



The Effect of Humor Therapy on Relieving Quality and Fear of Pain in Elderly Residing Nursing Homes: A Randomized Clinical Trial

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Abstract

Introduction: Chronic pain is common in the elderly. Distraction is one of the important uses of cognitive-behavioral techniques and humor is one of the distraction techniques used in pain control. The aim of the present study was to determine the impact of humor therapy (HT) on quality and fear of pain in nursing homes.

Methods: We conducted a randomized clinical trial study on 55 elderly who had experienced chronic pain for at least 3 months and residing in nursing homes in Mashhad, Iran, 2016. The sampling was of convenience type as well as random allocation of nursing homes to two groups; the one receiving HT (n = 28) and a control group (n = 27) living in two similar nursing homes. The experimental group received 6 sessions of humor therapy over 6 weeks and the control group received the routine care. To this end, pain quality and fear of pain were assessed at the first, after the 3rd and 6th sessions in both groups respectively using the McGill Pain Questionnaire and Fear of Pain Questionnaire. The main data were also compared using the Mann-Whitney U test.

Results: Total pain quality and fear of pain before the study was homogeneous in both groups (P > 0.05); but after 6th sessions in humor therapy the score of total pain quality decrease from 3.5 ± 1.1 to 2.4 ± 0.7 (P < 0.001) and the score of fear of pain decrease from 36.0 ± 1.4 to 30.6 ± 0.8 (P < 0.05). These results were not significant in control group (P > 0.05).

Conclusions: HT as a low-cost method can be an effective way to reduce the quality and fear of pain in elderly pain.

INTRODUCTION

Elderly is considered as a biological process which can affect all creatures as well as humans. According to the

World Health Organization (WHO), aging population has turned into one of the most important public health

challenges in recent years[1]. In the past, few individuals per population reached the aging times, yet in the modern life, with the fast technological advancements, people experience longer lives. Now, rapid population growth, particularly in the elderly population, has been one of the most important issues raised in public, political and scientific communities in most of the Asian countries in the past half-century[2]. It is estimated that from 2000 onward, the proportion of the world's population over 60 years will double to reach 1.97 billion people by the year 2050[3]. According to the 2016 census records, Iran's annual population growth has been reported by 7.1% and such an increase in the population aged over 60 years has been estimated to be 5.2% [2] and it is predicted that more than 10% by 2026 and between 21-25% of the population by 2052 will be made up of older adults[4].

Moreover, the risk of infliction with chronic diseases can significantly increase with aging. As recent studies show, 80% of older adults have had at least one chronic disease. Chronic pain is very common in the elderly, especially among old people living in nursing homes. Many studies show that 25–50% of the elderly had clinically relevant pain, and among nursing home residents the pain prevalence is 45–85%. Other studies show that about 80% of the elderly are suffering from a chronic disease frequently associated with "pain"[5], that this amount in elderly and residing nursing homes were reported 67% and 72% Respectively in Iran. Recognition of pain by nursing home staff is poor and frequently no treatment is given[6]. Conceivably, pain is the most common psychological stress that humans may face and also none of the other physical symptoms are as prevalent as pain, so pain is taken into account as a bio-psycho-socio-spiritual concept. Chronic pain in the elderly is one of the most pervasive problems care providers encounter. Chronic pain is regarded as pain that persists past the normal time of healing. Three months is the most convenient point of division between acute and chronic pain for nonmalignant pain[7].

In pain assessment, two different categories are considered: the first category, factors causing pain, including pain sensitivity, the experience of the individual, family and the various factors such as osteoarthritis, neuromuscular disorders, postoperative pain, and chronic diseases such as diabetes, And the second category, continuing pain factors that include psychological factors such as fear of pain, vigilance and anticipation of pain[8]. Research suggests that pain-related fear serves as a risk factor for the development and persistence of chronic pain and long-term sick leave following an acute pain episode. Algophobia is a phobia of pain - an abnormal and persistent fear of pain that is far more powerful than that of a normal person that is much more common in elderly people[9]. The fear-avoidance model (FA model) is a psychiatric model that describes how individuals develop

chronic pain as a result of avoidant behavior based on fear[10].

