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DEVELOPMENT OF MRI CERVICAL SCREENING MODEL TO GET MAXIMUM IMAGE RESULTS

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Abstract: Abnormal movement can usually occur in any critically ill patient. However, based on the observations made by the author since attending lectures to working in a hospital today, several routine examinations were found with uncooperative patients due to anxiety, anxiety and fear before undergoing examinations and entering the MRI (gantry) area. The research design was a one group pre-test post-test design. The population was all patients who underwent MRI at the Abdoel Moeloek Hospital in Bandar Lampung, totaling 12 people. The sampling technique used simple random sampling with a sample of 12 people. The research instrument used a DASS (Deperession Anxiety Stress Scale) questionnaire with data processing editing, coding, scoring, tabulating and statistical tests using Wilcoxon with $\alpha < 0.05$. From the results of the MRI images performed on patients who had received dhikr the results of the MRI images became clearer and less noise was produced. This was because the patient's anxiety level had decreased slightly and even decreased anxiety with dhikr therapy. With calm from the patient, the process of taking MRI images is faster and the results obtained are much easier to read. This research can be interpreted that there is an effect of dhikr relaxation therapy on anxiety levels in MRI patients.

Keyword: Dhikr Relaxation; Anxiety Level; MRI

INTRODUCTION

The cervical spine consists of seven vertebrae separated by intervertebral discs and connected by a complex network of ligaments. The ligament network causes these bones to work as a unified unit. The cervical spine has the character of each transverse process having a transverse process foramen for the vertebral arteries and veins, but the vertebral arteries only go through the transverse processes Cervical 1 – Cervical 6 only [1]. Abnormalities or pathologies that commonly occur in the cervical spine include tumors, trauma, compression, and infection [2].

The neck (cervical bone) is the upper limb that has many functions. In everyday life, the neck has the function of supporting the head, protecting the spinal cord and part of the torso or spine [3]. The neck has a very important role in the process of innervation from the brain to the whole body. The neck plays a role in the performance of blood vessels leading to the brain. The neck has very complex joint movements.

Neck movements consist of flexion, extension, rotation, and lateral flexion, neck movements are quite extensive and have many functions, the neck has a very high risk of musculoskeletal injury, especially neck pain [4].

The prevalence of neck pain within one month ranged from 15.4% to 45.3% in adults and 4.5% to 8.5% in children/adolescents. In addition, the prevalence of neck pain within one month that interferes with activities in adults ranges from 7.5% to 14.5%, and the annual prevalence of neck pain is estimated to range from 30% to 50% in the general population. There are 10% of all people experience neck pain in one month. Some of the causes of neck pain can be errors in sleeping position or heavy loading on the shoulders that radiates to the neck. In detail, it can be explained that pain in the neck is caused by musculoskeletal disorders due to tension and stretching of the muscles and ligaments in the neck area. In addition, generally, neck pain is triggered by a static neck position for a long time or movement or pressure on the neck muscles.

Neck pain is the second largest musculoskeletal case after low back pain. A study shows the prevalence of musculoskeletal pain in the neck in the community for 1 year is 40% and this prevalence is higher in women [5].

Several imaging diagnostic modalities to be able to see the anatomical structures of the Cervical and Cervical abnormalities can be performed using conventional imaging modalities of radiology, CT-Scan, and Magnetic Resonance Imaging (MRI) [6]. MRI is a diagnostic examination that produces cross-sectional images of the human body using a magnetic field without using X-rays. The basic principle of this examination is that the atomic nucleus vibrates and moves in a magnetic field. That movement is then captured and processed by the computer.[6]

The advantages of MRI are non-invasive and good detail in soft tissues such as the spinal cord, intervertebral discs, spinal corpus, Cerebro Spina Fluid (CSF) or abnormalities that may be masked by bone

images by other modalities [6]. The process of image formation on MRI According to Westbrook (2011) goes through a series of processes, including the longitudinal relaxation time (T1) and the transverse relaxation time (T2). T2 is the time required for the transverse magnetization component (Mxy) to decay to 37 % of its initial value. The values of T1 and T2 are constant at a certain magnetic field strength, and the transverse relaxation time results in T2 weighting.

MRI Cervical Spine examination on weights is recommended to use a pulse sequence Gradient Echo (GRE) because, in the Cervical Spine, there is the movement of CSF which can cause artifacts in the resulting MR image, so using a pulse sequence GRE can minimize artifacts caused by movement of CSF. Gradient Echo pulse sequences are sequences that use a variable flip angle of less than 90 so that the scanning time can be reduced. The resulting weighting of the Gradient Echo pulse sequence is T1, PD, and T2, where the T2 weighting of the Gradient Echo is called T2*WI [2].

