Effect of Music Assisted Breathing Exercise on Stress and Anxiety among Institutionalized Elderly

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Abstract
The present study assessed the effect of music assisted breathing exercise on stress and anxiety among institutionalized elderly in a selected old age home, Thiruvananthapuram. The objective of the study was to assess the effect of music assisted breathing exercise on stress and anxiety among institutionalized elderly and to find the association between stress and selected sociopersonal variables and between anxiety and selected sociopersonal variables. The conceptual framework of the study was based on Betty Neumann's systems model. Quasi experimental design was used for the study. Forty institutionalized elderly residing in Government old age home, Pulayanarkotta, Thiruvananthapuram who satisfied the inclusion criteria were selected through simple random sampling. Structured Interview schedule was used to collect data regarding socio personal variables, Perceived Stress Scale and State Trait Anxiety Inventory form Y1 were used to assess stress and anxiety respectively. After the pretest, the elderly were divided into three groups and music assisted breathing exercise was given for 30 minutes daily for 4 weeks (6 days/week). Posttest I was conducted immediately after the completion of the intervention and posttest II was done 2 weeks after the completion of the intervention. The result showed statistically significant difference in the pretest and posttest I scores of stress (t=8.56, p<0.001) and anxiety (t=8.45, p<0.001) among institutionalized elderly. The effect of music therapy was sustained up to 2 weeks after the discontinuation of sessions (p<0.001). The result showed that, there was statistically significant association between stress among institutionalized elderly and socio personal variables such as gender and monthly income (p<0.05) and statistically no significant association between anxiety among institutionalized elderly and socio personal variables. Study concluded that music assisted breathing exercise was effective in reducing stress and anxiety among institutionalized elderly.
Key words: Music assisted breathing exercise; stress; anxiety; institutionalized elderly.

I.   Introduction

Ageing can be defined as a progressive and generalized impairment of function resulting in the loss of adaptive response to stress and increased risk of age related disease. Elderly are vulnerable to stress and anxiety from various causes.[1]

An old age home is usually the place, a home for those old people who have no one to look after them or those who have been thrown out of their homes by their children. The elderly in old age homes are a distinct population with lack of family and social support contributing to an increased prevalence of stress and anxiety. Elderly worry about their health, family, financial situation and mortality. These worries are even more likely to arise when they feel that their physical and mental capacities are diminishing and that they are losing their autonomy. The stressors of old age such as loss of skill developed early in life, adjustment to retirement, loss of income, coping with change in role function and social life, quality of relationships and coping with loss in turn make the elderly feel insecure and lost.[2]

According to data from World Population Prospects Revision (2017) there is an estimated 962 million people aged 60 or above in the world, comprising 13 per cent of the global population. The population aged 60 or above is growing at a rate of about 3 percent per year. The number of older persons in the world is projected to be 1.4 billion in 2030 and 2.1 billion in 2050, and could rise to 3 billion in 2100.[3]

According to the report by the ministry for statistics and programme implementation (2016), India has 103.9 million elderly. The elderly population has grown at about 3.5 percent per year, double the rate for the population as a whole. While the overall population of India will have grown by about 40 percent between 2006 and 2050, the report adds, the elderly population will have grown by 270 percent.[15] The projections for population over 60 years in next four censuses are: 133.32 million (2021), 178.59 million (2031), 236.01 million (2041) and 300.96 million (2051).[4]

As per the 2011 census, Kerala's total population is around 3.36 crore, of which 12.6 percent are aged

above 60 years and the State's elderly population is growing at a perpetual rate of 2.3 percent. The growth rate is high among the elderly aged 70 or 80 and above.[5]

The technological breakthrough due to industrialization, westernization and urbanization has weakened the unity and integrity of joint family leading to the negligence of the role and status of the elderly persons. The fading joint family system in India and other innumerable factors have given rise to west-inspired phenomena of old age homes.[6]

Older adults living in old age homes face problems of adjustment with rigid schedules, separation from their family, friends and society; anxiety over entrusting oneself to a new environment; diminished physical ability and close and frequent encounters with death and ailments in the institution.[7]

For elderly, stress has the potential to be especially overwhelming. Common sources of stress for elderly include changes of lifestyle and financial status after retirement, caring for grandchildren, death of relatives, beloved or close friends, chronic illness, and worries for institutionalization.[8]

Anxiety disorder is a common illness among older adults, affecting as many as 10-20 percent of the older population, though it is often undiagnosed. Music therapy is an effective complementary treatment for many conditions, especially anxiety and depression.[9]

Relaxation technique such as deep breathing, visualization, progressive muscle relaxation, meditation, yoga and music therapy plays a vital role in reducing stress and anxiety among elderly people.[10]

Statement of the problem
A study to assess the effect of music assisted breathing exercise on stress and anxiety among institutionalized elderly in a selected old age home, Thiruvananthapuram.

