

Original Research

**Electro-Scalp Acupuncture Reduce Elder Dementia Rate In Aisiyah Nursing Home Of Surakarta**

Jatmiko Rinto Wahyudi<sup>1\*</sup>, Risna Widowati<sup>2</sup>

<sup>1</sup>Department of Acupuncture Poltekkes Kemenkes Surakarta, Indonesia

**ABSTRACT**

**Background:** *Alzheimer's Diseases International predicts that the number of elderly people with dependency will increase from 101 million to 277 million in 2050, including Indonesia which is estimated to have one million people. The aim this research is to determine the effect of stimulation on Skin, Connective tissue, Aponeurosis, Loose areolar, Pericranium (SCALP) acupuncture with electro stimulation on reduce elder dementia rate in Aisiyah Nursing Home of Surakarta.*

**Methods:** *The study was conducted at Aisiyah Nursing Home of Surakarta for 2 months. Dementia rate measured with Mental Mini State Examination (MMSE) and analyze with a cross-sectional approach and with a one-group pretest-posttest research design. There are 15 elderly people as research subjects, using purposive sampling techniques. Needle insertion in this research performed at the Brain point Yamamoto New SCALP Acupuncture (YNSA).*

**Results:** *The average age of the elderly in Aisiyah Nursing Home of Surakarta is 72.4 years and has a risk of cognitive decline or dementia. The average of dementia rate measured with Mental Mini State Examination (MMSE) scores before treatment was 21 (dementia) and the average of MMSE score after treatment was 26.3 (normal category). Paired T-test was obtained  $p < 0.05$  which means there is an influence of SCALP Acupuncture with electro stimulation on reduce elder dementia rate.*

**Conclusion:** *There is an effect of the procedure of SCALP acupuncture with electrostimulation therapy to reduce elder dementia rate which is marked by an increase in the value of MMSE score after therapy.*

**ARTICLE HISTORY**

Received : April 26<sup>th</sup>, 2021

Accepted : May 25<sup>th</sup>, 2021

**KEYWORDS**

brain point; dementia; electro stimulation; MMSE; scalp acupuncture

**CONTACT**

Jatmiko Rinto Wahyudi



[jr\\_wahyudi@yahoo.com](mailto:jr_wahyudi@yahoo.com)

Department of Acupuncture  
Poltekkes Kemenkes Surakarta, Jln.  
Letjen Sutoyo, Mojosongo,  
Surakarta, Indonesia.

**Cite this as :** Wahyudi, R. J., & Widowati, R. (2021). Electro-Scalp Acupuncture Reduce Elder Dementia Rate In Aisiyah Nursing Home Of Surakarta. *Jurnal Keterapian Fisik*.  
<https://doi.org/10.37341/jkf.v0i0.262>

**INTRODUCTION**

Aging occurs naturally, followed with degraded physical, psychological, and social conditions. One of body systems encountering degraded function is cognitive or intellectual system, called dementia (Widita, 2010). World Alzheimer's report of 2013 predicted that the number of dependent elders will increase from 101 millions to 207 millions in 2050, including Indonesia where there are about a million dependent elders (Alzheimer's Diseases International, 2013)

The increased elder population increases health related problems and typical diseases in elders (Darmojo, 2010), (Jaul & Barron, 2017). Dementia needs personal treatment with extra time and supervision, all of which are related to higher nurse burden and cost (Brodaty & Donkin, 2009). To reduce nurse workload and to save the cost, an effective and efficient but simpler treatment is required, for example may using acupuncture.

The result of acupuncture study in Alzheimer case, including degraded cognitive level or dementia, indicates good outcome in which acupuncture is safe, well tolerated and effective in improving the cognitive function (Jia et al., 2017). In China, dementia therapy using acupuncture has been studied broadly in basic and clinical sciences. However, such study is found rarely in Japan. It has been reported that systemic studies conducted by a group of skilled acupuncturists emphasize on the efficiency and use of new acupuncture (Sanjiao) (Nakamura Masamichi, Hyodo Akira, Han Jingxing, 2017).

Meanwhile, in Indonesia the use of acupuncture for dementia case is still found very rarely and even there has been no service in healthcare facilities. A study should be conducted by finding out the effect of SCALP acupuncture with electro stimulation therapy on the reduce dementia rate in elders, so that the output can be reference in better treatment for elders and get recognition in the health services system in Indonesia.

## **MATERIALS AND METHOD**

This study was a quantitative research with cross sectional approach with *one-group pretest-posttest design*. The authors intervened using 25 mm (1 cun) acupuncture needle at the YNSA brain points on SCALP with electro stimulation once a week, with a duration therapy of 15-20 minutes for 2 months.

