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Relationship between knowledge and patient anxiety on CT scan examination at radiology installation of rsud dr. Gunawan mangunkusumo Semarang regency

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ABSTRACT

In patients who will perform CT Scan examination when entering the examination feel fear, feel uneasy, restless, and often feel fear because there is an examination table and there is a large circular device. This study aims to describe, know, and analyze the relationship between knowledge and anxiety of CT Scan radiography examination patients in CT Scan radiography examination at Radiology Installation of RSUD dr Gunawan Mangunkusumo Kab Semarang. Descriptive quantitative research type. The population in this study were all patients of CT Scan examination in Radiology Installation of RSUD Dr. Gunawan Mangunkusumo Kab Semarang. The sample was 30 patients of CT Scan examination in Radiology Installation of RSUD dr Gunawan Mangunkusumo Kab Semarang. Data collection with quisione. Data analysis using nonparametric, namely Rank Spearman correlation. The results of the Spearman rank test obtained a Spearman rank correlation value (Rs) of -0.615 with a strong correlation level category and a significance value (p-value) of 0.000. The significance value of the test is smaller than 0.05 (0.000 <0.05) so that the test decision is H_0 rejected which means that there is a significant relationship between patient's knowledge of CT scan radiography examination and patient's anxiety at CT scan examination. Furthermore, the value of the Spearman rank correlation coefficient is negative (-0.615), meaning that the higher the level of patient's knowledge of CT scan radiography examination, the higher the level of patient's anxiety.

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INTRODUCTION

CT Scan is a means of supporting diagnosis that uses a combination of x-rays and computers to obtain images in the form of various slices of the human body. CT Scan can be used to examine the whole body, namely to examine the head, thorax, abdomen, upper extremities, lower extremities and spine. The components in a CT Scan consist of a consul system, examination table, injector and gantry. The gantry in a CT scan is round and has a small hole in the middle(Bawa et al., 2023; R. Kurniawan, 2019; McCoubrie, 2021). Patients often feel anxiety before entering the CT Scan room or even often experience anxiety

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during the CT Scan examination. The fear and anxiety experienced by patients can affect the body's physiological response which is characterized by physical changes such as increased pulse rate, increased blood pressure and increased respiratory rate, as well as uncontrolled hand movements, damp palms, restlessness, asking questions the same thing over and over again, difficulty sleeping, frequent urination, headaches, and blurred vision(Ballinger, 2017; Cousins et al., 2021; Pragholapati et al., 2020).

Based on initial observations carried out by the author in several hospitals on patients who were going to undergo a CT Scan examination, the author found that patients often felt anxious when they were in the waiting room waiting for their turn to be called for a CT Scan examination, apart from that the author also often encountered anxious patients during the examination. The CT scan took place because the patient was afraid and anxious when lying on a narrow examination table and having to enter the gantry. Providing prior knowledge and understanding before a CT Scan examination needs to be considered as a way to reduce the level of anxiety in patients. Therefore, the author is interested in raising it as research and studying in more depth the "Relationship between Knowledge and Patient Anxiety during CT Scan Examinations in the Radiology Installation of Regional Hospitals Dr. Gunawan Mangunkusumo, Semarang Regency", so this research aims to describe, determine and analyze the relationship between the level of knowledge and patient anxiety during CT scan examinations.

METHODS

To examine how augmented reality-based flashcards affect children's cognitive development, this study will use descriptive qualitative research (H. Kurniawan et al., 2023; Rony, 2020; Sarwono, 2022). Early childhood children of all ages, genders, and educational backgrounds will be studied. To assess AR flashcards' interactivity and educational value, researchers observe children's interactions with them, interview teachers or parents, and analyze their content. The research will cover children's AR flashcard use, behavioral observations, post-use interviews, and content analysis. Qualitative data analysis will focus on children's behavior and responses and synthesize interview and content analysis results. Research ethics such data confidentiality and privacy will be examined(Ibrahim et al., 2023). Constraints like subject age variation and educational setting will be considered. This study will examine how augmented reality-based flashcards could transform children's education.This study will start with subject selection, selecting willing early childhood children with written agreement from parents of subjects follow.

