

## The Influence of Instrumental Music *Alam Menyapa* for Prenatal and Postnatal Patients at the Martha Friska Multatuli Hospital

Ronald Heriko Saragih<sup>1)</sup>, Junita Batubara<sup>2)\*</sup>, Happy Majesty Waruwu<sup>3)</sup>, Merdiani Gulo<sup>4)</sup>

<sup>1,2,3,4)</sup> Music Study Programm, HKBP Nommensen University

\*Corresponding Author

Email: [junitabatubara@uhn.ac.id](mailto:junitabatubara@uhn.ac.id)

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### ABSTRACT

The research was a trial of instrumental music therapy on prenatal and postnatal patients at the Martha Friska Multatuli Hospital in Medan. The aim of this research is to be a solution to reduce pain and stress so that mothers who are about to give birth and after giving birth can feel relaxed. The tool used in the research is BmT (Music Box Therapy). Previously, BmT (Music Box Therapy) was tested on patients affected by drugs at the Mutiara Abadi Binjai Foundation (2019) and hypertension patients at the Medan Methodist Hospital (2021). The method used in the research was a quasi-experiment on four patients before and after giving birth. The BmT is designed to use two types of sensors, namely the MPX5050dp sensor as a blood pressure sensor and Galvanic Skin Resistance (GSR) as a sensor to measure the patient's skin conductivity level. One of the components of BmT is 16 pieces of instrumental music which are musical compositions by Prof. Junita Batubara, S.Sn., M.Sn., Ph.D.. The results of this trial show that the use of the instrumental music *Alam Selamat*, which is one of the therapeutic music in BmT, can reduce stress levels in mothers who are about to give birth and after giving birth.

### KEYWORDS

Instrumental  
Music  
Hospital  
Medic  
BmT

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### INTRODUCTION

Music therapy is a series designed in an attempt to encourage a person or even petrify a person. The word is usually used in physical and mental contexts. "music" in "music therapy" has a specific meaning or explanation in the series of therapy. Music therapy is a nonverbal therapy. With the help of music, the client's mind is allowed to wander, either to remember happy things, imagine things he dreams of and aspire to, or even describe the problems he is facing (Djohan, 2006). Enjoying music itself can be done by listening to music, singing, and playing musical instruments

Pregnancy is every woman's dream and is one way to achieve perfection as a mother. This process begins with fertilization (conception), the period of formation of the baby in the womb, and ends with the birth of the baby. Feelings of fear and anxiety in pregnant women can cause excessive pain during childbirth. The excruciating pain felt by the mother can disrupt the labor process and result in a prolonged labor process. On the other hand, psychological conditions with anxiety and depression in pregnant women will influence the emergence of disease and complications of pregnancy and childbirth, both in mother and baby. Anxiety problems always arise in primigravida mothers, therefore these anxiety problems must be addressed immediately (Shodiqoh, 2014).

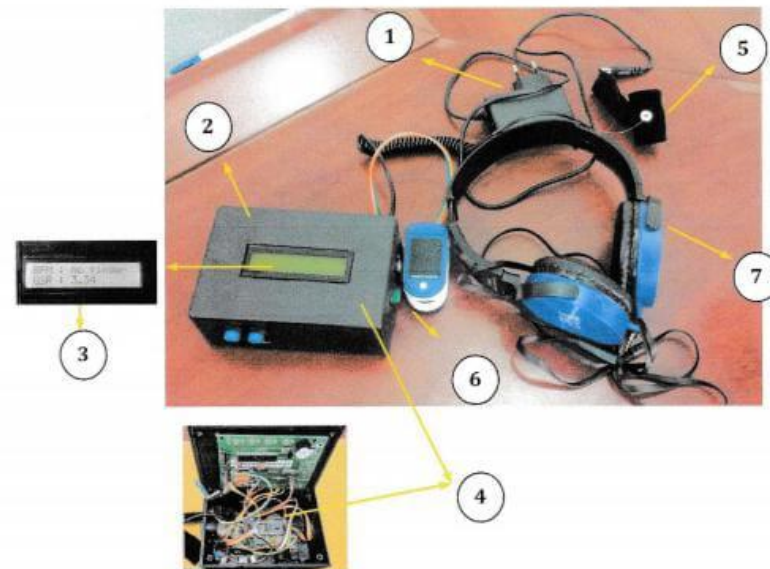
With regard to the case above, this research will focus on the use of instrumental music

