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FACTORS ASSOCIATED WITH THE ULTRASOUND EXAMINATION SELECTION BY PREGNANT WOMEN IN LEREP PRIMARY HEALTHCARE

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ABSTRACT

Ultrasound is a way to find out the fetus's condition in the body during prenatal care (antenatal care). This research aim was to determine the correlation between knowledge, parity, motivation, and husband's support with the choice of ultrasound examination by pregnant women at the Lerep Primary Health Care, Semarang Regency. This research is a descriptive study which is an analytic survey with a cross-sectional design. The population used in this research were third-trimester pregnant women who had their pregnancies checked at the Lerep Primary Health Care, Semarang Regency, with as many as 98 people. Sampling was conducted using non-probability sampling with accidental sampling techniques and a total of 50 people were obtained. Data collection was carried out using a questionnaire. Data analysis using chi-square. The results showed a significant relationship between the knowledge of pregnant women and the choice of ultrasound examination, there was no significant relationship between parity and the choice of ultrasound examination, and there was no significant relationship between the husband's support with the choice of ultrasound examination. With this research, it is hoped that primary health care can give some improvement in education and information for every pregnant woman who visits prenatal care about the choice of doing an ultrasound examination so that pregnant women understand the benefits of ultrasound examination.
Keywords: pregnant woman, Pregnancy test, USG

BACKGROUND

Ultrasonography (USG) is a part of Ante Natal Care (ANC) to determine the condition of the fetus in the body.(Lady Tioro Coilal, 2020) Gynecological examination with ultrasound is a standard examination that is not mandatory, but with this examination, it is hoped that it can detect conditions that are at risk to the mother and fetus earlier (Sarwono Prawirohardjo, 2016). Pregnancy examination using ultrasound reported to have no harm effects on the fetus. nevertheful, research regarding safety issues and biological effects provided by usg continues to be conducted. Pregnancy examination with ultrasound should only be carried out by a competent doctor and there are certain medical indications. This is intended to maintain the safety of the fetus when using ultrasound(D"Addario, 2022).

At this time most pregnant women do an ultrasound examination only to find out the sex of the fetus. (RS Hermina Pekalongan, 2020) Factors that influence pregnant women to carry out ultrasound are basically motivation, both from themselves and from outside. External motivation comes from family support, such as attention from husbands and health workers who have the knowledge to encourage pregnant women to have their wombs checked (Lies Indarwati, 2010).

The results of the preliminary study conducted were obtained from 10 pregnant women who did an ultrasound examination, it was found that 6 people had less knowledge about ultrasound, 8 people did an examination based on a midwife's referral and 6 people did not get a husband's support. The large number of pregnant women who carry out ultrasound examinations based on midwife referrals and not of their own free will shows that the level of knowledge about ultrasound is still lacking.(Komariyah, 2019) Ultrasound performed at her own request is influenced by the intrinsic motivation of pregnant women to get examination results from the health of their fetus. Meanwhile, pregnant women do not get support from their husbands because their husbands argue that ultrasound can endanger the health of the fetus and require high costs.(Megawati Sinambela and Eva Solina, 2021)

METHOD

The research is a descriptive study that had an analytic survey using a cross-sectional design. To collect research data using a questionnaire sheet. The sample of this research uses 50 respondents. Respondents were pregnant women who were living in the Lerep Primary Health Care area in Semarang Regency, before filling out the questionnaire, the researcher has been explained that this research would be kept confidential, and the respondents had been explained the risks of this research and agreed to it by filling out an informed consent form.

RESULT

1. Knowledge Level

Frequency distribution of knowledge level of respondents who chose to have their pregnancy checked using ultrasound at the Lerep Primary Health Care, Semarang Regency

No	Knowledge	Frequency	Prosentage (%)
1	Less	28	56
2	Well	22	44
	Total	50	100

In this table, it can be seen that the majority of pregnant women are less knowledgeable as many as 28 people or 56%.

2. Parity

Frequency distribution of parity of respondents who chose to have their pregnancy checked using ultrasound at the Lerep Primary Health Care, Semarang Regency

No	Paritas	Frequency	Prosentage
1.	Primiparas	31	62
2	Multyparas	19	38
	Total	50	100

In this table, it can be seen that the majority of pregnant women are primiparas, namely as many as 31 respondents (62%).

3. Motivation

Frequency distribution of motivation level of respondents who chose to have their pregnancy checked using ultrasound at the Lerep Primary Health Care, Semarang Regency

No	**Motivation**	**Frequency**	**Percentage**
1	Low Level	28	56
2	High Level	22	44
	Total	50	100

In this table, it can be seen that the majority of pregnant women are in low levels of motivation as many as 28 people or 56%.

4. Husband Supports

Frequency distribution of husband supports of respondents who chose to have their pregnancy checked using ultrasound at the Lerep Primary Health Care, Semarang Regency

No	**Husband Supports**	**Frequency**	**Percentage**
1	Doesn't Support	28	56
2	Support	22	44
	Total	50	100

In this table, it can be seen that the majority of pregnant women are in low levels of motivation as many as 28 people or 56%.

5. The Ultrasound Examination Selection By Pregnant Women

Frequency distribution of Ultrasound Examination Selection at the Lerep Primary Health Care, Semarang Regency

No	**Examination selection**	**Frekuensi**	**Prosentase**
1	Not according to recommendations	28	56
2	According to recommendations	22	44
	Total	50	100

From this table the majority of respondents checked their pregnancies using ultrasound not in accordance with the recommendations, namely 28 people (56%)

6. The correlation between knowledge and USG examination selections

The correlation between knowledge and USG examination selections in Lerep Primary Health Care, Semarang Regency

Knowledge	USG examination selections				Total		**P value**
	Not according to recommendations		According to recommendations				
	n	%	n	%	N	%	0.001
Less	22	15,7	6	12,3	28	28	
Well	6	12,3	16	9,7	22	22	
Total	28	28	22	22	50	100	

The statistical test results obtained p value = 0.001 ≤ 0.05 which means that there is a significant relationship between the knowledge of pregnant women and the choice of ultrasound examination at the Lerep Health Center, Semarang Regency.

7. The correlation between Parity and USG examination selections

The correlation between Parity and USG examination selections in Lerep Primary Health Care, Semarang Regency

Parity	USG examination selections				Total		**P value**
	Not according to recommendations		According to recommendations				
	n	%	n	%	N	%	0.209
Primiparas	20	17,4	11	13,6	31	28	
Multyparas	8	10,6	11	8,4	19	22	
Total	28	28	22	22	50	100	

The statistical test results obtained a p value of 0.209 ≥ 0.05, which means that there is no significant relationship between the parity of pregnant women and the choice of ultrasound examination at the Lerep Health Center, Semarang Regency.

8. The correlation between Motivation and USG examination selections

The correlation between Motivations and USG examination selections in Lerep Primary Health Care, Semarang Regency

Motivations	USG examination selections				Total		P Value
	Not according to recommendations		According to recommendations				
	n	%	n	%	N	%	
Low Level	15	12,3	7	9,7	22	22	0,211
High Level	13	15,7	15	12,3	28	28	
Total	28	28	22	22	50	100	

The statistical test results obtained a p value of 0.211 ≥ 0.05 which means that there is no significant relationship between the motivation of pregnant women and the choice of ultrasound examination at the Lerep Health Center, Semarang Regency.

9. The correlation between Husband Support and USG examination selections

The correlation between Husband Supports and USG examination selections in Lerep Primary Health Care, Semarang Regency

Husband supports	USG examination selections				Total		P Value	POR
	Not according to recommendations		According to recommendations					
	n	%	n	%	N	%		
Doesn't Support	20	15,7	8	12,3	28	28	0,028	4,375
Support	8	12,3	14	9,7	22	22		
Total	28	28	22	22	50	100		

The statistical test results showed that the p value was 0.028 ≤ 0.05, which means that there is a significant relationship between husband's support and the choice of ultrasound examination at the Lerep Health Center, Semarang Regency. Analysis of the description of the 2 variables obtained prevalence or POR (95% CI: (1.325-14.446) can be interpreted that respondents with non-supportive husbands are at risk of 4.375 times getting an ultrasound examination that does not match the recommendations compared to husbands who support it.

DISCUSSION

1. The correlation between knowledge and USG examination selections

After the statistical test, the p value was 0.001 ≤ (0.05), which means that there is a significant relationship between the knowledge of pregnant women and the choice of ultrasound examination at the Lerep Ungaran Health Center. Of the 28 respondents who had good knowledge, there were 6 people (12.3%) with the category of choosing an ultrasound examination that did not match the recommendations.

According to the assumptions of researchers, respondents with less knowledgeable categories are related to exposure to information about the importance. Respondents with less knowledge consider that ultrasound is not important in determining pregnancy health, in contrast to respondents with good knowledge, this is because these respondents have obtained many sources of information about the importance of selecting ultrasound examinations in pregnancy because respondents think this determines health in pregnancy. Knowledge of a person is also inseparable from the education pursued by the person. Someone who has a higher education, the ability to know, understand and understand someone will be easier (Prof.Dr. Soekidjo Notoatmodjo. S.K.M., 2014). Thus it can be said that there is a tendency that the better a person's knowledge, the better the awareness of the importance of having their pregnancy checked using ultrasound. This is in accordance with research conducted by (Akbar Andika reza, 2017) which states that there is a relationship between the level of knowledge of pregnant women about ultrasound in pregnancy examinations and the use of ultrasound in pregnancy examinations and the use of ultrasound at the Padang Bulan Health Center, Medan based on a p value of 0.001.

2. The correlation between Parity and USG examination selections

The statistical test results obtained a p value of 0.209 ≥ 0.05 which means that there is no significant relationship between the parity of pregnant women and the choice of ultrasound examination at the Lerep Health Center, Semarang Regency.

According to the researchers' assumption, primiparous mothers who are pregnant for the first time have the motivation to check their pregnancy with health workers. On the other hand, mothers who have had more than one child have the notion that mothers have experience, so they rarely have their pregnancies checked, so pregnant women think that prenatal care, especially ultrasound, is not so important.(Resdeli Lubis, 2021) Mothers with primiparous pregnancies are more selective about pregnancy checks than multiparous pregnant women, they tend to delay pregnancy checks and are less likely to keep prenatal check-up appointments, especially if the mother's previous pregnancy experienced a few problems(Reeder, 2011)

The results of this study are in line with Junga's study (Ministi Ratri Junga, 2017) which stated that there was a relationship between maternal parity and ultrasound examinations at Ranotama Weru Manado Hospital, which showed that mothers with high parity did a lot of irregular ultrasound examinations. While in reality multipara parity has a higher risk of maternal mortality. Even though the actual risk of multipara parity can be anticipated with family planning, because most pregnancies at high parity are not prepared or planned(Padila, 2014)

3. The correlation between Motivation and USG examination selections

The statistical test results obtained a p value of 0.211 ≥ of 0.05, which means that there is no significant relationship between the motivation of pregnant women and the choice of ultrasound examination at the Lerep Health Center, Semarang Regency.

According to Asnawi(Asnawi, 2002) one of the factors that influence motivation is family support. Pregnant women who ask to have their pregnancies checked using ultrasound based on family support can be influenced by external

encouragement, namely due to respect and respect for parents by being patient and wise about their pregnancy behavior. One of the factors that influence motivation is the factor of health facilities which is the health workers. Health workers are people who are educated, have knowledge about health and understand about the treatment that must be done to pregnant women in maintaining their health and have the authority to carry out pregnancy examinations.

According to research conducted by Lies Indrawati in 2010(Lies Indarwati, 2010) pregnancy checks using ultrasound in order to form good/positive motivation and action. Based on the results of the study, the majority of respondents had positive motivation of 38 (61.3%) and negative motivation of 24 (38.7%) and based on the results of the study there was a relationship between pregnant women's motivation and ultrasound pregnancy examinations at the Salatiga BPRSUD Obstetrics Polyclinic. can be seen from the P value = 0.001.

4. The correlation between Husband Support and USG examination selections

The statistical test results obtained a P value of 0.028 ≤ of (0.05) which means that there is a significant relationship between husband's support and the choice of ultrasound examination at the Lerep Health Center, Semarang Regency. According to the researcher's assumption that husbands do not support the choice of ultrasound examination due to the high cost of using ultrasound examinations, most husbands consider ultrasound examinations to be not very important, this is also related to the lack of ultrasound information. This is in contrast to husbands who support ultrasound pregnancy examinations, husbands who receive a lot of information about the benefits of ultrasound are more enthusiastic about the examination so that the wife's pregnancy is healthier and runs normally.

Pregnant women who do not get support from their husbands during pregnancy can experience stress or depression because everything related to pregnancy and the selection of examinations, including determining the selection of pregnancy support examinations such as ultrasound or those related to their pregnancy, is borne by them (Rustam Mochtar, 2015).

Factors from the support of husbands of pregnant women who ask to have their pregnancies checked using ultrasound based on family support can be influenced by external encouragement, namely because of respect and respect for parents by being patient and wise about their pregnancy behavior. Because there is support from the family for pregnant women to check their pregnancies so as to encourage mothers to routinely maintain their health, pregnancy and prevent complications, pregnant women request an ultrasound examination because of family support. This is in line with the research conducted by Lies Indriawati which stated that there was a relationship between husband and family in having their pregnancy checked using ultrasound at the Gynecology Polyclinic BPRSUD Salatiga in 2010 with a statistical test result of P Value 0.004.

CONCLUSION

There is a relationship between the knowledge and also between husband's support of pregnant women and the choice of ultrasound examination at the Lerep Health Center, Semarang Regency. But there is no relationship between the parity and the motivation of pregnant women and the choice of ultrasound examination at the Lerep Health Center, Semarang Regency. For the health workers at the Lerep Ungaran Health Center It is necessary to increase the provision of information and education about ultrasound examination services and information about ultrasound to pregnant women so that pregnant women know the benefits and uses of ultrasound examination. And for the researchers in further research needs to be carried out by paying attention to variables that can affect the motivation of pregnant women to ask for an ultrasound examination while the number of samples in future studies should be larger and not only use quantitative methods but also qualitative methods (interviews) and observation to see the motivation of pregnant women request an ultrasound examination. Also for pregnant women who check their pregnancies at the Lerep Ungaran Health Center It should be a consideration in requesting an examination using ultrasound because you have to know the benefits and for what indications in the examination using the ultrasound. For pregnant women, ultrasound examinations can be done at least 3 times during pregnancy or if there are indications and recommendations from the doctor or midwife who examines them.

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THE RELATIONSHIP OF THE INCIDENT OF DIABETES DISTRESS AND SELF CARE IN DIABETES MELLITUS PASTIENTS IN SEMARANG

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ABSTRACT

The disease that is often found in the community is diabetes mellitus. Diabetes mellitus is caused by metabolic disorders that occur in the pancreas organ. Diabetic patients will feel frustrated, angry, hopeless, stressed, anxious, and emotional, which is called diabetes stress. Patients with diabetes will experience psychological changes including stress due to the treatment they are undergoing. This study aims to determine the relationship between diabetes distress and self care in diabetics. This type of research used is a quantitative method, with a cross sectional approach. The research instrument used was a questionnaire sheet that had been tested for validity in previous studies. The research respondents consisted of 30 diabetes mellitus patients in the inpatient room at Permata Medika Hospital, Semarang, who were taken using total sampling techniques. The test analysis method used is Rank Spearman. There is a relationship between diabetes distress and self-care in diabetes mellitus sufferers in the inpatient ward of Permata Medika Hospital, Semarang. The results of the analysis using the Spearman rank correlation test regarding diabetes distress and self-care of diabetes mellitus sufferers obtained p value of 0.000, meaning p value ≤ 0.05. The coefficient value or, r value = -0.650 shows a strong relationship in the negative direction, so it means the diabetes distress is getting lighter. the better the self-care behavior. Based on the results obtained, it can be concluded that there is a relationship between diabetes distress and self-care in diabetes mellitus sufferers in the inpatient ward of Permata Medika Hospital, Semarang.

