

INFLUENCE OF GARDENING ACTIVITIES TOWARDS DECREASING HYPERTENSION OF ELDERLY PRESSURE

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Abstract

Facing this surge of elderly people, Badan Koordinasi Keluarga Berencana Nasional (BKKBN) or National Population and Family Planning Board in collaboration with various sectors are developing Strong Elderly Programs. Strong Elderly are elderly who can still work, do positive activities, do not feel excluded from society, and whose health is maintained. One of the elderly activities can be done in urban areas is to fill leisure time with gardening, by utilizing the potential of available land, both in the form of residential land, yards, roofs, public roads and river banks. Gardening activities carried out on the elderly proved to have a tremendous positive impact, improving health and mental well-being. This research method is a literature review, using ten articles that are relevant to the research topic. To be included in the report needed to measure the effect of gardening on reducing blood pressure in elderly hypertension and conducting an analysis of the relationship of gardening activities with a decrease in blood pressure in elderly hypertension. The results of the literature study show that gardening activities decrease blood pressure for elderly people with hypertension. Several studies have shown a positive relationship between gardening activities and a reduction in blood pressure in elderly people with hypertension.

Keywords: gardening, elderly, hypertension.

1. INTRODUCTION

Indonesia's population aged 60 years and over or elderly is estimated to increase from 18 million in 2010 to 80 million in 2030, or increase by 23% -24%. This will tend to increase the prevalence of disease incidence [1]. The increasing number of elderly people in Indonesia gives a special attention to the elderly who are experiencing an aging process. Problems that need special attention to the elderly related to the process of getting old, which results in the emergence of physical, cognitive, emotional, social and sexual changes [2]. Non-contagious diseases in the elderly include hypertension, stroke, diabetes mellitus, and arthritis or rheumatism. Hypertension is a "silent killer" that causes an iceberg phenomenon. The prevalence of hypertension increases with age. This pathological condition if it does not get treatment quickly and early it will aggravate the risk [3].

Physical activity is related to quality of life in elderly hypertension [4]. How to control blood pressure other than antihypertensive drugs is also balanced by changing healthier lifestyles, doing physical activities, and stress management by doing fun things like doing hobbies or desired activities. Elderly who have high physical activity, then have a high quality of life [5].

Gardening is a method that can be used as an alternative recreation that matches healthy living activities. Doing something based on a hobby will be easier to do because it is not used as a burden, or demands that actually burden the elderly. One hobby that can be used as an alternative therapy is gardening. Gardening activities provide emotional satisfaction during harvests, a sense of belonging, encourages communication because it is done together which is a form of self-expression that can allow the distribution of emotions to create a sense of comfort. Feeling comfortable, calm, and happy will activate the Hypothalamus-Pituitary-Adrenal (HPA) axis. The HPA axis will stimulate the hypothalamus to reduce secretion of Corticotropin Releasing Hormone (CRH) which causes Adrenocorticotropic Hormone (ACTH) to decrease and stimulates Pro-opiomelanocortin (POMC) which also decreases the production of ACTH and cortisol to stimulate endorphin production. Endorphin causes vascular dilatation. Decreased cortisol and ACTH and increased endorphins make blood vessels relax so that it will reduce peripheral pressure and cardiac output and affect blood pressure [6]. The benefits of horticulture therapy can improve motor behavior, coping with success or failure, improve social ability in groups, commit and be responsible, build self-esteem, improve cognitive abilities, as self-expression and creativity, the opportunity to go out (outdoor), have activities and as a recreation. For the elderly, horticultural therapy provides an opportunity for the elderly to train and maintain motor skills, such as eye and hand coordination, exercise muscles and provide light exercise, and generate satisfaction when the plants they plant can grow [7].

2. METHOD

This research method is a literature review, using ten articles that are relevant to the research topic. To be included in the report needed to measure the effect of gardening on reducing blood pressure in elderly hypertension and conducting an analysis of the relationship of gardening activities with a decrease in blood pressure in elderly hypertension.

3. DISCUSSION

Based on several previous conducted studies, about physical activity (gardening) impact on the health of the elderly, it shows that gardening affects the health of elderly hypertension. Of the 10 articles used as a reference, only 3 are shown in this paper, and already represent an explanation of the effect of gardening activities on the blood pressure of elderly people with hypertension.