In order to obtain quality MRI images, there are several things that must be considered, including the Signal Noise Ratio (SNR), Contrast to Noise Ratio (CNR), and Scan Time. SNR is the comparison ratio between Signal to Noise during an MRI examination, CNR is the difference in values between 2 (two) adjacent SNRs, and scan time is the time required to acquire data during an examination. Image quality values can be different due to variations in the Time Repetition (TR) value, TR is the delay time before the next RF-pulse is reapplied in the MR image weighting process. By increasing the TR value, the SNR, CNR, and Scan Time values will increase, conversely if the TR value decreases, the resulting MRI image quality parameter value will decrease. The artifact factor may occur from image noise, in which the artifacts from the image noise can reduce the value of the image quality of the resulting MR (SNR and CNR) [2].

Abnormal movement can usually occur in any critically ill patient. However, based on the observations made by the author since attending lectures to working in a hospital today, several routine examinations were found with uncooperative patients due to anxiety, anxiety, and fear before undergoing examinations and entering the MRI (gantry) area. Thus, according to the authors, additional preventive treatment is needed (efforts to prevent artifacts from occurring) before the examination is carried out even though the current MRI modality has also been equipped with parameter facilities that can reduce the effect of these movements during the examination [7].

One effort that can be done by someone to get peace, including the process of examining the disease to get healing, can be done through understanding the spiritual potential of each patient. Likewise in health services, the concept of spiritual care is currently an alternative treatment that can be given by medical personnel both before, during, and after undergoing examination or treatment. Spiritual care does not promote religion or practices to convince patients about their religion but instead provides opportunities for patients to express their values and needs, and empowers them

regarding their illness [8]. Spiritual Care is practices and procedures performed by nurses on patients to meet the patient's spiritual needs.

The word Spiritus which means blowing or breathing, this word gives meaning to everything that is important for human life. A person is said to have a good spirit if that person has full hope, is optimistic, and thinks positively, conversely if someone loses his spirit then that person will show despair, and pessimism and think negatively [9]. There are various definitions of spirituality according to each point of view. Spirituality is a broad concept, highly subjective and individualistic, defined in different ways for each person. Spirituality is a person's belief in the existence of God, and this belief becomes a source of strength when sick so that it will influence his beliefs about the causes of illness, the healing process of illness, and choosing people who will care for him [9][10].

THEORETICAL STUDY

Cervical MRI Patient Screening

Preparation for screening of Cervical MRI patients includes filling out the available checklist as follows:

1. Prior to the MRI examination, the patient was asked to urinate.
2. Removing all metal worn by the patient, such as dentures, hair clips, jewelry, etc.
3. The patient is asked to wear a patient gown.
4. Patients were asked and given explanations not to move and swallow during the examination to avoid artifacts.
5. Provide the patient with earplugs (ear plugs) so as not to feel noisy.[11]

Anatomy Cervical

1. Cervical Spine

The early form of the spine in the embryo is curved into a perfect "C" shape, with the extension of the head and lower limbs. As the child first raises the head, then sits and stands, what happens is a secondary forward curvature appears in the Cervical and Lumbar regions, which then produce the fullest curve of the spine in each region.

The working system of the cervical spine is assisted by muscles, tendons, ligaments and joints. The Cervical Spine closest to the skull is C1 with the smallest size compared to the other Cervical Spines, and then the Cervical Spine becomes larger up to C7. The cervical spine at the bottom must be larger to support the extra load from above [1].

The spine is separated into 5 (five) parts, namely Cervical, Thorax, Lumbar, Sacrum, and Coxygeus with the distribution of the vertebrae as follows; 7 cervical vertebrae, 12 thoracic vertebrae, 5 lumbar vertebrae, 5 sacral vertebrae and 4 coxygial vertebrae. Cervical is the smallest vertebrae which can be distinguished from Thoracic and Lumbar by the presence of foramen in each transverse process [11].

2. Cervical Spine Abnormalities

Some abnormalities were found in the Cervical Spine [2];

   a. Cervical myelopathy
   b. Cervical radiculopathy
   c. Cervical cord compression or trauma
   d. Spinal infection atau tumor

3. Magnetic Resonance Imaging (MRI)

Magnetic Resonance Imaging (MRI)

is a method of diagnostic examination in medical science, especially radiology, which produces images of a section of the human body using a magnetic field without using X-rays. The MRI imaging technique is relatively complex because the resulting image depends on many parameters [13].

Broadly speaking, MRI images are formed from 2 (two) types of Pulse Sequences, namely Spin echo (SE) and Gradient Echo which then from these 2 (two) types of sequences can produce image weighting, in the Gradient Echo sequence the resulting image weighting is T1. , Proton Density (PD) and T2*, with Signal to Noise Ratio (SNR), Contrast to Noise Ratio (CNR), Spatial Resolution, and scan time as image quality parameters [14].

In addition to image quality parameters, MRI is also known for several parameters in the weighting process to produce MR images, including Time Echo (TE), Flip Angle (FA), Field of View (FOV) and Slice Thickness and Time Repetition (TR) [2].