Kata Kunci : Diabetes Mellitus, *Diabetes Distress*, *Self Care*

INTRODUCTION

A disease that is often found in the community is diabetes mellitus, where DM is a threat to public health status because it can cause blindness, kidney failure, and gangrene in sufferers. Diabetes mellitus, or diabetes is a chronic condition that can last a lifetime. Diabetes mellitus is caused by a metabolic disorder that occurs in the pancreas which is characterized by an increase in blood sugar or often referred to as a condition of hyperglycemia caused by a decrease in the amount of insulin in the pancreas (Lestari et al., 2021).

Diabetic patients will feel frustrated, angry, hopeless, stressed, anxious and emotional. Emotional disturbances that occur in people with diabetes mellitus 2 are called *diabetes distress* (Alfalsah & Sutawardana, 2021). *Distress* is anxiety with mixed feelings such as sadness, pain, and even discomfort that a person feels about an event. *Diabetes distress* is a condition of the emotional burden of diabetes felt by sufferers, they will experience mental and physical exhaustion and will feel that their life is always controlled by diabetes.(Nurmaguphita & Sugiyanto, 2019). Self-care is a main behavior that must be carried out by someone who has a chronic illines, such as someone who has diabetes mellitus. Diabetic patients must have self-care behaviors to control their disease and prevent complications (Wayan et al., 2019). If self-care is carried out effectively, the blood sugar levels of diabetes mellitus sufferers can be controlled and the quality of life of diabetes sufferers is optimally achieved (Srywahyuni et al., 2021).

Researchers conducted a preliminary study conducted at the Permata Medika Hospital in Semarang through interviews with 3 diabetes mellitus patients and obtained the results of the interviews, namely that there were 3 patients who said they experienced emotional distress such as psychological imbalance because they were stressed and worried about their illness that had been suffered for more than 5 years. They think about their incurable disease. When they are first diagnosed with diabetes, they deny it, reject it and feel guilty about their disease. They admitted that they had difficulty adjusting to their lives which made them stressed. They feel compelled to comply with the treatment they are undergoing, such as food restrictions, lengthy treatment processes, and expensive medical expenses, which creates an economic burden and a negative outlook on the future. Based on these problems, researchers were interested in conducting a study with the title "The Relationship Between Diabetes Distress and Self-Care in Diabetes Mellitus Sufferers in the Inpatient Room at Permata Medika Hospital, Semarang."

METHODS

In this study, a type of quantitative research was used using a correlational research design. The research design used in this study is Cross Sectional, which is a type of research that only makes observations and measures of variables at one particular moment (Notoadmojo, 2018). The population in this study were all cases of patients with diabetes mellitus, totaling 30 patients in the inpatient room of the Permata Medika Hospital, Semarang, which were in the Arimbi room, Dewi Kunthi room, and Rama room with a total sampling technique. This research was conducted from March to July 2023. The instrument used on the diabetes distress variable was a diabetes distress scale questionnaire consisting of 17 statements that had been tested for validity with the results of the validity test obtained an r value between 0.534-0.607. The results of the reliability test on the DDS questionnaire conducted by previous studies obtained a Crobach's Alpha value of > 0.87.

The self-care variable uses the Summary of Diabetes Self-Care Activity (SDSCA) questionnaire which consists of 15 questions related to activity. The results of the validity test on the self-care questionnaire the study (Putri, 2017) gave results showing r counts in the range 0.363-0.728, which means the questions are valid. The results of the reliability test on the self care questionnaire conducted in Putri's research (2017) showed that the result was r alpha Cronbach's 0.855, which means the instrument is reliable.

The method of data collection was carried out using a questionnaire given directly to diabetes mellitus patients in the inpatient room. Patients filled out questionnaires accompanied by researchers. The questionnaire was input into Excel with data processing via SPSS 25 to process and analyze data starting from respondent characteristics, independent variables, dependent variables, as well as the results of univariate analysis and bivariate analysis.

RESULT

Research results on the characteristics of respondents based on age, gender, education, occupation, length of suffering.

Tabel 1 Distribution of Respondent Characteristics

Respondent Characteristics	Amount	Presentase (%)
Age		
19-40 Year	2	6.7
45-65 Year	20	66.7
>65 Year	8	26.7
Gender		
Man	12	40.0
Woman	18	60.0
Education		
Not completed in primary school	10	33.3
Elementary school	8	26.7
SLTP / Sederajat	3	10.0
SLTA / Sederajat	6	20.0
Academy/PT	3	10.0
Work		
Doesn't work	10	33.3
Laborer	1	3.3
Farmer	4	13.3
Entrepreneur/trader	7	23
Civil Servants	1	3.3
Etc	7	23.3
Long suffering from diabetes		
5-11 months	2	6.7
1-5 years	17	56.7
>5 years	11	36.7

Based on table 1 the majority of respondents were aged 45-65 years with a total of 20 (66.7%) respondents. In this study, most of the respondents were female with a total of 18 (60.0%) respondents. Most respondents' last education did not complete elementary school with 10 (33.3%) respondents. Occupation of the majority of respondents did not work as much as 10 (33.3%). Respondents with a long history of diabetes for 5-11 months were 2 (6.7%) respondents, those who had diabetes for 1-5 years were 17 (56.7%) respondents, and those who had diabetes for >5

years were 11 (36.7%) respondents.

Tabel 2 Distribution of *Diabetes Distress*

Diabetes Distress	Amount	Presentase (%)
Light level	6	20.0
Medium level	19	63.3
Weight level	5	16.7
Total	30	100.0

Based on the variable frequency distribution table of diabetes distress from 30 respondents, the majority of respondents experienced diabetes distress at a moderate level with a total of 19 respondents.

Tabel 3 Distribution of *Self Care*

Self Care	Amount	Presentase (%)
Not enough	8	26.7
Good	22	73.3
Total	30	100.0

Based on the self care variable distribution table, the most respondents had good self care, namely 22 respondents (73.3%).

Tabel 3 The Correlation between Diabetes Distress and Self Care in Semarang

		Kesiapan Kemoterapi	Tingkat Kecemasan
Diabetes Distress	Correlation Coefficient	1.000	-.650**
	Sig. (2-tailed)	.	.000
Spearman's rho	N	30	30
Self Care	Correlation Coefficient	-.650**	1.000
	Sig. (2-tailed)	.000	.
	N	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

Based on the Rank Spearman statistical test carried out on the variable diabetes distress and self-care in patients experiencing diabetes mellitus in the inpatient ward of Permata Medika Hospital, Semarang, a significant value of 0.000 (sig <0.05) was obtained, which means that there is a relationship between diabetes distress and self-care in patients who experienced diabetes mellitus in the inpatient room at Permata Medika Hospital, Semarang, with a correlation value of (r = -0.650), that is, the correlation was strong.

DISCUSSION

1. Characteristics respondents in people with diabetes mellitus

The characteristics of respondents who suffer from diabetes mellitus are age, gender, education, occupation and length of suffering. The research results were mostly 40-65 years old, 20 respondents (66.7%). Increasing age puts a person at risk of increasing the incidence of DM. The results of this study are in line with (Nurmaguphita & Sugiyanto, 2019) where people over 45 years old have an eight times higher risk of suffering from type 2 DM than people under 45 years old. Characteristics of respondents based on gender, the majority were 18 respondents (60.0%) female. This shows that women are more at risk of developing diabetes mellitus than men. Women have a higher body fat composition compared to men, so women get fat more easily, which is associated with the risk of obesity and diabetes (Komariah & Rahayu, 2020).

Characteristics of respondents based on education shows the result that most of the respondents did not finish elementary school, amounting to 10 respondents (33.3%). This research is in line with research conducted by (Endra Cita, 2019) which shows that the educational characteristics of diabetes patients are most of the respondents having elementary school education/equivalent, namely 27 respondents (52.9%). An educated person when encountering a problem will try to think as well as possible in solving

the problem. People who are well educated tend to be able to think calmly about a problem.

The characteristics of respondents based on work showed that the majority of respondents who did not work were 10 people. Someone who has an income tends to be able to maintain a healthy lifestyle and can do self-care well compared to those who have a less good income (Adimuntja, 2020). Work with light physical activity will cause a lack of energy burning by the body so that excess energy in the body will be stored in the form of fat in the body which results in obesity which is a risk factor for diabetes mellitus (Arania et al., 2021).

The characteristics of respondents based on length of suffering showed that the majority of respondents had diabetes for 1-5 years, 17 people. The longer a person experiences diabetes mellitus, the greater the risk of developing complications such as diabetic ulcers, retinopathy, nephropathy, neuropathy, CAD and PAD (Cahyono & Purwanti, 2019).

2. *Diabetes Distress* in Patients with Diabetes Mellitus in the Inpatient Room of Permata Medika Hospital Semarang

In this study, as many as 19 respondents showed that most of them experienced diabetes distress at the moderate level category. Respondents who experience moderate-level distress diabetes because they have accepted their diabetes. They feel that their life is not always a failure because they have diabetes. They can still do their daily activities without spending a lot of energy and mentally because of their illness.

Research conducted by (Naibaho, 2020) also shows that the majority of diabetes patients experience moderate stress. Moderate stress usually lasts a few hours to a few days. Diabetic patients who have moderate levels of stress are characterized by irritability, sensitivity, difficulty resting, feeling tired due to anxiety, impatience, restlessness, and not being able to understand things that can disturb them.

3. *Self Care* in Patients with Diabetes Mellitus in the Inpatient Room of Permata Medika Hospital Semarang

The results of this study showed that the majority of patients who had good self-care were 22 people. Patients who have good self-care because they are able to follow a good diet based on doctor's and nurse's instructions. They quite often check their blood sugar at home and at health services. Even though they rarely exercise, they work all day which makes the body move.

Research conducted (Munir & Solissa, 2021) shows that the majority of 34 respondents (83%) have good self-care. Self care is a person's ability to care for themselves independently so that they can maintain their health and well-being. Self-care refers to a person's activity of doing something in their life independently to improve and maintain their health (Ernawati, 2013).

4. The Relationship between the Incidence of *Diabetes Distress* with *Self Care* in Patients with Diabetes Mellitus in the Inpatient Room of Permata Medika Hospital Semarang

The results in the Spearman Rank statistical test conducted regarding diabetes distress with self care in diabetes mellitus patients in the inpatient room of Permata Medika Hospital Semarang obtained a significance value of 0.000 (p value ≤ 0.005), which means that there is a relationship between diabetes distress and self care in patients diabetes mellitus in the inpatient room of Permata Medika Hospital, Semarang.

This study is in line with research (Januar Ary, Widayanti nur, 2017) using the Spearman Rank statistical test found that p value <α (0.000≤0.05), so it can be concluded that there is a significant relationship between diabetes distress and self-care behavior in people with type DM 2 in the working area of the Rambipuji Health Center. The correlation (r) obtained was -0.63 which showed that there was a strong relationship between diabetes distress and self-care behavior in people with type 2 DM.

CONCLUSION

The results of the study show that the characteristics of respondents in diabetes mellitus sufferers are that most of them are 40-65 years old, 20 people. The majority gender is female as many as 18 people, the majority's education has not completed elementary school as many as 10 people, the majority's occupation is not working as many as 10 people, and the majority have suffered from diabetes for 1-5 years as many as 17 people. The results of the study showed that the majority of those experiencing diabetes distress were in the moderate level category, namely 19 respondents. The research results showed that the majority of respondents who had good self-care were 22 people. The results of the Spearman's Rank statistical test conducted on diabetes distress with self care in diabetes mellitus patients in the inpatient room of the Permata Medika Hospital in Semarang obtained a significance value of 0.000 (p value ≤ 0.005), which means that Ha is accepted and Ho is rejected. So that there is a relationship between diabetes distress and self care in diabetes mellitus patients in the inpatient room of the Permata Medika Hospital, Semarang. To see the direction of the variable relationship, the closeness of the correlation is strong in a negative direction, which means the milder the diabetes distress, the better the self care.

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ACTIVE STRETCHING HAS AN EFFECT ON FUNCTIONAL ABILITY IN ONLINE MOTORCYCLE TAXI DRIVERS EXPERIENCING CARPAL TUNNEL SYNDROME

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ABSTRACT

Carpal Tunnel Syndrome (CTS) is a common medical condition that occurs when the median nerve is pinched or compressed as it passes through the wrist due to continuous long-term movement. The research aims to determine the effect of Active Stretching on the functional ability of the hands in online motorcycle taxi drivers who experience Carpal Tunnel Syndrome. The type of research is quasi-experimental with sample collection techniques using the purposive sampling method. The research was carried out in May-June 2023, with a population of 35 people and a sample size of 10 people who were given intervention 9 times. Measurements in this study used the Wrist/Hand Disability Index (WHDI). The results of research on Active Stretching showed that the average functional ability of the hand before the intervention was 58 and after the intervention was given it was 43,2. The p value = 0.0005 means there is an increase in functional ability. The results of the research can be concluded that there is an influence of Active Stretching exercises on increasing the functional abilities of the hands in online motorcycle taxi drivers who experience Carpal Tunnel Syndrome.

Keyword : Active Stretching, Carpal Tunnel Syndrome, Functional Ability

BACKGROUND

Online motorcycle taxi services have become widely used for goods delivery. According to (Wallsten, 2015), online transportation service providers connect potential passengers with drivers through smartphones. Online motorcycle taxi drivers use motorcycles as their primary mode of transportation, and one common issue they face is Carpal Tunnel Syndrome (CTS). The pathophysiology of CTS involves a combination of mechanical trauma, increased pressure, and ischemic injury to the median nerve within the carpal tunnel (Ibrahim, 2012). Compression in CTS typically results from biomechanical pressure caused by repetitive hand movements, gripping or pinching motions, extreme positions of the wrist, direct pressure on the carpal tunnel, and the use of vibrating tools (Sekarsari, Pratiwi and Farzan, 2017). Carpal Tunnel Syndrome (CTS) is one of the upper extremity disorders caused by narrowing in the carpal tunnel, leading to pressure on the median nerve located at the wrist. CTS presents several symptoms, including pain, numbness, tingling, and paresthesia. Any condition that results in the narrowing of the carpal tunnel, one of which is jobs involving tapping or repetitive flexion and extension of the wrist, can compress the median nerve (Hakim *et al.*, 2016).

There are two mechanisms that cause CTS in online motorcycle taxi drivers: repetitive cumulative pressure and wrist injury while riding motorcycles. First, the motorcycle handlebars receive a significant amount of vibrations from the engine and uneven road surfaces. Second, the controls on the handlebars are operated by the motorcycle rider, with the right hand controlling the throttle (to increase or decrease gas) and front brake, while the left hand controls the clutch. This can add repetitive pressure to the wrist (Farhan, 2018). Repetitive movements can cause a tendon sheath, resulting in pressure on the wrist tendons. If muscle contraction exceeds 20%, blood circulation to the muscle decreases, oxygen supply to the muscle diminishes, the work of nerves innervating the muscles is disturbed, and metabolic processes are hindered. As a result, there is an accumulation of lactic acid, which causes muscle pain (Lazuardi, Ma'arufi and Hartanti, 2016).

Stretching is the process of extending muscles to prepare the body for activity and to relax the muscles (Nohantiya, 2017). Active stretching, or active stretching, is a type of stretching procedure that is done independently after being given instructions and is performed without the help of external forces. (Kisner & Colby, 2017). Stretching regularly during work breaks can be beneficial for the body, including reducing muscle tension, improving blood circulation, reducing anxiety, feelings of stress and fatigue, reducing the risk of injury, and making one feel better. The study on carpal tunnel syndrome conducted by (Pande *et al.*, 2019) on the administration of active wrist stretching to blacksmiths in Sidan Village, Gianyar Regency, found that complaints of carpal tunnel syndrome, which interfere with daily activities such as gripping, pinching, and other hand activities while working, can be reduced by performing active stretching.

Based on data from two courier offices in Bukittinggi, the estimated number of drivers is around 35, a number expected to increase over time due to the growing demand for online motorcycle taxi services. This increased operational activity can have health impacts on online motorcycle taxi drivers. Active Stretching is a form of muscle stretching aimed at reducing the impact of injuries, improving body flexibility, and relaxing muscles. It can be used as an exercise in this study (Novianthi Sidiartha, 2018). Considering the above, online motorcycle taxi drivers frequently perform flexion and extension movements while adjusting the motorcycle's gas flow, coupled with the fact that they experience a significant amount of vibrations from the engine and uneven road surfaces. Therefore, this research is crucial. Thus, the researcher is interested in conducting a study titled The Effect of Active Stretching on the Functional Ability of the Hand in Online Motorcycle Taxi Drivers with Carpal Tunnel Syndrome.

