Sonic Healing: Integrating Cultural Music Practices in the Delivery of Therapeutic Sound Waves to Neurological Patients

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Abstract

This study explores the efficacy of Box Musik Terapi (BmT) as a supplementary medium in music therapy for patients with neurological disorders. Two primary methods were employed: active music therapy, involving patient participation in singing and instrument playing, and passive music therapy, where patients listened to specific music tailored to their conditions. The research utilized a quasi-experimental method with a non-equivalent design, including pre-tests and post-tests to evaluate the therapy's impact on patients with nervous system disorders. The BmT device, equipped with sensors and instrumental music storage, facilitated the therapy. Results indicated significant improvements in patients' stress levels and heart rate, as measured by Galvanic Skin Response (GSR) and Beat Per Minute (BPM) sensors, respectively. Patients reported experiencing relaxation and pain relief during and after the therapy sessions. The study concludes that BmT-assisted music therapy can be an effective intervention for neurological disorder patients, potentially helping them overcome their conditions.

Keywords: Music Therapy, Therapy Equipment, Patients, Hospital, Medical.

Because it usually goes unnoticed, high blood pressure, or hypertension, is known as the silent killer because those who have it are usually unaware of their condition until problems develop. The World Hypertension League (WHL) is in charge of overseeing the World Hypertension Day theme, "Measure Your Blood Pressure Accurately, Control It, Live Longer." The global theme of "Prevent and Control Hypertension Appropriately for a Longer

Healthy Life," which aims to raise public awareness and encourage hypertension prevention and control, starting with oneself and the family, is adopted by Indonesia.

A malfunction in any of the body's systems, especially the central and peripheral nervous systems, is indicative of a nervous disease. There can be disturbances in the normal functioning of the peripheral nervous system, which links the body's organs to the central nervous system, which includes the brain and spinal cord. Such disruptions can lead to a range of symptoms, including difficulty with movement, breathing, speech, memory problems, and disrupted organ function, such as in the heart and lungs (Aladokter, 2018). One of the deadly nervous disorders is stroke. Stroke is known as one of the second causes of death in Indonesia (Novianty, et al. 2018). Stroke is a condition in which a person's blood supply to the brain is reduced due to a blockage in the blood vessels. The occurrence of blockages or strokes around the human head consists of 2 types, namely blockages around the brain nerves called ischemic stroke. Meanwhile, a stroke caused by a ruptured blood vessel is called a hemorrhagic stroke.

Several interviews with patients who experienced strokes stated that the disease they initially suffered was due to a lack of knowledge about healthy living, problems that arose due to the accumulation of stress both in terms of life problems and the work environment. As a result of this, without realizing it, a blockage occurred which resulted in the initial diagnosis of a mild stroke (results of an interview with Doctor Roestam's patient). According to Doctor Roestam, as a neurologist, most patients who come or undergo outpatient treatment experience the initial complaint of hypertension. This is because the patient's blood pressure rises significantly which results in blockages. Normal human blood pressure is usually in the range of 120/80mg.

With changes in blood pressure that are above the normal average, it is possible to experience a stroke if it is not treated with treatment. Bearing this in mind, researchers are trying to provide education to patients who have had a stroke about carrying out therapy. Alternative treatment is to use music therapy to treat or as a companion medication for stroke.

This research aims to develop music therapy as a 'supplement' media for patients with nervous disorders as well as a media to reduce the stress level of nurses working in hospitals. In the world of healing with music therapy, there are 2 (two) methods known, namely active music therapy, and passive music therapy. According to Aizid, one of the techniques developed for relaxation is music therapy. Music can provide calm, improve mood, reduce anxiety physiologically. When music is used as therapy, it can improve, restore and maintain an individual's physical, mental, emotional, social and spiritual health (Aizid, 2011).

Individuals with high blood pressure who also suffer from nervous disorders ought to take action to manage their condition. At Methodist Hospital in Medan, many patients with nervous disorders and hypertension are still under stress due to the nearly three-year-long Covid-19 pandemic. This stress causes their blood pressure to rise. The general public is often unaware of the symptoms of hypertension. This highlights the need for lifestyle changes (Nababan et al., 2023). There are two ways that hypertensive patients can control their blood pressure, namely through treatment and without treatment. Lifestyle changes that can be made without treatment include adopting a low-salt, low-fat, alcohol-free diet that is rich in potassium, fruits, and vegetables, managing weight by reducing obesity, engaging in regular physical exercise, and practicing stress management. These efforts to control blood pressure can lead to improved blood pressure and a reduced need for medication (Park et al, 2015). Thus, it is crucial to utilize efficient therapies to treat individuals diagnosed with hypertension (Batubara et al., 2021).