MRI Weighting Parameters

Image weighting on MRI consists of several parameters, including:

1. Time Echo

Time Echo or TE is the time from the application of Radio Frequency (RF) to the signal peak induced in the coil. The unit of TE is ms (millisecond).

2. Flip Angel

Flip Angle or FA is the angle resulting from a change in the precision angle due to the application of Radio Frequency (RF) pulses.

3. Field of View

Field of View or FOV is the area of anatomy or objects covered in the resulting MR image. The unit of FoV is mm (millimeter)

4. Slice Thickness

Slice Thickness, defined as the "thickness of the band" which will be passed by the nuclei or atoms

5. Phase Encode

The process of placing an MR signal by changing the spin phase in one dimension with a magnetic field gradient prior to signal acquisition

6. Number of Excitation (NEX)

NEX (Number of Excitation) is a value that indicates the repetition of data recording during acquisition with the same amplitude and phase encoding [14].

TR Value Variation on MRI Image Quality Parameters

1. Time Repetition

Time Repetition or TR controls how far the vector can recover before the next application of Radio Frequency (RF) in milliseconds or ms units, changing the TR value will make a difference to the resulting MR image quality parameters, namely the value of the Signal to Noise ratio (SNR), the Contrast to Noise Ratio (CNR) value and the Scan Time value. Variations in TR values can result in differences in image weighting, for example in T1 weighting the TR value used is low or short, in T2 and Proton Density (PD) weighting the TR value used is high or long.

2. Parameters of MRI Image Quality

Image quality parameters on MRI are based on:

a. Signal To Noise Ratio

Is the difference between the signal amplitude and the noise amplitude in MRI. The signal can affect the voltage at the receiver coil by the precession of the NMV

in the transverse plane. This noise is generalized by having the patient in a magnetic field, using the electric pulses from the system. The noise present is constant for each patient and depends on the object of the patient, the area being examined and the inherent noise of the system. Noise occurs at all frequencies and is also random in time. However, the signal that occurs is cumulative and depends on many factors and can be changed. The signal is then amplified or decreased in accordance with the existing noise. Increasing the signal can increase the SNR, whereas if you reduce the signal, the SNR will decrease. Therefore, any factor that influences the amplitude will ultimately affect the SNR. One of the factors that affect SNR is TR, whereby by changing the TR value, the SNR will also change [14].

b. Contrast To Noise Ratio

Contrast to Noise Ratio (CNR) is defined as the difference in SNR values between two adjacent areas. controlled by the same factors as SNR. CNR is perhaps the most critical factor in evaluating image quality because it directly uses the eye's ability to distinguish areas of high signal from low signal areas.

Changes in image contrast on the CNR parameter depend on two intrinsic factors and extrinsic factors

c. Scan Time

Scan time is time to complete data acquisition or time to fill K space. Scanning time is important in maintaining image quality, as long scan times give the patient more opportunity to move around during acquisition. Any movement of the patient may reduce the quality of the MR image

Spiritual Caring

Efforts to achieve optimal health in the nursing process must be holistic, which includes all dimensions ranging from physical, cultural, social, and spiritual. Spiritual caring is a nursing process that aims to improve the patient's spiritual well-being including a better quality of life, and reducing depression and hopelessness. According to Islamic teachings, spirituality is a dimension of one's health [22]. In Islam, it is believed that one of the goals of Allah SWT in teaching Dhikr is as a cure for all kinds of diseases, especially heart disease (psychological).

This is shown from several dhikr which have been extensively researched and used as instruments of treatment in various diseases. Spiritual care according to the views and teachings of Islam is one of the rights of Muslim patients that must be fulfilled [22].

Spiritual care can benefit patients as well as health workers. Reciting dhikr and doing other acts of worship are beneficial for curing mental and psychological ailments. The stage of spiritual development needs to be considered by the nurse before meeting the patient's spiritual needs. Understanding the stages of spiritual development will assist nurses in overcoming spiritual problems, meeting the patient's spiritual needs, and is expected to be able to improve the patient's spiritual well-being (Manap and Jambi 2011).

Generally, in an inpatient practice setting, patients are only led to pray through loudspeakers in the rooms without any special guidance. This is felt to be lacking and further intervention is needed to meet the patient's spiritual needs during

hospitalization. Interventions that can be given to meet spiritual needs can be in the form of worship practices (eg praying for Muslims), praying, and reading the holy book.

Several theories put forward spiritual definitions according to their respective perspectives but have the same meaning. Spirituality is anything or anyone that gives ultimate meaning and purpose to a person's life that embodies certain ways of being in the world in relation to other people, oneself, and the universe. Spirituality is the core of one's well-being which is usually conceptualized as a higher experience or self-transcendence, and is individual.

Spirituality and religion have similarities in several aspects and also have overlapping concepts. Their daily experiences include transcendence, relatedness, and the search for meaning and purpose in human life. However, the two terms have a sharp difference. Religion is usually understood as an expression of spiritual practice; organization, ritual, and practice of faith.

