

Relationship of Gardening Activities to Elderly Stress Level in Kuranji District of Padang City

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Abstract

Aging and physical decline in the elderly due to the degenerative process causes stress for the elderly. Humans evolved from helplessness to become perfect man and independently, and eventually do not know what to do facing advanced age. Almost all the events can be stressful. Gardening is one of the alternatives that can reduce the stress of the elderly. This research aims to find out the effect of gardening on elderly stress. This study used purposive sampling techniques to disseminate questionnaires to as many as 237 elderlies in Kuranji Sub-district of Padang City. The measuring instrument used to measure stress is PSS 10 and compares the frequency and duration of elderly gardening. The results show that gardening with time minimum duration of 30 minutes can reduce stress and emotions, because gardening can stimulate brain chemicals that can make you happier and more relaxed. Gardening activities will make our bodies move while breathing fresh air and getting to know the environment, which will make our minds fresher. This study was tested by the Kruskal Wallis statistical test with a value of $p=0.034$, with moderate stress levels and strength associated with the Spearman Rho test, with a correlation value of -0.236 . This study concludes that gardening effectively changes the stress levels of the elderly, so it is expected that the elderly do gardening as one of the non-pharmacology alternatives conducted independently without causing side effects.

Keywords: gardening, elderly, stress level

INTRODUCTION

The elderly is an age group over 60 years of age (WHO, 2015). Improving good health services will enhance the welfare and quality of life of the elderly so that there is also an increase in the number of older people in Indonesia. According to the Central Bureau of Statistics, in 2015, the number of seniors was 22 million, or about 8.5%. In 2019 it increased to 27.5 million or about 10.3%. It estimated that by 2045 it would grow to 576.0 million or 17.9% (Badan Pusat Statistik, 2018).

This increase in the number of elderlies in Indonesia will concern the elderly related to getting old, resulting in physical changes, cognitively sensitive feelings, and decreased physical strength. The problems that become the basis in the elderly are the physical limitations that are increasingly apparent so that physical strength would reduce; then, life feels dependent on others. Feelings consider themselves useless; activities will decrease, often feel pain due to health problems that cause the elderly to become less excited in their lives and feel worthless or underappreciated.

Thus, the elderly feels unproductive anymore, so it arises in their minds the rest of their lives just waiting for death. Many older people are not prepared to face and deal with old age,

so the elderly cannot adjust to the environment. Lack of adaptability to this environment resulted in elderly stress and depression, so quickly angry because of compassionate feelings.

Stress is a feeling of distress experienced by a person that can harm aspects of person physiology, emotions, and behavior. The elderly is prone to stress disorders caused by physical decline, decreased activity ability, difficulty adapting to the environment, and mental disorders.

A person entering the age of the elderly should be adapt or adjust to the changes from the previous stage. If the person reaches the elderly stage, he is accustomed to doing daily activities regularly. He can adapt to people and the surrounding environment, such as developing hobbies that are gardening activities.

Gardening is one solution that can channel a fun and easy hobbies, so it will not be a burden to do such activities. Gardening provides satisfaction in the moment of harvest; therefore, gardening activities can serve as a suitable alternative recreation with healthy lifestyle activities. Doing something based on a hobby would be easier because it is not a burden or demand for the elderly. The sense of owning a garden and reaping the harvest can bring out self-expression to channel emotions that can give rise to a sense of comfort.