Researchers have conducted various studies on music therapy across different patient and hospital settings, as previously mentioned. In light of this, they conducted a trial using a music therapy tool called Box Music Therapy (BmT) on patients with nervous disorders at the Medan Adventist Hospital. Initial observations revealed the following issues:

1. The hospital had never administered music therapy to patients with nervous disorders.

2. The trial aimed to assess the effectiveness of BmT Music Therapy as a treatment complement and to measure its outcomes.

3. BmT was integrated with Senosr GSR, MPX5050p, and Arduino Promini to ensure that the research findings were quantifiable, practical, and useful.

The objective of the research was to integrate Music Therapy techniques with methodological approaches for patients with neurological conditions through Box Music Therapy (BmT). BmT can be considered as a potential treatment option that incorporates instrumental music compositions and songs created by Junita Batubara. Batubara's works introduce innovative cross-cultural elements that blend Western music with traditional music from various countries, along with natural sounds like the sound of water, wind, and birds. It is envisioned that the music created by Batubara can alleviate stress and provide digital technology-based solutions for the physical health of patients with nervous disorders.

Eka, as reported by Mulyati (2017), suggests that music therapy is a simple, inexpensive, and side-effect-free non-pharmacological therapy for hypertensive patients. Certain music therapy techniques consider the human body to be a source of sound, and contend that the organs within the body are comparable to a set of musical instruments. The body generates a variety of sounds, including those produced by biological processes carried out by organs such as the stomach or heart. Additionally, Finasari et al. (2018) revealed that music therapy has been widely utilized in the field of health. For example, RSUD DR. H. Soewondo Kendal offers classical music therapy to hypertensive patients as an alternative form of treatment.

This study involves a quasi-experimental design that features a non-equivalent pretest-posttest control group. The purpose of this design is to examine the potential causal relationship between treatment and a variable, followed by a comparison of the treatment's results with those of a control group that received only a placebo and no intervention (Mulyati et al., 2017). This research design involves taking measurements before and after the intervention.

A silicon-based piezoresistive transducer, the MPX5050dp pressure sensor is intended for a variety of uses, especially microcontroller-based ones. In mmHg units between 0 and 375 mmHg, this sensor can measure pressures between 0 and 50 kPa. It is a monolithic, cutting-edge silicon pressure sensor that uses bipolar semiconductor processing, thin-film metallization, and sophisticated micromachining techniques to generate a precise, high-quality analog output signal that is proportionate to the applied pressure. The sensor also includes temperature-compensated, signal-conditioned, and calibrated chips. The MPX5050dp sensor detects air pressure and outputs the data in volts. It is designed for a variety of applications, particularly those that use microcontrollers. The sensor's working principle is that it reads air pressure and generates analog data, making it easier to process data using microcontrollers (Deza, 2017).

Observing the image below, this depicts a snapshot of the therapy session where the skin on the fingertips is able to transmit electronic voltage, which is then delivered to the primary nerve system. Similarly, in BmT, the GSR and MPX5050dp sensors connected to the patient can detect their stress levels and heart rate through the Arduino Promini, ultimately displaying numerical data on the BmT music therapy device's screen.
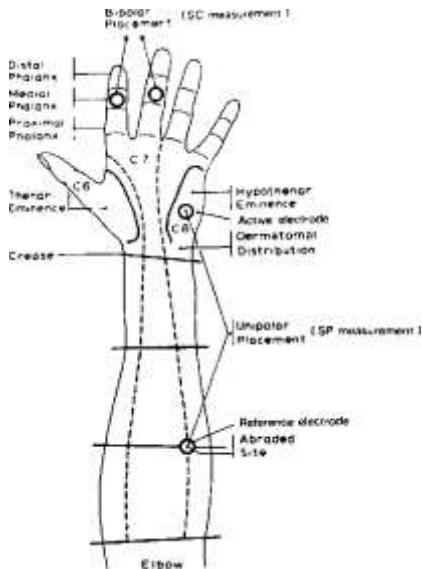
Figure 1. Hand Electrodermal Response Area for Detecting Stress (Batubara, 2024)

Research Methods

This study is a quasi-experimental research that implements a non-equivalent pretest-posttest design. In this instance, the researchers conducted the study with patients suffering from nervous disorders at the Medan Advent Hospital. The purpose of the study was to investigate potential causal relationships between the GSR sensor, MPX 5050dp, which was connected to the patients via Arduino Promini. The results were compared before, during, and after the music therapy was administered.