Objectives
* Assess the level of stress and anxiety among institutionalized elderly.
* Evaluate the effect of music assisted breathing exercise on stress and anxiety among institutionalized elderly.
* Find the association between stress among institutionalized elderly and selected socio personal variables.
* Find the association between anxiety among institutionalized elderly and selected socio personal variables.

II.   Material And Methods

Setting
* Government old age home, Pulayanarkotta, Thiruvananthapuram.

Sample & sample size
* Sample consists of 40 institutionalized elderly within the age group of 60-80years residing in Government old age home Pulayanarkotta, Thiruvananthapuram.

Research design
* Quasi experimental design

Sampling technique
* Simple random sampling technique

Inclusion   criteria
* Elderly who can understand the instruction and participate in the training

Exclusion   criteria
* Elderly who are critically ill.
* Elderly with poor hearing ability.
* Elderly with severe mental illness.
* Elderly who are newly joined.

Data were collected using structured interview schedule (to assess the socio personal data and old age home related data), Perceives Stress Scale (to assess stress) State Trait Anxiety Inventory Form Y1 (to assess anxiety).

Perceived Stress Scale (PSS; Cohen et al, 1983) evaluates the degree to which individuals believe their life has been unpredictable, uncontrollable, and overloaded during the previous month. It is based on a 5 point likert scale consisting of self report questions. The participant's responses are marked based on the frequency of experiencing a particular stress against 5 options as given below,

0-Never, 1-Almost never, 2-Sometimes, 3-Fairly often and 4-Very often

Item numbers 4, 5, 7 and 8 are scored negatively. The total score ranges from 0-40.The scoring is interpreted as;

0-13 = Low stress.

14-26 = Moderate stress.

27-40 = High stress
The State-Trait Anxiety Inventory (STAI) is a commonly used measure of trait and state anxiety (Spielberg, Gorsuch, Lushene, Vagg, & Jacobs, 1983). In this study STAI form Y-1 is used which measures the state anxiety. It is based on a 4 point likert scale consisting of 20 self report questions. The participant's responses are marked based on how they feel at that moment of time against 4 options,
1-Not at all, 2- Somewhat, 3-Moderatly so, 4-very much so
Statements 1, 2, 5, 8, 10, 11, 15, 16, 19 and 20 are negatively scored. Score ranges from 20-80 and is interpreted as
20-37 = Mild anxiety
38-44 = Moderate anxiety
45-80 = High anxiety

Reliability
Cronbach's alpha coefficient for PSS is 0.82 and for STAI form Y-1 is 0.86.

Data Collection Process
Data collection was from 4-12-19 to 15-1-2020. Forty samples who fulfilled the inclusion criteria were selected using simple random sampling technique. Detailed description about the study was given to the participants. After obtaining informed consent from the elderly, questionnaire to collect sociopersonal variables, Perceived Stress Scale and State Trait Anxiety Inventory form Y1 were administered to the elderly and data were collected.

After the pretest, music assisted breathing exercise was given to the elderly who met the inclusion criteria by the investigator. The elderly were divided into three groups and music assisted breathing exercise was given for 30 minutes daily for 4 weeks (6 days/week). Posttest I was conducted immediately after the completion of the intervention and posttest II was done 2 weeks after the completion of the intervention using Perceived Stress Scale and State Trait Anxiety Inventory.

III. Results

Socio personal data
Among the institutionalized elderly, 37.5% were within the age group of 71-75 yrs. Most of the institutionalized elderly (55%) were males. Majority of the institutionalized elderly (90%) were Hindus. Among the institutionalized elderly, 38% had high school education. Most of the institutionalized elderly (35%) were daily waged. Most of the institutionalized elderly (72.5%) had no income and22.5% of institutionalized elderly had pension as source of income. Among the institutionalized elderly, 35% were divorced / separated. Majority of the institutionalized elderly (82.5%) belonged to nuclear family. Among the institutionalized elderly, 47.50%had no children. Majority of the institutionalized elderly (75%) had health problem and among them 37.5% were diabetic and 45% were hypertensive. Among the institutionalized elderly50% had 1 to 5 yrs duration of stay in old age home. Most of the institutionalized elderly (70%) made decision by themselves for the institutionalization. Most of the institutionalized elderly (65%) had good interpersonal relationship with the inmates and 66.67% of the elderly had good interpersonal relationship with the old age home staff. Among the institutionalized elderly, 52.5% had no visitors. All the study participants were satisfied with the services in the old age home and 77.5% had no adjustment problems in the old age home. Majority of the institutionalized elderly (70%) had participated in leisure time activities and among them 30% of institutionalized elderly were engaged in reading.

