N1. We appreciate the respected Deputy of Research at Mashhad University of Medical Sciences, honorable authorities at Mashhad School of Nursing and Midwifery, respected professors at the School of Nursing and Midwifery, all the doctors, nurses, caregivers, and honorable authorities of Salamati and Baran Geriatric Nursing Homes, as well as all the elderly individuals and their families who participated in this study.

Conflict of interest

None declared.

References

1. Rastogi R, Meek BD. Management of chronic pain in elderly, frail patients: finding a suitable, personalized method of control. Clin Interv Aging. 2013;8:37-46.
2. Van Lerberghe W. The world health report 2008: primary health care: now more than ever. Geneva: World Health Organization; 2008.
3. Afshar PF, Asgari P, Shiri M, Bahramnezhad F. A review of the Iran's elderly status according to the census records. Galen Med J. 2016;5(1):1-6.
4. Tanjani PT, Motlagh ME, Nazar MM, Najafi F. The health status of the elderly population of Iran in 2012. Arch Gerontol Geriatr. 2015;60(2):281-7.
5. Ross AC, Taylor CL, Yaktine AL, Del Valle HB. The national academies collection: reports funded by national institutes of health. Dietary reference intakes for calcium and vitamin D. Washington, DC: National Academy of Sciences; 2011.
6. Kaye AD, Baluch A, Scott JT. Pain management in the elderly population: a review. Ochsner J. 2010;10(3):179-87.
7. Treede RD, Rief W, Barke A, Aziz Q, Bennett MI, Benoliel R, et al. A classification of chronic pain for ICD-11. Pain. 2015;156(6):1003-7.
8. Simon LS. Relieving pain in America: a blueprint for transforming prevention, care, education, and research. J Pain Palliat Care Pharmacother. 2012;26(2):197-8.
9. AGS Panel on Persistent Pain in Older Persons. The management of persistent pain in older persons. J Am Geriatr Soc. 2002;50(6 Suppl):S205-24.
10. Sari N, Kooshiar H, Vaghee S, Kamelnia H. Elderly's Quality of Life and Related Factors Among Nursing Home Residents in Mashhad, 2013. J Mazandaran Univ Med Sci. 2014;23(1): 243-252.
11. Maftoun F, Nikpour B, Majlesi F, Rahimi FA, Shariati B. Elderlies and medical services: demand and utilization in Tehran. Payesh. 2002;1(2):51-5 (Persian).
12. Yonan CA, Wegener ST. Assessment and management of pain in the older adult. Rehabil Psychol. 2003;48(1):4.
13. Corran TM, Helme RD, Gibson SJ. Multidisciplinary assessment and treatment of pain in older persons. Top Geriatr Rehabil. 2001;16(3):1-11.
14. Davis GC, White TL. Nursing's role in chronic pain management with older adults. Top Geriatr Rehabil. 2001;16(3):45-55.
15. Turner JA, Chapman CR. Psychological interventions for chronic pain: a critical review. II Operant conditioning, hypnosis, and cognitive-behavioral therapy. Pain. 1982;12(1):23-46.
16. Ikemoto T, Arai YC, Nishihara M, Ushida T. Strategies for managing chronic pain: case of a skilled orthopaedic physician and mini-review. Open J Orthoped. 2015;5(5):109.
17. Ehde DM, Dillworth TM, Turner JA. Cognitive-behavioral therapy for individuals with chronic pain: efficacy, innovations, and directions for research. Am Psychol. 2014;69(2):153-66.
18. Kwekkeboom KL. A model for cognitive-behavioral interventions in cancer pain management. Image J Nurs Sch. 1999;31(2):151-6.
19. Melzack R, Wall PD. Pain mechanisms: a new theory. Science. 1995;150(3699):971-9.
20. Matz A, Brown ST. Humor and pain management: a review of current literature. J Holist Nurs. 1998;16(1):68-75.
21. Martin RA. The psychology of humor: an integrative approach. Massachusetts, US: Academic Press; 2010.
22. Asghari EbrahimAbad M, Mashhadi A, Attarzadeh Hoseini R, Ahmadzadeh Ghavidel R, Mashhadi Nejad H. Effect of cognitive pain self-management program on depression, anxiety, and stress in women with chronic musculoskeletal pain: a pilot study. Evid Based Care. 2016;6(2):39-48.
23. Tse MM, Lo AP, Cheng TL, Chan EK, Chan AH, Chung HS. Humor therapy: relieving chronic pain and enhancing happiness for older adults. J Aging Res. 2010;2010:34354.
24. Ghodsbin F, Sharif Ahmadi Z, Jahanbin I, Sharif F. The effects of laughter therapy on general health of elderly people referring to jahandidegan community center in Shiraz, Iran, 2014: a randomized controlled trial. Int J Community Based Nurs Midwifery. 2015;3(1):31-8.