The sense of owning a garden and reaping the harvest can bring out self-expression to channel emotions that can give rise to a sense of comfort. A comfortable, happy, and calm feeling can activate the axis (HPA). In general, psychological stressor will stimulate release of stress hormones such as glucocorticoids and catecholamines (epinephrine and norepinephrine) and then will influence immune response through many pathways. The first line, through hypothalamus-pituitary adrenal axis (HPA axis) and release corticotropin-releasing hormone (CRH) by hypothalamus will stimulate production and release adrenocorticotropin hormone (ACTH) by anterior pituitary gland, finally this hormone will stimulate adrenal cortex to release glucocorticoid. Glucocorticoid is an important hormone as immunosuppressive effect. The second line, through sympathico-adrenal-medulla axis (SAM axis) will stimulate release of catecholamine from medulla adrenal and post synaptic sympathetic nerves. Catecholamine will affect suppress of Th1 response and shift toward Th2 response, with result dominate role of humoral immunity. The third line, through CRH-mast cell axis, CRH from hypothalamus will binding to mast cell via CRHR1 receptors on mast cell surface, lead to degranulation of mast cell and releasing histamine and other inflammation mediators. The other pathway through, neuropeptide which consist of substance P and neuropeptide Y, have direct effect on immune cell.

Previous research conducted by showed a modality of gardening therapy for the quality of life of the elderly. The results of this study only describe the quality of life of the elderly with hypertension. However, there is nothing about stress levels in the elderly. So it is necessary to do further research regarding the effect of gardening on stress levels of the elderly in Kuranji District, Padang City.

Based on the introduction above, we examined the effect of physical activity on gardening the elderly who like gardening activities and stress levels among the elderly in Kuranji District, Padang City.

METHOD

This research uses a nonprobability sampling method with a purposive sampling technique. A purposive sampling technique is used because not all samples meet the criteria according to the phenomenon studied. The selection of samples is taken based on the village quota in Kuranji Sub-district of Padang City. In determining the number of samples to choose from, the authors used an error rate of 5% because it was impossible to get 100% perfect results; the greater the error rate, the fewer sample sizes. The number of elderly people aged 60-70 years in Kuranji District is 7880 elderly (Pemko Padang, 2019)

The questionnaire method is an efficient way to collect data from many respondents or subjects and give respondents more freedom to answer the researcher's statements. The study used the PSS 10 questionnaire.

Sheldon Cohen first introduced the Perceived Stress Scale (PSS 10) in 1983, a psychological instrument widely used to measure stress, determining the level of stress in a person's life. This scale includes some direct questions about stress levels. PSS 10 is designed to measure stress consisting of 10 items compiled based on the experiences and perceptions of individuals about what they feel in their lives, namely feeling of unpredictability, feeling of uncontrollability, and feeling of overloaded.

The study's researchers prefer the method of collecting questionnaires. The questionnaire method is an efficient way to collect data from a large number of respondents or subjects simultaneously, in addition to respondents more freedom to answer the researcher's statements. The study used the PSS 10 questionnaire. PSS 10 will ask how often the respondent's feelings and thoughts are indicated by rounding off the answers to the questions.

1. Never given a score of 1 (1).
2. Rarely given a score of 2 (1-2 times)
3. Sometimes given a score of 3 (3-4 times).
4. Quite often, given a score of 4 (5-6 times)
5. Very often given a score of 5 (more than six times).

All Assessments are accumulated, then adjusted for stress levels as follows:

1. Mild Stress (total score 1-14)
2. Moderate Stress (score 15-26)
3. Severe Stress (total score > 26).

The measurement of gardening activity is based on the measurement of physical activity which includes the frequency and duration of activity. Gardening frequency is the amount of gardening in one week, while gardening duration is length of gardening in one day. To determine whether there is a statistically significant difference between two or more groups of independent variables on a numerical data scale using non parametric statistical methods the Kruskal Wallis method is used.

In this study, the population is the elderly living in Kuranji District with an age of 60-70 years with a total of 6,408 elderly people (BPS, 2019). In this study using a sampling technique, namely non probability sampling with purposive sampling technique. Purposive sampling is a sampling technique from data sources with certain consideration (Sugiono, 2016).

The reason for using the purposive sampling technique is that not all samples meet the criteria are in accordance with the problem being studied, so the sample selection is taken based on the village quota in Kuranji District, Padang City.

The data used in this study is quantitative data, namely data expressed in the number that indicate the value of the quantity or variable represented. In this study, researchers used several data collection methods to obtain relevant data and information related to the problem to be studied. The data collection method used in this research is questionnaire collection.