Baseline level of stress and anxiety
Among the study participants, 15% of the institutionalized elderly had low stress, 45% had moderate stress and 40% had high stress. And 12.5% of the institutionalized elderly had mild anxiety, 27.5% had moderate anxiety and 60% had severe anxiety.

Effect of music assisted breathing exercise on stress among institutionalized elderly.
1.   **Mean, standard deviation and t value of pretest and posttest I scores of stress among institutionalized elderly.**
(n = 40)

Variable		Mean	SD	df	t
Stress	Pretest	21.8	6.88	39	8.56***
	Posttest I	15.45	5.43		

*** significant at .001 level
The obtained t value shows statistically significant difference in the pretest and posttest I scores of stress ($p<0.001$). Music assisted breathing exercise was found to be effective in reducing stress among

institutionalized elderly.

2.   Mean, standard deviation and t value of pretest and posttest II scores of stress among institutionalized elderly.
(n=40)

Variable		Mean	SD	df	t
	Pretest	21.8	6.88		
Stress				39	10.66***
	Posttest II	12.45	4.69		

*** Significant 0.001 level

The obtained t value shows statistically significant difference in the pretest and posttest II scores of stress (p<0.001). Music assisted breathing exercise was found to be effective in reducing stress among institutionalized elderly.

3.   Mean, standard deviation and t value of posttest I and posttest II scores of stress among institutionalized elderly.
(n=40)

Variable		Mean	SD	df	t
	Posttest I	15.45	5.34		
Stress				39	5.34***
	Posttest II	12.45	4.69		

*** Significant 0.001 level

The obtained t value shows statistically significant difference in the posttest I and posttest II scores of stress (p<0.001). Music assisted breathing exercise was found to be effective in reducing stress among institutionalized elderly.

Effect of music assisted breathing exercise on stress among institutionalized elderly.

1.   Mean, standard deviation and t value of pretest and posttest I scores of anxiety among institutionalized elderly.
(n=40)

Variable		Mean	SD	df	t
	Pretest	47.2	9.6		
Anxiety				39	8.45 ***
	Posttest I	39.2	5.5		

*** Significant 0.001 level

The obtained t value shows statistically significant difference in the pretest and posttest II scores of anxiety (p<0.001). Music assisted breathing exercise was found to be effective in reducing anxiety among institutionalized elderly.

2.   Mean, standard deviation and t value of pretest and posttest II scores of anxiety among institutionalized elderly.
(n=40)

Variable		Mean	SD	df	t
	Pretest	47.2	9.6		
Anxiety				39	12.03 ***
	Posttest II	34.7	5.9		

*** Significant 0.001 level

The obtained t value shows statistically significant difference in the pretest and posttest II scores of anxiety (p<0.001).Music assisted breathing exercise was found to be effective in reducing anxiety among institutionalized elderly.

3.   **Mean, standard deviation and t value of posttest I and posttest II scores of anxiety among institutionalized elderly.**

(n=40)

Variable		Mean	SD	df	t
Anxiety	Posttest I	39.2	5.5		
				39	11.02 ***
	Posttest II	34.7	5.9		

*** Significant 0.001 level

The obtained t value shows statistically significant difference in the posttest I and posttest II scores of anxiety (p<0.001).Music assisted breathing exercise was found to be effective in reducing anxiety among institutionalized elderly.

Chi square value showing association between stress among institutionalized elderly and gender.

(n=40)

Sociopersonal variable	Level of stress						df	χ2
	Low stress		Moderate stress		High stress			
	f	%	f	%	f	%		
Gender								
Male	4	18.2	13	59.1	5	22.7		
							2	6.13*
Female	2	11.1	5	27.8	11	61.1		

* Significant at 0.05

Table shows that there is statistically significant association between stress among institutionalized elderly and gender (p<0.05).

Chi square value showing association between stress among institutionalized elderly and monthly income.

(n=40)

Sociopersonal variable	Level of stress						df	χ2
	Low stress		Moderate stress		High stress			
	f	%	f	%	f	%		
Monthly income								
No income	3	10.3	13	44.8	13	44.8		
Below Rs.5000/-	1	11.1	5	55.6	3	33.3	4	12.33*
Rs.5000/--10,000/-	2	100	0	0	0	0		

* Significant at 0.05

Table shows that there is statistically significant association between stress among institutionalized elderly and monthly income (p<0.05).