therapy for pre-natal pregnant women. The use of music therapy in the world of health has been done a lot before. For example, classical music therapy as an alternative treatment for hypertension patients at RSUD DR. H. Soewondo Kendal (Finasari et al., 2018), research on Sundanese Degung music (Mulyati & Sudirman, 2017) on reducing blood pressure in hypertensive patients as well as the use of Indian classical music/ragas (Sarkar & Biswas, 2015) which is believed to be able to cure various health problems. Apart from that, the use of music therapy can also reduce anxiety levels in cancer patients. Based on the results of the research above, it turns out that music not only has benefits for children or young people. Music also has benefits for people who are already elderly. Aspects of the lives of the elderly who benefit from music both physically and psychologically. So that music therapy has several benefits such as; relaxation, resting the body and mind, increasing motivation, self-development, improving the ability to remember and mental health.

In this research, researchers will use a tool called BmT (Music Box Therapy) as a supporting medium in this research. The BmT is designed to use two types of sensors, namely the MPX5050dp sensor as a blood pressure sensor and the Galvanic Skin Resistance (GSR) sensor as a sensor to measure the patient's skin conductivity level. The musical component in BmT has 16 pieces of music. The MPX5050dp pressure sensor is a piezoresistive transducer made from silicon and designed for various applications, especially those using a microcontroller on a chip, working at pressures of 0 kPa to 50 kPa for mmHg units from 0 mmHg to 375 mmHg. This sensor is a monolithic, technologically advanced silicon pressure sensor. This sensor combines advanced micromachining techniques, thin-film metallization, and bipolar semiconductor processing to provide an accurate, high-level analog output signal that is proportional to the applied pressure. Apart from that, it is equipped with signal conditioned, temperature compensated and calibrated chips. This sensor detects air pressure with an output of voltage in Volts. Sensors are designed for various applications, especially those using microcontrollers. The working principle of this sensor is that the air pressure read by the MPX5050dp sensor produces analog data, making it easier to process data in micro (Deza, 2017).

GSR is a sensor that can sense and measure the level of conductivity of the skin which varies depending on the level of skin moisture (moisture) and the salt content found in sweat on the surface of the skin. The interesting thing that is the center of attention is that basically the sweat glands are influenced by the sympathetic nerves, so changes in a person's emotional level will influence the sweat glands on the surface of the skin to secrete sweat, thus having the ultimate impact on increasing the level of skin conductivity. In this way, this sensor can be used to determine human psychological and physiological levels (Ningrum, 2019). The human body's resistance is found in almost all body skin. Body skin consists of 2 (two) layers, the outer layer and the inner layer. The outer layer is composed of scale cells which has high resistance when dry, clean and not torn. For the inner layer of skin, due to the presence of body fluids, it has a relatively lower resistance, namely around 300  $\Omega$  (Zoel, 2016).

Based on the opinions above, the research team made updates to BmT where the initial BmT consisted of 3 types of therapeutic music. Then on the previous BmT monitor screen there was no choice of therapy music. The innovations made to BmT include: bpm, GSR, therapy music number and volume for adjusting the strength/softness of the music being played. The latest form of BmT can be seen in the image below:



No. acuan gambar:

Gambar 1

1. Adaptor dengan suplai energi listrik dari PLN
2. Packaging berbentuk kotak (mini box) dari bahan HDPE
3. Tampilan data BPM dan GSR pada LCD
4. Sistem Arduino Uno (Atmega328)
5. Sensor GSR (*Galvanic Skin Resistance*)
6. Sensor MPX5050dp
7. Perangkat Headphone

