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Legendary Music on Intervention Cognitive Function in Stroke Patients

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Abstract: ***Background: Stroke is a brain dysfunction that lead to various disorders. Impaired cognitive function that is not handled properly resulting in dementia and dementia. neurotrasmiter legendary music serves as cognitive function and helps to remember the past involving the system of the brain seek and find information about the small memory memories stimulate the activation of cognitive function with the aim of analyzing the influence of the legendary music on cognitive function in stroke patients. Method: Quasi Experiment study design with the design of non-randomized control group pre-post test. The entire study population of non hemoragic stroke patients treated in inpatient with a sample of 30 respondents in each group. The research instrument cognitive function using the Mini-Mental State Exam (MMSE) and anxiety Zung Self-Rating Anxiety Scale (ZCAS). Univariate data analysis with frequency distribution table and test bivariate analysis of T-test and ANOVA Repeated Test. Results: Repeated test results Anova their legendary musical influence on cognitive function with of p value 0.000. Conclusion: Legendary music affect the improvement of cognitive function in stroke patients.***

Keywords: legendary music, Cognitive Function, Anxiety, Stroke

1. Introduction

Stroke is a disorder of brain function thoroughly for 24 hours or more and cause malfunctioning of the blood flow in the brain as well as global focal sudden or rapidly.[1] Stroke one cause of death or disability is temporary or permanent lead to problems in using or understanding language, control movement, sensory impairment, thinking and memory problems, emotional disturbance and loss of sense of taste.[2] Every year, there were 15 million people affected by strokes and 5 million people were paralyzed by the World Health Organization (WHO).[3] Patients with stroke in the southeast Asian region as many as 4.4 million people and is estimated in 2020 there were 7.6 million people will die from stroke.

2. Literature Survey

Sudden neurological deficit and damage brain cells cause disability in cognitive function, sensory, motor and inhibiting the functional ability to communicate normally.[4] A stroke three-fold increased risk of cognitive impairment in the form of brain function disorders with symptoms of orientation, perception, attention, memory, or memory, concentration, judgment, difficulty thinking, language and intellectual function.[5] Danger of cognitive function disorder if not treated properly and quickly can result in dementia and in the long term can lead to dementia in stroke.[6]

The problems of impaired cognitive function performed by activation of brain stimulation program.[7] music is one way to increase brain activation.[8] neurotrasmiter memintervensi legendary music as feeling happy, decreased anxiety, and a sense of relaxation to help remember the past involving the brain for a working system and find information about the memories with a small memory instructions that stimulate the activation of cognitive function.[9]

Legendary music is a tool that easily accepted by the organ of hearing and delivered to the limbic system to help restore the physical, cognitive and psychological stroke.[10] Music in stroke patients can provide a wide range of impacts include: improving motor function, providing a positive emotional effect, decrease anxiety, improve mood and cognitive function in memory enhancement.[11]

Cognitive impairment in stroke are not getting penenganan properly can lead to decreased quality of life.[12] When left in a considerable period of time and do not get immediate action, it can intervene in the day-to-day activity, a decrease in hope of a cure, and the treatment time in the hospital.

Treatment in the hospital about a decrease in cognitive function in stroke merely procedural workmanship existing Standard Operating hospital. Yet their implementation in accordance with a penchant legendary music as one of the standard hospital procedures. Giving the legendary music according to the penchant of patients is expected to help improve cognitive function in stroke patients so researchers are interested in examining "the legendary music intervention on cognitive function in stroke patients."

3. Methods/Approach

This study is the kind of research methods using *Quasi Experiment with non-randomized* study design control group *pre-post test desaign*. Analysis of cognitive function can be seen with the trend analysis table seris. The samples in this study using a *non-probability sampling* and the sampling

technique used was *purposive sampling*. Total sample of 30 respondents in each group.

4. Results & Discussion

a) Characteristics of Respondents

1) Age

Table 4.1: Average Age on Intervention and Control Groups

Age	Intervention group	Control group
Mean	48.83	46.77
SD	3,761	4,666
Min	42	40
Max	55	55

Table 4.1 shows that the average age of the respondents intervention group and the control group 46.77 48.83 with a vulnerable age 40 to 55 years. The youngest age in the intervention group and the control group 42 years 40 years. The oldest age group of the respondents same intervention and control groups at 55 years. Spread value in the intervention group and the control group 4,666 3,761 This case illustrates that in the control group had a wider distribution than in the intervention group.