This research design involves conducting measurements twice, specifically before and after the intervention. To obtain accurate and relevant information, secondary data from the field were sought from various sources, such as the Internet, books, journals, and articles.

According to Arikunto (2006), the entire research subject is referred to as the population. Batubara and Maniam (2019) defined a sample as a portion or representative of the population being studied. Batubara (2020) emphasized that if there are fewer than 100 subjects in the population, it is advisable to include all of them in the study to make it a population study (Raj, Batubara, and Veerappan, 2020). However, the population limitation of this study was restricted to patients suffering from nervous disorders who were under the care of Dr. Rustam Sipahutar Sp.S.

The MPX5050dp is a specialized silicon pressure sensor designed for use in a range of applications, particularly those employing a microcontroller on a chip. This piezoresistive transducer is capable of measuring pressure from 0 kPa to 50 kPa, with corresponding mmHg readings between 0 mmHg and 375 mmHg. Additionally, the sensor features signal conditioning, temperature compensation, and calibration chips to ensure accurate measurements. The sensor operates by converting air pressure readings into analog data, making it simpler to process and analyze smaller data sets (Wiradharma, Mukhtar, & Cahyadi, 2022). For instance, in the case of the BmT MPX5050dp, it is particularly useful for measuring the heart rate of patients with nervous disorders while listening to therapeutic music. The functioning of skin conductance is thought to be influenced by sweat gland and skin pore activity. A person's skin conductance may be impacted by various factors, such as gender, blood type, skin type, and situational factors. The sympathetic nervous system plays a role in regulating sweat gland activity, and anxiety can result in a rapid increase in skin conductance. The higher a person's level of anxiety, the higher their body's resistance value will be (Bakti & Wardati, 2019). The tool's components, including the ESP32_D1_Mini, Audio_Jack, Heart Sensor, YX6200-16S MP3 Module, Ads1115idgst, GSR Sensor Connection, Display-Oled-128X64-I2C, LED0805, Battery, USB-MICRO-5P, USB-103F-B-FE headset, red/yellow/green LED, buzzer, switch, and others, must be purchased after it is designed. and material selection is important when creating a product because it affects how accurate it is.

Examples of features that depend on this material are body temperature detection, GPS-based tracking, finger sensor-based oxygen level measurement, distance measurement, sweat analysis-based stress level measurement, and 12 tests and data calibration for each feature.

Results and Discussion

The hospital, The Medan Adventist Hospital, expanded by adding a consultation room/doctor practice room due to the increase in such spaces. Ten polyclinics/doctors' practice rooms were available. The Adventist Hospital's medical practice collaborates with BPJS. Researchers have observed patients with nerve pain, and a specialist in neurological diseases, Dr. Rustam Sipahutar, Sp.S., contributed to the study. Dr. Rustam is a well-established physician who has honed his skills at Medan Adventist Hospital over an extended period of time. The clinic's organization at the Adventist Hospital is highly structured, with each doctor's schedule clearly outlined. Dr. Rustam holds clinics every Wednesday from 10:00 to 14:00 WIB. His patient population suffers from a variety of neurological disorders, including mild to moderate strokes, vertigo, nerve pinching in the hips and spine, numbness in both hands, tremors in the right hand, and Parkinson's disease.

The researchers have scrutinized patients under Dr. Rustam Sipahutar, Sp.S. A total of thirty-five individuals with neurological diseases were observed. These individuals received music therapy, which was evaluated through pre- and post-treatment assessments, such as GSR and bpm. The therapy utilized BmT, which fused GSR and BPM with 16 different types of music composed by the researchers themselves. This music therapeutic approach combined simple melodies with natural sounds like birds chirping, water sounds, wind sounds, and human voices. This study concentrated on patients who had experienced nerve pain for over a year.

