

# The Effect of Guided Imagery and Music with *Sasando* Music on Anxiety among Ischemic Stroke

## Abstract

**Background:** Guided Imagery and Music (GIM) interventions reduced the anxiety in many clinical settings. Traditional music pictures the emotion of specific culture. No interventional study was found in reducing anxiety among ischemic stroke patients using GIM with traditional music. The aim of the study is to determine the effect of GIM with *sasando* music on anxiety among ischemic stroke survivors. **Materials and Methods:** The method was a quasi-experimental design with a pretest–post-test with a control group. Respondents are 50 ischemic stroke survivors divided into two groups and selected by the consecutive sampling technique. The instrument is the HAM-A questionnaire. The intervention group listened to GIM with *Sasando* Music from the Nusa Tenggara Timur Province, Indonesia. The statistical test used was the Mann–Whitney test. **Results:** The anxiety score in the intervention group before and after the GIM intervention showed a statistically significant difference,  $p$  value = 0.001 ( $p < 0.05$ ), while in the control group, there was no statistically significant difference,  $p$  value = 0.683 ( $p > 0.05$ ). The test on the two groups showed that there was no significant difference of anxiety score before intervention,  $p$  value = 0.351 ( $p > 0.05$ ). After intervention, there was a significant difference in anxiety score,  $p$  value = 0.001 ( $p < 0.05$ ). **Conclusions:** GIM intervention affects anxiety level on post-ischemic stroke patients. As a recommendation, GIM can be used as an intervention to reduce anxiety in post-ischemic stroke patients.

**Keywords:** *Anxiety, ischemic stroke, music therapy, psychotherapy imagery*

## Introduction

Stroke is a global health problem that is the main cause of disability. In 2019, there were 12.2 million incident cases of stroke globally, with a 95% uncertainty interval ranging from 11.0 to 13.6 million. Epidemiological evidence in Asia from the same year corroborates this, showing 12.2 million incident cases of stroke with a 95% uncertainty interval between 11.0 and 13.6 million.<sup>[1]</sup> In Indonesia, the incidence is 8.8 per mile, and in Nusa Tenggara Timur Province, the incidence is 5.9 per mile.<sup>[2]</sup> The stroke affects anxiety and depression.<sup>[3]</sup> Prolonged anxiety is a predictor of depression in the 6-month post-stroke period and is associated with poor quality of life.<sup>[4]</sup> In a qualitative study, patients diagnosed with anxiety and depression experienced a fear of stroke and a shift in behavior and felt isolated and lonely.<sup>[5]</sup> They also experienced an array of emotions, grieving the loss of their previous role before the stroke attacked, and trying

hard in establishing a new normal routine and life goals.<sup>[6]</sup> The highest prevalence rates were observed during the 0–2 week period (36.7%) and at the 3-month mark (24.1%).<sup>[4]</sup> While early studies have posited that music can be efficacious in ameliorating mood, research specifically focusing on its efficacy in reducing anxiety remains limited. This gap exists because previous studies have predominantly concentrated on the broader framework of emotional regulation rather than examining anxiety as a distinct psychological construct.<sup>[7]</sup>

Guided Imagery and Music (GIM) is a relaxation intervention to reduce bio-psycho-social stress using music-centered imagination.<sup>[4]</sup> Previous research extracted from Bonny's 2001 writings defined GIM as music using preselected classical music mostly from Western traditions, which allows clients to conjure or experience imagination while listening to the music. Imagery can include symbols, sensations, memories, and/

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or feelings that help overcome anxiety in a healing and transformative way.<sup>[4]</sup> GIM differs from Benenzon's music therapy in that the latter primarily describes the external auditory stimuli that most accurately resonate with one's internal psychological state.<sup>[8]</sup> In Cognitive Behavioral Music Therapy (CBMT), music serves as a medium to reinforce certain behaviors while modifying others. Consequently, it can be posited that GIM is congruent with post-stroke anxiety, which is associated with feelings, sensations, memories, and imagery that align with the conditions precipitating the anxiety post-stroke.<sup>[8]</sup>