Stroke is caused by the behavior of an unhealthy lifestyle and attack adulthood due to changes in lifestyle fond of eating fast food (fast food), high-fat diet, smoking, alcohol, overwork, lack of exercise and stress.[15]

The incidence of strokes occur in the age group 40-60 years there were 138 respondents (59.2%) had non hemoragic stroke. Blockage of blood flow lead to hypertension resulting in damage to the blood vessel walls due to their blood pressure beyond normal limits is continuously causing clots in blood vessels that can lead to rupture of blood vessels to the brain.[16]

Lack of exercise causes muscle stiffness and blood vessels. Additionally sedentary person will be obese that cause fat deposits in the body and lead to blockage of blood flow by fat / atherosclerosis.[17]

Healthy lifestyle from an early age and exercise can help prevent the risk of stroke. Physical activity by helping someone move and flex the body burn fat.

2) Gender

Table 4.2: Distribution Sex on Intervention and Control Groups

Variable Gender	Intervention group		Control group	
	f	%	f	%
Man	11	36.7	13	43.3
Woman	19	63.3	17	56.7

Table 4.2 describes the distribution of the female sex more than men in the intervention group and the control group. Female gender intervention group 19 respondents (63.3%) and the control group 17 respondents (56.7%). Distribution of sex male intervention group 11 respondents (36.7%) and 13 respondents (43.3%) control group.

The results of the study the majority gender in the intervention group 63.3% (19 respondents) and the control group were female 56.7% (17 respondents).

Women ages 45-59 years of menopause have a higher risk of stroke than men. Increased estrogen initially act as protective decreased function of the body. Increased estrogen causes emotional disorders such as mood changes, increased blood pressure, increased risk of heart disease or high blood pressure.[15]

Women have a high enough risk for stroke if they are taking the Pill, undergoing hormone, as well as pregnancy and childbirth. Pregnancy causes increased risk of stroke due to natural changes in the body such as increased blood pressure and heart pump changes.[18]

Use of Hormone or Hormone Replacement Therapy (HRT) as a combination of progesterone and estrogen hormones to relieve symptoms of manapouse in the long term can lead to stroke, endometrial cancer and breast cancer.[19]

Regular health checks to help identify changes in body function and state of the body before it becomes sick and is the first step in protecting the disease. Pregnancy checking periodically assist pregnant mothers to know the condition of my mother and fetus womb so as to minimize the risks that can occur during delivery or after childbirth.

3) Education

Table 4.3: Distribution Education On Intervention and Control Groups

Variable Education	Intervention group		Control group	
	f	%	F	%
SD	2	6.7	5	16.7
SMP	5	16.7	0	0
High School	19	63.3	20	66.7
College	4	13.3	5	16.7

Table 4.3 shows the intervention group most high school education 19 respondents (63.3%) and least elementary education 2 respondents (16.7%). The control group of 20 respondents (66.7%) most high school education and elementary education level of the lowest fifth of respondents (16.7%).

Education can be a factor for stroke although not a direct cause of stroke. level of education determines the awareness, attitudes, behavior and knowledge on health.

According to the Stroke Foundation of Indonesia 50-80% less possessed the knowledge and skills of stroke patients in managing the disease. Educational background reflects the level of knowledge and pemahanan in analyzing and solving the health problems themselves. The lack of curiosity on the illness and disordered patients in taking medication is the cause of lack of education makes it difficult to identify health respondents themselves. Health education is needed in increasing knowledge to improve health and education in stroke patients.[20]

Higher levels of education are expected to understand health information and apply it in daily life. Low education level will have little knowledge and difficult to respond to the statements containing the verbal language compared to the level of higher education.[18]

4) Work

Table 4.4: Distribution Work On Intervention and Control Groups

Variable Works	Intervention group		Control group	
	F	%	f	%
Government employees	6	20.0	6	20.0
Private	8	26.7	10	33.3
Housewife	13	43.3	10	33.3
entrepreneurial	3	10.0	4	13.3

Patients with stroke with a background as a housewife work due to psychological stress as a result of work that can increase the risk of stroke non hemoragic. A history of hypertension, diabetes mellitus, and heart housewives also be a trigger factor for stroke.[21]

Patricia research, consisting of 75 respondents there were 30 respondents (40%) had a job as a housewife.[20] The problems faced by housewives very diverse either individual issues or even problems with the external environment that can lead to prolonged stress in the individual as a trigger factor of stroke.[22]

Inability to cope with a problem that there is a burden that is perceived, as well as stressful situation herself. Housewives who are not able to control and manage the pressures faced problems will be a burden to the mother become stressful. Stressful conditions can memintervensii state of mind, feelings, and behavior of individuals in everyday life. Stress experienced by housewives, especially those related to domestic work may cause to feel uncomfortable in doing household chores. Small everyday pressures that accumulate would be a great stress and lead to the risk of hypertension and stroke.[23]