Figure 2. Advent Hospital in Medan (source: google.com)

The research team, following the established standard operating procedure (SOP) and the specified criteria, monitored individuals under the care of Dr. Rustam Sipahutar Sp.S. The number of nurses required for the study was 35, comprising 12 men and 23 women.

Figure 3. Patients participating with music therapy

Researchers have applied Sera's theory to the study of GSR and MPX5050dp, which involves detecting stress levels through the condition of the skin on the fingers or hands. According to Regina Seran's perspective, the stress levels under investigation align with her theory.

Table 1. Theory of GSR

Patients' condition	GSR (bits)
Normal	0-300
Relax	301-525
Light Stress	526-600
Moderate Stress	601-725
Heavy Stress	726-825
Extremely Stressful	826-1023

No.	Patients' Initial names	Age	Gender (Male/Female)
24	F	47	F
25	TH	67	F
26	LN	60	F
27	RSM	68	F
28	JN	62	F
29	RehS	64	F
30	MA	19	M
31	DS	46	F
32	HA	20	M
33	HB	84	F
34	EMS	42	F
35	SP	36	M

A. Male Patients Aged 19 Years to 78 Years

The stress levels of patients monitored were found to be between 245 and 704 prior to receiving music therapy. A total of thirty-five individuals, aged 19 to 84 years old, participated in the therapy, and to ensure their privacy, researchers used initials to identify them.

Table 2 displays the identities of patients with neurological disorders after undergoing BmT

No.	Patients' Initial names	Age	Gender (Male/Female)
1	NS	62	F
2	RS	78	M
3	KP	69	F
4	SS	62	F
5	MH	52	M
6	SSir	70	F
7	MP	51	M
8	SM	69	F
9	J	45	F
10	LS	68	M
11	M	59	M
12	I	55	F
13	SH	61	F
14	HS	75	F
15	RoS	63	F
16	MR	60	M
17	SA	40	F
18	TB	71	F
19	JT	82	F
20	HL	60	M
21	RN	56	F
22	SG	67	M
23	CS	64	M

Table 3. Male patients aged between 19 years until 78 years

NO	Initial Names	Age	Gender
1	MA	19	M
2	HA	20	M
3	SP	36	M
4	MP	51	M
5	MH	52	M
6	M	59	M
7	MR	60	M
8	HL	60	M
9	CS	64	M
10	SG	67	M
11	LS	68	M
12	RS	78	M

Out of the thirty-five patients who participated in music therapy, twelve were male (34.29%). The age range of these male patients was between 19 and 78 years, with one patient (2.86%) falling between the ages of 71 and 80. Additionally, there were three male patients (8.57%) who were between 61 and 70 years old. The age group of male patients experiencing nerve pain was between 51 and 60 years, with five patients (14.29%) falling within this range. The average age of one male patient (2.58%) who was between 30 and 40 years old was also observed. Moreover, there were two male patients (5.71%) who were between the ages of 10 and 20 years old.

A 19-year-old patient named MA visited Dr. Rustam Sipahutar, Sp.S, complaining of pinched nerves and excessive anxiety. First, the researcher inquired about anxiety and pinched nerve. According to MA, the coccyx is where the pinched nerve is, and the inappropriate choice of educational major was the cause of the high level of anxiety. The patient was informed about music therapy and the function of BmT and therapeutic music selection were explained. After obtaining the patient's consent, an initial examination was conducted, which showed a bpm of 61 and a GSR of 559. The patient chose song number 3 (Alam Meyapa) and, after listening, the bpm was recorded as 81 and the GSR as 504. The patient reported feeling relaxed after hearing the therapy music. The researcher then asked whether the bpm increased by 20 as a result of the music therapy and whether the patient felt a strong heartbeat. The patient acknowledged that because of pain in their tail, their heartbeat was quicker than normal. HA, a male patient of 20 years old, had a history of vertigo and nerve disease in his thighs, waist, and back. When seeing Dr. Rustam Sipahutar, Sp.S., HA was only seen for pain.

.After conveying the education about the applications and advantages of music therapy, the healthcare assistant (HA) consented to perform music therapy. The initial values for beats per minute (BPM) and galvanic skin response (GSR) were 97 and 248, respectively, and the HA chose to play song number three ("Natural Greets"). Upon listening to the therapeutic music, the BPM decreased to 89 and the GSR increased to 141 as a result of the music therapy.