25. Takeda M, Hashimoto R, Kudo T, Okochi M, Tagami S, Morihara T, et al. Laughter and humor as complementary and alternative medicines for dementia patients. BMC Complement Altern Med. 2010;10(1):28.
26. James DH. Humor: a holistic nursing intervention. J Holist Nurs. 1995;13(3):239-47.
27. Feagai HE. Let humor lead your nursing practice. Nurse Leader. 2011;9(4):44-6.
28. Sherrington C, Lord SR, Vogler CM, Close JC, Howard K, Dean CM, et al. Minimising disability and falls in older people through a post-hospital exercise program: a protocol for a randomised controlled trial and economic evaluation. BMC Geriatr. 2009;9(1):8.
29. Capps D. Religion and humor: estranged bedfellows. Pastoral Psychol. 2006;54(5):413-38.
30. Davidhizar R, Schearer R. Humor: no geriatric nurse should be without it. Geriatr Nurs. 1992;13(5):276-8.
31. Senn SS. Statistical issues in drug development. New Jersey, US: John Wiley & Sons; 2008.
32. Malakouti K, Fathollahi P, Mirabzadeh A, Salavati M, Kahani SH. Validation of geriatric depression scale (GDS-15) in Iran. Res Med. 2006;30(4):361-9.
33. Nasreddine ZS, Phillips NA, Bédirian V, Charbonneau S, Whitehead V, Collin I, et al. The montreal cognitive assessment, MoCA: a brief screening tool for mild cognitive impairment. J Am Geriatr Soc. 2005;53(4):695-9.
34. Budnick A, Kuhnert R, Könner F, Kalinowski S, Kreutz R, Dräger D. Validation of a modified German version of the brief pain inventory for use in nursing home residents with chronic pain. J Pain. 2016;17(2):248-56.
35. Alizadehfard S. The effect of life review group therapy on elderly with chronic pain. Iran J Ageing. 2012;7(2):60-7.
36. Breivik H, Collett B, Ventafridda V, Cohen R, Gallacher D. Survey of chronic pain in Europe: prevalence, impact on daily life, and treatment. Eur J Pain. 2006;10(4):287-333.
37. Astrand NE. Medical, psychological, and social factors associated with back abnormalities and self reported back pain: a cross sectional study of male employees in a Swedish pulp and paper industry. Occupat Environ Med. 1987;44(5):327-36.
38. Golchin N, Janbozorgi M, Alipour A, Agah HM. The efficacy of cognitive behavioral therapy on using coping strategies and decreasing pain among females with chronic back pain. Quart J Fundamen Ment Health. 2011;13(2):160-9.
39. Maghsoudi S, Sajjadi Z, Behnam Vashani H, Nekah A, Mohsen S, Manzari ZS. Comparison of the effects of play dough and bubble making distraction techniques on venepuncture pain intensity in children. Evid Based Care. 2016;5(4):25-32.
40. Dunbar RI, Baron R, Frangou A, Pearce E, van Leeuwin EJ, Stow J, et al. Social laughter is correlated with an elevated pain threshold. Proc Biol Sci. 2012;279(1731):1161-7.