People with great fear, imagine the pain and consequences of disability caused by it as a catastrophic event, which increases the fear of movement and recovery, and makes pain from acute to chronic. On the other hand, studies have shown that fear of pain scores increase linearly with age. Fear of pain (activities or events associated with pain) is a central construct in the cognitive-behavioral models. Over the past decade, the specific role of fear in the onset, development, and maintenance of pain has received increasing attention[11].

Pain and its assessment have important consequences on patient quality of life. Falls, depression, social isolation, slow response to rehabilitation therapy, extensive use of drugs, sleep disorders, cognitive disorders and also malnutrition are common in the elderly and can be influenced by pain. Indeed, these negative impacts of chronic pain are more disturbing for older persons in residential care [3].

Pain relief and control it is also one of the key roles of nurses. Due to disturbance in communications and presence of cognitive impairment or coincidence of infliction with several underlying diseases, conditions of pain management in the elderly become more complex and physicians may not be able to assess or treat pains in older adults properly [12]. Analgesics prescribed for pain management can similarly have numerous side effects on the body and the mind of patients. In addition to the risks of addiction and drug dependence, can cause a fall in blood pressure, weakened vital functions, drowsiness, nausea, vomiting, and even shocks. Owing to defects in the functioning of kidneys, liver, and other organs; the risk of poisoning and drug dependence also becomes more severe in the elderly. Therefore, physicians make less use of pharmacological treatments to manage pain in older adults[13].

Considering that pain is a bio-psycho-socio-spiritual concept which influences all dimensions, classification of Nonpharmacological pain management strategies are accordingly based on physical methods (interventions affecting biological dimension), cognitive-behavioral therapy (CBT) (interventions influencing mental and biological dimensions), spiritual methods, as well as social management which are in need of special skills and expertise. CBT strategies to manage pain are also focused on the role of cognitive factors and their relationships with pain perception and it is logical that the modification of a person's cognitive state is effective in changing pain perception [14]. Several studies have demonstrated the potential for CBT to cause a reduction in fear-avoidance beliefs, and that treatment success may be mediated by changes in fear-avoidance beliefs[15]. Distraction is one of the important uses of cognitive-behavioral techniques to relieve pain, as suggested by the gate control theory and humor is one of the distraction techniques used in pain control[16].

Perhaps, it is possible to assume humor therapy (HT) effective considering different dimensions of pain. From a physiological perspective, it can probably reduce spasms and muscle pains in neurological disorders or rheumatoid diseases. It also helps with releasing endorphins as a natural morphine in the brain [17]. From a psychological dimension, CBT using distraction may reduce pain perception and set the mind that may be effective in painful and stressful situations and create an opportunity to adjust and configure the cognitive dimension in an individual in terms of facing problems [18].

However, older people may not be able to receive sufficient training and education in cognitive therapies in pain relief and humor therapy in particular. In light of the inadequate management of chronic pain situations among older persons in residential care, and the potential therapeutic effects of humor. In the review of extensive literature, there were few reports that examined the effect of humor therapy on the pain of the elderly, but no study was found to measure the effect of the HT on the quality and fear of pain. Since it has been emphasized that individuals' sense of humor can be affected by their religion and culture [19], it is necessary to examine the effect of sense of humor within different societies that has not been already reported in Iran on the elderly. This study aimed to determine the effect of humor intervention on quality and fear of pain in the elderly living in nursing homes.

METHODS

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.

Participants

This research was randomized clinical trial pre- and post-test control group design. After gaining approval from the Research Ethics Committee of Mashhad University of Medical Sciences, Mashhad, Iran, an organization operating residential care homes for older people was approached and invited to participate in the study two nursing homes were randomly (picking by chance) assigned to the experimental (receiving HT) and control groups (without HT). Two nursing homes were similar in nature, running under the same organization, with similar staff to client ratios. In addition, resources, spacing and quality of services were similar in these homes.

The inclusion criteria in this study were participants 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 (scored lower than 8 in 15-item Geriatric Depression

Scale (15-GDS)) or any other cognitive disorders (scored higher than 26-30 in Montreal Cognitive Assessment (MoCA)). The exclusion criteria included being absent in more than two 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 pain intensity and quality of pain on the basis of comparison of means formula [20] with 80% test power and 95% confidence level. The maximum sample size associated with the pain quality was estimated at 27 individuals in each group. Considering the probable loss of individuals, the number of people enrolled in the study increased to 32 in each group (two nursing homes). Considering the possibility of sample attrition, a total number of 64 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 experimental (n=31 individuals). Within the control and experimental 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 experimental and control groups, respectively (Fig 1).