**Figure 1.** Box Music Therapy (Doc. Researcher, 2023)

The results of the interview with Dr. Jhoni Sastra Manurung, MKM that the Martha Friska Multatuli Medan Hospital was officially opened on July 24 2010, as a branch of the Martha Friska Pulo Brayon Hospital with different management. This hospital is located at Jalan Multatuli, Taman Multatuli Indah Complex No.1 Medan. The Martha Friska Multatuli Hospital in Medan has a bed capacity of 250 units consisting of SVIP, VIP, class 1, class 2 and class 3. There are also general practitioners and specialist doctors who work under the auspices of the Martha Friska Multatuli Hospital in Medan totaling  $\pm 100$  people. who are ready to serve patients. Based on the results of interviews with dr. Jhoni Sastra Manurung, MKM as head of the medical services management section said that the Martha Friska Multatuli Hospital in Medan was reopened during the 2020 pandemic and was then used as a referral hospital for the Provincial Health Service. Until 2021, this hospital will be open to BPJS patients and the general public. The number of patients continues to increase from year to year, numbering from one hundred to three hundred people. In 2023, Dr Jhoni explained that there will be  $\pm 600$  inpatients.



**Figure 2.** Martha Friska Multatuli Hospital Medan (Doc. Researcher, 2023)

The research was carried out specifically for mothers who gave birth normally. From the results of observations at the hospital, many young mothers who want to give birth choose the method of caesarean section (SC), where delivery is a way of giving birth to the fetus through an incision in the front wall of the stomach and uterine wall (Sarwono, 2009). In this case, the researcher's focus was on four prenatal and postnatal inpatients, which were carried out every Tuesday and Friday from 09.00 to 16.00 WIB. Researchers collaborated with obstetrician Dr Alim Sahid, SpOG.

## METHOD

Data collection techniques used include; (a) In-depth interview with the Nurse; (b) Observations of pregnant women at the Martha Friska Multatuli Hospital in Medan. Observations were made to test the performance of the BmT music therapy tool; (c) Interview with pregnant women and the management of Martha Friska Multatuli Hospital. The validity of the data obtained by having Ethical clearance, namely a certificate of passing the ethical review with letter number 485/KEPK/FK/VI/2023. The purpose of the EC is as one of the ethical requirements for research protocols in an effort to protect the human rights of researchers and patients in medical ethics. This is done so that the research results are recognized in the medical world.

The data analysis technique used is an interactive analysis model. The procedures used are; (1) data collection (focusing the collection data); (2) data reduction (analysis during data collection, within site analysis, cross site analysis); (3) data presentation (matrix displays some general suggestion); and (4) drawing and verifying conclusions. Researchers conducted a study of music therapy procedures, where in carrying out research it is best to have Operational Standards (SOP). The SOP was prepared after receiving input from doctors, nurses and the results of observations at the hospital before conducting the research. The SOPs carried out by researchers when observing pre- and post-natal maternal patients are:

1. The patient is a patient of Dr. Alim Sahid Sp. OG.
2. Patients can participate in music therapy after obtaining permission and being



- examined by Dr. Alim Sahid Sp. OG.
3. The patient is interviewed regarding general identity (name, age, pre/postpartum experiences/perceived by the patient).
  4. Patients are given education about BmT benefits and uses (BmT Box and Headphones).
  5. Patients are given education about 16 pieces of therapeutic music so that patients can choose what music they want to listen to.
  6. Patients are given time to choose the therapy music they will listen to.
  7. The patient must sit/half-asleep/stand in a relaxed position so that observations can be carried out.
  8. The patient is given time to listen for 3 minutes to 3 minutes. 8 minutes (depending on the time duration of each therapy music).
  9. After listening, the researcher will explain the results of observations via BmT to the patient.

With the SOP above, researchers have a basis for implementing and educating prenatal/postnatal mothers so that they can be observed during the prenatal and postnatal processes.

## RESULTS AND DISCUSSION

The Martha Friska Hospital in Medan is basically located in two places, namely the Martha Friska Glugur Hospital and the Martha Friska Multatuli Hospital. The difference between the two hospitals is the ownership and management system which is managed professionally. Then, Martha Friska Multatuli Hospital is one of the hospitals that has type C accreditation. On average, patients at Martha Friska Hospital are patients who use BPJS, including pre-natal and post-natal mothers.