The research subject consisted of 15 active elders in Aisiyiah Surakarta Nursing Home, taken using purposive sampling technique. The sample by considering physical and aspect that can support the research objective. The inclusive criteria of research subject are: (1) the residents of Aisiyiah Surakarta Nursing Home Care, (2) available to the subject of research, (3) 60-90 year old elders, (4) having listening and seeing abilities, (5) including the ones with dementia according to *Mini Mental State Examination* (MMSE) with the score less than 24, (6) having no chronic disease, (7) not consuming prescribed drugs routinely, (8) cooperative, available to follow routine therapy schedule.

Research questionnaire was used during interview to obtain information on the research subject as the reference in taking sample. This research employed MMSE assessment instrument, a brief questionnaire test consisting of 40 question items for 10 minutes to find out the cognitive downward involving five assessment areas: orientation, retention, attention, recall, and language (Saryono, 2011). The result of pretest used as a reference in taking sample and preliminary data of research.

In this research, there are independent variable (SCALP acupuncture therapy using YNSA brain point) with electro stimulation and dependent variables (dementia rate measured using MMSE). The method of this research was conducted by cross-sectional approach and with a one-group pretest-posttest research design. The collected data were further analyzed in order to test the hypothesis using SPSS Version 20.00 with a 95% degree of confidence. This research is lised and under the ethical supervision of Researh Ethics Committee of Poltekkes Kemenkes Surakarta, with number Kp. 03.04/11.02/607/2018.

## RESULTS

**Table 1.** Characteristics subjects and MMSE Score

No.	Subject	Age	Last Education	MMSE Score		The increase of Score
				Before Therapy	After Therapy	
1	Mrs.G	85	Not in school	24	30	+6
2	Mrs. M	74	SD	10	18	+8
3	Mrs. A	74	SMP	29	30	+1
4	Mrs. P	63	SD	28	30	+2
5	Mrs. H	65	SMP	28	28	0
6	Mrs. S	74	SPK	24	29	+5
7	Mrs. K	88	Not in school	10	13	+3
8	Mrs. SR	78	SD	19	25	+6
9	Mrs. E	60	SMP	11	19	+8
10	Mrs. N	65	SD	19	25	+6
11	Mrs. SRA	77	S1	26	30	+4
12	Mrs. ST	65	Not in school	21	28	+7
13	Mrs. SU	64	Not in school	24	30	+6
14	Mrs. SW	72	S1	27	30	+3
15	Mrs. SRU	82	SMA	26	30	+4
Means		72.4		21.73	26.3	4.6

Notes: SD = Elementary School, SMP = Junior High School, SMA (Senior High School), SPK = (Nursing School), S1 = Bachelor Degree

Table 1. shows that out of 15 research subjects, the oldest one is 85 years old and the youngest is 60 years, while the average age is 72.4 years. These ages belong to elder category and have a risk of degraded cognition or dementia. The lowest education level is not in school (4 subjects), while the highest one is bachelor degree (S1) (1 subject). The mean MMSE score before intervention is 21.73(developing dementia). Meanwhile, mean MMSE score after SCALP acupuncture with electro stimulation therapy is 26.3 (normal category). The result indicates that the average increase of MMSE score in 15 research subjects is 4.6 with highest increase value of 8, while there is no increase one (1) subject.

To find out the reduce dementia rate has been intervened with SCALP acupuncture with electro stimulation, data analysis was conducted using *Paired Sample Test*.

The analyze data shows that p value < 0.05 meaning there is an effect of SCALP acupuncture with electro stimulation on the reduce of dementia rate on elderly.

## DISCUSSION

From data of research subject obtained in Aisiyiah Nursing Home of Surakarta, it can be seen the interval of age is 60-80 years (belonging to elder age category). It is in accordance with Republic of Indonesia's Law, Elderly is someone who has reached the age of 60 (sixty) years and over (Undang-undang, 1998) and WHO's stipulation that the lower margin of age for elder is 60 year. (CDC, 2019) stated that the strongest known risk factor for dementia is increasing age, with most cases affecting those of 65 years and older.

A significant correlation of age and education to decreased cognition and dementia is not found. From the result of test using MMSE, it can be seen that the mean MMSE score is 21.73 before SCALP acupuncture with electro stimulation therapy. Considering the literature, the one with MMSE score of 17-23 likely develop dementia.

The mean MMSE score of 21.73 obtained from 15 (fifteen) research subjects increased to 26.3 after an intervention with SCALP acupuncture with electro stimulation therapy was conducted for 6 (six) times. MMSE score of 26.3 belongs to normal cognitive level.

The rise of MMSE score indicates that there is an effect of SCALP acupuncture with electro stimulation therapy. In line with YNSA theory, SCALP acupuncture on brain area has an indication for dementia case (Yamamoto, 2003). Meanwhile, the stimulation with lower frequency of electro stimulation (2Hz) apriori is used to stimulate electrically the brain area that can improve electric signals of brain. (Adair et al., 2020), (Reato et al., 2010), (Han, 2003)

Out of 15 research subjects, it can be seen that the mean increase of MMSE score is 4.6 with the highest score rise is 8, occurring in two subjects. Meanwhile, a subject is known with no increase in MMSE score, or his subject remains to be 28 both before and after intervention SCALP acupuncture with electro stimulation. Its cause is still unknown so that further studies need to be done with the larger number and more homogeneous research subject.