Humor Therapy Program

Humor therapy was administered in the experimental group during a 6-week program involving one hour per 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 overall atmosphere was relaxed and cheerful during all the humor therapy sessions.

The protocol of primary humor therapy was provided through reviewing other research articles on humor therapy [21-23] and integration of their protocols in a way that they were in line with the culture of Iranian elderly individuals and arranged in a structured program with separate sessions. This program was then endorsed by experts in the domain of old age and clinical psychology and experienced people in comic affairs in the city of Mashhad (a professional artist) in Iran. The proposed humor therapy program was first performed in a pilot format on ten elderly people meeting the inclusion criteria to determine its feasibility and

appropriateness of interventions for the elderly living in nursing homes in the city of Mashhad. Moreover, necessary modifications and revisions were carried out under the guidance of humor and media experts, geriatric care specialists, as well as clinical psychologists; and then they were administered on the experimental group. The content of the humor therapy program included video clips with a humorous theme, games with a funny theme, comic and hilarious stories, as well as music with comic themes along with jokes. The humor therapy protocol is available for each session in [Table 1](#).

Furthermore, no specific intervention was performed for the control group and the researcher only completed the above-mentioned questionnaires in the selected center (Baran Nursing Home). In order to encourage the elderly to complete the questionnaires; receptions were provided in the first, the third, and the sixth sessions.

Instruments

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. Level of depression in the elderly using the 15-item Geriatric Depression Scale (15-GDS) was measured and the older adults who scored lower than 8 were allowed to participate in the study. The content validity of this research instrument was

also confirmed by a survey of 10 professors but its reliability had been already confirmed with a Cronbach's alpha coefficient of 0.89 in previous studies [24]. In the present study, the internal consistency using Kuder-Richardson coefficient was estimated to be equal to 0.79. Cognitive disorders were also evaluated through the Montreal Cognitive Assessment (MoCA) and the elderly with a score higher than 26-30 were allowed to participate in the study. The validity of this instrument was confirmed in the present study via content validity method and a survey of 10 professors. The reliability of this instrument had been also approved with Cronbach's alpha coefficient of 0.83 in previous studies [25]. Besides, the coefficient was estimated by 0.84 using the split-half method in the present study. Pain quality was measured via the short and moderated instrument of McGill Pain Questionnaire (MPQ) in two dimensions: sensory (including 11 descriptors: throbbing, lancinating, shooting stabbing sharp, cramping, lasting, hot-burning, normal, heavy, pinching, and splitting) and affective (containing 4 descriptors: extremely exhausting, sickening, fearful, and cruel-punishing). Each dimension had a Likert-type scale rated from none (score 0), mild (score 1), moderate (score 2), and severe (score 3). The validity of this instrument in this study was approved through content validity with a survey of ten professors. The reliability of this instrument had been already confirmed in previous studies with the alpha coefficient of 0.85 [26] and, in the present study, it was estimated by the Cronbach's alpha coefficient of 0.88 using internal consistency method.

Table 1. Humor Therapy Protocol Separately for each Session

Session	Protocol humor therapy
Introduction Session 1-6 (10- minutes)	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
Main part (40-minutes)	
Session 1	<ul style="list-style-type: none"> - Expression mental and psychological benefits of humor and laughter - Play Happy and funny music - Reciting funny poetry and prose Display funny video clips containing scenes of falling and slipping on a large display screen
Session 2	<ul style="list-style-type: none"> - Expression physical benefits of humor and laughter - Play funny songs - Display funny video closed-eye painting game
Session 3	<ul style="list-style-type: none"> - Expression Social benefits of humor and laughter - Play funny songs - reading funny proverbs by the professional host using different dialects Play a very simple and understandable pantomime
Session 4	<ul style="list-style-type: none"> - Expression Mental benefits of humor and laughter - playing a variety of different laughing sounds by children - 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
Session 5	<ul style="list-style-type: none"> - Asking the elderly to define past funny memories - play Happy music and animal sounds in space - Display funny video about playing games of children or pets game of finding the first names for girls or boys with special letters
Session 6	<ul style="list-style-type: none"> - encouraging the elderly to laugh like an airplane or a waterfall - Tell and making jokes - play funny music and laughing sounds in space game of throwing coins into a glass of water
Finalizing Session 1-6 (10- minutes)	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, distributing sugar free chocolates and gifts