When a person listens to music in GIM intervention, their imagination conjured up spontaneously in response to the combination of music and such imagination relaxes them.<sup>[9]</sup> Systematic reviews have shown that a series of sessions in Bonny's GIM method may be effective in improving psychological and physiological health and may be indicated as having therapeutic effects for adults seeking care in medical health, mental health, and nonclinical needs.<sup>[10]</sup> In clinical settings, GIM has the effect of increasing comfort and replacing worries about the surgical process with happy thoughts among post-surgery patients.<sup>[11]</sup>

Many studies on GIM use western art music.<sup>[10]</sup> On the other hand, past music studies used the cultural background on the music protocol. Those studies identify that traditional music is cultural, interpersonal, and intergenerational, a product of affective social relationships while flowing through the existing ones. Messaging with traditional music is much more powerful and memorable because of face-to-face communication in the context of focus, recognition, and a communal approach.<sup>[12]</sup>

Indonesia is a multicultural country that has a variety of traditional music as well. *Sasando* is one of the traditional music instruments from Nusa Tenggara Timur Province in Indonesia, which conveys a life advice for everyone to respect each other, love each other, help each other, and care for each other.<sup>[13]</sup> In addition, the music of the *Sasando* has undergone validation and has been shown to produce a relaxing effect. In GIM intervention, classical music evokes feelings, sensations, memories, and imagery. On the other hand, *Sasando* music, while similar to GIM in these aspects, is much more powerful and memorable and also conveys life advice. Thus, this study is aimed to explore the effect of GIM with the *sasando* traditional music instrument as a nursing intervention on anxiety among stroke ischemic survivors.

## Materials and Methods

This study was conducted from June to December 2021. The design of this study was a quasi-experimental design using a pretest and posttest design with a control group. Conducting RCT research is challenging because anxiety typically manifests within 0 to 3 months after the attack.

Delaying for the purpose of matching could influence the progression of anxiety, and the number of available respondents is very limited. The samples were all post-ischemic stroke patients at the neurology outpatient service at the Regional Public Hospital of Kupang City, Nusa Tenggara Timur Province, Indonesia. The sample size was calculated considering the test power of 80%, the first type error of 5%, the confidence level of 95%, and the effect size of previous study of 0.9.<sup>[14]</sup> The minimum sample was 16 for each group. This study involved 25 people in the intervention group and 25 people in the control group. The sampling technique used is consecutive sampling. Respondents were diagnosed with acute ischemic stroke. The diagnosis was confirmed by clinical examination and computed tomography of the brain. The diagnosis authentication was signed by a neurologist. Furthermore, the inclusion criteria were patients with compos mentis awareness (GCS = 15), experiencing anxiety by measurement using the Hamilton Anxiety Rating Scale (HAM-A) instrument, not experiencing cognitive impairment as indicated by the Mini Mental State Examination (MMSE) of at least 24, not experiencing hearing disturbances, and did not experience attacks on the limbic system areas in the brain (amygdala and limbic cortex), namely, areas that regulate mood. Patients with aphasia and patients who suddenly had recurrent strokes during the study period were then excluded from the study.

Demographic data, Hamilton Anxiety Rating Scale (HAM-A), and Mini Mental State Examination (MMSE) were collected from outpatient neurology services. Demographic data include gender, education, occupation, marital status, and duration of stroke. The samples' cognitive function was evaluated using the MMSE.<sup>[15]</sup> Hamilton's Anxiety Scale (HAM-A) was used to assess patients. The researcher conducts validity and reliability test. The validity ranged from 0.479 to 0.940 ( $r > 0.30$ ). Meanwhile, the reliability test showed Cronbach Alpha = 0.95. Researchers calculated The Hamilton Anxiety Scale (HAM-A) by interviewing the patients.<sup>[16]</sup>

