



Sensory Stimulation Activities Improving Quality of Life of Elderly People in Elderly Communities

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Received: October 6, 2023

Revised: November 27, 2023

Accepted: December 20, 2023

Published: December 31, 2023

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DOI: [10.29303/jppipa.v9i12.5572](https://doi.org/10.29303/jppipa.v9i12.5572)

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Abstract: The aging process has an impact on social, economic and health aspects of life. The presence of elderly people with all health problems causes a decrease in quality of life. One effort to overcome physical health problems, especially sensory organs, is by providing sensory stimulation activities to the elderly. Sensory stimulation activities by stimulating gustatory/oral motor, visual, olfactory, tactile, auditory, vestibular and proprioceptive. This study aims to determine the effect of providing sensory stimulation activities on the quality of life of the elderly. The research method was a pre-experimental one group pretest-posttest design with a sample size of 44 elderly people in the elderly community in RW 8 area of Kemiri Village, Kebakkramat, Karanganyar. Intervention by providing 10 sensory stimulation activities. Quality of life is measured by the World Health Organization Quality of Life (WHOQOL-BREF) before and after 8 session. The data analysis method uses Paired Sample T Test. The results showed Paired sample t-test Asymp Sig. (2-tailed) = 0.000, which means that the p-value < α (0.05), which means that the Sensory Stimulation activity intervention has an effect on the quality of life of the elderly in the elderly community in RW 8 area of Kemiri Village, Kebakkramat, Karanganyar.

Keywords: Community; elderly; quality of life; sensory stimulation activities

Introduction

Elderly is the last period in a person's life span. Humans will naturally experience the process of aging or becoming old. This process causes changes in health status. The declining health status of the elderly with increasing age will affect the quality of life of the elderly (Fauziyah et al., 2020). A preliminary study conducted by researchers in Kebakkramat District, especially in the RW 8 area of Kemiri Village, Kebakkramat District, Karanganyar Regency, Central Java in December 2022, showed that the elderly posyandu had been active again since November 2022. The number of elderly members at the posyandu was 103 elderly. The level of citizen participation in elderly posyandu is 60% as seen from the posyandu main book. The decline in the quality of life for the elderly in RW 8 during the Covid pandemic for 2 years was due to restrictions on activities that must be carried out by the elderly.

These restrictions have an impact on various aspects of quality of life. In the aspect of social relations, there is a decrease in the level of participation of elderly people in their environment due to restrictions on activities outside the home, which affects the level of participation of elderly people (Damayanti & Ibrahim, 2021). The physical aspects of the elderly experience a decline in their physical condition, such as a decrease in their senses and endurance (Shalahuddin et al, 2021). The psychological aspect of the elderly decreased because the elderly felt stressed at home due to restrictions on activities outside the home and also decreased financial income during Covid.

Elderly is the closing period in a person's life span. Humans will naturally experience the process of aging or becoming old. Aging (getting old) is the process of slowly losing the ability of tissues to repair themselves. Humans who become old will experience physical, mental and social decline (Kusumawardani & Andanawarih, 2018). The aging process has an impact on

How to Cite:

Puspitosari, A., & Nurhidayah, N. (2023). Sensory Stimulation Activities Improving Quality of Life of Elderly People in Elderly Communities. *Jurnal Penelitian Pendidikan IPA*, 9(12), 11038–11044. <https://doi.org/10.29303/jppipa.v9i12.5572>

several aspects of life, namely social, economic and health (Nugraha, 2020). In the elderly there are various changes in physical, psychological and cognitive aspects. The elderly experience greater physical decline than during previous age periods. Physical problems that generally occur in the elderly are problems with the musculoletal, neuromuscular, cardiopulmonary-respiratory, integument and sensory systems of the elderly (Fatmawati & Imron 2017).

Elderly people experience many physiological changes in the body, one of which is experiencing changes in the five senses such as refractive disorders and cataracts in the eyes (Rahayu & Ardian, 2019), reduced taste for enjoying food (Yoga, 2015), changes in mucus secretion which causes a decrease in the sensation of smell (Wuryasti, 2020), presbycusis (Istiqomah & Imanto, 2019), decreased muscle mass and strength (Pinontoan, et al. 2015), balance disorders and vertigo (dizziness), changes in sensation sensitivity (Muyassaroh, 2021). These changes cause a decrease in work ability and have an impact on the health status of the elderly. The declining health status of the elderly with increasing age will affect the quality of life of the elderly (Kiik, et al. 2018).