Research was conducted on patients who experienced contractions/openings in mothers who were ready to give birth. From the results of researchers' observations, pre-natal mothers are usually in a state of pain or have experienced contractions or 6 to 9 openings, often experiencing very high levels of stress and worry, especially mothers who are giving birth for the first time. So it is often found that young mothers have surgical deliveries. From this observation, the researcher used the Regina Seran method. Where Regina Seran said that there are six levels of stress levels, namely:

**Table 1.** Stress Level according to Regina Seren

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

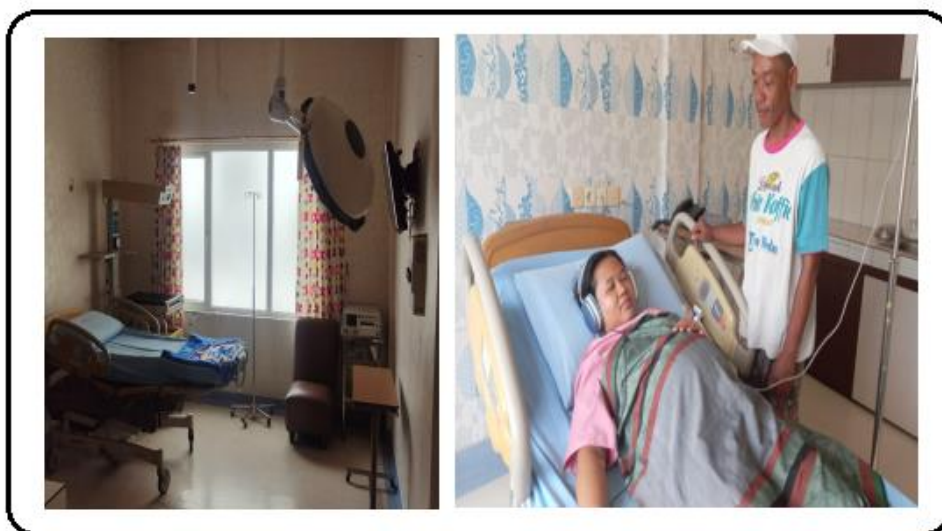
By Regina Seran's opinion regarding stress levels measured by GSR, researchers used GSR and bpm in BmT. The Stress Level (GSR) of patients following observation was in the range 284 - 683 (before therapeutic treatment); BPM is in the range 41 - 102 (before treatment). The patients who took part in music therapy were four people with an age range

of 20 years - 39 years and the researchers in this case made initials to protect the nurses' confidentiality. The four patients are:

**Table 2.** Data on Pregnant Women Who Followed Music Therapy  
At Martha Friska Multatuli Hospital, Medan

No	Patient's initials	Age/ Years	Gender	Day/Date
<b>Prenatal Patient</b>				
1	VG	20	F	30/09/2023
2	AS	23	F	28/08/2023
<b>Postnatal Patient</b>				
3	AN	35	F	22/08/2023
4	AH	39	F	21/08/2023

In this case, researchers carried out observations of prenatal and postnatal patients in accordance with the SOP where there were four young mothers who were ready to give birth. In accordance with the SOP, the normal birthing room for pregnant women is made in such a way that they feel comfortable. This can be seen in the picture below:



**Figure 4.** Normal Delivery Room (Dpc. Researcher, 2023)

Patients who received music therapy treatment during prenatal period were with the initials VG (20 years) and AS (23 years). The two patients came to the Martha Friska Multatuli Hospital in Medan in a six-opening condition, which means the patient was experiencing mild contractions. Both patients attended music therapy on different schedules, VG on 09/30/2023 while AS on 08/28/2023. Next, music therapy is performed on AS at the seventh opening where the patient is experiencing quite active contractions. Patient AS, a mother who gave birth to her second child, received three music therapy treatments up to opening nine by choosing two different songs. The first song to listen to is song number three (Alam Greetings) and song number 11 (Senandung Bidadari).