The intervention group was given GIM therapy in the form of recordings of approximately 26 minutes, 3 times a week for 1 month at the patient's residence.<sup>[17]</sup> Meanwhile, the control group received standard therapy from the hospital. Respondents listened to GIM recordings through JBL 500BT headphones which have the advantage of very clear sound quality and able to muffle external sounds so that respondents can focus on listening to the therapy sound. The GIM procedure requires five stages<sup>[17,18]</sup>:

In the first stage (preliminary conversation) for 2 minutes, respondents are asked to imagine psychological resistance such as physical and psychological problems related to stroke. In the second stage (induction) for 4 minutes, respondents are encouraged to continue to imagine what was told in the first stage until it is actually felt during

the therapy time. The researcher then began to guide the respondents to do diaphragmatic breathing to feel relaxed. In the third stage (listening to music), which lasted for 15 minutes, respondents only listened to *sasando* music without any instructions or sentences from the researcher. The goal is to neutralize the psychological resistance conjured during the previous steps. In the fourth (return) stage, for 3 minutes, the researcher gave verbal instructions to guide the respondent to end their imagination and return to the real situation. The fifth stage (postlude discussion) lasted for 1,5 minutes; at this stage, the researcher encourages respondents to stay strong and think positively in facing the realities of life situations. The *sasando* music used had been validated in advance to determine its therapeutic effect in reducing anxiety, which includes timbre, tempo, harmony, tone, melody, and volume in Institute Seni Indonesia (Art Institute of Indonesia).

Univariate analysis was shown in the form of frequency distribution. Presentation of respondents' characteristics was shown in the form of categorical data, namely, gender, education, occupation, and marital status. Meanwhile, age data are presented with maximum, minimum, mean, and standard deviation values. Afterward, the homogeneity used Chi-square test was carried out to see the resemblance between the intervention group and the control group. The data in this study were not normally distributed, so they were analyzed using nonparametric Mann–Whitney statistics with 95% confidence interval to compare the anxiety score between groups before intervention and after intervention as well.

### Ethical considerations

The research ethics test was conducted in accordance with the 2016 CIOMS guidelines. Information on this study passing the ethical test is no: LB.02.03/1/0100/2020 on February 22<sup>nd</sup> 2021. Respondents who agreed to participate in the study signed the informed consent voluntarily without coercion from any party. This study does not pose any risks or loss to the respondents. If the respondent feels unsafe during the research process, the respondent was allowed to withdraw their involvement in this research.

### Results

The results obtained on the variables of sex, age, education, employment, and marital status were significantly homogeneous ( $p > 0.05$ ); it was concluded that the respondents were homogeneous between groups [Table 1]. The Mann–Whitney test showed there was no significant difference in anxiety scores between groups before intervention ( $p > 0.05$ ) [Table 2]. After intervention, the test showed that there was a significant difference of anxiety score between the two groups ( $p < 0.05$ ) [Table 3].

### Discussion

The results showed that there was a significant effect of GIM intervention on the anxiety of post-ischemic

stroke patients. A previous study used a modified version of GIM, namely, the GIMCS (Guided Imagery and Music as Combine Stimulus) technique for unpleasant emotions including anxiety, resulting in a significant difference between the GIMCS technique for dealing with unpleasant emotions compared to only M-SS (Music as Single Stimulus).<sup>[19]</sup> Patients undergoing cardiac rehabilitation also showed positive results after BMGIM intervention.<sup>[20]</sup>

A similar study supported that GIM has positive outcomes in stressed workers.<sup>[14]</sup> In a clinical setting, there was an improvement in the states of mind: sadness, fear, anger, and depression after BMGIM among Inflammatory Bowel Disease (IBD) patients.<sup>[21]</sup> Another study explored the effects of GIM in neuroanatomy. Among healthy individuals, GIM shows increased activation in three regions including the right posterior cingulate gyrus, bilateral parahippocampal gyrus, and angular gyrus (AG). This region is related to the processing of episodic memories in an emotional context.<sup>[22]</sup> Neuroscience studies in stroke showed that the gray matter volume (GMV) increases from the acute to the 6-month stage.<sup>[23]</sup> Even though it is only music therapy, it can support the evidence of GIM because there is music in it as a protocol.