The World Health Organization (WHO) states that the quality of life domains for the elderly consist of four, namely physical health, psychological health, social relationships and environmental aspects (Wong et al, 2018). Jacob & Sadjaya (2018) state that quality of life is an individual's perception of their position in life, in the cultural context, the value system in which they live and their relationship to life goals, expectations, standards and other related things. Problems that include quality of life are very broad and complex, including physical health problems, psychological status, level of freedom, social relationships and the environment in which they live.

One effort to maintain physical health, especially the sensory system, is by providing sensory stimulation to the five senses which aims to stimulate all the five senses to provide an adequate response to the sensory process. Stimulus is given to all the elderly's senses which include hearing (auditory), sight (visual), touch (tactile), smell (olfactory), balance (vestibular), muscle strength (proprioceptive), smell (gustatory) (Masithoh, et al. 2020; Fibrianto, et al. 2020). Maintaining the elderly's sensory abilities will have a good effect on the physical and psychological abilities of the elderly. The elderly will be happier (Fauziyah et al., 2020), independent, productive and able to enjoy their lives again, which will have an impact on the quality of life of the elderly (Nurhidayah et al. 2019).

Method

This research is a quantitative pre-experimental study using a one-group pretest-posttest design. The population in this research was all elderly in the elderly community RW 8, Kemiri Village, Kebakkramat, Karanganyar. The research subjects were 44 elderly obtained through purposive sampling technique with inclusion criteria: being able to understand simple commands, don't use walking aid, no motor, visual & auditory impairment and able to move. The flow of research can be seen in Figure 1.

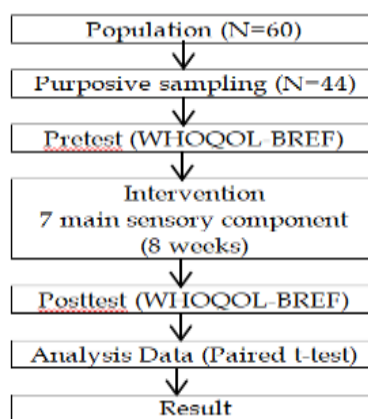


Figure 1. The flow of research

Current research tool was WHOQOL-BREF that is valid and reliable. We interviewed with elderly and completed clinical interview checklist based on WHOQOL-BREF. Moreover, WHOQOL-BREF was completed by elderly as pre and post test, too. Data collection is carried out by means of direct intervention and evaluation during March to September 2023.

The intervention was carried out by giving sensory stimulation activities with 7 main sensory component, namely tactile, vestibular, auditory, gustatory, olfactory, proprioceptive and visual. This sensory stimulation activities is done 8 times of group therapy (1 sessions peer week, each for 45-60 minutes for 8 weeks). The quality of life of subject were assessed before and after the intervention using WHOQOL-BREF which consisted of 26 items (9 items measuring physical health, 6 items measuring psychological, 3 items measuring social relationship, 8 items measuring environment).

Data analysis was performed in SPSS software using the Paired t-test. The results of the normality test of the data obtained are normally distributed, the statistical analysis used is the paired t-test. Ethical clearance was obtained from Health Research Ethics Committee Dr. Moewardi General Hospital number 700 / V / HREC / 2023.

Result and Discussion

The intervention was carried out at elderly community RW 8 Kemiri Village Kebakkramat, Karanganyar during March to September 2023. The sample of the study was 44 elderly with a percentage of 100% women, 70.4 % youngest old, 71.4 % basic education level.

Table 1. Min-Max WHOQOL-BREF *pretest-posttest*

	N	Min-Max	Median
<i>Pre Test</i>	44	53-80	67.50
<i>Post Test</i>	44	72-91	83.00

From the results of the table 1, the results of the quality of life before and after the intervention using the Pre Test and Post Test WHOQOL BREF measurements show an increase in the median value, namely 67.50 to 83.00 or an increase in the difference of 15.5.

Table 2. WHOWOL-BREF *pretest posttest*

	N	Value ρ
<i>Pre-test WHOQOL BREF</i>	44	0.141
<i>Post-test WHOQOL BREF</i>	44	0.165

Based on the table 2, it can be seen that the pretest data distribution has a significance value of 0.141, which means the data distribution is normal, and vice versa for the data distribution from the posttest results, the significance value is 0.165, which means the data distribution is normal.