Good communication between the family and other people that exists to help overcome the burden is felt and is always open to the spouse or child of what is felt that it will not accumulate load perceived, holidays with the family so that the activities are not monotonous so it can refresh all the activities done daily.[22]

b) Analysis of the Treatment Given Before Cognitive Function

Table 4.5: Analysis of the Treatment Given Before Cognitive Function

Group	Mean ± SD	mean Difference	Min-Max
Intervention	19.7 ± 2.452	2:33	15-24
Control	17:37 ± 2,059		12-21

The problems experienced by respondents' cognitive function in accordance with the questionnaire that has been given to the respondents showed that the fifth statement that the ability to repeat what is told to have a low value compared to other forward-pernyaataan. In addition to the statement of the 13th of the ability to adapt to circumstances have a low value also. This happens because their sense of inferiority in the patient at the time of initial assessment and the low expectations of recovery due to the fear that is in the respondents to the circumstances that happened now so that the families do not want to accept the respondent state.

Stroke is a major cause of functional impairment, where 20% of patients who survive still in need of care in health institutions after 3 months and 15-30% of patients suffered permanent disability. Stroke is a life-changing events and not just memintervensii sufferer but also the entire family. As a result of this functional disorder causes of stroke survivors have to incur huge costs for rehabilitation treatment while also losing productivity. Functional impairment caused by stroke is very diverse, one of which is cognitive impairment.[24]

According to the classification proposed by the American Heart Association, regions (domains) of neurological disorders caused by stroke can be classified into five types which include motor, sensory, visual, speech and language, cognitive, and affective.

Cognitive disorders such as impaired memory, attention, orientation, and loss of ability to calculate (calculation). Approximately 15-25% of patients with stroke showed tangible cognitive gangguaun after suffering an acute ischemic attack.[27]

Cognitive impairment may affect the mind (thinking) and retention (memory) which resulted in wide attention (attention span) narrows. In this disorder also found the existence of a defect in the short-term memory loss and the ability to follow instructions, even in some people there is also a nuisance anosognosia. Cognitive dysfunction can cause physical disability in the form of loss of life and decrease the role of social interaction skills may cause disruption of the meaning of self-perception (personal worth) the corresponding impact on the quality of life.[28]

Perceptions of patients about their physical incapacity that is a contributing factor in the excessive believe the entire disability suffered. Limited ability is not limited to physical inability melaikan psychologically. Limitations in the ability of self-actualization play a role in social, cultural, economic and environmental in the family for certain individuals due to impairment (organ function impairment) and disability (inability) experienced.[28]

International Classification of Functioning (ICF) said that the improvement of cognitive function in stroke not focusing on what can not be done but the patient functional ability (activity) and the role of the patient in accordance with the inability of life, activity, and health conditions (participation).[29]

c) Given Cognitive Function Analysis After Treatment

Table 4.7: Given Cognitive Function Analysis After Treatment

Day	Group	Mean ± SD	Min-Max	*P*
1	Intervention	21.2 ± 2,107	16-24	0000
	Control	17:53 ± 2.080	12-22	
2	Intervention	22:23 ± 2,192	18-26	0000
	Control	18.8 ± 2,441	14-23	
3	Intervention	23.1 ± 1,936	19-27	0000
	Control	19.77 ± 2,712	14-26	
4	Intervention	23.63 ± 2.076	19-29	0000
	Control	20.5 ± 2:33	16-25	
5	Intervention	24.67 ± 2,412	20-30	0000
	Control	21:33 ± 2,354	16-26	
6	Intervention	24.63 ± 2.81	18-29	0000
	Control	20:33 ± 3,231	15-29	
7	Intervention	25.17 ± 2,151	20-30	0000
	Control	21.2 ± 2,759	16-27	

Cognitive function is a mental process that includes perception, memory, creative imagination, and thought that forms the awareness and preparedness of individuals to receive, record, store and use the information to make a decision.[30]

Stroke increases the risk for cognitive impairment as much as 3 times. Impaired cognitive function in the long term if it is not the optimal treatment will increase the incidence of dementia. Cognitive impairment in patients with stroke is a predictor for the occurrence of dementia.[31]

Cognitive function is an integral part of the limbic system pathways-pathways form a link in the control memory, learning, motivation, emotion, neuroendrokrin function and autonomic activity.[32] The thalamus controls the cognitive function of the brain to the cerebral cortex. Hippocampus helps in the formation of long term memory.