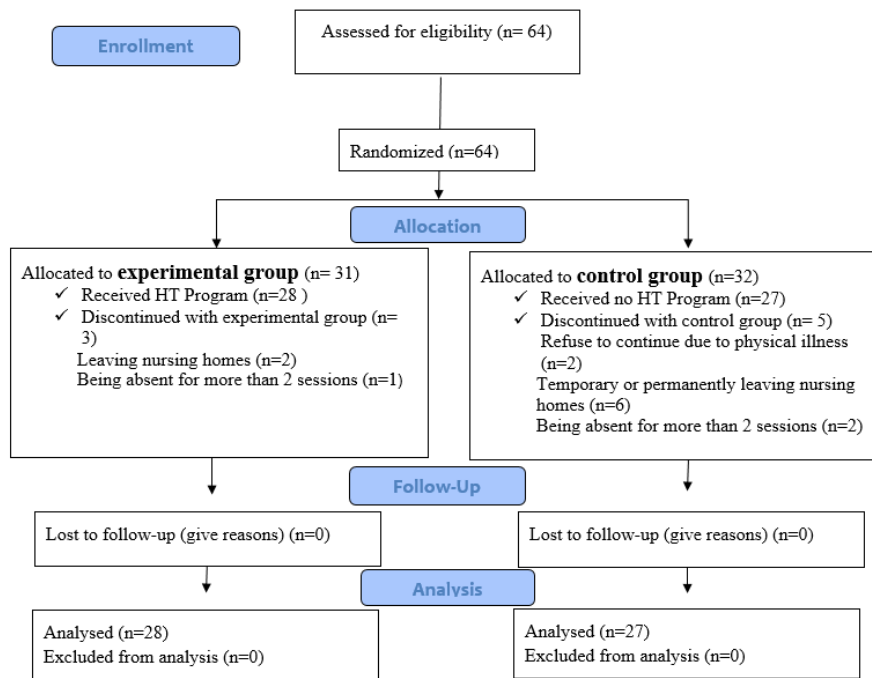


Figure 1. CONSORT Flow Diagram

Table 2. Comparing the Demographic Characteristics of the Elderly Individuals in Terms of their Groups

Variable	Control group, (n=27)	HT group, (n=28)	Test results
Age (year)	73.9 ± 4.3	73.9 ± 5.8	*P = 0.98
Gender			**P = 0.61
Male	7 (25.9)	9 (32.1)	
Female	20 (74.1)	19 (67.9)	
Duration of residence in nursing homes			***P = 0.70
6 to 12 months	6 (22.2)	10 (35.7)	
Between 12 and 24 months	15 (55.2)	10 (35.7)	
More than 24 months	6 (22.2)	8 (28.6)	
Use of analgesics			****P = 0.66
No	2 (7.4)	4 (14.3)	
Opioid	5 (18.5)	2 (7.1)	
Non-steroidal anti-inflammatory drugs (NSAID)	21 (77.8)	22 (78.6)	
Non-pharmaceutical method of pain relief			****P = 0.39
No method	17 (63.0)	15 (53.6)	
Massage therapy	3 (11.1)	4 (14.3)	
Heat therapy	2 (7.4)	0 (0.0)	
Herbal medicine	5 (18.5)	9 (32.1)	
Pain Medication Relieved			***P = 0.189
no relief at all	1 (4.3)	3 (13.0)	
some relief	22 (95.7)	14 (60.9)	
sufficient relief	0 (0.0)	6 (26.1)	
total pain relief	0 (0.0)	0 (0.0)	

Data in table are presented as Mean ± SD or No.(%)

Fear of Pain Questionnaire – Version III (FPQ-III), in response to 30 items (eg, “having a muscle cramp”), respondents were asked to indicate how fearful they are (or would be), using a scale ranging from one (not at all) to five (extreme). High scores were indicative of high levels of fear. The validity of this instrument in this study was approved through content validity with a survey of ten professors. The reliability of this instrument had been already confirmed in previous studies with the alpha coefficient of 0.80 [27], and 0.89 in Persian version [28]. In the present study, it was estimated by the

Cronbach’s alpha coefficient of 0.85 using internal consistency method.