The type of research used in this research is descriptive analytic using cross sectional methods(Cousins et al., 2021; Seeram, 2022). The location of the research was in the Radiology Installation at the Hospital.

- H0: There is a relationship between knowledge and patient anxiety during CT scan examinations in the radiology installation at Dr Gunawan Mangunkusumo Hospital, Semarang Regency.

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- H1: There is no relationship between knowledge and patient anxiety during CT scan examinations in the radiology installation at Dr Gunawan Mangunkusumo Hospital, Semarang Regency.

The Independent Variable is the Patient's Level of Knowledge. The dependent variable is patient anxiety on CT scan radiography examination.

The population taken in this study were all patients who would undergo a CT Scandi examination at the Radiology Installation of Gunawan Mangunkusumo Hospital, Semarang Regency.The sample in this study was 30 CT scan patients who met the inclusion criteria (Isidental)

Inclusion Criteria

1. Patients aged 15 years and over
2. Cooperative patient
3. Patients who will undergo a CT scan

Exclusion Criteria

1. Patients aged 15 years and under
2. Non-cooperative patient
3. Patients who will not undergo a CT scan

Data processing

a. Editing
   The researcher corrected the data to see the completeness of the data filled in by the respondents
b. Scoring
   Researchers give a value to the data according to the score that has been determined based on the questionnaire
c. Coding
   Coding is the activity of assigning numerical codes (numbers) to data consisting of several categories, then entering them into the questionnaire sheet
d. Processing
   After editing and coding, the data is processed through a computer program
e. Entry
   Entry is entering data obtained using computer facilities using SPSS.
f. Cleaning
   Check the data that has been entered again whether there are errors or not
g. Tabulating
   Tabulating is grouping data according to the researcher's objectives, then entering it in a table that has been prepared and each question that has been given a value is added up and categorized according to the number of questions.

Data analysis to test the hypothesis in this study, the statistical test used was non-parametric, namely the Spearman Rank correlation(Kwintiana et al., 2023) which was intended to see the relationship between the level of knowledge and anxiety in patients pre-CT scan examination. This test was chosen with the consideration that the

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measurement scale of the two research variables is ordinal. The Spearman Rank correlation formula used in this case is as follows:

$$\rho_{xy} = 1 - \frac{6\sum d^2}{N\left(N^2 - 1\right)} \quad (1)$$

Information:
Pxy: rho correlation
N: Number of cases or samples
d^2 : Difference in ranking between variables X and Y for each subject

RESULTS AND DISCUSSION

Results

Research regarding the relationship between knowledge and patient anxiety during CT scan examinations at the radiology installation at Dr Gunawan Mangunkusumo Hospital, Semarang Regency, obtained the following results:

1. Description of Respondent's Gender

Table 1. Frequency Distribution of Respondent Gender Descriptions

Gender	Frequency	Percentage (%)
Man	14	47
Woman	16	53
Total	30	100

*) Source: Primary Data

Based on table 1, it can be seen that 16 respondents were female (53%) and 14 were male (47%).

2. Description of Respondent's Marital Status

Table 2. Frequency Distribution of Respondents' Marital Status

Marital status	Frequency	Percentage (%)
Not Married	0	0
Marry	30	100
Total	30	100

*) Source: Primary Data

Based on table 2, it can be seen that all respondents were married, namely 30 people (100%).

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3. Age description of respondents

Table 3. Frequency Distribution of Respondents' Age

Age	Frequency	Percentage (%)
30-50 Years	9	30
>50 Years	21	70
Total	30	100

*)Source: Primary Data

Based on table 3, it can be seen that 9 respondents were aged between 30 - 50 years (30%) and 21 respondents were over 50 years old, namely 21 people (70%).