Age one factor changes on the various systems in the body that tend to lead to decreased function. On cognitive function decline in the ability of intellectual function, reduced ability to nerve transmission in the brain is decreased, the information to be slow, reduced ability to accumulate new information and retrieve information from memory.[33]

Music heard by the respondents in the intervention group has several benefits to the body such as creating calm or relaxed, comfortable, maximizing the work function of the brain.[16]

Selection of the legendary music as music that is played to the stroke patients were selected based on their likes and has special memories of the respondents. Legendary music is music full song memories with its own story to the listener and has a previous memory helps to remember the past involving the brain for a working system and find information about the memories with a small memory instructions that stimulate the activation of cognitive function.[9]

Research Hayden, stating that use of music was more effective than the use of methods that uses only physical exercise without stimulants.[34] Legendary musical stimulation activates specific pathways in the brain, such as the limbic system is directly related to emotional behavior, when the limbic system is activated, the patient will be relaxed. Music activates the release of hormones that exist within the body. Endhorphine hormone that serves to make relaxed comfortable conditions will make the work function of a person's brain can be maximized.[16]

The Effect of Music and Audiobook Listening on People Recovering From Stroke The Patient's Point of View explained that the music is needed by patients with stroke, because the music aims to restore a pleasant atmosphere on the patient's condition in order to be motivating undergoing rehabilitation and is expected rehabilitation patients will be optimized.[35]

d) Differences in Cognitive Function in Stroke Patients Given Before and After Treatment

Table 4.9: Anova Repeated Test Results Cognitive Function In Stroke Patients Given Before and After Treatment

	Sig.
Cognitive function	0000

Table 4.9 shows that after being given the legendary musical treatment in stroke patients for 7 times can improve cognitive function of stroke patients. Anova Repeated test results showed p = 0.000 thus obtained significancy value of <0.05 can be deduced that the provision of the legendary music intervene on cognitive function in stroke patients.

Table 4.10: Post Hoc Test Results Comparison Paires Wise Cognitive Function In Stroke Patients Given Before and After Treatment

(I) day	(J) days	Intervention		Control	
		Mean Difference (IJ)	*P*	Mean Difference (IJ)	*P*
pre	1	-1500 *	0000	4,200 *	0000
1	2	-2533 *	0000	2,967	1,000
2	3	-3400 *	0000	5067 *	0001
3	4	-3933 *	0000	10,700 *	0000
4	5	-4967 *	0000	12,500 *	1,000
5	6	-4933 *	0000	14,700 *	1,000
6	7	-5467 *	0000	12 367 *	1,000

Table 4.10 Describing test results Post Hoc Paires Wise Comparison meaning there are differences in measures of cognitive function in both groups looked at day 7 intervention showed mean values in the intervention group which is the most time effective enhancement of cognitive function with a mean of 5467 with p value of 0.000. in the control group there was a difference measurement on day 7 with a mean value of 3,833 (p = 0.000) but not as significant in the intervention group.

The results showed the ability of cognitive function increased from day to day in both groups, but the intervention group more significant improvement than the control group.

The process of cognitive function involves memory function can be impaired as a result of non-hemorrhagic stroke. The decline in cognitive function abilities experienced by stroke patients causing an inability to achieve the developmental tasks associated with despair.[36]

According to cognitive research more stressed and training to change the way of thinking negatively of failure, frustration and helplessness so it can be better and more productive. provide basic cognitive thinking to express negative feelings, to understand the problem and be able to solve the problem.[37]

On cognitive function decline in the ability to improve intellectual function, reduced efficiency of nerve transmission in the brain that lead to process information slows down and a lot of information is lost during transmission, reduced ability to accumulate new information and retrieve information from memory, the ability to remember past events better than the ability to remember events what just happened.[38]

Recovery of cognitive function occurs early after stroke with underlying mechanisms of recovery of function of brain cells in the area penumbra located around the area of infarction real, diaschisis recovered and terbukannya back in nerve circuits that were previously closed or no longer used the basis of the functional ability to recover in line with the recovery neurological.

Use of the legendary music is a form of simple activities by listening to a piece of music in accordance with a penchant memintervensii mood and the subconscious to stimulate the memory of the events in the past. Legendary music on cognitive function as a stimulus to help improve memory and enhance the ability to speak your mind.[28]

Increased memory of the past with legendary music helps recall past experiences regarding ever experienced and memorable experience, so that a time unwittingly or not the shadow of these events may recur through an effort to remember through music.[9]

5. Other Recommendations

a) For the development of Nursing

It is expected that this study may help to increase understanding and to enrich science, especially in the field of nursing, especially in the medical rehabilitation so that they can apply the nursing actions independently of music on cognitive function and anxiety in stroke patients so it can be returned to its original state as when it was not sick.

b) For Research Sites

The results of this research can be used as a reference in implementing the guidelines in the management of nursing interventions independently in nursing actions music on cognitive function and anxiety in patients with stroke and can be applied as nursing care in stroke patient care activities.

c) For Nursing Care

The results of this study are expected to be used as an information providing nursing care for the provision of music on cognitive function and anxiety as the contribution healing stroke.

d) For Further Research

It is expected that this study may help develop future research related to the legendary music on cognitive function and drawing this anxiety into various cases and additional literature in the treatment of stroke patients in the room, especially in the handling of medical Rehabilitation.

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