Furthermore, patients with initial SG (67 years/male) and RS (78 years/male) were also studied by the researchers. SG and RS had two sessions of music therapy. Through the use of BMT and its applications, the researchers taught SG and RS about music therapy. A patient named SG sees Dr. Rustam Sipahutar on a regular basis. Due to a brain blockage on the left side, SG experiences mild stroke and slurred speech. RS, a 78-year-old man with a history of tremors in his right hand, numbness, and a stroke in his left hand, is another patient that Dr. Rustam Sipahutar sees. The researcher administered music therapy and informed the patients about the advantages of BMT music therapy in both cases. Furthermore, RS was administered two treatments.

The RS showed differences between the first and second treatment outcomes in that they did not think the researchers' music therapy was effective because the first treatment's song choice was not appropriate. But by choosing a better song for the second treatment, the RS was able to benefit from music therapy. As a result, both patients—aged 60 to 80—felt that music therapy was beneficial. During the second treatment, the RS reported that their left hand, which had been immobile following a stroke, was now able to move, if only slightly. Researchers' findings regarding the relationship between patient age and the BPM produced by music therapy revealed that the BPM produced by music therapy tended to decrease with increasing age. The graph below illustrates this trend visually:
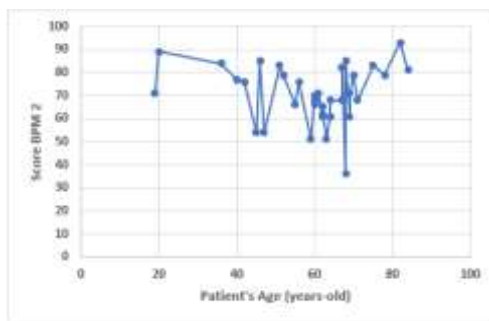

Figure 4. Relationship between age and bpm results of music therapy

B. Female Patients Aged 40 Years to 84 Years

Table 4. Female Patients aged between 40 years until 84 years

NO	Inisial Name	Age	Gender
1	SA	40	F
2	EMS	42	F
3	J	45	F
4	DS	46	F
5	F	47	F
6	I	55	F
7	RN	56	F
8	LN	60	F
9	SH	61	F
10	JN	62	F
11	SS	62	F
12	NS	62	F
13	RoS	63	F
14	RehS	64	F
15	TH	67	F
16	RSM	68	F
17	KP	69	F
18	SM	69	F
19	SSir	70	F
20	TB	71	F
21	HS	75	F
22	JT	82	F
23	HB	84	F

Twenty-three female patients participated in music therapy, accounting for 65.71% of the total number of participants, ranging in age from 40 to 84 years. Among these patients, there was one patient who was 30-40 years old (2.86%), and four patients who were 41-50 years old (11.43%). There were also three patients who were 51-60 years old (8.57%), and eleven patients who were 61-70 years old (31.43%). Two patients were 71-80 years old (5.71%), and two patients were 81-90 years old (5.71%). The initial BPM prior to music therapy ranged from 39 to 101, with an average of 73, according to the observational results. Similar to this, the first GSR observations made prior to music therapy had an average of 537.30 and ranged from 245 to 704. These findings suggest that the light stress to relaxed category applied to the female patients whose initial BPM was obtained prior to treatment.

Under the care of Dr. Rustam Sipahutar, Sp.S., two female patients, SA (40 years old) and ES (42 years old), both suffered from acute vertigo. The patients were only examined once because of their ongoing condition. This implies that each month, the patients have control over their symptoms. Researchers informed both patients about BmT, which included using music therapy to lessen vertigo and severe headaches. SA's initial bpm was 64 and ES was 83, the researchers saw after SA consented to the first treatment. SA's initial ES was 401 and its GSR status was 449. Based on the researchers' observations, the BPM from music therapy for SA was 77 and the GSR was 404, while for ES, the BPM was 76 and the GSR was 233, after choosing music therapy number 3 (natural greets) and music therapy number 8 (Ku grateful version 2), respectively. Overall, it can be concluded that BmT is highly beneficial for patients with acute vertigo as it helps them experience relaxation and allows them to express themselves through movement, such as shaking their head, tapping their fingers, and slowly stomping their feet.