METHOD

This research was conducted at two courier offices in Bukittinggi, namely Meme Antar and Jam Gadang Kurir, in May-June 2023. The Wrist/Hand Disability Index (WHDI) was used as a measurement tool to assess the functional ability of the respondents' hands. The research employed a quasi-experimental research method. In this study, the sample size was 10 out of a population of 35, selected through purposive sampling based on inclusion and exclusion criteria. The inclusion criteria were willingness to be a respondent, age between 20-40 years, and being a rider experiencing Carpal Tunnel Syndrome (CTS). The exclusion criteria were sensory disturbances, fractures in the wrist area, and open wounds on the wrist. The data obtained by the researchers in this study were analyzed to determine the effect of active stretching on the functional ability of online motorcycle taxi drivers experiencing carpal tunnel syndrome using statistical tests, namely the Wilcoxon Test, where based on the results of the Wilcoxon Test, a p-value of 0.0005 (P <0.05) was obtained.

RESULT

Univariate Analysis

The average functional ability of the hands before the Active Stretching intervention in online motorcycle taxi drivers experiencing Carpal Tunnel Syndrome (CTS) Based on the research findings, from 10 respondents the average value of hand functional ability before the Active Stretching intervention was 58, with a standard deviation of 5.812. The lowest functional ability score is 50, and the highest score is 70**.** The average functional ability of the hands after the Active Stretching intervention in online motorcycle taxi drivers experiencing Carpal Tunnel Syndrome (CTS) Based on the research findings, from 10 respondents the average value of hand functional ability after the Active Stretching intervention was 43.2, with a standard deviation of 4.917. The lowest functional ability score is 36, and the highest score is 50.

Bivariate Analysis

The Influence of Active Stretching Intervention on the Functional Ability of Hands in Online Motorcycle Taxi Drivers with Carpal Tunnel Syndrome (CTS)

Table 1. The Influence of Active Stretching Intervention on the Functional Ability of Hands in Online Motorcycle Taxi Drivers with Carpal Tunnel Syndrome (CTS)

Variable	N	Mean	SD	P Value
Before *Active Stretching*	10	58	5,812	0,0005
After *Active Stretching*		43,2	4,917	

Based on table 1, from 10 respondents, the average functional hand ability before the intervention is 58, with a standard deviation of 5.812, while the average functional hand ability after the intervention is 43.2, with a standard deviation of 4.917. The p-value obtained is 0.0005 (P < 0.05), indicating that there is an influence of Active Stretching intervention on the functional hand ability in online motorcycle taxi drivers experiencing Carpal Tunnel Syndrome (CTS).

DISCUSSION

Univariate Analysis

The average functional ability of the hands before the Active Stretching intervention in online motorcycle taxi drivers experiencing Carpal Tunnel Syndrome (CTS) Based on the results of the study conducted on 10 online motorcycle taxi drivers experiencing Carpal Tunnel Syndrome, the average functional hand ability measured with

WHDI before the Active Stretching intervention is 58. Carpal Tunnel Syndrome (CTS) is a common medical condition that occurs when the median nerve is pinched or compressed as it passes through the wrist. This syndrome is characterized by pain in the hand, numbness, and tingling in the distribution of the median nerve. Carpal Tunnel Syndrome (CTS) is caused by prolonged and continuous movements with a static position, disrupting blood supply to the wrist, hand, and nerves (Utamy, Kurniawan and Wahyuni, 2020).

According to (Ibrahim, 2012), Carpal Tunnel Syndrome occurs when there is an increase in pressure within the space of the wrist that accommodates tendons and nerves. As the pressure rises, it compresses the nerve known as the median nerve. This nerve innervates the thumb, index finger, middle finger, and half of the ring finger, leading to clinical manifestations in those specific areas. Risk factors for CTS include obesity, repetitive wrist activities, pregnancy, genetic inheritance, and rheumatoid inflammation. Carpal Tunnel Syndrome is more commonly observed in women compared to men. Typically, CTS often occurs in the age range of 40-60 years; however, it is undeniable that CTS can also occur in individuals of all age groups (Huntley and Shannon, 1988).

Two mechanisms cause cumulative repetitive pressure and wrist injuries when riding a motorcycle. First, the handlebars receive a significant amount of vibrations from the engine and uneven road surfaces. Second, the devices on the handlebars are controlled by the motorcycle rider. The rider's right hand controls the throttle (to increase or decrease gas) and front brake, and the left hand controls the clutch. This can add repetitive pressure to the wrist (Manes, 2012). According to Harahap (2003), one of the factors that can cause Carpal Tunnel Syndrome (CTS) is trauma due to repeated flexion-extension movements of the wrist with sufficient force, such as in certain jobs that require frequent wrist movements. This is what motorcycle taxi drivers do while riding a motorcycle. The findings of this study align with research conducted by (Darmawijaya, Yani and Permadi, 2020) titled "Active Stretching of the Wrist Reduces Complaints of Carpal Tunnel Syndrome in Blacksmith Workers in Sidan Village, Gianyar Regency." It was found that before the administration of active stretching of the wrist, the complaints perceived by the samples were in the moderate category. Judging from the mean value of 33.60, median value of 33.00, minimum value of 26.00, and maximum value of 40.00.

According to the researcher's assumption, some online motorcycle taxi drivers complain of pain and limited movement due to prolonged use of vehicles, resulting in discomfort and pain in the wrist. Risk factors that also contribute to carpal tunnel syndrome in online motorcycle taxi drivers include muscle pressure, vibrations, temperature, non-ergonomic work postures, age, work methods, work equipment, and high-frequency activities such as repetitive movements. In line with the research results, the functional hand ability of online motorcycle taxi drivers measured with the Wrist Hand Disability Index (WHDI) resulted in an average of 58%, indicating a severe disability. It is highly likely that carpal tunnel syndrome in online motorcycle taxi drivers can interfere with their work and daily activities. The average functional ability of the hands after the Active Stretching intervention in online motorcycle taxi drivers experiencing Carpal Tunnel Syndrome (CTS)

Based on the results of the research conducted on 10 online motorcycle taxi drivers experiencing Carpal Tunnel Syndrome, the average value of hand functional ability measured with WHDI after the Active Stretching intervention is 43.2. Active Stretching is a type of stretching procedure performed independently after receiving instructions and is done without external force assistance (Kisner & Colby, 2017). To improve muscle flexibility, stretching can be done at least once a day or, if possible, several times a day. The principle is that continuous stretching is better than doing it once in a single intense session. Complaints related to carpal tunnel syndrome can significantly disrupt daily activities that involve hand functionality, such as gripping and pinching. These complaints can be reduced by performing active stretching (Darmawijaya, Yani and Permadi, 2020).

The results of this study are in line with previous research conducted by (Darmawijaya, Yani and Permadi, 2020) titled "The Provision of Active Stretching of the Wrist Reduces Complaints of Carpal Tunnel Syndrome in Blacksmith Workers in Sidan Village, Gianyar Regency." After the administration of active stretching of the wrist, the perceived complaints of the samples were in the moderate category, with a mean value of 27.00, a median value of 27.00, a minimum value of 20.00, and a maximum value of 32.00. According to the researcher's assumption, stretching exercises or stretching therapy are beneficial not only for reducing pain but also for restoring flexibility in stiff muscles. Stretching itself can keep muscles flexible, preparing them to move during activities without causing tension, making it suitable for alleviating pain and increasing movement in individuals with carpal tunnel syndrome. Stretching should be done every day for 15-30 seconds, repeated 4 times. Regular stretching during breaks at work can benefit the body by reducing muscle tension, improving blood circulation, reducing anxiety, feelings of pressure and fatigue, reducing the risk of injury, and making one feel better. This exercise can be easily done anywhere without the need for equipment, using only the hands, and can be done anytime.

Bivariate Analysis

The Influence of Active Stretching Intervention on the Functional Ability of Hands in Online Motorcycle Taxi Drivers with Carpal Tunnel Syndrome (CTS) Based on the research results involving 10 online motorcycle taxi drivers experiencing Carpal Tunnel Syndrome, there is a difference in the average functional hand ability before and after the Active Stretching intervention. The statistical analysis yielded a p-value of 0.0005 (P < 0.05), indicating that Active Stretching has a significant impact on the functional hand ability of online motorcycle taxi drivers (Darmawijaya, Yani and Permadi, 2020)with Carpal Tunnel Syndrome (CTS). Stretching is a form of muscle elongation or stretching for each body part to reduce injury vulnerability, enhance body flexibility, and relax muscles (Novianthi Sidiartha, 2018). Regular stretching can be beneficial for the body, reducing muscle tension, improving blood circulation, alleviating anxiety, feelings of pressure and fatigue, and reducing the risk of injuries (Darmawijaya, Yani and Permadi, 2020).

Stretching exercise therapy, in addition to reducing pain, is also beneficial in restoring flexibility to muscles that have become stiff. With stretching exercises, symptoms of cellular oxygen deficiency can be reduced, which can lead to an increase in lactic acid and thus cause pain (Wiwit Nurdiati, Gamya Tri Utami, 2015). The administration of tendon stretch and nerve gliding exercises conducted over 3 weeks has shown that these exercises are beneficial for carpal tunnel syndrome (Kaur, Kumar and Arora, 2016). Exercise therapy involving stretching is beneficial not only for reducing pain but also for restoring flexibility in stiff muscles. Stretching itself helps to maintain muscle flexibility, preparing the muscles for movement in various activities without causing tension (Mujianto, 2013). The stretching mechanism falls under the category of mechanical stimulation that can activate the functions of thick non-nociceptive nerve fibers (A alpha and A beta) and close the gate control, preventing the transmission of pain signals carried by thin nerve fibers (A delta and C) to the brain (Rovitri Anestia, 2015).

The findings of this study are consistent with the research conducted by (Darmawijaya, Yani and Permadi, 2020) titled "The Provision of Wrist Active Stretching Reduces Complaints of Carpal Tunnel Syndrome in Blacksmith Workers in Sidan Village, Gianyar Regency." The significant result of 0.000 (0.000 < 0.05) indicates that providing active stretching of the wrist can reduce complaints related to carpal tunnel syndrome in blacksmith workers in Sidan Village, Gianyar Regency. According to the researcher's assumption, active stretching is beneficial not only for reducing pain but also for restoring flexibility in stiff muscles. This reduction in pain experienced by Carpal Tunnel Syndrome patients is attributed to the ability of active stretching to reduce symptoms of oxygen deficiency in cells, which can lead to an increase in lactic acid causing pain. Active stretching keeps muscles flexible, prepares them to move during activities without causing tension, and can stretch the median nerve, making the hands of individuals with carpal tunnel syndrome more comfortable. It is recommended to perform active stretching as often as possible during leisure time to achieve optimal results, as active stretching is highly beneficial without side effects and can be done anytime.

CONCLUSION

Based on the research results, after studying 10 online motorcycle taxi drivers experiencing Carpal Tunnel Syndrome in 2 courier offices in the city of Bukittinggi, it was found that there is an influence of providing Active Stretching exercises on hand functional ability. There is a difference and improvement between the average values before and after the intervention. A suggestion for future researchers is to consider adding the latest interventions in exercise applications aimed at improving the functional ability of hands in online motorcycle taxi drivers experiencing Carpal Tunnel Syndrome.

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CARING NURSES IN THE PREVENTION OF FALL RISK PATIENTS IN THE INPATIENT ROOM

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ABSTRACT

The inpatient treatment room is a room that has the potential to have a risk of falling in patients with heart, lung and nerve diseases such as strokes who experience decreased consciousness, muscle weakness and impaired mobility which are at risk of falling from bed or when going to the bathroom. Nurses who are not Caring for patients can result in the risk of falling for patients. The inability of nurses to carry out fall risk assessments will be detrimental to patients during hospitalization. The purpose of this study was to explore the description of caring for nurses in preventing patients at risk of falling in the inpatient room of Permata Medika Ngaliyan Hospital, Semarang City. The research method uses a qualitative research design with a phenomenological approach. Research informants are implementing nurses. Determination of the sample using purposive sampling. Collecting data by in-depth interviews with informants using a voice recorder. The results of the study identified several themes related to the research objectives, namely the caring behavior of nurses when providing nursing care to patients, the impact of caring for patients on patients, the implementation of patient fall risk assessments in hospitals, and the efforts of nurses to prevent the risk of falling in patients. Conclusion: Nurses' caring behavior is a dynamic approach, where nurses work to increase their concern for patients, especially patients at risk of falling as an effort to prevent unexpected events in maintaining the quality of nursing care services.

Keywords**:** Nurse, Fall Risk, Caring

BACKGROUND

The hospital is a form of health facility that deals directly with patients and must prioritize safe, anti-discrimination, quality and effective health services. According to Law No. 44 Article 32 of 2009 concerning patient rights states that "every patient has the right to obtain security and safety for himself while in treatment at the hospital". Patient safety is a top priority that must be implemented by the hospital. This is closely related to the image of the hospital and patient safety. The implementation of patient safety in hospitals is to prevent and reduce the occurrence of Patient Safety Incidents in health services. (Depkes RI, 2008).

Based on the results of research by Pramudio (2017) at RSI Klaten, it shows that the incidence of patient falls at Klaten Hospital was as many as 8 cases (16%) of all patient safety incidents in the period January 2015 - October 2016. The actual prevention has been carried out by the Committee for Quality Improvement and Patient Safety at RSI Klaten which plays the role of patient safety management. Furthermore, the results of research on the relationship between the level of independence in daily activities and the risk of falling in the elderly by Yulinda Permata Sari in 2015, the risk of falling in the elderly at the PSTW Unit Budhi Luhur Bantul Yogyakarta found that the majority of respondents had as many as 36 respondents at risk of falling (76.6%).

Prevention of patient falls can be done starting from conducting an initial assessment when the patient is admitted for treatment, and further assessment if there is a change in the patient's condition using the Morse Fall Scale. The role of the nurse in implementing steps to reduce falls by setting policies and placing a special bracelet marking the patient as a patient falling high, monitoring and evaluating periodically the success of reducing injuries due to falls and other impacts using the form: and creating Standard Operating Procedures and procedures to support sustainable reduction of the risk of injury to patients falling in hospital. (Depkes, 2011).

Dwidiyanti (in Suweko, 2019) states that caring is a form of attention to other people, respect for self-worth and humanity, centered on other people, commitment to prevent something from getting worse, giving attention and concentration, respect for other people and human life, bonds love, existence, always together, empathy, knowledge, appreciation and fun (Juwariyah, Joyo, & Santosa, 2014) Based on the results of a preliminary study conducted at RSPM, it is known that the inpatient treatment room is a room that has the potential to have a risk of falls in patients with heart disease and stroke who experience decreased consciousness, muscle weakness and impaired mobility who are at risk of falling out of bed. There were 3 patients who fell while receiving treatment in 2018 and in 2019 there were 5 patients. Patient falls can occur from the patient's bed or when going to the patient's bathroom. The results of interviews with nurses showed that not all nurses carry out fall risk assessments, both in initial assessments and

repeated assessments of patients so that patients who are at risk of falling do not use a fall risk label in the form of a yellow bracelet. This is an example of nurses not caring about patients when assessing the risk of falls. The impact of the nurse's inability to carry out this assessment will be detrimental to the patient by increasing the risk of falls. Efforts to implement caring for nurses in preventing the risk of falls still need to be a concern for hospitals.

METHODS

This research used a qualitative research design with a phenomenological approach which was carried out in June 2023. The research informants were executive nurses at Permata Medika Ngaliyan Hospital Semarang with a sample size of 4 informants. The sampling technique was purposive sampling with the criteria of implementing nurses who work in the RSPM Inpatient Room, nurses who are able to communicate well or cooperatively, and nurses who are willing to become research informants.