When the first music therapy treatment was carried out with song number three, the patient experienced quite a high level of stress. This can be seen from the initial BPM of 82 and the initial GSR of 683. In opening seven patients received music therapy treatment with

music therapy with number three with a BPM resulting from music therapy of 69 and a GSR resulting from music therapy of 650. After the patient experienced a reduction in stress through the first music therapy treatment, then the patient is able to move around the room while experiencing moderate contractions.

Two hours later, the AS patient was examined by the hospital midwife to check the opening/contractions of the normal labor process. Judging from these results, the patient is already in an eight-opening condition. In the next hour and a half, AS asked for a second music therapy treatment. Initial BPM 72 and initial GSR 652 with therapy music number 11 (angel humming). The results obtained were that the BPM resulting from music therapy was 64 and the GSR resulting from music therapy was 630.

Next, AS was checked again by the hospital midwife to find out where the contractions/openings had reached. Then it was discovered that the AS patient had experienced nine contractions/openings. Researchers approached AS to carry out a third music therapy. In this condition, AS patients have started to experience very painful contractions because the baby is about to head down (ready to be born). AS agreed to do the third music therapy where the initial BPM was 102 and the initial GSR was 669. The researcher carried out music therapy where AS asked for music therapy number three again (Nature greets). After listening to therapeutic music, the BPM resulting from music therapy became 51 and the GSR resulting from music therapy became 602. Judging from the results of three music therapy treatments for AS patients, the success rate is quite significant.

Furthermore, patient VG (20 years) is a mother who is ready to give birth to her first child. The first music therapy treatment for VG was carried out at opening six. Initial BPM 74, initial GSR 490 with therapy music number 3 (nature greets). After listening, the patient feels calm and can reduce the pain caused by contractions. Four hours later the patient experienced mild contractions so the hospital midwife re-checked the level of contraction/opening. After checking, it was still in the sixth contraction/opening position. For this reason, the midwife calls the doctor to inform him of the patient's condition. So the doctor stated that the patient had to be induced to speed up contractions/openings for childbirth. This action was carried out because the VG patient was giving birth to her first child for the first time. After the induction, VG asked the researcher to experience music therapy a second time. Initial BPM 76 and initial GSR 401 with therapy music number 3 (nature greets). After doing music therapy the second time, the BPM from music therapy was 84 and the GSR from music therapy was 321.

Then the VG patient returned to movement by walking in the delivery room. After a while the patient experienced contractions which were quite painful and the midwife checked again that at that time the patient was already in a contraction/eight opening condition. This shows that music therapy is very beneficial for VG patients. Two hours later, VG experienced very painful contractions. With the situation experienced by VG, researchers recommended that he undergo music therapy treatment a third time. This treatment is approved by VG patients. The initial BPM was 94 and the initial GSR was 505. After the third music therapy treatment, the BPM resulting from music therapy was 75 and the GSR resulting from music therapy was 284 with music therapy number 11 (an angel humming). VG asked to repeat the therapy music with the same number twice.

According to VG, therapy music number 11 really makes him calm and really reduces pain. After an hour, VG experienced excruciating pain due to contractions. Then the midwife checked again and stated that she was in the ninth contraction/opening position. From the results of research for AS and VG patients who are normal prenatal patients, it can be stated

that music therapy is useful before the tenth contraction or opening process. As for reasons the doctor did not allow the researcher to carry out music therapy on the two patients: (1) the patient was in a lying position; (2) the position of the patient's legs ready for delivery; (3) medical ethics states that those who have the right to be in the room when a patient is about to give birth are the patient's husband/family, doctor, nurse and midwife; (4) a comfortable place is needed when the patient is ready to push to give birth so that music therapy cannot be carried out.

Patients who received music therapy treatment during postpartum were with the initials AN (35 years) and AH (39 years). The two patients came to the Martha Friska Multatuli Hospital in Medan in eight and nine openings, which means the patient was experiencing very painful contractions.