On the morning of the first session of humor therapy and immediately after the third and the sixth sessions, FPQ-III and MPQ were completed by the researcher and her colleague for the control and experimental groups simultaneously using interview method in the conference halls to assess fear of pain and pain quality, respectively. Then the data collected were analyzed using the SPSS software (version 22) via Chi-square test, Mann-Whitney U test, Friedman test, and paired t-

test, as well as Fisher's exact test. To describe the data, mean \pm standard deviation were employed. The level of significance and the confidence level of the tests were also considered by 0.05 and 95%, respectively.

RESULTS

The mean age of the study participants was 73.9 ± 5.1 . No significant difference was observed between the two groups in terms of their demographic characteristics ($P > 0.05$). Other demographic characteristics along with results of homogeneity were given in Table 2. Considering inter-group comparison, "fear of pain" at the stage immediately prior to the study in the control group was 35.1 ± 0.8 and that was 36.0 ± 1.4 in the group receiving HT. According to the results of Man Whitney U test, both groups were not significantly different ($P = 0.413$) and they were homogeneous, but this value immediately after the third and the sixth sessions was significantly lower in the HT group than that in the control group ($P < 0.05$).

Given intra-group comparison, "fear of pain" in the group receiving HT in the third and the sixth sessions according to Friedman test also showed a significant

decrease in the results ($P < 0.05$); however, such a value in the control group was not significant ($P = 0.891$) (Table 3).

Comparison of the mean scores of pain quality in both groups before and after the study in terms of sensory, affective, and total dimensions using Mann Whitney U test similarly revealed no significant difference between control and HT groups (respectively $P=0.577$, $P=0.784$, and $P=0.607$). Following the third session, no significant difference was observed between both groups concerning sensory, affective, and total dimensions (respectively $P = 0.007$, $P = 0.011$, and $P < 0.001$). After the sixth session, a significant difference was found in all sensory, affective, and total dimensions between both groups ($P < 0.001$).

The results of intra-group Friedman test comparison indicated that the mean scores of sensory, affective, and total dimensions in the HT group before the study, and then after the third session, and following the sixth session had also significantly decreased ($P < 0.05$); but a significant increasing trend was found in the control group before the intervention, after the third session, and following the sixth session ($P < 0.05$) (Table 4).

Table 3. Comparison of the Means and Standard Deviations of Fear of Pain in the Elderly based on Groups

Fear of pain	Control group (n = 27)	HT group (n = 28)	Between-group test results
Before the first session	35.1 ± 0.8	36.0 ± 1.4	* $P = 0.413$
after the 3 rd session	35.2 ± 0.9	32.1 ± 1.0	* $P = 0.037$
after the 6 rd session	35.8 ± 0.4	30.6 ± 0.8	* $P = 0.009$
Intra-group test result	** $P = 0.891$	** $P < 0.05$	

Data in table are presented as Mean \pm SD

* Mann-Whitney test

**Friedman test

Table 4. Comparison of the means and standard deviations of quality of pain in the elderly based on groups

Quality of pain	Control group (n = 27)	HT group (n = 28)	Between-group test results
Sensory Pain			
Before the first session	2.0 ± 0.6	2.1 ± 0.8	* $P = 0.577$
after the 3 rd session	2.6 ± 1.7	1.8 ± 0.6	* $P = 0.007$
after the 6 rd session	2.3 ± 0.7	1.3 ± 0.4	* $P < 0.001$
Intra-group test result	** $P = 0.012$	** $P < 0/001$	
Affective Pain			
Before the first session	1.3 ± 0.4	1.3 ± 0.5	* $P = 0.784$
after the 3 rd session	1.4 ± 0.7	1.1 ± 0.3	* $P = 0.011$
after the 6 rd session	1.7 ± 0.6	1.0 ± 0.5	* $P < 0.001$
Intra-group test result	** $P = 0.016$	** $P = 0.002$	
Total Pain			
Before the first session	3.3 ± 0.7	3.5 ± 1.1	* $P = 0.607$
after the 3 rd session	3.8 ± 0.9	2.9 ± 0.8	* $P < 0.001$
after the 6 rd session	4.0 ± 0.8	2.4 ± 0.7	* $P < 0.001$
Intra-group test result	** $P < 0.001$	** $P < 0.001$	

* Mann-Whitney test

**Friedman test

DISCUSSION

The present study investigated the effect of humor therapy on quality and fear of pain among the elderly residing in nursing homes. Since the prevalence rate of pain in older adults is on an increase and pain management is considered as a big challenge for healthcare in society.