Before carrying out the research, an ethical test was carried out by the research ethics committee of Widay Husada University, Semarang. The instruments used were 1). a notebook to record the informant's questions, movements and expressions. 2). Voice recorder for recording during conversations with informants. This activity was carried out with agreement with the informant. Data analysis techniques by carrying out 1) Data reduction, namely selecting the main things and focusing on the important things, looking for themes and patterns so that the data that has been reduced will provide a clear picture. 2) Presentation of data in the form of short descriptions to make it easier to understand what is happening, plan further work based on what has been understood. 3) Carrying out verification or drawing conclusions is a new finding in the form of a description or picture of an object

RESULTS

Researchers conducted interviews to get an overview of Caring Nurses in Preventing Patients at Risk of Falling in the Inpatient Room of Permata Medika Ngaliyan Hospital, Semarang. Based on the results of the analysis through interviews conducted by researchers, researchers have identified several themes related to research objectives. These themes consist of: 1) caring behavior of nurses when providing nursing care to patients, 2) the impact of caring nurses on patients, 3) Implementation of patient fall risk assessments in hospitals, 4) efforts of nurses in preventing the risk of falling in patients

1. Caring behavior of nurses when providing nursing care to patients
   a. Caring forms of nurses in providing nursing care services to patients. This form of caring for nurses is based on the results of interviews, namely caring for patients, well-came, listening to patient complaints, with touch. The following are the results of informant statements that support this:

      Yes.. care about patients like that, for example a patient needs help or something like that, we can welcome the patient. (I1)

      Asking what the patient is feeling at the moment, listening to patient complaints, continuing to chat, be close to the patient.. (I2)

      We really have to be caring for patients, maybe if something goes wrong maybe it's because of the individual, right sir, maybe he has problems being carried around at work (I3)

      all of that is done from the heart, for example if maybe we do it from the heart to feel what the patient is feeling, maybe we become empathetic usually like that. (I4)

   b. Caring attitude of nurses to patients

      The nurse's caring attitude can be manifested in the form of giving attention, empathy, being present at the patient's place, listening to patient complaints, and giving touch. Following are the results of interviews with informants:

      Give attention to patients like that sir, uh... what is it, empathy, we feel what patients feel like that (I1)

      Ask what the patient is feeling at the moment, listen to the patient's complaints, continue to chat, be close to the patient, look him in the eye, if you are of the same sex, you can hold his hand by touch (I2)

      Nurses should all be caring because we carry out nursing care for patients, so we must have uh... what... a caring attitude towards patients, the term must... the nurse is not allowed to not be caring, all nurses must be caring (I3)

      all of that is done from the heart, for example if maybe we do it from the heart to feel what the patient is feeling, maybe we become empathetic usually like that.. (I4)

2. Caring impact of nurses on patients

This impact can be in the form of patients being happier, easier to communicate with, reducing patient anxiety, accelerating patient healing, and friendly relations between patients and nurses. The following are the results of interviews with several informants:

can speed up the healing process, reduce anxiety because there is trust with the nurse and there is tras, so the patient feels confident in the nurse because they take care seriously, the possibility of good treatment, meaning that the treatment process itself will be faster (I1)

of course there is an impact on caring, the patient is happy when he is visited, in fact he often talks even though the conversation is sometimes not important so he often talks to his nurse (I2)

yes sir, automatically the relationship is like that of a sibling, the relationship can go on and on so it can be like your own family like that (I3)

what is clear is that he often calls the nurse (I4)

3. Implementation of patient fall risk assessment in the hospital
   a. The place for screening the risk of falling in patients
   Fall risk screening can be done when security opens the door, patients come to the emergency room, and in the poly room. Here are the results of interviews with informants.

Fall risk screening is done immediately after the patient comes from the ER, (I1)

when the patient arrives security opens the door should be able to screen the patient, the patient can be seen bouncing (I2)

We have screening for patients who have fallen, from the front in the emergency room, Poly, they have already done screening, (I3)

we will do the screening in front of the emergency room, we will do the screening later in the room, we will also do a re-assessment for the risk of falling (I4)

b. Fall risk screening can be done when security opens the door, patients come to the emergency room, and in the poly room. Here are the results of interviews with informants.

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we will do the screening in front of the emergency room, we will do the screening later in the room, we will also do a re-assessment for the risk of falling (I4)

   c. Officers who do screening risk of falling on patients
   The officers who do the initial screening when the patient enters the hospital are security and nurses in the ER and Poly wards. Following are the results of interviews with informants.

in the room we also do screening. The initial patient arrives, we do the screening (I1)

screening will be carried out later in the room and a re-assessment will be carried out for the risk of falling (I2)

if for screening the risk of falling is not only from the nurse, when at the entrance for example when a security patient opens the door they should be able to screen the patient (I3)

   d. The officers who do the initial screening when the patient enters the hospital are security and nurses in the ER and Poly wards. Following are the results of interviews with informants.

in the room we also do screening. The initial patient arrives, we do the screening (I1)

screening will be carried out later in the room and a re-assessment will be carried out for the risk of falling (I2)

if for screening the risk of falling is not only from the nurse, when at the entrance for example when a security patient opens the door they should be able to screen the patient (I3)

   e. Identify the risk of falling in yellow.
   To identify patients who are at risk of falling, patients who are being treated at the hospital must be given a sign in the form of a yellow bracelet, ribbon, sticker. Following are the results of interviews with informants:

For a fall risk sign we wear a yellow bracelet (I1)

If the patient is treated as an outpatient, we use yellow tape (I2)

Patients who are treated in the inpatient room wear a yellow sticker attached to the patient's wristband (I3)

we can also use the yellow sign hanging on the patient's IV pole (I4)

f. Evaluation of fall risk implementation.
Evaluation to monitor the patient's progress whether the patient is at risk of falling or not is carried out every day by nurses. The following is one of the results of interviews with several informants.

if we do an evaluation every day to find out the development of the risk of falling (I1)
We monitor it every day sir (I2)
Monitor it every day because our format is for daily (I3)

g. The time needed to evaluate the risk of falling.
When evaluating a patient at risk of falling, the nurse does not take long, about 5 minutes. Berik The following is one of the results of interviews with several informants.

We do not need a long time to evaluate, just a moment (I1)
The implementation takes less than five minutes, so it doesn't take long (I2)
There is already a form, it shouldn't take long, so it doesn't take long (I3)

h. Causes the patient is at risk of falling.
The causes of patients falling are lack of grip on walls, slippery floors, lack of lighting, patients with SNH and age factors. Berik The following is one of the results of interviews with several informants.

diagnosed at the same age, sir, a patient with SNH can't really do anything, (I1)
it could be because the floor is slippery the patient could fall sir (I2)
due to the patient's age, poor environment and lighting can also cause the patient to fall (I3)
lack of handrails, but in the bathroom there are handles (I4)

4. Nurse's efforts to prevent the risk of falling in patients.
   a. Provide education to patients and their families
   Nurses' efforts to prevent patients at risk of falling by providing education to patients and their families. The following is one of the results of interviews with several informants.

   educate patients and their families, for example, the family explains that the mother has this condition and at this age, the patient is at risk of falling, so ask for help from the family later, as much as possible don't leave the patient alone in the room (I1)
   if the family cannot help the patient, later they can ask for help from the nurse (I2)
   patient education and assistance to at-risk patients (I4)

   b. Install safety guards and place food or drink within easy reach of the patient.
   To keep the patient safe so they don't fall, the nurse's efforts are carried out by bringing the patient's food or drink closer so that it is easily accessible to the patient, helping the patient to the bathroom, using non-slip sandals, installing a safety bed and ensuring that the bed is not damaged and safe. The following is one of the results of interviews with several informants.

   then what is needed, for example, is bringing food or drink closer to the patient, if you go to the bathroom you have to be helped, you also have to wear sandals to go to the bathroom so that it is not slippery (I1)
   if the family cannot help the patient, later they can ask for help from the nurse (I2)
   install a safety bed, then for the bed itself it is ensured that the bad is not damaged the savety bed is safe (I4)

DISCUSSION

Caring behavior of nurses in nursing services is very important to improve the quality of service and patient safety, especially patients who are at risk of falling. The risk of falling in patients can be prevented by increasing good nurse caring. Forms and attitudes of nurses caring for patients such as caring for patients, well-came, listening to patient complaints, giving attention, empathy, being present at the patient's place, listening to patient complaints, and giving touch.

1. Caring behavior of nurses when providing nursing care to patients.

Caring behavior is expressed as a feeling to provide security, change behavior, and work according to standards. The caring behavior of nurses displayed in providing nursing care services to patients can be manifested in the form of paying attention to patients, well-being, empathy, listening to patient complaints, looking at patients when communicating, and giving touch. Nurse's caring behavior like that will encourage patients to change their physical, psychological, spiritual, and social aspects for the better. (Jek Amidos Pardede et al., 2020) Nurses who treat patients with a caring attitude well, the patient will give a positive response to the nurse, and vice versa. Nurses' caring behavior can give patients a sense of trust in the services provided by nurses, patients will feel happy and will say that nurses are friendly and pleasant. Nurses who can convince the patient/family will gain the trust of the patient, so that it can indirectly help shape the patient's positive attitude towards nurses. (Tiara & Arena Lestari, 2013) According to (Cindy Oktaviana et al., 2019) Caring is a way of behavior of nurses towards patients, where nurses work to further increase their concern for patients. The caring attitude of nurses in improving nursing services can be in the form of a friendly attitude towards patients in serving patients such as smiling facial expressions, greeting, asking about the patient's condition and speaking politely to patients and their families

2. Caring impact of nurses on patients

   Providing simple nursing care is not just an emotional feeling, because caring is a form of caring to achieve better patient care. Caring behavior is very important in influencing the quality of service and patient satisfaction, especially in hospitals, where the quality of service determines the image of service institutions which will later be able to improve the quality of hospital services. (Tati Nurbiyati, 2013) The impact of caring for patients on nurses is that patients become happier, easier to communicate with, reduce patient anxiety, accelerate patient healing, and have a brotherly relationship between patients and nurses. Nurses who do caring also have an impact on increasing self-confidence and reducing anxiety in patients, reducing anxiety and stress will increase the body's defenses and help improve patient healing. (Jek Amidos Pardede et al., 2020) The results of the study (Tati Nurbiyati, 2013) also state that the caring behavior of nurses can have a positive impact on nurses and also for patients, namely establishing a family relationship or treating patients as their own family. If this family atmosphere has been created, nurses in carrying out nursing actions will not be awkward and patients will be more cooperative with nurses in all matters, especially nursing actions. Patients who are sick if treated properly and lovingly like their own family will definitely have a good impact, patients will trust nurses more in nursing actions and also help the healing process go faster. (Tutu April Ariani & Nur Aini, 2018)

3. Implementation of patient fall risk assessment in the hospital.

   Prevention of patient falls is carried out from the beginning of the patient's admission to the hospital. This risk assessment is part of the duties and responsibilities of the nurse in identifying patient-related risks, reporting and analyzing incidents. Reassessment of fall risk is an assessment process carried out by nurses for all patients to identify any changes in the patient's condition, either in the form of worsening or improving conditions. (Susi Nurhayati et al., 2020) Nurse Caring behavior is very important to improve the quality of nursing services and patient safety, especially in patients at risk of falling. Patients at risk of falling can be prevented by good nurse caring behavior. Patient safety at risk of falling if managed properly then the risk of falling for patients will not occur. Patient safety at risk of falling will also reduce unexpected events at the hospital. (Rini Setyowati & Indasah, 2022) The implementation of a fall risk assessment can be done by screening the risk of falling when the patient arrives at the hospital, the initial screening can be done when security and nurses help patients arrive in the emergency room and also when patients are patients in the poly room. Identification of the risk of falling is done by giving a yellow sign to the patient which can be in the form of a bracelet, ribbon, sticker to facilitate identification of the risk of falling. Evaluation of the implementation of fall risk is carried out to monitor the patient's progress whether the patient is still at risk of falling or not. The implementation of the fall risk screening assessment is carried out every day by nurses, it takes about 5 minutes to do a fall risk screening

4. Nurse's efforts to prevent the risk of falling in patients

   In an effort to prevent unexpected events, it is necessary to build a patient safety culture in the hospital. The Patient Safety Program is a system that ensures hospitals provide health services to patients to be safer. The components included are: risk assessment, patient risk identification and management, reporting and analysis of fall risk incidents, the ability to learn from incidents, and their follow-up and implementation of solutions to minimize risks. This system prevents injuries caused by errors both from various factors in (patient's condition), the environment and the accuracy of the officer's assessment of the incidence of injuries to patients. All units in the hospital must strive for quality indicators based on the International Patient Safety Goal, one of which is the identification of a fall risk assessment. 2022) Nurses in preventing the risk of falling by providing education to patients and the patient's family so that undesirable events do not occur. To keep the patient safe so they don't fall, the nurse's efforts are carried out by bringing the patient's food or drink closer so that it is easily accessible to the patient, helping the patient to the bathroom, using non-slip slippers, installing a safety bed and ensuring that the

bed is not damaged and safe. Caring is a dynamic approach, where nurses work to further increase their concern for patients, especially patients at risk of falling, where caring is also the key to the quality of nursing care services. (Rini Setyowati & Indasah, 2022)

CONCLUSION

Nurses' caring behavior in providing nursing care services to patients is manifested in the form of attention, well-being, empathy, listening and providing touch. The impact of caring felt by the patient is that the patient becomes happier, more communicative, reduces anxiety, speeds up healing, and fosters a brotherly relationship between the patient and the nurse. Nurses who carry out caring also have an impact on increasing self-confidence and reducing patient anxiety and healing. Good nursing caring behavior can reduce the risk of patient falls by conducting fall risk screening and educating patients and families as an effort to prevent unexpected events. Caring is a dynamic approach, where nurses work to increase their concern for patients, especially patients at risk of falling, where caring is also the key to the quality of nursing care services.

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DIFFERENCE BETWEEN *PURSED LIP BREATHING* AND *DISTRACTIVE AUDITORY STIMULI* REGARDING ANXIETY IN COPD PATIENTS

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ABSTRACT

Anxiety of COPD patients is related to perceived clinical depression such as fear of acute dyspnea attacks with a sense of suffocation and fear of death. Anxiety can be treated by providing non-pharmacological therapies, namely *Pursed lip breathing* and *distractive auditory stimuli. Pursed lip breathing* is a breathing technique that helps more effectively in increasing oxygen saturation, which trains to exhale more slowly so that breathing will feel easy and more comfortable both when resting or doing activities. *Distractive auditory stimuli (DAS)* using classical music with a tempo of 60-80 beats/minute so as to increase patient calmness and control patient breathing patterns. This study was conducted to determine the difference between *Pursed lip breathing* and *distractive auditory stimuli* on the anxiety of COPD patients. Experimental research method *two group pre-posttest design* with 40 respondents taken using *purposive sampling technique* which each group consists of 20 respondents. Anxiety measurement tools using *beck anxiety inventory.* Bivariate analysis using man-whitney *test* . The results showed that the p-value of the Mann-Whitney test was 0.006. Conclusion: there is a difference in *Pursed lip breathing* and *distractive auditory stimuli*, indicating a decrease in the anxiety level of COPD patients.

Keywords: Anxiety, COPD, Distractive Auditory Stimuli, Pursed lip breathing

INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a common disease with symptoms of persistent airflow limitation associated with a more chronic inflammatory response in the respiratory tract and lung parenchyma due to harmful gases or particles (Yudhawati & Prasetiyo, 2018). Gender, age, body index, and smoking habits are risk factors for COPD. COPD is a non-communicable disease where the manifestation of this disease is often coughing, but it's not just an ordinary cough, this disease can threaten life and result in death (Nurfitriani, 2021).

COPD in Central Java had 41,049 COPD cases in 2019, 43,182 in 2020, 42,1123 in 2021, and 57,502 in 2022 (Dinas Kesehatan Provinsi Jawa Tengah, 2023). A diagnosis of COPD should be considered in any patient who complains of shortness of breath, chronic cough or sputum production, and a history of recurrent lower respiratory tract infections (Agustí et al., 2023). The results of a preliminary study with interviews with 5 COPD patients stated that 3 people felt anxious because their condition when they were short of breath felt like they were suffocating. All the patient did was sit and stroke their chest until they calmed down. Two other people stated that they were never worried about their situation. COPD patients who are hospitalized are usually patients who have experienced severe exacerbations. These patients were reported to have higher anxiety compared to outpatient COPD sufferers. This anxiety occurs due to traumatic experiences due to shortness of breath, and chronic cough which causes fear and worry about oneself because of the disease (Radityatami, 2018). This is reinforced by the statement that anxiety in COPD patients is related to clinical depression, such as fear of acute dyspnea attacks with a feeling of suffocation and fear of death (Tselebis et al., 2016). COPD patients with comorbid anxiety or depression experience more acute exacerbations and incidence of rehospitalization within 12 months. They also have a higher risk of death than COPD patients without these comorbidities (Rahi et al., 2023).