Three women between the ages of 70 and 84 were examined by the researchers. Patient HB was eighty-four years old, patient JT was eighty-two, and patient SS was seventy-seven years old. Each of the three patients had mild strokes, different degrees of knee pain, or hearing loss. However, when conducting music therapy, the researchers faced uncertainty about the patient's ability to perceive the sounds due to her hearing impairment. Consequently, they devised a policy of amplifying the sound volume beyond its normal limits. As a result, the patients were able to hear and respond positively to the therapy. SS was the only patient to receive music therapy twice out of the three; JT and HB only once. It's important to note that these three patients routinely see Dr. Rustam Sipahutar, Sp.S. and that BPJS provides their medication on a monthly basis.

Patients with SS received music therapy on two separate occasions: August 10, 2023, and

August 23, 2023. During the initial treatment, the researchers observed that the patient's basal metabolic rate (BPM) was 69, and their galvanic skin response (GSR) was 687. Following the patient's selection of music therapy number 8 (I am grateful Version 2), the BPM increased to 79, and the GSR decreased to 662. A second treatment was administered, with the patient's initial BPM at 64 and GSR at 655. After selecting music therapy number 5 (Dream), the BPM decreased to 62, and the GSR decreased to 528. The data suggests that the patient experienced benefits from music therapy, and the patient also reported feeling relaxed and experiencing a reduction in headaches/vertigo and knee pain during an interview.

C. The connection between song selection and GSR and bpm.

GSR and bpm are two elements of BmT that are combined with instrumental music and songs written by musicians. The instrumental music and songs feature a variety of melodies that fall into specific pitch ranges, as well as natural sounds like wind, rain, and bird calls. The BmT comprises sixteen compositions in total.

Table 5. Some titles of Songs/Instrumental Music used in BmT

No	Title of Song	Note
1	After rain comes Sunshine	
2	Aktivitas lama	
3	Alam Menyapa	Instrumental
4	Human of the storm	
5	Impian	
6	In the Morning Shade	
7	Ku bersyukur V1	
8	Ku bersyukur V2	Vokal
9	Renungan	Instrumental
10	Senandung Alam	
11	Senandung Bidadari	
12	The Power of the dream	
13	Suara Alam	
14	Suara Air	
15	Song of the angel	
16	Blessing	

Patients at Medan Adventist Hospital under the care of Dr. Rustam Sipahutar, Sp.S., had a preference for songs 3, 4, 5, 7, 8, 9, and 11 out of all the songs and instrumentals that the researchers played. Among the thirty-five patients who took part in music therapy, songs 8 and 11 were their most preferred choices, as indicated by their song selection percentage of 31.43%, with song number 3 being a close second at 14.29%. Song number 4 (music therapy) was selected three times (8.57%), twice (5.71%) for songs 5 and 7, and once (2.86%) for song number 9. All patients had initial GSRs ranging from 245 to 704 and initial BPM concentrations ranging from 39 to 101 on average before beginning music therapy. The average GSR decreased from 141 to 704 after music therapy, and the BPM increased from 36 to 93 as a result of the treatment.
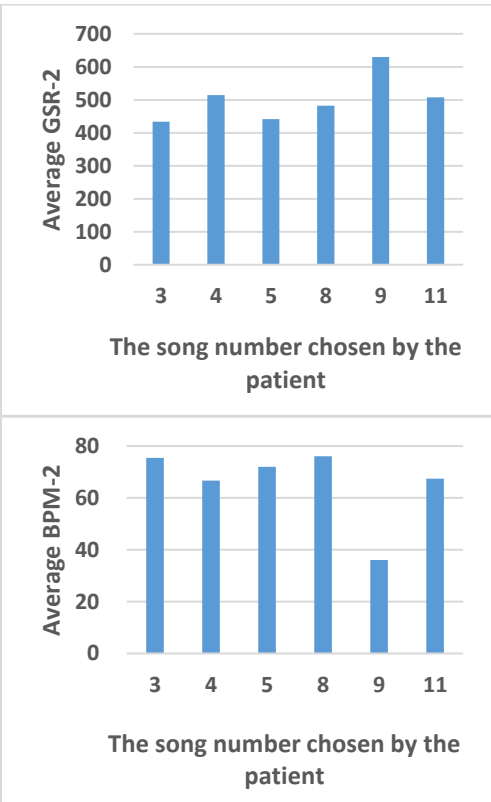