RESULTS AND DISCUSSION

The study results were presented and analyzed in the form of tables and analyzed using univariate and bivariate methods. The results of the study characteristics of respondents based on gender have a relationship with elderly stress levels. Respondents' characteristics are shown in Table 1. This research is related to the science of ergonomics; namely, humans have weaknesses and strengths. Therefore, it is necessary to research the elderly towards light

physical activity; namely, gardening activities can make mental satisfaction and reduce stress on the elderly, so most elderly can do physical activities such as exercising and gardening.

Table 1
Characteristics of Respondents Based on Gender to Elderly Stress Levels in Kuranji District of Padang City.

Characteristics	n	%	p
Gender			
Male	112	47	
Women	125	53	
Stress Levels			
High	0	0	
Medium	226	89.7	0.012
Low	11	10.3	

Table 2
Elderly Gardening Data

Characteristics	n
Elderly like Gardening	237
Elderly don't like Gardening	239

Table 3
Analysis of The Influence of Gardening Activities on Elderly Stress Levels in Kuranji District of Padang City

Gardening Activities - Stress	
Chi-Square	6.785
Df	2
Asymp. Sig.	.034

- a. Kruskal Wallis Test
- b. Grouping Variable: Frequentation - Duration

Table 3 of the statistical calculation of the bivariate analysis between gardening activities is a dependent variable with the stress level of the elderly which is an independent variable, the measurement scale used is the interval scale. From the Kruskal Wallis statistical test, it shows that the p-value value of the stress level is 0.03 or less then 0.05, which means there is a difference in gardening activity to the stress levels of the elderly. Then there is a significant correlation between gardening activities to the stress levels of the elderly in Kuranji Sub-district of Padang City.

Based on Table 3, show the strength of the relationship between gardening activity and elderly stress levels; the authors used spearman's rho test. The amount of research data on gardening activity against elderly stress levels was 237 older people. The sig (2-tailed) value was 0.000. It can conclude that there is a significant relationship between gardening activities and elderly stress levels. Furthermore, the correlation coefficient value is -0.236, so this value. The negative sign indicates that opposite direction, which means that the higher the gardening activity of the elderly, the lower the stress level.

Table 4
Results of The Strength Test on The Effect of Gardening Activity
on Elderly Stress Levels

Spearman's rho	Gardening	Correlation Coefficient	1.000	-.236**
		Sig. (2-tailed)	.	.000
		N	237	237
	Stress	Correlation Coefficient	-.236**	1.000
		Sig. (2-tailed)	.000	.
		N	237	237

Based on the calculation of hypothesis testing using the Spearman Rank Test, we found a significant association between gardening activity and decreased stress levels in the elderly. A correlation score of -0,236 shows the magnitude of the relationship between gardening activities and reducing stress levels. Based on Table 3, the value is -0.236 belong to the weak category, so the large correlation is shown weak.

This research was conducted to determine the effect of gardening on stress levels in Kuranji Sub-district of Padang City. Stress is an external event and an environmental situation that burdens the ability to adjust, including emotional and psychological. In this study, respondents experienced changes in senior stress levels with a value of $p = 0.000$ and a negative correlation of weak relationship strength. It means that gardening effectively lowers the stress levels of the elderly. Seeing the beauty and making direct contact with plants can create comfort and calm and trigger positive emotions. Some people owning a garden can improve our emotional well-being and make life happier (Verdiana, 2018). The comfortable and peaceful feeling can distract focus from stress. Gardening provides a sense of satisfaction when the garden results are successful and can be enjoyed so as to provides sense of comfort, calm and happiness.

CONCLUSION

In the Spearman Rho statistical test, the activity shows a significant value of 0.001 and correlation coefficient value is -0.236, then the negative correlation value indicates an inverse relationship between gardening activities and the stress level of the elderly, so with gardening activities, the elderly stress level will be reduced. This research shows physical activity in gardening can have a good impact on reducing stress levels.

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