COPD patients often experience anxiety, which is estimated to occur in around 2-96%. The anxiety symptoms experienced are related to lack of physical activity, worsening dyspnea, increased frequency of exacerbations, and exposure to cigarette smoke (Sandra et al., 2022). Anxiety can cause shortness of breath. Shortness of breath and other physical symptoms that accompany anxiety are a "fight or flight" response to protect yourself. This response can cause the chest to tighten, breathing more quickly, and shortness of breath because the body is trying to get more oxygen to the muscles. Anxiety in COPD patients can be treated by providing non-pharmacological therapy. This non-pharmacological therapy can reduce the side effects of pharmacological therapy. Therapy that is easy to do independently is Pursed lip breathing, which is a breathing technique that helps to increase oxygen saturation more effectively, where you train to exhale more slowly so that breathing feels easier and more comfortable both when resting or doing activities (Suryantoro, Isworo, & Upoyo, 2017). In the process, the Pursed lip breathing technique can

expand the lungs more optimally and prevent respiratory muscle fatigue, so that COPD sufferers achieve controlled, efficient ventilation and reduce the work of breathing (Junaidin, Syam, & Irwan, 2019). Pursed lip breathing is carried out to obtain controlled and efficient ventilation results, besides being able to increase alveolar inflation maximize muscle relaxation, and reduce the work of breathing (Tunik, Niningasih, & Yuswantoro, 2020). Results of research conducted by (Haryanti, Suratun, & Wahyudi, 2023) stated that Pursed lip breathing (PLB) is effective in reducing dyspnea by administering it for 4 weeks 3 times a day for 10-30 minutes in a row.

Pursed lip breathing can help improve breathing frequency. When anxious, a person will experience rapid breathing because of the anxiety they feel. When Pursed lip breathing is done, there is an improvement in homeostasis, namely a decrease in carbon dioxide levels in the blood when taking a long breath during inhalation, so that carbon dioxide becomes normal, this has an impact on the breathing pattern being good. Pursed lip breathing can affect breathing frequency. If it is done for a long duration of practice with the correct process, the results will be better (Suryati, Primal, & Sy, 2018). Apart from that, when you breathe with your mouth with a long exhalation, it can increase the pressure in the oral cavity and increase the intratracheal pressure, causing a decrease in air trapping in the lungs, which makes the hypothalamus release the CRF hormone from the pituitary gland so that the body relaxes (Novitasari, Wati, & Weti, 2022).

Another therapy to overcome anxiety is Distracting auditory stimuli (DAS). Distractive auditory stimulation (DAS) in anxiety (DAS) is distractive auditory stimulation in the form of music which can reduce the perception of dyspnea. Distractive auditory stimulation (DAS) can use classical music with a tempo of 60-80 beats/minute so that it can increase the patient's calmness and control the patient's breathing pattern (Rozi, 2019). Distractive auditory stimuli use the sense of hearing in the process, when music comes in and is distributed as sound waves, this increases endorphin hormones which affect mood (Keumalahayati & Supriyanti, 2018). Anxiety after being given music therapy is because music stimulates the axons of accessory sensory fibers to the neurons of the reticular activating system. This stimulus is transmitted by nuclei from the thalamus through the cerebral cortex area, systemic limbic and neuroendocrine systems and music will reduce oxygen consumption, music also reduces levels of adrenal corticosteroids, Corticotrophin Releasing Hormone (CRH) and Adrenocorticotropic Hormone (ACTH). The impact is reduced stress and feeling comfortable (Kustiningsih, 2020).

Music therapy is effective in reducing stress and anxiety, where listening to music that is calm, melodious, and follows a stable rhythm will cause the production of endorphin and melatonin hormones which are responsible for producing a feeling of comfort and relaxation. Music can also divert people's attention from stress and anxiety, and focus more on positive things (Khadijah, 2023). Music can increase the release of endorphin hormones, where these hormones provide a feeling of relaxation and calm, the midbrain releases gamma amino butyric acid which is useful for inhibiting the transmission of electrical impulses from one neuron to another by neurotransmitters. Music can reduce anxiety where there is a correlation with the nerves of the process and perception of listening to music. Musical stimulation can activate specific pathways in areas of the brain, one of which is the limbic system which is activated and causes a feeling of relaxation. Matching the rhythm of the body and the rhythm of the music will cause a harmonious response in the body, if the rhythm is appropriate it will create a pleasant impression.

Based on this, it is necessary to further study the effect of each method with certain therapies that are focused on reducing anxiety in COPD patients. Therefore, the author feels the need to analyze the difference between *Pursed lip breathing* and *disruptive auditory stimulation* on the anxiety of COPD patients.

METHODS

This type of research is quantitative using quasi-experimental. The sample for this study consisted of 40 COPD patients who were hospitalized in hospitals in Salatiga. The study's inclusion criteria were respondents experiencing anxiety, and compliments, apart from that the exclusion criteria in this study were patients with heart failure, hearing loss, and oxygen saturation less than 95%. Research time from March until April 2023. Scale The Beck Anxiety Inventory (BAI), developed by Aaron Beck, is an anxiety measurement scale with 21 questions with emotional, cognitive, and physical aspects. Beck Anxiety Inventory (BAI) has 0.379 – 0.807 > r table 0.254 with a Cronbach alpha value of 0.756.

In group 1 with 20 respondents, the researcher provided intervention Pursed lip breathing (PLB) is given 2 times a day with 5 repetitions in one intervention with a duration of 7 minutes at 09.00 and 15.00 WIB. Implementation of the intervention for 3 days. In the second group with 20 respondents, the researcher provided Distractive auditory stimuli (DAS) intervention which was listened to via earphones from a cellphone and was carried out twice a day for 30 minutes at 09.00 and 15.00 WIB for 3 consecutive days. Researchers measured anxiety using the Beck Anxiety Inventory (BAI) questionnaire before intervention and after intervention to respondents. The analysis uses the Man-Whitney test with a significance value of $\alpha = 0.05$. This research has been subjected to ethical test number 76 /EC- LPPM /UWHS /X-2023.

RESULTS AND DISCUSSION

Table 1. Differences between *Pursed lip breathing* and *Distractive Auditory Stimuli* on the Anxiety of COPD Patients

	Negative Ranks	Positive Ranks	Ties	n	*p*-Value
Pursed lip breathing	19	0	1	20	0,006
Distractive auditory stimuli	16	0	4	20	

Table 1 shows the negative rank value in 19 respondents and the ties value in 1 respondent, meaning that there is a decrease in anxiety scores between pretest and posttest, and 1 respondent has the same score between pretest and posttest, this shows that there is an effect on the anxiety level of COPD patients before and after being given *Pursed lip breathing*. The results showed a negative rank value in 16 respondents and a ties value in 4 respondents, meaning that there was a decrease in anxiety scores between pretest and posttest, and 4 respondents had the same score between pretest and posttest, this shows that there is an effect on the anxiety level of COPD patients before and after being given *distractive auditory stimuli*. The *p-value* of the *Mann U Whitney* test obtained at 0.006 is less than α (0.05), indicating that there is a difference in *Pursed lip breathing* and *distractive auditory stimuli* on the anxiety of COPD patients.

Anxiety experienced by respondents due to symptoms of COPD such as dyspnea and continuous coughing which causes disrupted activities, this causes anxiety in respondents. Anxiety in COPD arises because of a negative assessment due to threats in the surrounding environment and the treatment undergone (Radityatami, 2018). The anxiety felt by respondents after doing PLB decreased anxiety because they felt relaxed after doing Pursed lip breathing. When someone feels anxious, the response that will occur in the body, namely breathing, pulse, and blood pressure, will increase, appearing tense and restless. Pursed lip breathing helps to provide and balance oxygen in the body, thereby causing the body to relax. This condition is continued to the hypothalamus with corticotropin-releasing factor (CRF) which stimulates the brain to increase production (POMC), when the production of encephalin and the adrenal medulla increases, at that time the beta-endorphin proopiomelanocortin produced as a neurotransmitter that influences mood (Karim, Aini, & Azzahra, 2022).

In this study, respondents' anxiety decreased after the intervention of *distractive auditory stimuli,* where researchers used beethoven classical music performed for 3 days with a span of 30 minutes to reduce respondents' anxiety. This anxiety decreases due to a sense of relaxation after listening to music. The results of this study are supported by where in his research the results obtained that there is an effect of Beethoven classical music therapy on reducing anxiety in patients with chronic renal failure (Lina, Susanti, Nunik, Wahyu, & Efrisnal, 2020).

According to the researcher's assumption, differences in anxiety among respondents are not only due to the therapy given but can be influenced by each respondent's characteristics and the therapy given, apart from that in the Pursed lip breathing process for each respondent, if you don't do it correctly this can cause anxiety. become less effective. When providing distractive auditory stimuli therapy, each respondent was given the same music with the same volume and rhythm, but the auditory response of each respondent was different, whereas in this study the majority were elderly.

These results are supported by research showed that there was a significant improvement after Pursed lip breathing with symptoms of shortness of breath and anxiety in COPD where there was an increase in temperature, heart rate, blood pressure, and respiratory rate (Mohamed, 2019). The results showed that there was a significant improvement after Pursed lip breathing with symptoms of shortness of breath and anxiety in COPD where there was an increase in temperature, heart rate, blood pressure, and respiratory rate. This was also supported by (Sakhaei, Sadagheyani, Zinalpoor, Markani, & Motaarefi, 2018) where Pursed lip breathing has a good impact on oxygenation, reducing heart rate and this decrease is due to stimulation of the autonomic nervous system and parasympathetic activity, stimulation of the vagus nerve can cause relaxation. Breathing exercises can reduce dyspnea and anxiety, where breathing through the nose and pursing the lips and in the Fowler's position with the head resting and elevated 60 degrees can reduce shortness of breath and anxiety from the first 40 minutes of arrival at the ER and results can be seen 4 hours later (Srimookda, Saensom, Mitsungnern, Kotruchin, & Ruaisungnoen, 2021)

Research (Hanedan Uslu, 2017) states that there is an influence of music on reducing anxiety, where music influences physiological and psychological factors, there is an effect that triggers the release of hormones that change body temperature which affects pulse rate, breathing, and blood circulation. This will be more positive if individuals are faced with a choice of their favorite music. Apart from that, there is also research (Hakim, Kaldozkhi, Tashakori, & Ghanbari, 2023) stating that listening to music can reduce anxiety and lower vital signs, where music is given for 20 minutes and after the second and third anxiety scores decrease, music can reduce unpleasant feelings by activating several subcortical areas of the brain including the dopaminergic system in the middle of the brain. The classical music

used by researchers helps reduce respondents' anxiety, (Mahatidanar & Nisa, 2018) Classical music is the basis of order and is both fair and beautiful. Apart from that, the sounds, melodies, rhythms, and harmonies expressed in sounds can stabilize emotions, relieve stress and improve mood. Beethoven's classical music therapy can reduce anxiety, where the presence of classical music can respond to controlling the activity of the autonomic nervous system such as reducing respiratory frequency, pulse, muscle tension, and blood pressure (Elyonasari, Suharman, Evayanti, & Yuviska, 2021).

This study found a difference in Pursed lip breathing and *distractive auditory stimuli* on the anxiety of COPD patients with the results of 19 respondents experiencing a decrease after being given *Pursed lip breathing* and 16 respondents experiencing a decrease in anxiety scores after being given *distractive auditory stimuli*.The *Pursed lip breathing* intervention is more effective in reducing the anxiety of COPD patients.

CONCLUSION AND SUGGESTION

The results showed a difference in *Pursed lip breathing* and *distractive auditory stimuli* on the anxiety of COPD patients with a *p-value* of 0.006. The *Pursed lip breathing* intervention is more effective in reducing the anxiety of COPD patients. The results of this study can be used as *evidence based in* conducting interventions and standard operating procedures in COPD patients who experience anxiety.

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EXPLORING RISK FACTORS AND THEIR IMPACT ON CHRONIC KIDNEY DISEASE IN HEMODIALYSIS PATIENTS: A COMPREHENSIVE STUDY

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ABSTRACT

Chronic kidney disease (CKD) is a global health problem with increasing prevalence, poor prognosis, and high costs. Hemodialysis is a type of kidney replacement therapy used as a treatment for CKD and obstructive and non-obstructive causes of CKD. This study aims to determine the relationship between risk factors for the occurrence of CKD in patients undergoing hemodialysis. Research is correlational analytical research with a cross-sectional approach. Sampling was based on a non-probability sampling technique, namely purposive sampling, with a sample size of 100 respondents obtained from January to December 2023 from medical record data. Analysis using Chi Square. Bivariate analysis test results of risk factors associated with CKD in hemodialysis patients, it was found that there was a relationship between HT and the incidence of CKD with a significant value of p=0.000 (0.000 p<0.05), DM and the incidence of CKD p=0.000, coronary heart disease and the incidence of CKD p=0.000, polycystic kidney disease and the incidence of CKD p=0.000, urinary tract stones and the incidence of CKD p=0.000, cervic cancer and the incidence of CKD p=0.000, BPH and the incidence of CKD. There is a relationship between work and the incidence of CKD p=0.026 (0.026 p>0.05), education and the incidence of CKD p=0.034, and there is no relationship between age and the incidence of CKD p=0.341 also gender and the occurrence of CKD p=0.607. Conclusion of the research were hypertension, diabetes mellitus, coronary heart disease, polycystic kidneys, urinary tract stones, cervical cancer, and BPH impact on CKD in hemodialysis patients.
Keywords: *CKD, Hemodialysis, Risk Factors*

BACKGROUND

Chronic kidney disease (CKD) is a disease that causes irreversible and progressive kidney damage, so that it is unable to maintain the balance of metabolism, electrolytes, fluids and acid bases, thus causing increased levels of creatinine and urea and decreased kidney function (Chukwumaife & Bannard-Smith, 2021). One of the treatments for CKD patients is hemodialysis (Lee et al., 2023), Additionally, itching is a CKD symptom (Minera et al., 2023; Retnaningsih et al., 2023).

Based on a survey from Fresenius Medical Care in 2018, around 2,786,000 CKD patients underwent treatment and there was an increase of 6-7% in line with the increase in world population and around 2,164,000 underwent hemodialysis (Halimah et al., 2022). In Indonesia, based on 2018 Risdakes data, there is an increase in CKD patients every year, amounting to 0.38% or 3.8 cases per 1000 population. The highest prevalence was recorded in the North Kalimantan region at 0.64%. Age characteristics, the highest prevalence is in those aged 65 to 74 years (0.82%), gender, the prevalence of kidney failure is higher in men (0.42%) than women (0.35%). Education, the highest prevalence of kidney failure is in the group who do not attend school (0.57%) (Riskesdas, 2018).

Various risk factors are known to be associated with the development of CKD. The National Basic Health Survey (2007-2018) shows a progressive increase in metabolic diseases related to the development of CKD, hypertension, and diabetes mellitus (Hustrini et al., 2023; Lilia & Supadmi, 2020) .Hypertension and diabetes mellitus is the highest factor causing CKD (Prihatiningtias & Arifianto, 2020). Other factors that may be related to the incidence of CKD are energy supplements and smoking (Lilia & Supadmi, 2020). These causal factors include non-obstructive risk factors, while obstructive factors also need to be studied for their contribution to the occurrence of CKD, so researchers are interested in conducting research that analyzes the risk factors associated with CKD in patients undergoing hemodialysis, both non-obstructive risk factors and obstructive risk factors. The aim of this study was to determine the relationship between CKD risk factors and the incidence of CKD in hemodialysis patients. It is hoped that from the results of this research the public will be able to know about the risk factors for CKD so that it will influence preventive and promotive actions against the increasing incidence of CKD.