Table 1. Analysis of the Effect of Gardening Activities on Changes of Blood Pressure in Elderly Hypertension

Meeting		I	II	III	IV
Pre Test	TDS	145, mmHg	150 mmHg	138,5 mmHg	147,1 mmHg
	TDD	74,2 mmHg	74,2 mmHg	80 mmHg	82,8 mmHg
Post Test	TDS	130 mmHg	125,7 mmHg	127,1 mmHg	138,5 mmHg
	TDD	68,5 mmHg	72,8 mmHg	70 mmHg	75,7 mmHg

Source⁸

From Table 1 have known 15 elderlies, consist of 10 women (66, 7%) and 5 men (33.3%) the average systolic blood pressure (TDS) of the elderly who do gardening activities at the 1st to 4th meetings, before and after experiencing a decline, as well as the elderly blood pressure (TDD). The average TDS and TDD results at the 4th meeting were 138.5 mmHg (TDS) and 75.7 mmHg (TDD). The paired t TDS and TDD tests before and after gardening therapy were $p = 0.005$ and 0.231 ($p \leq 0.5$), effective for changes in TDS and TDD in elderly hypertension [8].

Table 2. The Change of TDS and TDD in Elderly Before and After Gardening Therapy.

No. Respondent	TDS			TDD		
	Pretest	Posttest	Delta	Pre Test	Posttest	Delta
	(mmHg)	(mmHg)	(mmHg)	(mmHg)	(mmHg)	(mmHg)
1	160	160	0	90	90	0
2	180	150	-30	90	80	-10
3	140	140	0	80	80	0
4	150	150	0	70	70	0
5	160	160	0	90	90	0
6	170	140	-30	80	70	-10
7	160	140	-20	80	70	-10
8	180	170	-10	80	80	0
9	160	140	-20	90	80	-10
10	150	140	-10	80	80	0
Average	161	149	-12	83	79	-4

Source⁶

Based on the research⁹ which was conducted on six women and four men elderlies with hypertension the systolic blood pressure (TDS) of the elderly at the time before doing gardening therapy (therapeutically gardening) is in the range of 140-180 mmHg, and TDS

after doing gardening therapy at the 8th meeting (for 4 weeks), in the range 140-170 mmHg. 60% of respondents experienced a decrease in TDS after doing gardening therapy. Diastolic blood pressure (TDD) after gardening therapy is in the range of 70-90 mmHg. 40% of respondents experienced a decrease in diastolic blood pressure. The TDS and TDD values of the pre-test and post-test, were analyzed using paired t test, obtained p value = 0.013 (TDS) an p = 0.037 (TDD), because $p \leq 0.5$, showed effective gardening therapy for changes in TDS and TDD in elderly hypertension.

Table 3. Relationship Test of Physical Activity and TDS and TDD in Elderly Hypertension

	Correlation test	P	Remarks
Physical Activity Significant	Systolic Blood Pressure (TDS)		0,014
	Diastolic Blood Pressure (TDD)		0,016

Significant

Source¹⁰

The study was conducted on 46 elderly hypertension, using the Pearson Product Moment test, obtained p = 0.014 (TDS) and p=0.016 (TDD), p, 0.05, meaning there was a relationship between physical activity and systolic blood pressure (TDS) and diastolic blood pressure (TDD).

Based on Table 3 have known that physical activity such as gardening has an effect on decreasing blood pressure in elderly hypertension. This is in accordance with⁶ opinion, and that Gardening activities provide emotional satisfaction during harvests, a sense of belonging, encourages communication because it is done together which is a form of self-expression that can allow the distribution of emotions to create a sense of comfort^{6&3}. Feeling comfortable, calm, and happy will activate the HPA axis. The HPA axis will stimulate the hypothalamus so that it decreases the secretion of CRH which causes ACTH to decrease and stimulates POMC which also decreases the production of ACTH and cortisol to stimulate endorphin production. Endorphin causes vascular dilatation. Decreased cortisol and ACTH and increased endorphins make blood vessels relax so that it will reduce peripheral pressure and cardiac output and affect blood pressure. Seeing beauty and making direct contact with plants can trigger calm and peace, trigger positive emotions, and shift the focus from stress⁵.

Lack of physical activity increases the risk of being overweight. Inactive people also tend to have a higher heart rate so that the heart muscle must work harder on each contraction. The bigger and often the heart muscle has to pump, the more pressure is placed on the arteries. This theory shows that physical activity influences changes in blood pressure¹¹.

4. CONCLUSION

From several studies conducted on gardening activities for elderly hypertension can be concluded as follows:

- a. Gardening activity affects the reduction in blood pressure in elderly hypertension.
- b. There is a positive relationship between gardening activity with blood pressure in elderly hypertension.

5. REFERENCES

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