4. Description of the level of knowledge of patients during CT scan examinations in the radiology installation at Dr Gunawan Mangunkusumo Hospital, Semarang Regency

Table 4. Frequency Distribution of the Level of Knowledge of Patients in CT Scan Examinations at the Radiology Installation at Dr Gunawan Mangunkusumo Hospital, Semarang Regency

No	Knowledge	Frequency	Percentage (%)
1	Good	16	54
2	Enough	1	3
3	Not enough	13	43
Total		30	100

*)Source: Primary Data

Based on table 4, it can be seen that the distribution of respondents' level of knowledge regarding CT Scan radiographic examination shows that the highest distribution is good knowledge with 16 respondents (54%), followed by 1 respondent (3%) in the sufficient category and 13 respondents (43%) in the poor category.

5. Description of patient anxiety level during CT scan examination at the radiology installation at Dr Gunawan Mangunkusumo Hospital, Semarang Regency

Table 5. Frequency Distribution of Descriptions of Patient Anxiety Levels on CT Scan Examinations in the Radiology Installation of Dr Gunawan Mangunkusumo Hospital, Semarang Regency

No	Anxiety	Frequency	Percentage (%)
1	Rarely/Never	0	0
2	Sometimes	18	60
3	Often	12	40
4	Almost always	0	0
Total		30	100

*)Source: Primary Data

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Based on table 5, it can be seen that the distribution of respondents' anxiety levels during the CT Scan examination shows the highest distribution in the sometimes category, 18 respondents (60%) and the frequent category, 12 respondents (40%).

6. Formulation of research hypotheses

H_0: There is no relationship between the patient's level of knowledge regarding the CT Scan radiography examination and the patient's level of anxiety regarding the CT Scan examination

H_1: There is a relationship between the patient's level of knowledge regarding the CT Scan radiography examination and the patient's level of anxiety regarding the CT Scan examination

1. If the value <0.05, then it means$\mathbf{asymp.Sig.(2-sided)}\mathbf{H_0}$rejected and accepted.$\mathbf{H_1}$
2. If value$\mathbf{asymp.Sig.(2-sided)}$ > 0.05, then it means accepted or rejected.$\mathbf{H_0}\mathbf{H_1}$

7. Description of the Relationship between Knowledge and Patient Anxiety in CT Scan Examinations at the Radiology Installation at Dr Gunawan Mangunkusumo Hospital, Semarang Regency Meanwhile, to explain the level of relationship in the Spearman rank correlation analysis according to Sugiyono (2014) is as follows:

Table 6. Level of Correlation Relationship

Correlation coefficient	Level of Relationship Closeness
0.000 – 0.199	Very low
0.200 – 0.399	Low
0.400 – 0.599	Currently
0.600 – 0.799	Strong
0.800 – 1,000	Very strong

*) Source: Sugiyono, 2018

Meanwhile, to interpret the direction of the Spearman rank correlation relationship according to Sugiyono (2008), namely:

1. If the value 0 ≤ rs ≤ 1 with a positive sign (+), then the correlation coefficient value has a directly proportional relationship direction so that the greater the value of variable X, the greater the value of variable Y.
2. If the value 0 ≤ rs ≤ 1 with a negative sign (-), then the correlation coefficient value has an inverse direction of relationship so that the smaller the value of variable X, the greater the value of variable Y or vice versa.
3. If the rs value = 0, then there is no relationship between the two variables.

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Table 7. Cross Frequency DistributionKnowledge Level of CT Scan Radiographic Examination and Patient Anxiety Level

Knowledge level	Anxiety Level				Total		Rs	$p-value$
	Sometimes		Often					
	N	%	N	%	N	%	-0.615	0,000
Good	5	16.7	11	36.7	16	53.4		
Enough	1	3.3	0	0	1	3.3		
Not enough	12	40	1	3.3	13	43.3		
Total	18	60	12	40	30	100		

*)Source: Primary Data

Based on table 4.5, it can be seen that the distribution of knowledge levels and anxiety levels of patients during CT scans shows that the majority of respondents (60%) are in the category of sometimes experiencing anxiety. Of the 18 respondents, 5 respondents had a good level of knowledge, 1 respondent had a sufficient level of knowledge and 12 respondents had a poor level of knowledge. On the other hand, 40% of respondents who often experience anxiety consist of 11 respondents with a good level of knowledge and 1 respondent with a poor level of knowledge.