The humanistic approach explains that spirituality is described as a relationship between humans, nature, life, and God. Spirituality guides humans so that their lives are more orderly, and have confidence in the meaning of life. Spirituality according to Islam means using reason, intelligence, and ability to interpret the origin of the universe, the existence of God, surrender, and the existence of the Last Day (Doomsday), this can form a certain behavior according to what one's beliefs are. Spiritual health leads to happiness, hope, satisfaction, self-confidence, comfort and safety in this world and the hereafter [22].

The Effect of Reciting Zikr on Mental Health (Anxiety)

With dhikr will cause the tongue to become increasingly busy so as to avoid ghibah (gossip), namimah (brawling), lies, heinous acts and falsehood. Dhikr will make the difficulty easy, something that feels like a heavy burden will become light, even the difficulty will find a way out. By dhikr, a person will get closer to Allah according to the level of his dhikr on Allah 'azza wa jalla. The more he neglects dhikr, the further he will be from Him.

People who do dhikr will be closer to Allah and be with Him, namely a special togetherness, not just that Allah is together in the sense of knowing or encompassing His servants. But this togetherness makes them closer, get guardianship, love, help and taufik from Allah.

Remembrance is the medicine of the heart, while neglect of dhikr is a disease of the heart. Dhikr can get rid of restlessness and a sad heart. Dhikr makes the heart happy and free. Dhikr strengthens the heart and body, Dhikr illuminates the heart and the face becomes radiant. The heart is hard. The hardness of the heart can be softened by remembering God. Therefore, whoever wants to be healed from a hard heart, then increase the remembrance of Allah SWT. Remembrance will bring a person closer to God so that he is included in the group of people who do charity, which is worshiping God as if he were seeing him.

Dhikr will bring inabah, namely returning to Allah 'azza wa jalla. The more a person returns to Allah with a lot of dhikr

on Him, then his heart will return to Allah in every situation. Dhikr will further increase ma'rifah (introduction to Allah). The more dhikr, the more ma'rifah someone to Allah. Dhikr causes sakinah (tranquility) to fall, the shade of mercy, and being surrounded by angels. For Muslims, there are certainly various ways to get closer to Allah SWT, namely by praying five times a day, fasting, circumcision prayers, dhikr, paying zakat, performing pilgrimage, infaq , sadaqah, and others.

Specifically about praying, in fact we are asking and begging for something more than humans, namely God (Allah). When we are asking, we are communicating transcendentally.

As participants in effective transcendental communication, of course, our hearts will be easily touched when we see the moon and stars scattered across the sky at night because we think that this is not just a natural phenomenon, but a form of embodiment of the greatness and power of Allah SWT. Also our hearts will be easily thrilled when we hear or mention Allah's name. When the heart is truly touched, it will shed tears and even cry bitterly remembering how small we are as human beings before Him.

Allah SWT certainly has a purpose by mentioning this sentence over and over thirty times until the end of the letter. what he has earned. Everything that is owned is only a mere deposit while living in the world because real life is life after death or the afterlife.

Adhering to the Qur'an will bring people closer to the Creator, Allah SWT. If humans have reached this stage, then what they want to do is continue to worship Him. Whether it's obligatory prayers or other forms of worship, such as circumcision prayers, dhikr, etc. The frequent frequency of communication between humans and their God will further increase the sensitivity of the human heart to the signs or symbols of the greatness of Allah SWT.

The inner being touched by God's words makes there is no longer a barrier between man and his God. A friend of the Prophet Muhammad SAW, Sayyidina Umar Bin Khattab, said: "My heart has seen my Lord because the hijab (curtain) has been lifted by piety. Whoever has lifted the hijab (curtain) between himself and God, then it becomes clear in his heart the image of the kingdom of the earth and the kingdom of heaven".

Apparently with piety will bring people closer to God. A person's piety will be reflected in his daily attitude. His heart will be easily thrilled when he hears or mentions Allah's name. Furthermore, he will shed tears, even weeping bitterly realizing how small he is in front of the Creator. This is the feedback from transcendental communication.

In the Qudsi Hadith, it is explained that the dialogue that actually occurs between humans and their God when the servant reads Al-Fatihah, namely; A servant said: "Praise be to Allah, Lord of the Worlds".

Then what about the expected effect of this transcendental communication? The expected effect is none other than a change in a person's behavior that is better than before. Be more patient and humble, every step taken is a guidance from Allah SWT [23].

MATERIALS AND METHODS

The type of research used in this research is a type of pre-experimental research, which is a research design used to look for causal relationships with research involvement in manipulating independent variables. The research design used was one group pre-test post-test design, which was an experimental design by conducting a pre-test before being given an intervention, then after being given an intervention, a post-test was carried out.