Figure 5. Relationship between song, GSR 2 and BPM 2

Based on the results of interview data and observations of patients with the music therapy that was created, it was proven that the frequency of the instrument's sounds was able to provide a sense of calm to the patient. This reduces stress in the patient. The following is data on frequency images for several instruments from several songs that are related to reducing stress levels:

Figure 6. Sound frequency using the Cubase music program

Above is a graphic image of sound frequencies for the flute musical instrument in the work 'Alam Greets', where the results of this graph show the range of melodies performed by this instrument which can reduce the patient's stress level. 'Alam Greeting' is one of the music therapies that is popular with neurology patients who take part in music therapy at the Medan Adventist Hospital. Then the music therapy that is the favorite of one of the patients is 'Senandung Bidadari'. This is a work of musical composition that has a female voice accompanied by music. The voice depicts the voice of an angel. Below is a graphic guide indicating the music therapy 'Senandung Bidadari' Number 11 with Khz between 50 to 10K Khz. According to the findings of observations and patient interviews, the chorus or refrain—that is, the presence of a woman's voice—of therapy music number 11 (Singing Bidadari) was able to calm the patient by causing them to follow the rhythm, move their head and body, and feel at ease. The patient reported feeling less stressed at that point. This was demonstrated by the 63-year-old patient with the initials RoS, whose initial heart rate was 74 and

his final heart rate was 51. He also showed improvements in his GSR, starting at 499 and ending at 340.

Graphic Form	Verse/Lyric
	Intro Vocal Sound *(Senandung Bidadari No. 11)*
	Middle minor vocal sound *(Senandung Bidadari No. 11)*

Figure 7. Sound in music therapy number 11 (Senandung Bidadari)

Conclusion

Researchers typically follow standard operating procedures (SOPs) when observing patients who participate in music therapy. The SOPs for observing patients are as follows: (1) the patient must be under the care of dr. Rustam Sipahutar Sp.S; (2) patients must obtain permission and be examined by dr. Rustam before participating in music therapy; (3) the patient is interviewed to gather general identity information such as name, age, and any nervous disorders they may have; (4) the patient is educated on the benefits and uses of music

therapy (BmT); (5) the patient is given a choice of 16 different therapeutic music pieces to listen to; (6) the patient is given time to select the music they want to listen to; (7) the patient must sit relaxed during the observation period; (8) the patient listens to the selected music for a period of three to eight minutes, depending on the duration of each music piece; (9) after listening, the researcher explains the results of the observation to the patient using BMT; (10) patients are encouraged to return for additional observations. Citation, reference, and in-line citations should not be modified, and numbers should not be changed. The text should be written using American English spelling, specific terms, and phrases.

The researchers studied 35 nurses, 12 of whom were male, and 23 were female, following Standard Operating Procedures (SOP) and requirements. The majority of males, 2.86%, were between 71 and 80 years of age. Additionally, 8.57% of males were between 61 and 70 years old, and 14.29% were between 51 and 60 years old. Only 2.58% of males were between 30 and 40 years old, while 5.71% were between 10 and 20 years old. Vertigo, pinched nerves around the waist, and mild to moderate strokes were among the symptoms that the study participants experienced. Interestingly, lower strokes and patients with pinched nerves around the waist were more common than mild to moderate strokes. Sixty-seven percent of the twenty-three female patients who underwent music therapy were in the 40–84 age range. Only 2.86% of females were between 30 and 40 years old, while 11.43% were between 41 and 50 years old. 8.57% of females were between 51 and 60 years old, 31.43% were between 61 and 70 years old, 5.71% were between 71 and 80 years old, and 5.71% were between 81 and 90 years old. Patients with vertigo were mostly aged between 40 and 68 years, while patients with pinched nerves ranged in age from 55 to 84 years.

According to the researchers' observations of dr. Rustam Sipahutar, Sp.S's patients at the Medan Adventist Hospital, it is crucial to conduct extensive research on patients once more, given that their stress levels are moderate. To attain the desired outcome of minimal relaxation, it is essential to administer music therapy to patients at least twice regularly at the Medan Adventist Hospital.

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