



The Effect of Listening to Quran Recitation on Score of Post-Stroke Fatigue in Acute Ischemic Stroke Patients

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Abstract

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BACKGROUND: One of the common stroke complications is post-stroke fatigue (PSF) with the prevalence of 25–85%. PSF influences health-related quality of life, disability, dependence in daily activities, ability to return to work, and case fatality rate of stroke patients. Listening to Quran recitation can increase alpha waves in the brain, reduce stress and inflammatory biomarkers.

AIM: The purpose of this study was to identify the effect of listening to Quran recitation on PSF and find out the mean Fatigue Assessment Scale (FAS) score in acute ischemic stroke patients.

METHODS: This was an experimental study with one-group pretest-posttest design. Sixteen subjects were recruited by consecutive sampling in Sultan Agung Islamic Hospital, Semarang. The FAS score was assessed on the 1st day of study, then Quran recitation was played 2 sessions a day, 15 min/session, for 5 days. The FAS score was reassessed on the last day. The study was conducted from August to September 2021. The analysis test used was paired t-test.

RESULTS: The results showed a significant relationship between listening to Quran recitation with changes in FAS score in acute ischemic stroke patients ($p < 0.05$). Most of the subjects were <65 years old, male, had hypertension, did not have DM, and did not smoke.

CONCLUSION: Listening to Quran recitation had an effect on changes in FAS score.

Introduction

Stroke has long-term adverse consequences globally. One of the common stroke complications is post-stroke fatigue (PSF) [1]. The prevalence varies from 25% to 85%. It also affects health-related quality of life [2], more severe disability [3], dependence to perform daily activities [4], inability of patients under 60 years to return to work after suffering a stroke [5], and a higher case fatality rate in stroke patients [4].

The mechanism of PSF is still unknown. Factors such as changes in cortical excitability, lesion site, inflammation, immune response, and genes are related to PSF mechanism. The role of inflammation in the pathogenesis of PSF is implied in several important ways. First, fatigue is a common symptom in patients with immune-mediated disease. Second, fatigue occurs in healthy individuals who have an infection. Third, administration of pro-inflammatory cytokines to healthy individuals leads to the perception of fatigue. Finally, modulation of inflammation with cytokine antagonists improves fatigue in several different diseases. Assessment of the genetic contribution to PSF is characterized by the presence of single-nucleotide polymorphisms in genes that modulate inflammation associated with PSF. PSF is associated with the IL1RN rs4251961 C allele [6].

Listening to Quran recitation can reduce stress levels [7], [8], [9], reduce cortisol serum [10] and IL-6 [11] levels, and increase alpha waves in the brain [7]. Spirituality is a protective factor in dealing with stress [12]. Music therapy in general also has an effect in reducing fatigue in several diseases [13]. Indonesia is a country with a majority Muslim population. Thus, listening to Quran recitation can be used as an easy, inexpensive, and non-invasive complementary therapy. However, the research in this field is still limited. Therefore, the purpose of this study was to determine the effect of listening to Quran recitation on changes in Fatigue Assessment Scale (FAS) score and to find out the mean FAS score in acute ischemic stroke patients before and after treatment. The hypothesis in this study is that there is an effect of listening to Quran recitation on changes in FAS score which is statistically significant.

Methods

This was an experimental study with one-group pretest-posttest design. It was conducted at Sultan Agung Islamic Hospital, Semarang, for 3 months. There were 16 samples that were selected using consecutive sampling.

The subjects listened to Quran recitation of Surah Ar-Rahman by Hanan Attaki two sessions a day at 09.00 AM and 04.00 PM for 15 min/session for 5 days. The FAS score was assessed on the 1st and last day.

Results

Subject characteristics

Subject characteristics which include age, sex, history of hypertension, history of diabetes mellitus, and history of smoking are shown in Table 1.

Table 1: Subject characteristics

Characteristics	n	%
Age		
≥65 years	7	43.75
<65 years	9	56.25
Sex		
Male	13	81.25
Female	3	18.75
Hypertension		
Yes	14	87.50
No	2	12.50
Diabetes mellitus		
Yes	4	25.00
No	12	75.00
Smoking		
Yes	5	31.25
No	11	68.75

Most of the subjects were <65 years old, male, had hypertension, did not have diabetes mellitus, and did not smoke.

Table 2 shows that all subjects had improved FAS score.

Table 2: FAS of the subjects

Variable	n	%
FAS day 1		
Normal	3	18.75
Fatigue	12	75.00
Extreme fatigue	1	6.25
FAS day 5		
Normal	10	62.50
Fatigue	5	31.25
Extreme fatigue	1	6.25
ΔFAS		
Improve	16	100.00
Not improve	0	0.00

Mean FAS score pre- and post-intervention

The mean FAS score pre- and post-intervention are shown in Table 3.