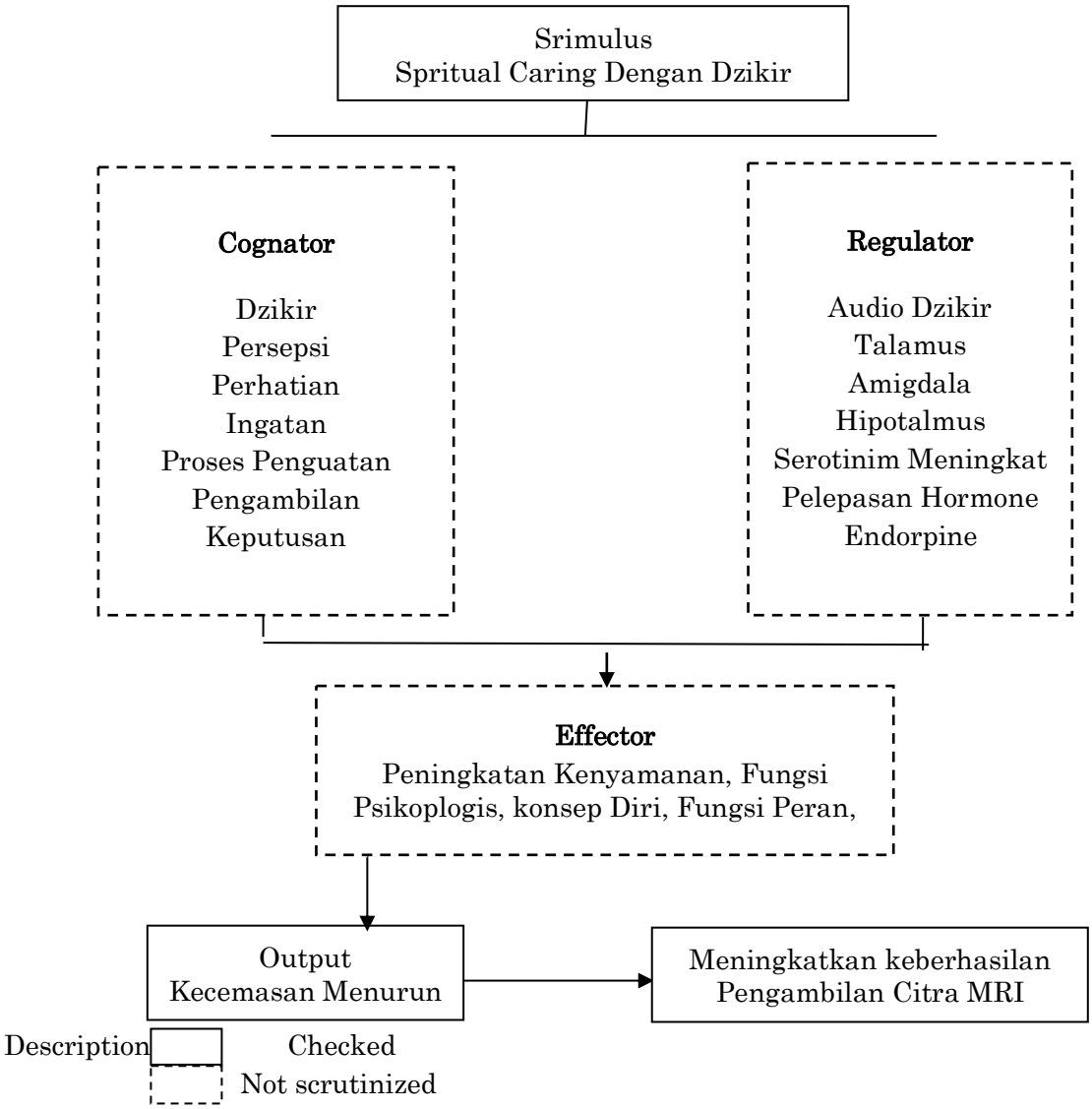

Figure 1. Theoretical Framework

RESULTS AND DISCUSSION

Overview of Research Locations

The research was conducted at the Abdoel Moelok Hospital Radiology Polyclinic in Bandar Lampung, which is a type A educational hospital owned by the Provincial Government of Bandar Lampung which is located at Jl. Dr. Rivai No. 6, Penengahan, Kec. Tj. Central Karang, Bandar Lampung City, Lampung 35112.

This research was conducted on patients who were going to do an MRI who visited room 116 of the radiology polyclinic at Abdoel Moeloek Hospital. The Radiology

Room consists of several examination rooms and has various kinds of radiology equipment to support the diagnosis of a disease. The following are the examination rooms and equipment in radiology: The CT-Scan 128 Slice Room consists of 2 rooms, the MRI Room consists of 1 room, The Mammography Room consists of 1 room, the X-Ray Room consists of 3 rooms, the USG Room consists of 2 rooms.