The implications of this research are expected to reduce the burden of nurses and the cost of caring for dementia patients. The results of this acupuncture research prove that a fairly simple method of therapy can have an effect on increasing MMSE scores in dementia patients. Therefore, acupuncture should be used in health care facilities especially to support dementia patient care.

## CONCLUSION

Considering the result of data analysis and discussion, the author can conclude that there is an effect of intervention using SCALP acupuncture with electro stimulation therapy on the reduce dementia rate in elders as measured using MMSE assessment instrument..

## ACKNOWLEDGEMENT

Acknowledgments are conveyed to appropriate parties, especially to the institution or person who is actually assisting the research: nursing home staff, final year acupuncture students who helped carry out the research.

## REFERENCES

- Adair, D., Truong, D., Esmailpour, Z., Gebodh, N., Borges, H., Ho, L., Douglas Bremner, J., Badran, B. W., Napadow, V., Clark, V. P., & Bikson, M. (2020). Electrical stimulation of cranial nerves in cognition and disease. In *Brain Stimulation* (Vol. 13, Issue 3, pp. 717–750). Elsevier Inc. <https://doi.org/10.1016/j.brs.2020.02.019>
- Alzheimer's Diseases International. (2013). *The Global Impact of Dementia 2013-2050* | *Alzheimer's Disease International (ADI)*. Report. <https://www.alzint.org/resource/policy-brief-the-global-impact-of-dementia-2013-2050/>

- Brodaty, H., & Donkin, M. (2009). Family caregivers of people with dementia. In *Dialogues in Clinical Neuroscience* (Vol. 11, Issue 2, pp. 217–228). Les Laboratoires Servier. <https://doi.org/10.31887/dcns.2009.11.2/hbrodaty>
- CDC. (2019). *What Is Dementia?* <https://www.cdc.gov/aging/dementia/index.html>
- Darmojo, B. dan M. H. (2010). *Geriatri: Ilmu Kesehatan Usia Lanjut* (fourth edi). Balai Penerbit FKUI.
- Han, J. S. (2003). Acupuncture: Neuropeptide release produced by electrical stimulation of different frequencies. *Trends in Neurosciences*, 26(1), 17–22. [https://doi.org/10.1016/S0166-2236\(02\)00006-1](https://doi.org/10.1016/S0166-2236(02)00006-1)
- Jaul, E., & Barron, J. (2017). Age-Related Diseases and Clinical and Public Health Implications for the 85 Years Old and Over Population. *Frontiers in Public Health*, 5, 335. <https://doi.org/10.3389/fpubh.2017.00335>
- Jia, Y., Zhang, X., Yu, J., Han, J., Yu, T., Shi, J., Zhao, L., & Nie, K. (2017). Acupuncture for patients with mild to moderate Alzheimer's disease: a randomized controlled trial. *BMC Complementary and Alternative Medicine*, 17(1), 556. <https://doi.org/10.1186/s12906-017-2064-x>
- Nakamura Masamichi, Hyodo Akira, Han Jingxing, K. O. (2017). Effects of acupuncture on dementia -A case series with a novel Sanjiao Acupuncture method-. *Japanese Acupuncture and Moxibustion*, Vo.13(1), 19–15. <https://jsam.jp/onlineJournal/fullpaper.php?id=85>
- Reato, D., Rahman, A., Bikson, M., & Parra, L. C. (2010). Low-intensity electrical stimulation affects network dynamics by modulating population rate and spike timing. *Journal of Neuroscience*, 30(45), 15067–15079. <https://doi.org/10.1523/JNEUROSCI.2059-10.2010>
- Saryono. (2011). *Kumpulan Instrumen Penelitian Kesehatan*. Nuha Medika.
- Undang-undang. (1998). *Tentang Kesejahteraan Lanjut Usia*. <https://bphn.jdihn.go.id/dokumen/view?id=1036>
- WHO. (2020). *Dementia*. <https://www.who.int/news-room/fact-sheets/detail/dementia>
- Widita Muharyani, P. (2010). Demensia dan Gangguan Aktivitas Kehidupan Sehari-Hari (Aks) Lansia di Panti Sosial Tresna Werdha Wargatama Inderalaya. In *Jurnal Ilmu Kesehatan Masyarakat* (Vol. 1, Issue 1). <https://ejournal.fkm.unsri.ac.id/index.php/jikm/article/view/23>
- Yamamoto, Toshikatsu, H. Y. (2003). *Yamamoto New Scalp Acupuncture*. Medical Tribune.