In the present study, most participants used analgesics to reduce their pain, but in others, this rate is only 32%. In the present study 45.4% of participant 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[29].

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[21], 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 67% decline in the 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. This difference could probably be associated with differences in quality of life and sense of humor in the elderly, as studies have shown that sense of humor is an effective factor in the severity of pain and the sense of humor in Iran is higher than that of Korea[30]. In addition, the implementation of the humor therapy protocol that included various aspects of humor can also be the cause of the current study's impact.

In a study, Salmon (2001) concluded that laughter could help with releasing a chemical mood enhancer called endorphin from the brain and refresh human spirit. Laughter could also have a direct effect on the brain and result in releasing tension-related chemicals and reduce adrenaline and noradrenaline hormones[31]. In this line, Song et al. (2013) in South Korea showed that laughter therapy could cause a significant increase in mood ($P < 0.001$) and satisfaction with life ($P < 0.001$) among elderly individuals living in care centers[23]. The relationship between pain, mood, and life satisfaction has been also reported in various studies so that those with positive moods valence could perceive less pain compared with individuals with lower and negative states. Moreover, individuals could show a lot of sensitivity to painful stimuli by demonstrating their emotions and negative moods. In addition, it has been concluded that the intensity rate of pain is an important and effective factor within life satisfaction especially in the elderly[32].

In the present study and considering the humor therapy group; scores of sensory, affective, and total dimensions of quality of life, moderated by 29%, 15%, and 17% after the third session of humor therapy; respectively. Such values also decreased by 38%, 23%, and 31% after 6 sessions; respectively. The results of Friedman intra-group test after 6 weeks in the control group also showed that the sensory ($P < 0.05$), affective, and total scores of pain quality ($P < 0.05$) had significantly increased compared with those before intervention (an increase in pain quality score meant getting worse) which could be

due to the inefficiency of the common pain management. Besides; the nature of the pain was in a form that its intensity and harmful effects could be felt more in life, if it was not controlled [33].

There was no study investigating the effect of humor therapy on quality of pain; therefore, investigations closer to the use of the independent variable were employed. Various qualitative studies have been also conducted on quality of acute and chronic pains; for example, the results of the study by Ebrahimi-Nejad (1997) revealed that quality of sensory and affective dimensions in patients with persistent and chronic pains was 17.03 ± 9.5 and 3.46 ± 2.9 ; respectively [34].

Finally, the results of the study by Siedliecki et al. (2006) demonstrated that music therapy could significantly reduce total pain quality ($p < 0.001$) and pain disability ($P < 0.001$) [35] in a way that music therapy for 7 sessions could lower total pain quality by 20% and moderate disability due to pain by 12%; while, humor therapy used in this study could decrease total pain quality by 31% considering lower number of sessions. Perhaps, one of the reasons for the difference in the effect of pain quality was related to the type of intervention in the study by Siedliecki; so that music therapy in this study was mostly in the domain of relaxing music whereas the intervention of music therapy had utilized fun and entertaining music and performing dances with melodies. In addition, the investigation by Siedliecki on individuals aged 21-65 years with chronic pain showed that they were more conscious than older people and the effect of intervention was observed higher among them. Considering that humor therapy, like music therapy, is a kind of cognitive-behavioral intervention for influencing the cognitive dimension of pain [36], the results of Siedliecki's study were considered to be in agreement with the findings of the present study.

CONCLUSIONS

Generally, it can be concluded that humor therapy as an intervention in complementary and alternative medicine, having an impact on the cognitive dimension of pain, can have a positive effect on the reduction of quality and fear of pain in 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.

Study Limitations

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. 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. Other limitations of this study were to measure the quality and fear of pain immediately after the sixth session of intervention, which suggests that other researchers would do a similar study with a longer follow-up period.

Ethical Considerations

Permission for this study was through the Ethical Committee of Mashhad University of Medical Sciences. All participants and their family were informed of the purpose and design of the study. Participants signed a written consent form for their participation.

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Author's Contribution

SB, HK, SRM collected data, performed intervention and conducted sampling.

SB, NA, HBV designed research, drafted the manuscript, performed statistical analysis.

SRM, SB designed and interpreted the clinical data and revised the manuscript clinically for import intellectual content.

Conflict of Interest

None declared.

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