METHODS

This type of research is quantitative and analytical with a cross-sectional design. CKD patients undergoing hemodialysis at Dr. Adhyatma MPH Regional Hospital from January to December 2023 were used as the study population. Sampling was based on a non-probability sampling technique using purposive sampling, with a sample size of 100 respondents, from data obtained from medical records, with ethical test no. 004/KEPK.EC./I/2024. The variables studied by researchers included age, gender, education, occupation, and history of illness. A bivariate analysis was carried out to determine the relationship between risk factors for CKD (age, gender, education, occupation, hypertension, diabetes mellitus, coronary heart disease, polycystic kidney disease, kidney stones, ureteral stones, vesical stones, cervical ca, and benign prostatic hypertrophy) and the occurrence of CKD in hemodialysis patients. The correlation test uses the Chi Square statistical test with a significance limit of $\alpha \leq 0.05$.

RESULTS

The research data consisted of 100 respondents, from patient medical record data from January to December 2023 at Dr. Adhyatma MPH Regional Hospital. The research was conducted in January 2024. The results of the research showed that 52% of the respondents were male, with the highest risk factor being hypertension; the highest age of the respondents was late elderly (48%), with the most cases at that age being diabetes mellitus; the highest education was public high school (as much as 77%); and the most employment was private (40%) (Table 1).

Table 1. Risk Factors for CKD Events

Category	HT	DM	Coronary heart disease	Polycystic kidney	Kidney Stone	Ureteral Stone	Urinary bladder stones	Cervical cancer	BPH	n	%
Gender											
Male	20	17	4	4	3	2	0	0	2	52	52
Famel	13	19	1	5	6	2	1	1	0	48	48
Age Category											
26-35 Years	4	4	0	1	0	0	0	0	0	9	9
36-45 Years	10	3	2	1	1	0	0	0	1	18	18
46-55 Years	4	9	3	4	2	2	0	1	0	25	25
56-65 Years	15	20	0	3	6	2	1	0	1	48	48
Education											
Not in School	1	2	0	0	1	0	0	1	0	5	5
Elementary School	1	4	0	0	0	0	0	0	0	5	5
Junior School	2	4	0	1	1	0	0	0	2	10	10
High School	28	14	5	8	7	4	1	0	0	77	77
Bachelor	1	2	0	0	0	0	0	0	0	3	3
Worker											
Doesn't work	3	4	1	0	0	0	0	0	0	8	8
self-employed	19	11	2	3	3	1	0	0	1	40	40
Farmer	1	1	0	0	0	1	0	1	0	4	4
ASN	0	2	0	2	1	0	0	0	0	5	5
Laborer	0	0	0	2	2	0	0	0	0	4	4
trader	0	1	0	0	0	0	0	0	1	38	38
Other Job	10	17	2	2	3	2	1	0	0	1	1

The results of the bivariate test with the square test showed that the factors age (0.341 p> 0.05) and gender (0.607 p> 0.05) were not related to the occurrence of CKD in hemodialysis patients. Meanwhile, there is a relationship between education (0.034 p<0.05) and employment (0.026 p<0.05) and the prevalence of CKD in hemodialysis patients. Risk factors for diseases that can cause CKD are hypertension (0.000 p<0.05), diabetes (0.000 p<0.05), coronary heart disease (0.000 p<0.05), polycystic kidney disease (0.000 p<0.05), kidney stones (0.000 p<0.05), ureter stones (0.000 p<0.05), bladder stones (0.000 p<0.05), cervical ca (0.000 p<0.05), and benign prostatic hypertrophy (0.000 p<0.05), which are associated with the prevalence of CKD in hemodialysis patients (Table 2).

Table 2. Risk factors for the occurrence of CKD in hemodialysis patients

Variable	*p* Value	Results
Gender	0.607	Not Related
Age	0.341	Not Related
Education	0.034	Relate
Worker	0.026	Relate
Risk Factors		
Hypertention	0.000	Relate
Diabetes Mellitus	0.000	Relate
Coronary heart disease	0.000	Relate
Polycystic kidney	0.000	Relate
Stone of Kidney	0.000	Relate
Ureteral Stone	0.000	Relate
Urinary Bladder Stone	0.000	Relate
Cervical Cancer	0.000	Relate
BPH	0.000	Relate

DISCUSSION

Demographic factors (age, gender, education, occupation) with the occurrence of CKD in hemodialysis patients

Chronic Kidney Disease (CKD) is a condition characterized by decreased kidney function, characterized by a glomerular filtration rate (GFR) of less than 60 ml/minute per 1.73 square meters and signs of kidney damage or both that persist for at least 3 months. It is the disease that causes it (Sukmawati et al., 2022; Webster et al., 2017). One of the treatments for CKD patients is hemodialysis. This is a type of renal replacement therapy (renal replacement therapy) used to treat advanced stages of chronic kidney disease (CKD) (Ladesvita[1] & Herlina, 2020).

According to research, most of the kidney failure patients studied were elderly (56 to 65 years), while 48 to 25 patients were early elderly (46 to 55 years). The risk of chronic kidney failure increases with age. The elderly group, both young and old, have a higher risk of developing chronic kidney failure. People aged 61 to 86 years have a 4.51 times greater risk of developing chronic kidney disease than people aged 18 to 30 years (Baroleh et al., 2019; Salsabila, 2023). The age range of CKD patients undergoing hemodialysis varies greatly, in general, hemodialysis is usually required for people aged 41 to 60 years or over 45 years (Irawati et al., 2023; Nasution et al., 2020; Sukmawati et al., 2022; Tampake & Doho, 2021).

The results of the study stated that there was no relationship between age and the occurrence of CKD. CKD can occur at any age (Arianti et al., 2020), but judging from research results, the most common age group is old age with comorbid hypertension, so hypertension is often associated with chronic kidney disease (CKD), especially in old age. This is different from research by Rustandi et al. (2018), which states that there is a relationship between age and the occurrence of CKD. Chronic diseases begin to appear with increasing age (Rustandi et al., 2018; Salsabila, 2023b; Sukmawati et al., 2022). At the age of 50 and over, the elasticity of blood vessels begins to decrease and the blood vessels become calcified, resulting in a tendency for blood pressure to increase. Uncontrolled blood pressure can cause the arteries around the kidneys to narrow, weaken, or harden, so that blood supply and nutrition to the kidneys decrease, causing the nephrons to not function to filter blood properly (Kuwa et al., 2022).

Based on gender, the majority of CKD respondents were men. Data shows an increased risk of chronic kidney failure compared to women (Arianti et al., 2020; Arriyani & Wahyono, 2023; Mait et al., 2021; Purwati, 2018; Salsabila, 2023b). This is because women value their health more than men and maintain a healthy lifestyle. Several studies show that women are more likely to take medication regularly as prescribed by a doctor, adhere to healthy eating recommendations, and seek health information and advice from medical professionals. This can have a positive impact on the management of health conditions such as hypertension and diabetes which are the main risk factors for chronic kidney disease (Arriyani & Wahyono, 2023; Purwati, 2018; Salamah et al., 2022).

Analysis results of study show that gender is not related to the occurrence of CKD, thus providing the conclusion that gender is not always the main risk factor in the occurrence of chronic kidney disease (CKD). Although there are differences in the prevalence of CKD between men and women in some populations, this is often related to factors such as differences in hormone levels, lifestyle, and genetic factors. This can be confirmed by the results of the

study (table 1), which explain that the largest number of respondents are men. The decline in kidney function related to gender is often related to increasing age, systemic hypertension, smoking habits, the presence of dyslipidemia, atherosclerosis disease factors, and the emergence of obesity (Arianti et al., 2020)

The research results show that the majority of education is from public secondary schools (77%), with the majority of jobs being in the private sector at 40%. The level of education is related to the ability to absorb and receive health information and is one of the internal factors that influences a person's level of knowledge. The higher a person's level of education, the higher their knowledge (Fitria & Blandina, 2023). Based on research results, education (0.034 $p<0.05$) and employment (0.026 $p<0.05$) are related to the occurrence of CKD. Low education is more at risk of having kidney disease (Sarastika et al., 2019). Education is related to knowledge about health, where higher education tends to provide greater access to knowledge about healthy lifestyles, including healthy diet, exercise and stress management (Priadini et al., 2023). Education has a significant impact on the knowledge a person has, because education allows a person to obtain the knowledge and skills needed to develop their potential and improve their health (Dharmapatni & Putri, 2022). People with higher education may be better able to access information about how to prevent CKD and take necessary precautions (Fitria & Blandina, 2023).

Work is related to the occurrence of chronic kidney disease (CKD) due to economic stability and work stress or exposure to dangerous substances (Rustandi et al., 2018). High levels of stress can trigger increased blood pressure and inflammation in the body, and it is possible that a work-related lifestyle can affect a person's life (Qi et al., 2023). Thus, education can play an important role in understanding and managing work-related CKD risks, both through knowledge of risk factors and the ability to access health-supportive resources.

Relationship between non obtructive risk factors for CKD in hemodialysis patients

The results of this study indicate that diabetes (36%) and hypertension (33%) are the main nonobstructive risk factors for CKD. Diabetes mellitus is a highly significant risk factor (0.000 $p<0.05$) in the development of chronic kidney disease (CKD). Diabetes mellitus is another factor that causes CKD (Arriyani & Wahyono, 2023; Baroleh et al., 2019; Salsabila, 2023b). Diabetes is a major risk factor for chronic kidney failure, high blood sugar levels, and changes in kidney blood vessels due to diabetes. This condition is called diabetic nephropathy. High blood sugar damages the small blood vessels in the kidneys, making them less efficient at filtering waste and water from the blood. Over time, this damage can lead to chronic kidney failure, a long-term loss of kidney function. (Arianti et al., 2020; Hustrini et al., 2023; Lilia & Supadmi, 2020; Purwati, 2018). Proteinuria and blood sugar are the main clinical symptoms of diabetic nephropathy. Proteinuria indicates severe damage to the kidney's filtration function, and blood sugar indicates that the kidneys are unable to absorb all the glucose filtered into the blood. These two diseases are important indicators that the kidneys are not functioning properly and if not treated properly, can cause the development of chronic kidney failure (Arianti et al., 2020; Lilia & Supadmi, 2020; Salsabila, 2023b). Damage to the blood vessels in the kidneys or diabetic nephropathy can cause gradual loss of kidney function and ultimately lead to CKD (Arriyani & Wahyono, 2023; Salsabila, 2023b; Siagian & Damayanty, 2015). Therefore, patients with diabetes mellitus have a higher risk of developing CKD compared to those who do not have this condition.

According to research results, hypertension is related to the occurrence of CKD, hypertension is a risk factor that develops as a cause or consequence of CKD (Aristoteles, 2018; Arriyani & Wahyono, 2023; Baroleh et al., 2019; Nasution et al., 2020). HT sufferers experience damage to the blood vessels in the kidneys, causing damage and affecting the kidneys' ability to filter waste and body fluids properly, conversely, existing chronic kidney disease can also trigger an increase in blood pressure. The two are interconnected and can worsen each other's conditions. Hypertension can also cause an increase in workload on the kidneys, so that the kidneys work harder to maintain water and electrolyte balance in the body when blood pressure is high (Hasanah et al., 2023). Clinically, people with hypertension are 13 times more likely to experience chronic kidney failure than people without hypertension (Lilia & Supadmi, 2020). Hypertension is a very important risk factor for chronic kidney failure (Arriyani & Wahyono, 2023). Enhancement of the renin-angiotensin-aldosterone system “RAAS” is one of the main pathways involved in the regulation of blood pressure and fluid homeostasis. Chronic kidney disease can cause overactivation of this system, especially in response to decreased blood flow to the kidneys or kidney damage. The cause is increased production of angiotensin II which has a vasoconstrictive effect and causes salt and water retention. This accumulation of salt and water increases the amount of circulating fluid, causing an increase in blood pressure. In addition, angiotensin II can also cause vasoconstriction of renal efferent arterioles, increasing glomerular pressure and causing progressive damage to the kidney. In addition to the RAAS mechanism, sympathetic overactivity can also occur in patients with chronic kidney disease. This can cause further systemic vasoconstriction, increase blood pressure, and contribute to further kidney damage (Arianti et al., 2020; Hustrini et al., 2023; Lilia & Supadmi, 2020; Purwati, 2018; Salsabila, 2023b).

Another factor based on research results is that there is a relationship between heart disease and the occurrence of CKD, this may be due to the patient's hypertension. Heart disease is a risk factor for CKD (Lilia & Supadmi, 2020). High blood pressure and dyslipidemia are risk factors for coronary heart disease. Increased blood pressure that occurs for a long time can damage blood vessels by causing arteriskerosis, including the coronary arteries which supply blood to the heart (Sagita et al., 2018). Dyslipidemia will accumulate in cells, including kidney cells, resulting in kidney damage, including due to diuretic drugs which worsen kidney function (Baroleh et al., 2019)

A non-obstructive risk factor that influences the occurrence of CKD is the presence of polycystic kidneys. The fluid pockets that form in the kidneys in polycystic kidneys can cause pressure on the surrounding tissue and damage it, which can interfere with the normal function of the kidneys which if it lasts for a long time there is a risk of CKD (Arianti et al., 2020).

Relationship between obtructive risk factors for CKD in hemodialysis patients

Obstructive factors associated with the occurrence of CKD, according to the research results, are the presence of urinary tract stones, cervical cancer and benign prostatic hypertrophy. Urinary stones can inhibit the flow of urine from the kidneys through the ureters to the bladder, this obstruction causes excessive pressure on the kidneys. This excessive pressure can cause damage to kidney tissue, causing impaired kidney function. If urine flow is significantly obstructed, this can lead to urine retention in the kidneys, which can increase the risk of kidney infection and further kidney damage (Madias, 2021), apart from urinary tract stones, other obstructive risk factors are the presence of cervical CA and BPH. Cervical cancer that has reached stage III or IV, where there has been metastasis to other organs and BPH can cause kidney obstruction caused by hydronephrosis. Hydronephrosis is a condition where the kidneys enlarge due to a buildup of urine which obstructs its flow from the kidneys to the bladder (Salsabila, 2023b).

CONCLUSION

The non-obstructive risk factors associated with CKD at Dr Adhyatma MPH Hospital who underwent hemodialysis from the research results were education, employment, and hypertension, diabetes mellitus, coronary heart disease, polycystic kidneys, while the obstructive risk factors for CKD were urinary tract stones, cervical ca. and BPH. This means that patients with a history of this disease are at risk of developing chronic damage to the kidneys that leads to CKD and will later have to undergo hemodialysis due to kidney damage.

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THE USE OF PERSONAL PROTECTIVE EQUIPMENT BY PHARMACISTS AND RADIOGRAPHERS DURING THE COVID-19 PANDEMIC IN KENDAL DISTRICT

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ABSTRACT

In order to control the transmission of covid-19 which entered Indonesia in early 2020, the government implemented health protocol regulations. Apart from health protocols, one of the steps that health workers can implement to control the transmission of covid-19 when providing services during the pandemic is to use personal protective equipment while working. This is the background for the author to study further in research that aims to determine the use of personal protective equipment used by pharmacists and radiographers during the covid-19 pandemic while in service in Kendal District. The research method used was descriptive qualitative by giving questionnaires electronically using google form to research respondents. The research results obtained include, the majority of respondents were female with a percentage of 62%, the health workers who participated as research respondents consisted of 38% pharmacists and 62% radiographers. The use of personal protective equipment used by pharmacists during the covid-19 pandemic includes masks and gloves which are adjusted to the risks of the work activities carried out. The use of personal protective equipment used by radiographers during the covid-19 pandemic includes wearing work clothes according to hospital regulations, surgical isolation gowns, N95 respirators, eye protection, medical gloves, closed shoes, face shields when carrying out medical interventions and tools additional personal protection according to the risks of the work activities carried out. So, it can be concluded that the personal protective equipment used by pharmacists and radiographers in Kendal District while on duty during the covid-19 pandemic has met the elements of compliance requirements in efforts to control the transmission of covid-19, such as the use of personal protective equipment based on indications for their use by considering the risk of exposure and possible transmission dynamics. By implementing appropriate personal protective equipment when working, it is hoped that pharmacists and radiographers in Kendal District can be protected from transmission of covid-19.