Tabel 3. Hypothesis result

	Mean (Std.dev)	Δ (Std.dev)	Interval conf 95%	Sig
<i>Pre- test</i>	67.15 (8.06)	15.89	12.69 - 19.09	0,000
<i>Pre- test</i>	83.04 (4.00)	(8.09)		

Based on table 3, it can be seen that after the intervention, the results of the pretest and posttest p value = 0.000 ($p < 0.05$). This shows that there is an effect of quality of life of elderly in elderly community. Mahboubinia et al. (2012) stated that providing sensory stimulation interventions had a positive influence on the quality of life of the elderly. Sensory stimulation can affect the quality of life in long-term care for elderly people with Alzheimer's (Backman, et al. 2021). Providing sensory stimulation activities can improve quality of life (Wang & Lou, 2019).

Taher (2015) stated that an eight-week intervention with multi-sensory stimulation had a significant effect

on cognitive function and quality of life in the elderly. In this study, there were 10 activities used to stimulate the sensors in the form of gymnastics (Wahyuni & Arifiati 2021), listening to music (Wattanasoei, et al. 2017), gardening (Soga, et al. 2017), leisure making fruit salad (Nurhidayah, 2018), paired balloon dancing (Hernandes, et al. 2018), games such as throwing a ball into a basket, moving marbles by walking on a line (Gray, 2020), brain games playing guessing pictures (McLaughlin, et al. 2018), smell sensation such as guessing the aroma, taste, texture (Zambom-Ferraresi, et al. 2021), brain gym such as guessing pictures (Andi, et al. 2019).

The exercise movements carried out have the benefit of stimulating sensory proprioception/muscle work when moving, visual when seeing exercise instructions, and auditory to hear the rhythm of the music that accompanies the exercise. Gymnastics has an influence on the quality of life in the physical domain, namely stimulating muscle work when moving will help the body stay fit and fresh because it trains the bones to stay strong, elderly people whose bodies are relatively fit have a good quality of life (Ermawati, 2020).

Wattanasoei et al. (2017) stated that music can make elderly people happier, and the activity of listening to music is effective in improving the quality of life of elderly people. Listening to music can improve elderly well-being, mental health, weight loss and can increase elderly happiness (McCrary, et al. 2021). Listening to music has an influence on the quality of life in the psychological domain, Komariyah (2016) states that music is the language of the soul, music is able to carry feelings in any direction. This activity stimulates the nervous system which will produce a feeling. If listening to music can make the elderly more relaxed and relaxed, this can reduce feelings of depression or stress in the elderly which has an impact on psychological aspects which will improve the quality of life. elderly (Wang & Puel, 2020).

Gardening can improve physical, psychological and social health, alleviate and prevent various health problems faced so that it can improve the quality of life (Soga, et al. 2017). The gardening intervention provided is planting chilies, kale, tomatoes in polybag containers. The therapist prepared tools and materials for planting chilies, kale, tomatoes and then distributed them to the samples. Samples were instructed to put the planting medium into a polybag after being inserted and then watered with water. Planting activities have the benefit of stimulating proprioception/muscle work, namely when picking up and putting soil into the container and then being tactile when picking up the soil with the aim of knowing the texture of the soil when held. Purnama

(2017) stated that elderly people who have productive activities make their lives more useful because they can fill their free time and feel happier, which has an impact on psychological and physical aspects which can improve the quality of life of elderly people.

The leisure activity in this research is making fruit salad. The therapist forms a small group of elderly people who will make rujak. The therapist prepares the ingredients to be used and then distributes them to the elderly while dividing up the work, such as kneading chili sauce, peeling fruit, cutting fruit, mixing the fruit. Making fruit salad has the benefit of stimulating the tactile when holding the texture of the fruit, gustatory when tasting the results of the fruit salad that has been made, proprioceptive when the elderly mix the chili sauce while listening to music.

Hernandes et al. (2018) said that dancing/dancing can provide a great sense of pleasure and lead individuals to find their sense of harmony, their desire to move is fulfilled and can improve health not only physically, but also mentally, emotionally and socially so as to improve the quality of life. In this study, the dance activity was a balloon dancing activity in pairs. Implementing the balloon dancing intervention in pairs, the therapist chooses a partner for the elderly to dance, whether the elderly like it or not must accept who will be their dancing partner while listening to music. Paired balloon dancing has the benefit of stimulating the vestibular when dancing while maintaining the position of the balloon so that it doesn't fall and not being squeezed too much by the body so that the balloon doesn't explode, stimulates the auditory when the elderly listen to songs while dancing, stimulates proprioceptive/muscle work when the elderly dance by maintaining the position of the balloon so that it doesn't explode.