The mean FAS score of patients on the last day decreased from 28.25 (fatigue) to 22.81 (fatigue).

The analysis of the effect of listening to Quran recitation on changes in FAS score

The analysis of the effect of listening to Quran recitation on changes in FAS score is shown in Table 4.

Based on Table 4, it was found that there was a statistically significant effect of listening to Quran recitation on changes in FAS score.

Table 3: Statistical description test

Group	Mean	SD	Min	Max
Pre-test	28.25	6.53	19	42
Post-test	22.81	7.36	14	38

Discussion

In this study, all subjects experienced an improvement in their FAS score after being given intervention. There was a significant change in the mean FAS score pre- and post-intervention. On the 1st day, 12 subjects experienced fatigue, one subject experienced extreme fatigue, and four subjects did not experience fatigue. The percentage of acute ischemic stroke patients who experienced extreme fatigue and fatigue was 81.25%, not much different from the prevalence of PSF in a review article published in 2014 [1].

Table 4: t-test

Group	n	Mean	p
Pre-test	16	28.25	0.000
Post-test	16	22.81	

In the previous studies, Quran recitation influenced brain waves, especially to produce alpha waves. Alpha waves are waves detected in the brain when a person feels relaxed and calm with a frequency of 8–13 Hz [14]. Compared to classical music, Quran recitation is better at increasing alpha waves [14], [15]. However, in this study, neither EEG nor classical music therapy was used as a comparison. Thus, this can be an area of research to be developed in the future.

Listening to Quran recitation can reduce cortisol hormone levels and IL-6 levels [10], [16]. The central nervous system has a role in the regulation of the immune system through the hypothalamus-pituitary-adrenal axis. Stress stimulates the secretion of corticotropin-releasing hormone (CRH) from the paraventricular nucleus in the hypothalamus to the pituitary gland. CRH then stimulates the secretion of adrenocorticotropic hormone (ACTH) from the anterior pituitary gland. ACTH then stimulates the secretion of glucocorticoid hormones from the adrenal glands [17]. An increase in the cortisol will increase levels of IL-6 which is a biomarker of inflammation. The increase in inflammation will cause damage to the tissue that normally secretes orexin. It was demonstrated that endotoxin-induced fatigue in rodents, as demonstrated by decreased locomotor activity, was associated with increased inflammatory signaling in the brain and decreased orexin neuronal activity [18]. Orexin is a neurotransmitter that stimulates arousal and keeps humans awake through cholinergic, serotonergic, dopaminergic, and histaminergic pathways in the ascending arousal network. Central administration of orexin-A reversed inflammation-induced fatigue in a model [18]. The absence of orexin causes manifestations of fatigue. Although suspected to have a relationship with the incidence of fatigue, cortisol hormone levels and IL-6 levels were not measured and analyzed due to research limitations.

The previous study on music therapy conducted by Lee *et al.* in 2015 using oriental music which was carried out on 30 idiopathic chronic fatigue subjects for 2 weeks found a significant decrease in the Fatigue Severity Scale (FSS), visual analog scale, and Revised Chalder Fatigue Scale scores.

In another study on the effect of music therapy on the incidence of fatigue in patients undergoing hemodialysis conducted by Haghi *et al.* [19] in 2018, it was stated that the mean fatigue score assessed using the FSS decreased from 36.8 to 31.2. The study used 25 subjects without control. The treatment was given for 30 min, 3 times a week, 12 sessions for 1 month.

The results of this study also showed similar results to those reported by Haghi *et al.* [19], where there was a significant decrease in the mean FAS score with $p < 0.05$, on the 1st day, the mean FAS score is 28.25 (fatigue), on the 5th day, the mean decreases to 22.81 (fatigue).

Conclusion

Listening to Quran recitation has a significant effect on changes in FAS score in acute ischemic stroke patients.