Keywords: personal protective equipment, pharmacist, radiographer.

BACKGROUND

The term coronavirus disease 2019 or more commonly known and referred to as covid-19 was first announced by the World Health Organization on February 11 2020 (WHO, 2020c). Covid-19 initially appeared in Wuhan City, Hubei Province, China in December 2019. Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is the cause of covid-19 and is the agent that causes the deadly disease (Rothan and Byrareddy, 2020; Susilo *et al.*, 2020). The spread of covid-19 is a major concern for global public health (Rothan and Byrareddy, 2020). The World Health Organization determined the status of covid-19 to be a pandemic on March 12 2020. Before determining this pandemic status, two reasons were considered, the first reason was because of the scale and speed of transmission of covid-19, the second reason was because there were several countries that did not respond to the threat of covid-19 (WHO, 2020d). Covid-19 has quickly spread throughout the world, infecting many people (Olivia, Gibson and Nasrudin, 2020). The ongoing covid-19 pandemic is putting the public health system under terrible strain (WHO, 2020a). The rapidly growing spread of covid-19 needs to be stopped with early diagnosis and isolation to achieve disease control (Amélia Estevão, 2020).

To prevent the spread of covid-19, it needs to be supported by increasing knowledge, understanding and awareness of the covid-19 vaccine (Mahendra and Fitriah, 2021). Prevention of the spread of covid-19 also needs to be supported by awareness in implementing health protocols, increasing knowledge of the effectiveness of the covid-19 vaccine and increasing covid-19 vaccination (Utami, Sulistyowati and Jamil, 2023). A high level of knowledge and a positive attitude towards the use of personal protective equipment are also needed for work safety during covid-19 (Suryani *et al.*, 2022). Apart from that, efforts to control the transmission of covid-19 need to be carried out by carrying out technical procedures in health services in the work environment and using appropriate personal protective

equipment (Utami and Sulistyowati, 2022). In health service facilities, control over the transmission of covid-19 is needed, comprehensive control activities are needed on various aspects, taking into account technical control, administrative control and the use of personal protective equipment (Sulistomo et al., 2020). Implementing personal self-protection in an effort to prevent the spread of covid-19 can be done by measuring body temperature, using a mask, washing hands and using hand sanitizer (Sari, Ardya and Kusumawardhani, 2023).

Personal protective equipment is special clothing or equipment worn by officers to protect themselves from dangers in the work environment (Sulistomo et al., 2020). The use of personal protective equipment is considered to have a positive and significant influence on the occupational safety and health of medical personnel (Daeli *et al.*, 2024). Therefore, there needs to be a balance between knowledge, attitudes and availability of personal protective equipment with compliance with the use of personal protective equipment (Prarona, Sutinbuk and Edi, 2024). As an effort to prevent and control infection in the management of covid-19 patients, the use of personal protective equipment is required (WHO, 2020b). So there is a need for standard operational procedures, availability of posters, training, providing explanations and understanding regarding the use and removal of covid-19 personal protective equipment (Hermawan, Heru and Hidayat, 2024). The World Health Organization recommends personal protective equipment for treating covid-19 patients using contact and droplet prevention measures (WHO, 2020b).

Health workers who are on the front line have a significant risk of being infected with covid-19 when providing services to covid-19 patients. Officers in pharmaceutical services use personal protective equipment. The personal protective equipment is divided into two, including for pharmacy officers who work in the covid-19 isolation room and officers who do not have direct contact with covid-19 patients. For officers in the covid-19 isolation room, the use of personal protective equipment follows the standards in the isolation room plus personal protective equipment that adapts to the risks of the activities carried out. Meanwhile, for officers who do not have direct contact with covid-19 patients, the personal protective equipment used is adjusted to the needs of routine activities with the addition of using surgical masks or other masks and using gloves according to the risks of the activity being carried out (Sulistomo et al., 2020).

Meanwhile, officers in radiology services use personal protective equipment which is divided into two parts, namely the use of personal protective equipment when carrying out radiological examinations in the isolation room and the use of personal protective equipment when carrying out radiological examinations in a radiology installation in accordance with their respective professions, including for radiographers, electromedics and cleaners. Radiographers who are carrying out radiological examinations in the isolation room use personal protective equipment that adapts to isolation room standards plus personal protective equipment that adjusts to the risks of work activities. Meanwhile, radiographers who come into contact with covid-19 patients in the radiology room wear work clothes that comply with hospital regulations, surgical isolation gowns, N95 respirators, eye protection, medical gloves, closed shoes, face shields when carrying out medical interventions and personal protective equipment that adapts to the risks of the work activities carried out. Electromedical personnel use personal protective equipment that adapts to work activities and can work after the equipment and room have been disinfected after each use to examine covid-19 patients. Finally, the cleaning staffs in the radiology room wear work clothes that comply with hospital regulations, surgical isolation gowns, N95 respirators, eye protection, medical gloves, closed shoes and eye protection when carrying out medical interventions (Sulistomo et al., 2020).

The background that has been presented is the basis for the author to study further in research related to the use of personal protective equipment used during the covid-19 pandemic. The aim of the research was to determine the use of personal protective equipment used by pharmacists and radiographers in Kendal District during the covid-19 pandemic while in service.

METHOD

The research carried out was descriptive qualitative research used to find out what personal protective equipment was used by pharmacists and radiographers when working during the covid-19 pandemic in Kendal District. The ethical principles in this research refer to regulations (Komisi Etik Penelitian dan Pengembangan Kesehatan Nasional and Indonesia, 2017) including paying attention to respect, kindness, justice, culture, norms, safety and welfare of research participants which are in line with the rules of science and research for individuals. and the community where this research was conducted. The research was conducted by applying inclusion criteria in the form of respondents being pharmacists and radiographers who work in Kendal District, respondents worked in health facilities during the covid-19 pandemic and respondents were willing to contribute to the research. Respondents in the study came from 4 health facilities in Kendal District with a total of 8 respondents consisting of male and female. The research was carried out by administering an electronic questionnaire in the form of a google form to research respondents with a total of 4 questions. Then the results of the respondents' answers are analyzed so that conclusions can be drawn.

Table 1. Electronic questionnaire consisting of a list of research questions given to respondents in the form of a google form.

Table 1. List of Research Questions

No	Research Question
1	Do you know about the regulations for using personal protective equipment in services during the covid-19 pandemic?
2	Is there a difference in the use of personal protective equipment when working with covid-19 patients and non covid-19 patients?
3	What personal protective equipment do you use as a pharmacist or radiographer during the covid-19 pandemic?
4	If you still have something to say about the last question regarding the use of personal protective equipment during the covid-19 pandemic, please fill it in. But if not, then just leave it blank.

RESULT AND DISCUSSION

Based on the results of the research questionnaire given to respondents, the following research results were obtained:

Based on table 2, it can be concluded that some of the respondents in this study were female with a percentage of 62% with a total of 8 participating respondents coming from 4 health facilities.

Table 2. Gender of Research Respondents

Gender	Percentage
Male	38%
Female	62%
Total	100%

Based on table 3, it can be concluded that the health workers who participated as respondents in the research consisted of pharmacists at 38% and radiographers at 62%.

Table 3. Research Respondents' Profession

Profession	Percentage
Pharmacists	38%
Radiographers	62%
Total	100%

Based on the results of the research questionnaire given to pharmacists, all respondents knew about the regulations for using personal protective equipment when on service during the covid-19 pandemic. All respondents stated that there were differences in the use of personal protective equipment used at work when treating covid-19 patients and those who did not. Respondents were of the opinion that the use of personal protective equipment used by pharmacists was generally masks and gloves which were adjusted to the risks of the work activities carried out.

This is in accordance with opinions in the literature (Sulistomo et al., 2020), who provided a statement regarding the use of personal protective equipment by pharmacists who are working in the covid-19 isolation room using personal protective equipment that follows the standards in the isolation room plus personal protective equipment that adapts to the risks of the activity being carried out. Meanwhile, for pharmacists who do not have direct contact with covid-19 patients, the personal protective equipment used can be adjusted to the needs of routine activities by additionally using surgical masks or other masks and using gloves according to the risk of the activity being carried out.

Table 4. Pharmacist Questionnaire Results

No	Research Question	Respondent's Answer (Pharmacist)
1	Do you know about the regulations for using personal protective equipment in services during the covid-19 pandemic?	Yes.
2	Is there a difference in the use of personal protective equipment when working with covid-19 patients and non covid-19 patients?	Yes.
3	What personal protective equipment do you use as a pharmacist during the covid-19 pandemic?	Surgical masks or other masks according to the risk analysis of work activities. Gloves according to the risk analysis of work activities.
4	If you still have something to say about the last question regarding the use of personal protective equipment during the covid-19 pandemic, please fill it in. But if not, then just leave it blank.	-

Based on the results of the research questionnaire given to radiographers, all respondents knew about the regulations for using personal protective equipment when in service during the covid-19 pandemic. All respondents stated that there were differences in the use of personal protective equipment when working with covid-19 patients and when working with patients who were not affected by covid-19. Respondents provided opinions regarding the use of personal protective equipment by radiographers during the covid-19 pandemic, including wearing work clothes that comply with hospital regulations, surgical isolation gowns, N95 respirators, eye protection, medical gloves, closed shoes, face shields if necessary, carry out medical interventions and additional personal protective equipment in accordance with the risks of the work activities carried out.

This is in accordance with opinions in the literature (Sulistomo et al., 2020), which provides a statement regarding the use of personal protective equipment by radiographers who are carrying out radiological examinations in isolation rooms using personal protective equipment that adapts to isolation room standards plus personal protective equipment that adapts to the risks of work activities. Meanwhile, radiographers who are involved in contact with covid-19 patients in the radiology room wear work clothes that comply with hospital regulations, surgical isolation gowns, N95 respirators, eye protection, medical gloves, closed shoes, face shields when carrying out medical interventions and personal protective equipment that adapts to the risks of the work activities carried out.

Table 5. Radiographer Questionnaire Results

No	Research Question	Respondent's Answer (Radiographer)
1	Do you know about the regulations for using personal protective equipment in services during the covid-19 pandemic?	Yes.
2	Is there a difference in the use of personal protective equipment when working with covid-19 patients and non covid-19 patients?	Yes.
3	What personal protective equipment do you use as a radiographer during the covid-19 pandemic?	Wear work clothes according to hospital regulations, surgical isolation gown, N95 respirator, eye protection, medical gloves, closed shoes, face shield (if carrying out interventional medical procedures) and additional personal protective equipment in accordance with the risk analysis of the activity being carried out.

4	If you still have something to say about the last question regarding the use of personal protective equipment during the covid-19 pandemic, please fill it in. But if not, then just leave it blank.	-

CONCLUSION AND SUGGESTIONS

The personal protective equipment used by pharmacists and radiographers while on duty during the covid-19 pandemic in Kendal District has met the elements of compliance requirements in efforts to control the transmission of covid-19, such as the use of personal protective equipment based on indications for use, taking into account the risk of exposure and transmission dynamics that may occur. By implementing appropriate personal protective equipment when working, it is hoped that pharmacists and radiographers in Kendal District can be protected from transmission of covid-19.

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ANALYSIS OF DIFFERENCES IN IMAGE QUALITY WITH VARIATIONS IN SLICE THICKNESS IN CT-SCAN BRAIN EXAMINATIONS WITH TRAUMA CASES AT THE RADIOLOGY INSTALLATION

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ABSTRACT

Research has been carried out on the analysis of differences in image quality with slice thickness variations in CT-Scan brain examinations with trauma cases at the Radiology Installation at RSI Siti Rahmah Padang. This study aims to determine the difference in image quality with varying slice thicknesses of 3 mm, 5 mm, and 7 mm in CT-Scan brain examinations with trauma cases and what slice thickness is capable of producing optimal image quality in establishing a diagnosis in CT-Scan brain examinations. with trauma cases. This research was conducted in January 2022 - June 2022 with a quantitative type of research with experimental methods, using purposive sampling techniques and questionnaire data distributed to respondents were processed using the weight mean score formula and the SPSS Friedman method. According to the weight mean score formula, the highest average value for the slice thickness variations of 3 mm, 5 mm and 7 mm is a slice thickness of 3 mm with an average value of 3.64, contrast resolution has an average value of 3.67, noise is 3. 49 and the results of the CT-Scan brain examination in the bone window in trauma cases had an average of t3.74. Based on the SPSS results of the Friedman method, it was found that there was a significant difference in the results of slice thickness variations of 3 mm, 5 mm and 7 mm in the CT-Scan brain examination with trauma cases because (p-value < 0.05), this shows that H_o was rejected and H_a was accepted. A good slice thickness variation for showing trauma on a CT-Scan brain examination is a slice thickness of 3 mm in the bone window, because if there is a very small fracture it can be seen more clearly.

Keywords : CT-Scan brain, Trauma, Slice thickness, Contrast resolution

BACKGROUND

CT-Scan is a combination of X-ray and computer technology so that it can display an anatomical image of the human body in the form of slices. The working principle of a CT scan uses X rays as a radiation source (Bontrager, 2018). In general, there are several types of CT-Scan examinations that can be carried out, including the head CT-Scan examination technique (Utami dkk., 2018). Head injury is a traumatic disorder of brain function accompanied or without interstitial bleeding in the substance of the brain without disruption of brain continuity (Syaripudin, 2018). One of the parameters that influences image quality is the selection of slice thickness. Choosing the right slice thickness can confirm the diagnosis well (Sookpeng dkk., 2019). Research on image quality is very important because good image quality can provide appropriate information for the medical team so that appropriate medical action can be taken (E, 2016). The thicker the slice thickness, the better the contrast resolution and the noise value is reduced (Karina dkk., 2017). Slice thickness is the thickness of a slice. The thinner the slice thickness, the better the image detail obtained, high accuracy and calcification can be seen, however, a thin slice thickness can also produce high noise in the image and increase the radiation dose received by the patient (Louk & Suparta, 2014) (Utami dkk., 2018). The choice of slice thickness when creating a CT-scan image has a direct influence on the resulting spatial resolution. With increasing slice thickness (thinner), the spatial resolution of the image gets better, and vice versa (Dewi dkk., 2022). Good CT-Scan image quality is influenced by several factors, spatial resolution, contrast resolution, noise and artifacts. Of the four image quality factors, only contrast resolution and noise are related to slice thickness (Karina dkk., 2017). On CT-Scan examination of the brain, slice thickness values range from 2 mm to 10 mm (Neseth, 2000). Research conducted by Hutami in 2021, variations in slice thickness affect the CNR value, where the greater the slice thickness, the greater the CNR value and the better the image quality (Hutami dkk., 2021). The slice thickness variations used are 1, 2, 3, 4.6, and 8 mm. From the description above, research was carried out regarding the analysis of differences in image quality with variations in slice thickness in CT-scan brain examinations with trauma cases with variations in slice thickness of 3, 5 and 7 mm. This research was carried out at the radiology installation at the Siti Rahmah Islamic Hospital in Padang using brain CT-Scan patient data with existing clinical trauma and then reconstructing the slice thickness

to 3, 5 and 7 mm. Next, the slice thickness is determined which produces optimal image quality at each slice thickness.