Human Resources (HR) in the radiology room environment consists of: Radiology Specialists: 5 people, Radiographers: 13 people 1) S1/DIV

Radiology: 9 people 2) DIII Radiology: 4 people, Radiology Nurses: 1 person, Administrative Officers: 4 people and Employees: 1 person f. Volunteers: 8 people.

The tools or facilities and services in Radiology are Magnetic Resonance Imaging (MRI). 0.36 Tesla MRI equipment can be used to examine several organs of the body using a magnetic field as an energy source. Examinations can be carried out using contrast and without using contrast. MRI equipment does not cause side effects and is relatively safer. Organs that can be examined using a 0.3 Tesla MRI are as follows:

a) Vertebrae

b) Head

c) Upper Extremity (Elbow Joint, Wrist Joint)

d) Under Extremity (Knee Joint, Ankle Joint)

CT Scan 128 Slices CT Scan 128 Slices can be used to examine all organs of the body by utilizing radiation as a source of tatis, examinations can be carried out using contrast and without using contrast. The Hitachi Brand 128 Slice CT Scan Equipment has 2 units and is equipped with 2 Contrast Injector units.

Mammography Equipment is used to examine the breast using radiation. Stationary X-Ray There is 1 unit of Stationary X-Ray in Room 6 of the Radiology Room, this equipment can visualize all organs of the body using radiation.

Mobile X-Ray There are 5 units of Mobile X-Ray equipment, spread across several rooms in Room 3 Radiology, ICU Isolation, Isolation 1, Poly Covid Mahan Munyai, Isolation 2. This equipment is very practical and easy to carry to carry out inspections in designated rooms. This equipment uses radiation as its static source. Mobile X-Ray equipment requires radiation shields that are practical to carry to ensure the safety of officers and the surrounding environment, there are 11 units of radiation shields and 7 units of aprons.

General Data of Patients Undergoing MRI Examination

The following is a table of respondent data:

Table 4. 1 Characteristics of Respondents

No	Variable	Intervention		Control		p
		N	%	N	%	
Age						
1	<35	1	16,7	2	33,3	0,061
2	36-40	1	16,7	4	66,7	
3	41-45	2	33,3	0	0	
4	46-50	1	16,7	0	0	
5	Over 50	1	16,7	0	0	
	Education					1,000
1	Not completed	0	0	0	0	

No	Variable	Intervention		Control		p
		N	%	N	%	
	in primary school					
2	SD	1	16,7	0	0	
3	JUNIOR HIGH SCHOOL	0	0	1	16,7	
4	SMA	6	50	0	0	
5	College	2	33,3	3	50,0	
	Work					1,000
1	Doesn't work	3	50,0	3	50,0	
2	TNI/POLRI/ civil servant	3	50,0	2	33,3	
3	Private	0	0	0	0	
4	Self-employed	0	0	1	16,7	
No	**Income**					0,567
1	>4 million	0	0	0	0	
2	1 million – UMR	4	66,7	2	33,3	
3	<UMR (3.5 million)	2	33,3	4	66,7	
No	**Check for MRIs**					1,000
1	Never	5	83,3	6	100,0	
2	1x	1	16,7	0	0	

Table 4.1 shows that there was no difference between the control and intervention groups in general, but in particular the intervention group 83.3% had never had an MRI examination, even in the control group 100% had never had an MRI examination.

Specific Data on Patients Undergoing MRI Examination

Table 4.1 Anxiety normality test in the intervention and control groups

Emergency	Intervention	Control
	p	p
Pre	1,000	0,492
Post	0,940	0,178
Delta	0,820	0,415

Table 4.1 shows that the pre, post and delta variables of anxiety in the intervention and control groups have data that are normally distributed (p>0.05).

Table 4. 2 Differences in anxiety before and after MRI screening

No	Group	Pre		Post		p
		m	Std	m	std	
	Intervention	11,0000	4,8579	8,5000	4,03733	0,002
	Control	11,3333	3,26599	10,0000	2,75681	0,043

Table 4.2 shows that MRI screening with spiritual care in the intervention group can reduce anxiety levels (p=0.002), and MRI screening procedures can also reduce anxiety levels in undergoing MRI screening (p=0.043).

Table 4. 3 Differences in anxiety levels between the intervention and control groups

No	Emergency	Intervention		Control		p
		M	Std	m	std	
	Pre	11,0000	4,8579	11,333	4,8579	0,892
	PosT	8.5000	4,037	10,000	2,75681	0,470
	Delta	3,500	1,048	2,3333	1,211	0,105

Table 4.3 shows that MRI screening with spiritual care in the intervention group reduced anxiety levels from moderate to mild and in the control group the anxiety level decreased but was still above the moderate category (p=0.105).