Previous research showed that the basic emotions conveyed through music (happy, sad, afraid, angry, surprised) were felt by listeners according to their cultural background. Emotions can be recognized more accurately when expressed and felt by group members from the same area. The study stated that it is better if the musical stimulus given and the participants who listen to it came from the same culture.<sup>[24]</sup> Another study synthesized findings from Bruscia in 2019 stated that music also provides nonverbal connections on a personal level. Music was also linked to the dimensions of cultural, social, archetypal, and spiritual issues fundamentally.<sup>[20]</sup> Another study in Indonesia reveals that the traditional music 'Saluang' could reduce stress among patients with Type II Diabetes Mellitus.<sup>[25]</sup> Similarly, in Turkey, classic traditional music has been shown to alleviate pain and anxiety among patients undergoing bone marrow aspiration and biopsy.<sup>[26]</sup> Compared to using Western classical music, utilizing Sasando music, which produces a relaxing effect, can be conveyed as more powerful and memorable in terms of messaging in traditional music. The nursing implication of this study is the nurse can use GIM with traditional music to reduce the anxiety among stroke ischemic survivors. The limitation of this study is there was no remeasurement after post-test; therefore, the effect of the intervention afterward was unknown.

### Conclusion

The GIM intervention with *sasando* music reduces anxiety felt among stroke ischemic survivors. It is recommended to practice the GIM with *sasando* music as nursing

**Table 1: Characteristics of respondents**

Variable	Group		<i>p</i>
	Intervention	Control	
	<i>n</i> (%)	<i>n</i> (%)	
Sex			0.537*
Male	16 (64)	19 (76)	
Female	9 (36)	6 (24)	
Age			1.000*
26-45 year	1 (4)	1 (4)	
=46 year	24 (96)	24 (96)	
	Youngest: 45	Youngest: 44	
	Oldest: 71	Oldest: 68	
	Mean: 60.80	Mean: 59.36	
	SD: 5.050	SD: 5.275	
Highest Education			0.137*
Elementary (Elementary, Junior High School)	9 (36)	10 (40)	
Middle (High School)	12 (48)	6 (24)	
High (University)	4 (16)	9 (36)	
Employment			0.377*
Employed	18 (72)	14 (56)	
Unemployed	7 (7)	11 (44)	
Marital Status			0.762*
Married	18 (72)	16 (64)	
Unmarried/widow	7 (28)	9 (38)	

\*Chi-Square

**Table 2: The Difference of Anxiety between groups before Guided Imagery and Music (GIM) intervention**

Variable	Group	Category	<i>n</i> (%)	Mean rank	Sum of rank	<i>p</i>
Anxiety level	Intervention Group	Mild	1 (2%)	27.38	684.50	0.351*
		Moderate	23 (46%)			
		Severe	1 (2%)			
	Control Group	Mild	1 (2%)	23.62	590.50	
		Moderate	24 (48%)			

\*\*Mann-Whitney

**Table 3: Difference of Anxiety between groups after Guided Imagery and Music (GIM) intervention**

Variable	Group	Level of Anxiety	<i>n</i> (%)	Mean rank	Sum of ranks	<i>p</i>
Level of Anxiety	Intervention Group	Mild	22 (44%)	13.40	335.00	0.001**
		Moderate	3 (6%)			
		Severe	0 (0%)			
	Standard Intervention Group	Mild	6 (12%)	37.60	940.00	
		Moderate	19 (38%)			
		Severe	0			

\*\*Mann-Whitney

intervention among ischemic survivor after discharge. Further research, it is recommended to conduct the repeated measurements to identify the afterward effect.

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### Conflicts of interest

Nothing to declare.

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