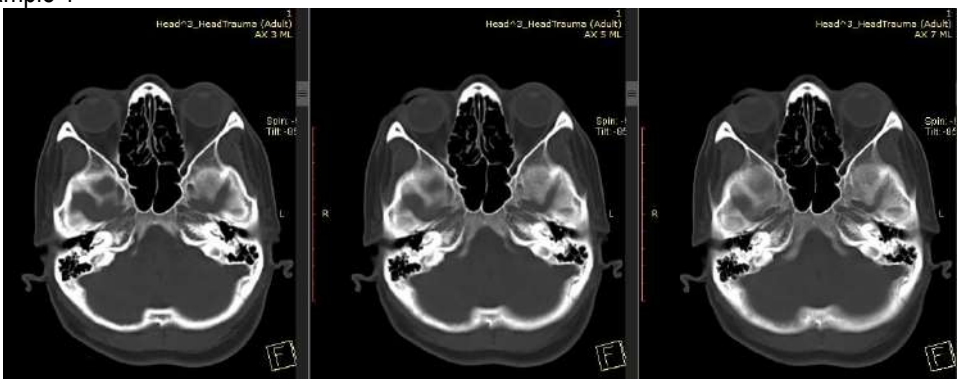
METHOD

The type of research used in this research is quantitative research with experimental methods (Sugiono, 2020). This research was conducted at the Radiology Installation of RSI Siti Rahmah Padang in January - June 2022. The total examination population in November - January 2022 was 42 people with 8 samples, by giving questionnaires to respondents by showing the CT-Scan results. exams with the Radiation Dicom Viewer application, the questionnaire results are calculated. After obtaining the average weight mean score processing value above, the data was processed using SPSS using the Friedman method to see the difference between slice thickness variations of 3 mm, 5 mm and 7 mm in CT-Scan brain examinations and trauma cases. With research hypothesis H_0: There is no difference in image quality in CT-Scan brain examinations with trauma cases at slice thicknesses of 3 mm, 5 mm and 7 mm. H_a: There is a difference in image quality in CT-Scan brain examinations with trauma cases at slice thicknesses of 3 mm, 5 mm and 7 mm. With a significant value for the Slice Thickness variation (p value < 0.05).

RESULT

After conducting research on 8 patients, we found differences in image quality with slice thickness variations of 3 mm, 5 mm and 7 mm in brain CT scans and trauma cases.

1. Sample 1

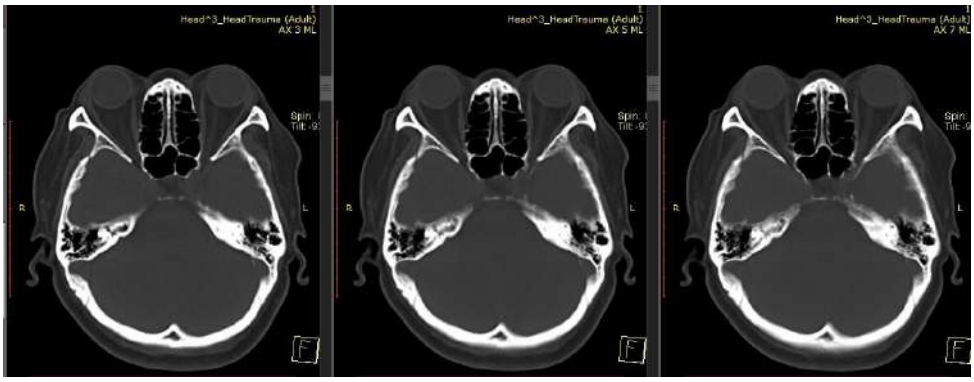


a) *Slice Thickness* 3 mm b) *Slice Thickness* 5 mm c) *Slice Thickness* 7 mm

2. Sample 2

a) *Slice Thickness* 3 mm b) *Slice Thickness* 5 mm c) *Slice Thickness* 7 mm

3. Sample 3



a) *Slice Thickness* 3 mm b) *Slice Thickness* 5 mm c) *Slice Thickness* 7 mm

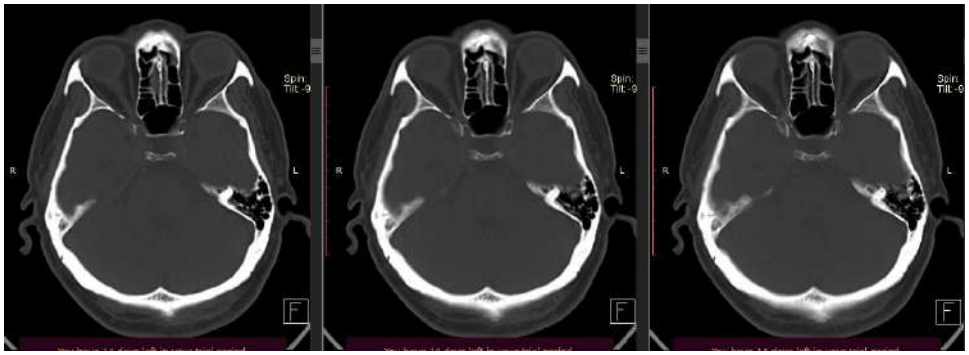
4. Sample 4

a) Slice Thickness 3 mm b) Slice Thickness 5 mm c) Slice Thickness 7 mm

5. Sample 5

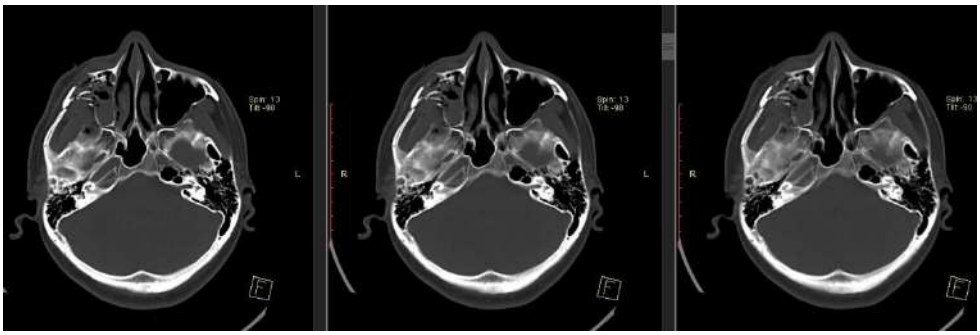
a) Slice Thickness 3 mm b) Slice Thickness 5 mm c) Slice Thickness 7 mm

6. Sample 6



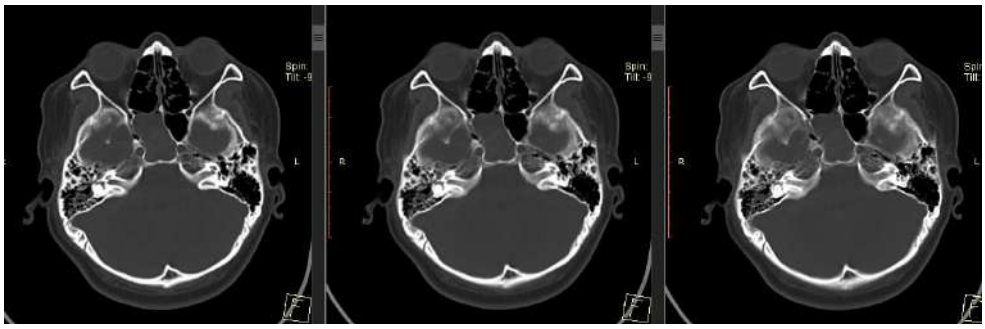
a) Slice Thickness 3 mm b) Slice Thickness 5 mm c) Slice Thickness 7 mm

7. Sample 7



a) Slice Thickness 3 mm b) Slice Thickness 5 mm c) Slice Thickness 7 mm

8. Sample 8



a) Slice Thickness 3 mm b) Slice Thickness 5 mm c) Slice Thickness 7 mm

The results of the calculation of the average weigh mean score formula in table 4.4 show that the average value of CT-Scan brain examinations with trauma cases at slice thickness variations of 3 mm, 5 mm and 7 mm.

Tabel 1.1 Hasil rata-rata weight mean score pada slice thickness 3 mm, 5 mm dan 7 mm

No	Nama	Variasi *slice thickness*		
		3 mm	5 mm	7 mm
1	Sampel 1	3,47	3,57	3.14
2	Sampel 2	3,66	3,61	3.37
3	Sampel 3	3,66	3,38	2,99
4	Sampel 4	3,66	3,33	2,80
5	Sampel 5	3,66	3,38	2,95
6	Sampel 6	3,66	3,33	2,66
7	Sampel 7	3,61	3,47	2,9
8	Sampel 8	3,71	3,42	2,99
Jumlah		**3,64**	**3,44**	**2,98**

The results of the calculation of the average weigh mean score formula in table 1.1 show that the average value of CT-Scan brain examinations with trauma cases at slice thickness variations of 3 mm, 5 mm and 7 mm in samples 1 to sample 8 with slice thickness variations of 3 mm is obtained. The average value is 3.64, at a slice thickness of 5 mm the average value is 3.44 and at a slice thickness of 7 mm the average value is 2.98. So the highest average value in samples 1 to 8 using the weight mean score formula with slice thickness variations of 3 mm, 5 mm and 7 mm is the slice thickness of 3 mm with a value of 3.64.

After obtaining the average weight mean score processing value above, the data was processed using SPSS using the Friedman method to see the difference between slice thickness variations of 3 mm, 5 mm and 7 mm in CT-Scan brain examinations and trauma cases. Based on the descriptive test results, the average value (Mean) for Slice Thickness 3 mm is 3.64, Slice Thickness 5 mm is 3.44 and for Slice Thickness 7 mm is 2.98. So the highest average variation in Slice Thickness is the Slice Thickness variation of 3 mm, namely 3.64. Based on the results of the Friedman test, it can be seen that the asimp.sig value or significant value obtained from the research results is 0.00 (p value <0.05). This shows that there is a significant difference, so Ho is rejected and Ha is accepted, meaning there is a significant difference in the Slice Thickness variations of 3 mm, 5 mm and 7 mm.

The average value of noise, resolution contrast and image results at slice thickness 3 mm, 5 mm, 7 mm can be seen in table 1.2 below :

Tabel 1.2. Nilai rata-rata noise, kontas resolusi dan hasil gambaran pada *slice thickness 3 mm, 5 mm, 7 mm*

No	Variable	Rata-rata	*Contras Resolusi*	*Noise*	Nilai gambaran pemeriksaan *CT-Scan brain*
1	*Slice thickness 3 mm*	3.64	3,67	3,49	3,74
2	*Slice thickness 5 mm*	3.44	3,42	3,44	3,37
3	*Slice thickness 7 mm*	2.98	3,13	2,58	2,83

The average value of noise, contrast resolution and image results on slice thickness 3 mm, 5 mm, 7 mm obtained the average value on slice thickness 3 mm is 3.64, the average value of contrast resolution is 3.67 and the value on noise has an average of 3.49. The average value at a slice thickness of 5 mm is 3.44. The average value for resolution contrast is 3.42 and the value for noise has an average of 3.44 and the average value for a slice thickness is 7. mm is 2.98, the average value for resolution contrast is 3.13 and the value for noise has an average of 2.58.

DISCUSSION

Good CT-Scan image quality is influenced by several factors, spatial resolution, contrast resolution, noise and artifacts. Of the four image quality factors, only resolution contrast and noise are related to slice thickness (Putu dkk., 2021). One of the parameters that influences image quality is the selection of slice thickness. The thicker the slice thickness, the better the contrast resolution and the noise value is reduced (Kartawiguna & Rusmini, 2017).

Based on the results of research conducted by researchers regarding the differences in image quality with slice thickness variations of 3 mm, 5 mm and 7 mm in CT-Scan brain examinations and trauma cases. According to calculations, the average slice thickness of 3 mm has an average value of Contras resolution (3.67), an average value of noise (3.49) and the results of CT-Scan brain examination on the bone window in trauma cases have an average -average (3.74). The slice thickness variation of 5 mm has an average value of Contras resolution (3.42), an average value of noise (3.44) and the results of the CT-Scan brain examination on the bone window in trauma cases have an average of (3 .74) and variations in slice thickness of 7 mm have an average value of Contras resolution (3.13), an average value of noise (2.58) and the results of CT-Scan brain examination in the bone window in trauma cases have an average -average (2.83). According to the weight mean score formula, the average value of CT-Scan brain examinations with trauma cases obtained at slice thickness variations of 3 mm, 5 mm and 7 mm in samples 1 to sample 8 with slice thickness variations of 3 mm obtained an average value of 3.64 , at a slice thickness of 5 mm the average value was 3.44 and at a slice thickness of 7 mm an average value was 2.98. So the highest average value in samples 1 to 8 using the weight mean score formula with slice thickness variations of 3 mm, 5 mm and 7 mm is the slice thickness of 3 mm with a value of 3.64.

Based on the SPSS test results using the Friedman method with slice thickness variations of 3 mm, 5 mm and 7 mm in CT-Scan brain examinations in trauma cases. get average descriptive results at Slice Thickness 3 mm 3.64 at Slice Thickness 5 mm 3.44 and at Slice Thickness 7 mm 2.98. So the highest average value of the Slice Thickness variation is the 3 mm Slice Thickness variation, namely 3.64. Based on the SPSS results of the Friedman test regarding the differences in image quality with slice thickness variations of 3 mm, 5 mm and 7 mm in CT-Scan brain examinations with trauma cases, researchers obtained A simp sig values or significant values for Slice Thickness variations of 3 mm, 5 mm and 7 mm. is 0.00. So the value is significant for the Slice Thickness variation (p value < 0.05). This shows that there is a significant difference, so Ho is rejected and Ha is accepted, meaning there is a significant difference in the Slice Thickness variations of 3 mm, 5 mm and 7 mm. The thinner the slice thickness, the better the image detail obtained, high accuracy and calcification can be seen, however, a thin slice thickness can also produce high noise in the image and increase the radiation dose received by the patient (Utami dkk., 2018). In accordance with the research results, the best slice thickness, namely slice thickness 3 mm, has an average value of 3.64, contrast resolution has an average value of 3.67, noise is 3.49 and the results of CT-Scan brain examination images on the bone window with trauma cases having an average of 3.74. These results are in accordance with research (Karina dkk., 2017) namely the average value of a 3 mm slice thickness is (3.775) with an average contrast resolution value of 3.475 and has an average noise value of 2.525, a 5 mm

slice thickness is (2.975) with The average resolution contrast value is 2.975, and has an average noise value of 2.025 and a slice thickness of 7 mm with an average value of (1.175) with an average resolution contrast value of 2.025, and, has an average noise value of 1.175.

A head CT scan is a computerized tomography examination to determine abnormalities in the intracranial area. One of the indications for a head CT-Scan examination is traumatic brain injury. In head CT-Scan examinations in cases of traumatic brain injury, what needs to be paid attention to is the selection of parameters. Considering that trauma cases are emergencies, the choice of parameters is very important, one of which needs to be considered is the application of slice thickness (Bushong, 2001). When examining small organs or to see small abnormalities, a thin slice thickness is used, and vice versa for large organs, a thick slice thickness can be used. In examinations that require image reconstruction in sagittal and coronal sections, a thin slice thickness is required, because if you use a thick slice thickness the image will appear large (Bontrager, 2018).

Slice thickness is the thickness of a slice. The thinner the slice thickness, the better the image detail obtained, high accuracy and calcification can be seen, however, a thin slice thickness can also produce high noise in the image and increase the radiation dose received by the patient (Utami dkk., 2018). Based on the results of research that has been carried out with variations in slice thickness of 3 mm, 5 mm and 7 mm, the best way to show trauma on a brain CT scan is a slice thickness of 3 mm in the bone window, because if there is a very small fracture it can be seen more clearly. The results of CT-Scan brain examinations in trauma cases at a slice thickness of 5 mm were also able to show fractures but not as detailed as a slice thickness of 3 mm, for a slice thickness of 7 mm it was too thick so the anatomical detail obtained was low and the noise value was reduced. It can be compared to thickly sliced bread, so if there are raisins in the bread that are smaller than the slice, the raisins may not be visible because in the slice, the thinner the slice thickness, the better the quality (Makmur dkk., 2013)

CONCLUSION

Differences in image quality with variations in slice thickness of 3 mm, 5 mm and 7 mm in CT-Scan brain examinations with trauma cases, the average for a 3 mm slice thickness is 3.64, a 5 mm slice thickness is 3.44 and for a 7 mm slice thickness is 2.98 . So the highest average value in the slice thickness variations of 3 mm, 5 mm and 7 mm is a slice thickness of 3 mm with an average value of 3.64. The slice thickness produces optimal image quality in establishing a diagnosis on a CT-Scan examination brain with trauma cases is at a slice thickness variation of 3 mm. From the results of research carried out to confirm the diagnosis in CT-Scan brain examinations in trauma cases, it is best to use a slice thickness of 3 mm. The choice of slice thickness should be adjusted to the clinical course because the choice of slice thickness will affect the quality of the CT-Scan image. This research can be continued using the ROI method. ROI (Region of interest) is a software facility in the form of an application program for the CT-Scan component which is used to calculate CNR (contrast resolution) and noise. On the monitor it appears on the tools select button for ROI measurements and is shaped like a circle.

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