References

- Acciarresi M, Bogousslavsky J, Paciaroni M. Post-stroke fatigue: Epidemiology, clinical characteristics and treatment. *Eur Neurol*. 2014;72(5-6):255-61. <https://doi.org/10.1159/000363763> PMID:25277765
- Van De Port IG, Kwakkel G, Schepers VP, Heinemans CT, Lindeman E. Is fatigue an independent factor associated with activities of daily living, instrumental activities of daily living and health-related quality of life in chronic stroke? *Cerebrovasc Dis*. 2007;23(1):40-5. <https://doi.org/10.1159/000095757> PMID:16968985
- Cumming TB, Yeo AB, Marquez J, Churilov L, Annoni JM, Badaru U, *et al.* Investigating post-stroke fatigue : An individual participant data meta-analysis. *J Psychosom Res*. 2018;113:107-12. <https://doi.org/10.1016/j.jpsychores.2018.08.006> PMID:30190042
- Glader EL, Stegmayr B, Asplund K. Poststroke fatigue: A 2-year follow-up study of stroke patients in Sweden. *Stroke*. 2002;33(5):1327-33. <https://doi.org/10.1161/01.str.0000014248.28711.d6> PMID:11988611
- Rutkowski NA, Sabri E, Yang C. Post-stroke fatigue: A factor associated with inability to return to work in patients <60 years-A 1-year follow-up. *PLoS One*. 2021;16(8):e0255538. <https://doi.org/10.1371/journal.pone.0255538> PMID:34347804
- Hinkle JL, Becker KJ, Kim JS, Choi-Kwon S, Saban KL, McNair N, *et al.* Poststroke fatigue: Emerging evidence and approaches to management: A scientific statement for healthcare professionals from the American heart association. *Stroke*. 2017;48(7):e159-70. <https://doi.org/10.1161/STR.000000000000132> PMID:28546322
- Yunus ES, Arismunandar PA, Rukanta D. Scoping review: The effect of listening to quran recitation on stress levels in adults. *J Integr Kesehat Sains*. 2021;3(1):110-6. [Indonesian].
- Ernawati R, Feriyani P, Tianingrum NA. The effectiveness of qur'an recitation therapy and aromatherapy on cancer patients' stress level in abdul wahab sjahranie hospital Samarinda, Indonesia. *Malaysian J Med Heal Sci*. 2020;16(3):47-51.
- Rahmat R, Mustikaningsih D, Haryanto M. The effect of quran recitation therapy on work stress levels of emergency room nurses at al-islam hospital Bandung. *J Keperawatan Prof*. 2019;7(2):48-69. [Indonesian].
- Amir F, Mastutik G, Hasinuddin M, Putra ST. Dhikr (recitation) and relaxation improve stress perception and reduce blood cortisol level in Type 2 diabetes mellitus patients with OAD. *Folia Med Indones*. 2018;54(4):249. <https://doi.org/10.20473/fmi.v54i4.10707>
- Sumarji, Husni A, Tugaworo D. The Effect of Quran Recitation on Anxiety, Depression, Changes in IL-6 Level, and Neurological Clinical Outcome in Acute Ischemic Stroke Patients. Indonesia: Universitas Diponegoro; 2019.
- Giaquinto S, Sarno S, Dall'Armi V, Spiridigliozzi C. Religious and spiritual beliefs in stroke rehabilitation. *Clin Exp Hypertens*. 2010;32(6):329-34. <https://doi.org/10.3109/10641960903443566> PMID:21028994
- Lee JH, Kim SK, Ko SJ, Lee SH, Lee JH, Kim MJ, *et al.* The effect of oriental medicine music therapy on idiopathic chronic fatigue. *J Altern Complement Med*. 2015;21(7):422-9. <https://doi.org/10.1089/acm.2014.0271> PMID:26056862
- Al-Galal SA, Alshaiikli IF. Analyzing brainwaves while listening to quranic recitation compared with listening to music based on EEG signals. *Int J Perceptive Cogn Comput*. 2017;3(1):1-5. <https://doi.org/10.31436/ijpcc.v3i1.43>
- Zulkurnaini NA, Kadir RS, Murat Z, Isa RM. The Comparison between Listening to Al-Quran and Listening to Classical Music on the Brainwave Signal for the Alpha Band. In: Intelligent Systems, Modelling and Simulation (ISMS), 2012 Third International Conference; 2012. p. 181-6.
- Zakariyati, Bahar B, Saleh A. The effectiveness of quran recitation therapy against changes in il-6 cytokine levels in pulmonary tuberculosis patients. *J Islam Nurs*. 2017;2:76-82. [Indonesian].
- Eskandari F, Webster JI, Sternberg EM. Neural immune pathways and their connection to inflammatory diseases. *Arthritis Res Ther*. 2003;5(6):251-65. <https://doi.org/10.1186/ar1002> PMID:14680500
- Grossberg AJ, Zhu X, Leininger GM, Levasseur PR, Braun TP, Myers MG *et al.* Inflammation-induced lethargy is mediated by suppression of orexin neuron activity. *J Neurosci*. 2011;31(31):11376-86.
- Haghi S, Zadeh SM, Vafayee M. The effect of music on fatigue and anxiety of patients undergoing hemodialysis. *Adv Nurs Midwifery*. 2018;28(1):20-5.