IV.   Discussion

The findings of the study showed that 40% had high stress, 45% had moderate stress and 15% had low stress, 60% had severe anxiety, 27.5% had moderate anxiety and 12.5% had mild anxiety. The findings of the study were supported by a study conducted among 100 inmates of an old age home to assess the perceived stress among them in Kanchipuram District, Tamil Nadu. Perceived levels of Stress among elderly were assessed using the perceived stress scale-10. Findings revealed that 18% of the participants had high stress scores and 60% had moderate stress scores. [11]

Another study which was conducted among 148 elderly to find out an array of mental health problems and associated morbidity among inhabitants of Government old age homes in Delhi also supported the present study. The World Health Organization Quality of Life BREF Scale (QOL), Mini - Mental State Examination, Geriatric Depression Scale, Hamilton Anxiety Rating Scale, Brief Psychiatric Rating Scale, and Kesseler 10 Scale were used to assess quality of life, cognitive impairment, depression, anxiety, major psychotic and non psychotic symptoms and psychological distress respectively. The findings suggested that 50% of elderly had

mild anxiety, 45.2% had moderate anxiety and 4.7% had severe anxiety.[12]

The results showed that the mean stress score reduced from 21.8 ± 6.88 to 15.45 ± 5.43 and mean anxiety score reduced from 47.2 ± 9.6 to 39.2 ± 5.5. The findings were significant at $p<0.001$ and hence music assisted breathing exercise was found to be effective in reducing stress and anxiety among institutionalized elderly.

The finding of the present study was consistent with the findings of a study conducted in Pune to assess the effectiveness of music therapy on level of stress among institutionalized elderly. Fifty samples each from the experimental and the control groups were selected by non-probability convenient sampling technique. Perceived Stress Scale was used to measure the level of stress and music therapy was given to the experimental group for seven consecutive days for 30 minutes and on the eighth day post test was done. The mean stress score reduced from 30.2 to 16.8 in the posttest. The findings showed that there is significant difference in the mean pretest and posttest stress score ($t=27.5$, $p<0.05$). The study concluded that music therapy was very effective in reducing stress of elderly in old age homes, so music therapy can be administered as an alternative treatment for the treating of stress in patients involved in long-term care.[13]

Another study had similar findings, which was done to assess the effect of structured nursing intervention (general warming exercise, breathing exercise, progressive muscle relaxation and guided imagery under the background of music) on anxiety, depression and quality of life. 312 senior citizens residing in government and private old age homes of Calicut and Palakkad were selected based on multi phase random sampling. Structured nursing intervention was given 3 days in a week for 3 months and posttest was done 20 days after the intervention. The result showed that structured nursing intervention reduced anxiety mean score from 40.66 ± 4.13 to 18.38 ± 3.14 in the post test. The findings showed that there is significant difference in their mean pretest and posttest scores of anxiety [$t=79.91$, $p<0.001$].[14]

The present study shows that there is statistically significant association between stress among institutionalized elderly and sociopersonal variables such as gender ($\chi2 = 6.13$, $p<0.05$) and monthly income ($\chi2 = 12.33$, $p<0.05$). A descriptive, cross-sectional study was conducted to assess the level of stress among100 inmates of Visalakshmi old age home, Golagamudi at Nellore District. Samples were selected using non-probability convenience sampling technique and modified stress scale was used to assess the stress level among elderly. Study results showed significant association between level of stress among elderly residing in old age home and their socio demographic variables like age, gender, education, marital status, source of income, habits, coping mechanisms used and co-morbid diseases.[15]

V. Conclusion

The findings of the study showed that 15% of the institutionalized elderly had low stress, 45% had moderate stress and 40% had high stress and 12.5% of the institutionalized elderly had mild anxiety, 27.5% had moderate anxiety and 60% had severe anxiety. The obtained t value shows statistically significant difference in the pretest and posttest I scores of stress ($t=8.56$, $p<0.001$) and anxiety ($t=8.45$, $p<0.001$) among institutionalized elderly. The effect of music therapy sustained for up to 2 weeks after the discontinuation of sessions ($p<0.001$).

The study concluded that there is a positive effect of music assisted breathing exercise in reducing stress and anxiety among institutionalized elderly. The present study highlights the alternative treatment strategies of stress and anxiety and can guide the elderly towards a stress free life.

LIMITATIONS
- It was difficult to draw generalization due to small sample size.
- Long term adherence to the relaxation technique could not be assessed due to the short duration of the study.

VI. Recommendations
- A similar study can be replicated on a large sample with a control group.
- A comparative study on stress and anxiety can be conducted among institutionalized and non-institutionalized elderly.
- Long term effect of music assisted breathing exercise on stress and anxiety among elderly could be studied.
- A follow up study can be conducted in the same setting to check the long-term adherence to music assisted breathing exercise.

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