Table 4.4 Differences in anxiety categories (n=12)

Group	Emergency Level	Pre		Post		p
		N	%	N	%	
Control	Normal					
	Light Currently Heavy	2 2 2	33,3 33,3 33,3	2 3 1	33,3 50,0 16,7	0,066
Intervention	Normal	1	16,7	2	33,3	
	Light Currently Heavy	1 3 1	16,7 50,0 16,7	1 2 1	16,7 50,0 16,7	

Table 4.4 shows that screening MRI with spiritual care in the intervention group can reduce the category of moderate to mild anxiety (16.7) and normal (33.3) and the control group to the category of severe anxiety to moderate (16.7%) but none reached the normal category (p=0.066).

Table 4.5 Image Quality (n=10)

Group	Little Noise		Lots of Noise		p
	N	%	N	%	
Control	2	40	3	60	0,310
Intervention	4	80	1	20	

Table 4.5 shows that screening MRI with spiritual care helps cervical fixation at the time of examination reach the low noise category up to 80%, whereas in the control group the low noise category is only 40% (p=0.310).

The Effectiveness of the MRI Spiritual Care Screening Model for Anxiety

A. 1. MRI screening model with Spiritual Care = MRI screening model for anxiety levels. Based on the previous table, it shows that most of the respondents had moderate levels of anxiety in MRI patients before dhikr relaxation therapy, 5 people (41.8%), 2 people with severe anxiety and 1 person very severe. According to researchers, anxiety is closely related to the emergence of patients who do not know about MRI examinations. This will trigger the elderly to tend to have feelings characterized by fear or worry, increasing age, stress, feelings of fear, and anxiety.

Anxiety is a worry that is not clear related to feelings of uncertainty, a state that does not have a specific object that is experienced subjectively [35]. Anxiety is a feeling that is characterized by ongoing fear or worry, does not experience personality disorders, and behavior can be disturbed but within normal limits [36]. So the level of anxiety in MRI patients before getting dhikr relaxation includes feelings characterized by fear or worry, increasing age, stress, feelings of fear, and anxiety.

A.2. Mechanisms for the effect of the MRI screening model on anxiety levels are factors of age, information, and gender. The first factor is the age factor indicating that most of the respondents are over 50 years old, a number of 1 person. Even though there is only 1 person over 50 years old, according to researchers, elderly people over 50 years old tend to experience more anxiety which will result in an increase in blood pressure because the increasing age of the individual also affects the decline in the immune system, biologically the aging process is continuous which is marked with decreased endurance, a person's level of maturity and strength will be more mature in his mindset.

The older a person is, the more prepared they are to accept trials. This is supported by activity theory which states that the relationship between social systems and individuals remains stable as individuals move from middle age to old age [37]. The more mature the level of maturity and strength of a person will be more mature in thinking and working, the more comprehension and mindset will also develop so that the knowledge obtained will be more and more [38].

The second factor is the factor of how many times the MRI process has been carried out. Based on research in the field, it was shown that all respondents had only done the MRI process once, a total of 12 people (100%). According to researchers, information is very important for patients who will be doing MRI to increase knowledge and insight. Information is a form of decision that is more directed to achieve goals and objectives that have been set better to increase knowledge and insight [39].

Based on research data the anxiety level in MRI patients before dhikr relaxation therapy is highest in the questionnaire statement, namely I feel angry just because of trivial things with an average respondent's answer of 36%. According to researchers, almost half of the MRI patients have a main activity, namely students, therefore it is possible that pressure from coursework and association at university can affect a person's anxiety level.

Based on research data the anxiety level in MRI patients before dhikr relaxation therapy is the second highest in the questionnaire statement, namely I cannot feel positive (pleasant) things/feelings with an average respondent's answer of 30%. According to the researcher, I can't feel positive (pleasant) things/feelings from the side effects of excessive thinking about MRI or *Overthinking*. As a form of anxiety in MRI patients that causes the feeling I can't feel positive (pleasant) things/feelings, you should do tips such as calming down, don't pay attention to what other people say, reducing online addiction, keeping yourself busy, and create an atmosphere of success.

Looking at the situation in the MRI room, according to some respondents, the respondent becomes overtired, so there is a need for concentration to calm himself from excessive thoughts. Community service carried out using the online seminar method includes mindfulness to stop overthinking. The achievement of community in managing to overthink will be able to achieve the meaning of life so that they can achieve life satisfaction. Life satisfaction that is felt due to being able to manage overthinking through the ability to

mindfulness.

Based on research data on anxiety levels in MRI patients before dhikr relaxation therapy, the third highest is the questionnaire statement, namely, the lips are often dry and I feel impatient when I have to wait (for example: traffic jams, waiting for something) with a percentage value of 26%. According to the researcher, I feel angry just because of trivial things, my lips are often dry and I feel impatient when I have to wait for a form of anxiety that causes discomfort for a few minutes. Factors that affect panic when blood pressure rises, so to prevent this, patients must have awareness of the body, these disturbances do not cause death but affect the quality of the image-taking process during the MRI. A state of fear that you are unable to do something even with directions because you experience a loss of control, such as being unable to respond to simple commands [40].