Discussion

Knowledge is understanding built by analysis of information. Knowledge is often embedded in people and can be enhanced through information obtained and the results of interactions with other people (Anita, 2020; Fitriana & Wahyuningsih, 2017; Prakash, 2014; Rahmawati et al., 2022). Anxiety is Anxiety is a mood state characterized by negative effects and symptoms of physical tension where a person anticipates the possibility of danger or misfortune in the future with feelings of worry. Anxiety may involve feelings of behavior and physiological responses. Anxiety is a feeling of discomfort or fear that is unclear and restless accompanied by an autonomic response (the source is sometimes unspecific or unknown to the individual), a feeling of anxiety about overcoming danger.

The results of the Spearman rank test of the relationship between the level of knowledge and the anxiety level of patients undergoing CT scan examinations at the Radiology Installation at Dr Gunawan Mangunkusumo Hospital, Semarang Regency, obtained a Spearman rank correlation value (Rs) of -0.615 with a strong correlation level category and a significance value () of 0.000. The significance value of the test is smaller than 0.05 (0.000 <0.05) so the test decision is rejected, which means that there is a significant relationship between patient knowledge of CT scan radiographic examinations and patient anxiety during CT scan examinations. Furthermore, the value of the Spearman rank correlation coefficient is negative (-0.615), meaning that the higher the patient's level of knowledge regarding CT scan radiographic examination, the lower the patient's anxiety level.$\mathrm{p-value H_0}$

With the results of this research, efforts are needed to increase the knowledge of patients in particular and the public in general about CT Scan examinations, either through

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posters and banners in the Dr Gunawan Mangunkusumo Regional Hospital, Semarang Regency, especially in the Radiology Installation so that patient anxiety during CT Scan examinations can be minimized. Apart from that, there is also the need for effective communication between the radiographer and the patient.

CONCLUSION

The research conclusions are 1) the level of knowledge and level of anxiety of patients on CT scans shows that the majority of respondents (60%) are in the category of sometimes experiencing anxiety. 2) Of the 18 respondents, 5 respondents had a good level of knowledge, 1 respondent had a sufficient level of knowledge and 12 respondents had a poor level of knowledge. 3) 40% of respondents who often experience anxiety consist of 11 respondents with a good level of knowledge and 1 respondent with a poor level of knowledge. 4) The results of the Spearman rank test of the relationship between the level of knowledge and the level of anxiety of patients undergoing CT scan examinations at the Radiology Installation at Dr Gunawan Mangunkusumo Hospital, Semarang Regency, obtained a Spearman rank correlation value (Rs) of -0.615 with the category of strong correlation level and significance value ($\boldsymbol{p - value}$) 0.000. The significance value of the test is smaller than 0.05 (0.000 <0.05) so the test decision is rejected, which means that there is a significant relationship between patient knowledge of CT scan radiographic examinations and patient anxiety during CT scan examinations. Furthermore, the value of the Spearman rank correlation coefficient is negative (-0.615), meaning that the higher the patient's level of knowledge regarding 5) CT Scan radiographic examination, the lower the patient's anxiety level. Research suggestions, namely$\boldsymbol{H_0}$Efforts are needed to increase the knowledge of patients in particular and the public in general regarding CT Scan examinations, either through posters and banners in the Dr Gunawan Mangunkusumo Regional Hospital, Semarang Regency, especially in the Radiology Installation so that patient anxiety during CT Scan examinations can be minimized. Apart from that, there is also the need for effective communication between the radiographer and the patient.

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