Both patients attended music therapy on different schedules. AN on 08/22/2023 while AH on 08/21/2023. Furthermore, AN received music therapy after three hours and AH received music therapy two hours after giving birth. AN gave birth to her third child, a boy weighing 2.8 kg at 04.15 WIB. AN is a nurse from Martha Friska Multatuli Hospital, Medan. Meanwhile, AH gave birth at 24.15 WIB, where AH gave birth to her fourth female child, weighing 2.1 kg. AH is a housewife. AN experienced the process of giving birth with the baby in a breech position so that after giving birth AN received eight stitches on the inside of the vagina. Meanwhile, after giving birth, AH only received three stitches. AH gave birth with the baby in a normal position.



**Figure 5.** Postnatal Ah Patient (Doc. Researcher, 2023?)

Both patients received music therapy by researchers two to three hours after giving birth. AN and AH received two treatments. The treatment was carried out in the position of selecting therapy music number three (nature greeting) and number 11 (angel humming). The choice of song was based on the wishes of the two patients. The first treatment was for



AN patients where the initial BPM was 111 and the initial GSR was 480. After carrying out music therapy by selecting therapy music number 3 (nature greets) the result was BPM from music therapy 103 and GSR from music therapy 198. Meanwhile AH chose therapy music number 3 (nature greets) with an initial BPM position of 64 and an initial GSR of 577. The results of the first treatment for AH were a BPM resulting from music therapy of 57 and a GSR resulting from music therapy of 352.

The position of the two patients during the first treatment was in the stage of feeling pain due to the stitches. The patient felt the pain very painfully, but after the first treatment, according to the patient, he relaxed and began to feel sleepy. The second treatment was carried out three hours later in different positions. AH performed music therapy for the second treatment in a sitting position. AH's data had an initial BPM of 71 and an initial GSR of 676. After receiving music therapy treatment by selecting therapy music number 11 (angelic humming), the results obtained were a music therapy BPM of 70 and a music therapy GSR of 568.

Next, for AN patients, music therapy treatment was carried out in a lying position where the initial BPM was 102 and the initial GSR was 615. After carrying out music therapy a second time by selecting therapy music number 11, the results obtained were the BPM resulting from music therapy in position 95 and the GSR resulting from music therapy. in position 525. When patient AH listened to therapy music, he became very sleepy so he fell asleep. According to patient AH, from the start of the sixth contraction/opening process until giving birth, the patient lacked sleep. From the results of the two postpartum patients above, it can be concluded that these patients experienced decreased stress and decreased pain. Both patients also felt sleepy so they fell asleep while listening to therapeutic music.

In BmT there are GSR and BPM where these components are integrated with songs/instrumental music created by a composer. The songs/instrumental music contain sounds of nature, bird sounds, wind sounds, rain sounds combined with melodies with certain pitch areas. The songs/instrumental music contained in BmT include sixteen compositions including:

**Table 3.** List Of Songs/Instrumental Music In Bmt

<b>Song Number</b>	<b>Title</b>	<b>Description</b>
1	<i>After rain comes Sunshine</i>	<b>Instrumental</b>
2	<i>Aktivitas lama</i>	
3	<i>Alam Menyapa</i>	
4	<i>Human of the storm</i>	
5	<i>Impian</i>	
6	<i>In the Morning Shade</i>	
7	<i>Ku bersyukur V1</i>	<b>Vokal</b>
8	<i>Ku bersyukur V2</i>	
9	<i>Renungan</i>	
10	<i>Senandung Alam</i>	<b>Instrumental</b>
11	<i>Senandung Bidadari</i>	
12	<i>The Power of the dream</i>	
13	<i>Suara Alam</i>	
14	<i>Suara Air</i>	
15	<i>Song of the angel</i>	
16	<i>Blessing</i>	

Of all the songs/instrumentals presented by the researchers, pre/postpartum patients at Martha Friska Multatuli Hospital in Medan chose songs number 3 and number 11 more often. Of the four patients giving birth normally who took part in music therapy, song number 3 and number 11 were the best choices. favorite. This can be seen from the percentage of song selection (50%) for each music therapy number. It can be seen from the results above that the relationship between the patient's choice of therapeutic music numbers on GSR and BPM shows that both instrumental music is able to reduce the patient's stress and pain levels. From both instrumental music there are natural sounds such as the sound of birds chirping in the morning, the sound of river water and the melodies sung have a calm rhythm. What this means is to use eighth, quarter and half note values with a tempo of 60-70.