Based on research data the anxiety level in MRI patients before dhikr relaxation therapy is lowest in the questionnaire statement, namely I feel that there is nothing that can be expected in the future with an average respondent's answer of 13%. According to researchers, the fear experienced by MRI patients, a form of anxiety which is characterized by feelings of tension, fear of facing death, discomfort, and unrest, is a factor that weakens the courage of MRI patients towards the MRI process and also affects the quality of life in these MRI patients. An emotional condition in a person characterized by a feeling of tension that is lived consciously and is subjective, death is also defined as a feeling of fear or anxiety when people think about what happens after death [41].

Based on the MRI photo in Figure 4.1 above, it can be seen that there are many *noises* (disturbance in the image) when the patient is undergoing the MRI retrieval process because of the existing patient anxiety data by distributing questionnaires, the researcher found the fact that the level of anxiety in a person can affect the results on the MRI image.

This is caused because with excessive anxiety, it can increase unnecessary movement which makes the MRI image results imperfect or there is much *Noise* and of course it will prolong the MRI process due to the repetition of the MRI process.

Based on table 4.7, it shows that the 12 respondents studied experienced normal and moderate levels of anxiety, 4 people (33.3%) after dhikr relaxation therapy. According to researchers, dhikr has relaxing powers that can reduce tension and calm down so that it can reduce anxiety, reading dhikr contains a very deep meaning that can prevent tension from arising. In addition, this dhikr relaxation therapy can be used to reduce physical, emotional, cognitive and behavioral tension which can result in increased blood pressure. This dhikr relaxation therapy helps the individual to concentrate on the tension that is felt and then trains the individual to relax so this therapy can reduce anxiety so that it can lower blood pressure.

Dhikr is an activity that triggers the activation of the parasympathetic nerves which stimulates a decrease in all functions raised by the sympathetic nerves, and stimulates an increase in all functions

derived by the sympathetic nerves [42]. Dhikr is an attempt to get closer to Allah by remembering Him. Dhikr can also function as a psychotherapeutic method because doing a lot of dhikr will make your heart peaceful, calm and peaceful, and not easily swayed by environmental influences [43].

So the application of dhikr can affect the anxiety that occurs in individuals causing both physical and psychological reactions because in each individual there are basic spiritual needs that must be met.

Based on research data the anxiety level in MRI patients after dhikr relaxation therapy is highest in the questionnaire statement, namely I cannot feel positive (pleasant) things/feelings with an average respondent's answer of 36.66%. According to the researchers, they cannot feel positive (pleasant) things/feelings because the side effects of excessive anxiety are often found in MRI patients.

According to researchers, they feel excessive worry, a form of anxiety level in MRI patients that is closely related to the emergence of a feeling of never getting pleasant things which is an asymptomatic disease that can cause serious illness suddenly, this situation will make MRI patients even more worried so that the pressure blood will quickly increase without realizing the symptoms.

Fear or worry about certain situations that are very threatening which can cause anxiety because something bad will happen, overthinking or overly anxious about a problem or situation accompanied by a feeling of discomfort[44].

Based on research data, the anxiety level in MRI patients after dhikr relaxation therapy was lowest in the statement of the questionnaire, namely experiencing difficulty breathing (for example: often panting or having difficulty breathing even though they had not done any physical activity before) with an average respondent's answer of 6.66%.

According to researchers, breathing disorders are a form of anxiety that will cause discomfort accompanied by fear that occurs for 30 minutes or more, factors that affect reflex movements that occur in the respiratory muscles so that gas exchange between oxygen O2 needed in the body is unstable [45].].

The need to get treatment to reduce the disorder and increase the chance of survival. Breathing is a reflex movement that occurs in the respiratory muscles, breathing reflexes are regulated by the respiratory center so that a person can hold, slow down or speed up his breath, then gas exchange between oxygen O2 which the body needs for cell metabolism and carbon dioxide CO2 produced from this metabolism is released from body through the lungs.

The Effectiveness of the MRI Spiritual Care Screening Model on Image Quality

Based on the results of data processing in Table 4.5, it shows that MRI screening with spiritual care helped cervical fixation during the examination and reached the low noise category of up to 80%, while in the control group the low noise category was only 40% (p=0.310).

The spiritual care mechanism with dhikr adds to the patient's sense of calm which can reduce the potential for body movement that can cause it to appear noise so that the process of taking MRI images becomes faster without having to repeat

and the results obtained are slightly better. So that the effectiveness of the MRI screening model with spiritual care for the quality of the MRI image can speed up the MRI process while at the same time getting better MRI images with less noise.

CONCLUSION

Based on the results of data analysis and discussion in this study, it can be concluded that:

1. The MRI Screening Model with Spiritual Care is slightly better than the regular MRI Screening Model for the patient's anxiety level in the Hospital Radiology Installation.
2. The MRI Screening Model with Spiritual Care is slightly better than the regular MRI Screening Model in terms of image quality obtained from patients in the Hospital Radiology Installation.

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