Gray (2020), states that games can reduce mild cognitive disorders, increase social activities, interactions between the elderly, physical health and can reduce symptoms of depression so that they have an impact on mental well-being and emotional experiences. This activity has a happy effect on the elderly which can affect the quality of life. This game consists of the activity of throwing a ball in a basket, walking on a line while moving marbles. The intervention provided is throwing a ball in a basket, the therapist forms a small group of elderly people, the therapist conveys the rules for playing, walking on a line, moving marbles. This activity has the benefit of stimulating proprioception/muscle work, namely when the elderly person throws the ball into the basket, which requires adjusting the energy so that the ball is thrown on target, then stimulates the tactile, namely by knowing the texture and size of the ball being thrown.

McLaughlin et al. (2018) stated that playing brain games can reduce anxiety and improve mood so that it can have an effect on improving the quality of life. One of the brain games is the activity of guessing pictures which can stimulate the visual, cognitive and logical aspects of the elderly. The intervention provided is a game of guessing animal pictures, stacked pictures, color blind pictures. The therapist instructs the elderly to guess the name of the picture shown, the elderly are instructed to guess the picture on the paper. Playing guess the picture has the benefit of stimulating the visuals, namely when seeing and guessing the picture.

Smell sensation is an intervention aimed at treating loss of smell. Zambom-Ferraresi, et al. (2021) stated that smell sensation intervention can reduce symptoms of depression, increase odor detection, subjective well-being such as happiness, life satisfaction, improve mood, which can have an impact on improving quality of life. In this study, the smell sensation activity was guessing the aroma, taste and texture. The therapist instructed the sample to close their eyes using a mask, after that the elderly were instructed to smell the container provided. After that, the elderly tasted the textured food that had been provided, then instructed to guess. The elderly remove the blindfold and confirm what is inhaled and eaten. The activity of guessing the aroma, taste and texture stimulates the olfactory, namely when guessing the aroma of the food and then the gustatory when tasting the taste and texture of the food.

Andi et al. (2019) stated that brain gym games can improve cognitive function, which is good for improving quality of life. Voice instruction game activities can train cognitive abilities with a series of movements that stimulate the brain (Lasmini & Sunarno, 2022). The intervention provided is a sound instruction game where the therapist instructs that if you clap your hands once, the sample will look to the right, if you clap your hands twice, the sample will look to the left, if you clap your hands twice, the sample will raise your head upwards, and if you clap your hands twice, the sample will lower your head. This voice instruction activity stimulates the auditory, namely when listening to the instructions delivered by the therapist. Backman, et al. (2021) said that providing sensory intervention in the form of auditory sensation, olfactory sensation, gustatory sensation, smell sensation, can improve the quality of life.

Conclusion

The results of the study show that there is an influence of providing sensory stimulation interventions on the quality of life of the elderly. The influence of this sensory stimulation can be caused by several activities

contained in the sensory stimulation intervention, namely in the form of exercise (proprioceptive, auditory, visual) which affects the physical domain, social relations and the environment, listening to music (auditory) which affects the psychological domain, gardening (proprioceptive, tactile) which influences the physical domain, making fruit salad (proprioceptive, tactile, gustatory) which influences the social relationship domain, paired balloon dancing (proprioceptive, auditory, vestibular) which influences the social, physical and psychological relationship domain, throwing a ball in a basket, walking on lines while moving marbles (vestibular, proprioceptive, tactile) which influences the psychological and physical domains, guess the image (visual) which influences the psychological domain, guess the aroma, taste and texture (gustatory, olfactory) which influences the psychological domain, sound instructions (auditory) which affects the psychological domain. The sensory stimulation activities provided can improve the quality of life of the elderly.

Acknowledgments

We would like to thank Muhammad Yusril Jalil, Nurlailita Azhar for their research assistance. We also would like to thanks Ismurini, SST cadre in elderly community RW 8 for support and encouragement. The author also thank to reviewers for their valuable comments to revise the paper.

Author Contributions

Conceptualization, Aniek Puspitosari and Ninik Nurhidayah.; methodology, Aniek Puspitosari.; software, Aniek Puspitosari.; validation, Aniek Puspitosari, and Ninik Nurhidayah.; formal analysis, Aniek Puspitosari.; investigation, Aniek Puspitosari.; resources, Aniek Puspitosari.; data curation, Aniek Puspitosari.; writing—original draft preparation, Aniek Puspitosari.; writing—review and editing, Aniek Puspitosari.; visualization, Aniek Puspitosari.; supervision, Aniek Puspitosari.; project administration, Aniek Puspitosari.; funding acquisition, Ninik Nurhidayah. All authors have read and agreed to the published version of the manuscript.

Funding

This research was funded by Kementerian Kesehatan.

Conflicts of Interest

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

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