VG patients experienced stress in a relaxed position (490) and after receiving music therapy treatment reached a normal position (284). AS patients were at moderate stress levels (669) before receiving treatment and after receiving music therapy treatment AS patients reached light stress levels (602). Furthermore, AN patients with moderate stress levels (615) before receiving treatment and after receiving music therapy treatment, AS patients reached light stress levels (198). AH patients experienced stress at a moderate stress level (668) and after music therapy treatment AH patients experienced a decrease in GSR 352 in a relaxed position.

## CONCLUSION

The Martha Friska Multatuli Hospital in Medan was officially opened on July 24 2010, as a branch of the Martha Friska Pulo Brayan Hospital with different management. This hospital is located at Jalan Multatuli, Taman Multatuli Indah Complex No.1 Medan. The Martha Friska Multatuli Hospital in Medan has a bed capacity of 250 units consisting of SVIP, VIP, class 1, class 2 and class 3. There are also general practitioners and specialist doctors who work under the auspices of the Martha Friska Multatuli Hospital in Medan totaling  $\pm 100$  people. who are ready to serve patients.

Based on the results of interviews with dr. Jhoni Sastra Manurung, MKM as head of the medical services management section said that the Martha Friska Multatuli Hospital in Medan was reopened during the 2020 pandemic and was then used as a referral hospital for the Provincial Health Service. Until 2021, this hospital will be open to BPJS patients and the general public. The number of patients continues to increase from year to year, numbering from one hundred to three hundred people. In 2023, Dr Jhoni explained that there will be  $\pm 600$  inpatients and 300 - 2000 outpatients with BPJS and general status at Martha Friska Multatuli Hospital in Medan. Furthermore, Dr. Jhoni also added that currently Martha Friska Multatuli Hospital Medan provides health services such as children's polyclinic, internal medicine polyclinic, mental health polyclinic, urology polyclinic, neurology polyclinic, surgery polyclinic, ob-gyn polyclinic, skin polyclinic, ENT polyclinic, pathology polyclinic, radiology and eye clinic.

The operational standards carried out by researchers when observing pre- and post-natal patients are: (1) The patient is a patient of Dr. Alim Sahid Sp.OG; (2) Patients can participate in music therapy after obtaining permission and being examined by Dr. Alim Sahid Sp.OG; (3) The patient is interviewed regarding general identity (name, age, pre/postpartum experiences/perceived by the patient); (4) Patients are given education about the benefits and uses of BmT (BmT Box and Headphones); (5) Patients are given education about 16 pieces

of therapeutic music so that patients can choose what music they want to listen to; (6) Patients are given time to choose the therapy music they will listen to.

Researchers carried out observations of pre/postpartum patients according to the SOP where there were four young mothers who were ready to give birth. The song/instrumental music titles found on BmT are (1) After rain comes Sunshine; (2) Activities; (3) Nature Greet; (4) Human of the storm (5) Dream; (6) In the Morning Shade; (7) I am grateful V1; (8) I am grateful V2; (9) Reflection; (10) Nature's Hum; (11) Angel's Song; (12) The Power of dreams; (13) Nature Sounds; (14) Sound of Water; (15) Song of the angels; (16) Blessings.

Of all the songs/instrumentals presented by the researchers, pre/postpartum patients at Martha Friska Multatuli Hospital in Medan chose songs number 3 and number 11 more often. Of the four patients giving birth normally who took part in music therapy, song number 3 and number 11 were the best choices. favorite. This can be seen from the percentage of song selection (50%) for each music therapy number. It can be seen from the results above that the relationship between the patient's choice of therapeutic music numbers on GSR and BPM shows that both instrumental music is able to reduce the patient's stress and pain levels. From both instrumental music there are natural sounds such as the sound of birds chirping in the morning, the sound of river water and the melodies sung have a calm rhythm. What this means is to use eighth, quarter and half note values with a tempo of 60-70.

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