

Overview of Patient Anxiety Levels Prior to Interventional Radiodiagnostic Procedures Using CT-Scan Modality with Contrast Media at the Radiology Department of Arifin Achmad Regional General Hospital in Riau Province

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ARTICLE INFO

Keywords:

Anxiety, Interventional Radiology, CT-Scan.

ABSTRACT

Computer tomography (CT) scan anxiety is an underestimated problem. Anxiety towards CT scans can be caused by concerns about diseases that may be detected, radiation exposure, administration of contrast agents, fear of pain, and claustrophobia. The results of a preliminary survey regarding interventional radiology examinations in the CT Scan room showed that there were several patients who experienced anxiety before undergoing interventional radiology examinations at RSUD Arifin Achmad Riau Province. The purpose of this study is to determine the description of patients' anxiety regarding interventional radiology examination using CT Scan modality with contrast media in Radiology Instalansi of RSUD Arifin Achmad Riau Province. This research uses a quantitative approach. Data obtained from survey results using the State Trait Anxiety Inventory (STAI) questionnaire, the sampling method used Quota Sampling with 50 respondents. Data analysis using frequency test. The results of data analysis on the level of anxiety obtained from 50 respondents studied the anxiety level of patients before the Interventional Radiodiagnostic CT Scan modality with contrast media at Arifin Achmad Hospital Riau Province mostly experienced moderate anxiety with a total of 36 people (72%), 8 people (16%) experienced mild anxiety and 6 people (12%) experienced severe anxiety.

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1. INTRODUCTION

Anxiety is a psychological condition characterized by feelings of fear and worry, where the fear and worry are directed towards uncertain events. The term "anxiety" comes from the Latin word "anxius" and the German word "anst," both used to describe negative effects and physiological stimuli [1]. According to the American Psychological Association (APA) as cited in [1], anxiety is an emotional state that arises when an individual is under stress, marked by tension, worrisome thoughts, and accompanied by physical responses (such as increased heart rate, elevated blood pressure, and others). According to [2], anxiety, or anxiety disorder, is an unpleasant emotional state characterized by psychophysiological responses that arise as anticipation of unreal or imaginary dangers, seemingly caused by unconscious intrapsychic factors.

Anxiety affects individuals in four main aspects: 1) physically, including increased heart rate, discomfort in the stomach (butterflies), trembling, nausea, muscle tension, sweating, and shortness of breath; 2) cognitively, leading to difficulty concentrating, decreased learning motivation, forgetfulness, and disorientation (time, people, and place); 3) emotionally, causing restlessness, worry, confusion, loss of self-control, and easy despair; 4) behaviorally, manifesting as incoherent communication, avoidance of specific objects, places, or situations, and withdrawal from social life [3].

Radiology is a branch of medical science that deals with the use of all modalities utilizing radiation for diagnosis and therapeutic procedures [4]. Radiology services are generally categorized into diagnostic and interventional radiology. Diagnostic radiology involves the use of modalities for

diagnostic purposes, while interventional radiology is engaged in both diagnosis and therapy with direct diagnostics (real-time) (Regulation of the Head of BAPETEN Number 4, 2020). Various modalities are used in diagnostic and interventional radiology, such as X-ray machines, mammography, dental radiography, conventional fluoroscopy, and CT scans in diagnostic radiology. Interventional radiology includes CT angiography, mobile interventional fluoroscopy, and interventional fluoroscopy (Regulation of the Head of BAPETEN Number 4, 2020).

Interventional radiology involves minimally invasive medical procedures for diagnosing and treating diseases [5]. Interventional radiology procedures include angiography, angioplasty, vascular stent placement, embolization to stop bleeding, chemotherapy via arteries, breast biopsy guided by stereotactic or ultrasound techniques, and catheter placement [6]. Anxiety related to computed tomography (CT) scans is considered a trivial issue, although its anxiety level is similar to that of MRI. CT scan is a non-invasive examination that uses X-rays to create three-dimensional images of the body's structures. Anxiety related to CT scans can be caused by concerns about possible diseases, radiation exposure, contrast agent administration, fear of the unknown, fear of pain, and claustrophobia [7].

A study conducted by Christoph M. Heyer MD and colleagues, involving 6122 patients, found that 825 patients undergoing CT scans (14%) were included (67% male; average age, 54 ± 17 years). The average STAI score was 42 ± 10 , with women and patients receiving intravenous contrast showing significantly higher anxiety levels compared to those without contrast. Patients undergoing extremity examinations and trauma patients showed much lower STAI scores. Patients who had never undergone CT scans before had significantly higher STAI-S values than those with repeat studies. Women had greater fears regarding examination results, radiation exposure, contrast administration, and claustrophobia. Patients with known malignancies had significantly higher anxiety levels about their CT scan results [7].

The preliminary survey conducted by the author through interviews with radiographers at the Radiology Department of Arifin Achmad Regional General Hospital in Riau Province regarding interventional radiology examinations in the CT Scan room revealed that some patients experience anxiety before undergoing interventional radiology examinations at the hospital. Further interviews revealed that patients were anxious because of the injection. Additionally, anxiety arose due to information related to the side effects of contrast media, and some patients postponed the examination due to anxiety. Therefore, the author is interested in conducting a survey presented in the form of a Scientific Paper with the title "Overview of Patient Anxiety Levels Before Interventional Radiodiagnostic Procedures Using CT-Scan Modality with Contrast Media at the Radiology Department of Arifin Achmad Regional General Hospital in Riau Province."

2. METHOD

The research employs a quantitative design with a cross-sectional approach, which is a study aimed at understanding the dynamics of correlation between risk factors and effects, using an approach, observation, or data collection at a single point in time (point time approach). This means that the research subjects are observed only once, and measurements are taken of the subject's character or variable status at the time of examination [8]. The population in this study consists of all patients undergoing CT Scan modality examinations with contrast media intervention. Field observations indicate that the average number of patients each month undergoing CT Scan examinations with contrast is 375 people.

By using quota sampling techniques, the determination of the sample is based on what the researcher desires, resulting in a sample size of 50 people representing the overview of the anxiety levels of patients before interventional radiodiagnostic procedures at the Radiology Department of Arifin Achmad Regional General Hospital in Riau Province.

3. RESULTS AND DISCUSSION

Overview of the Research

Data for this study were obtained from a questionnaire distributed to 50 individuals, and the characteristics of the respondents are presented in the following tables:

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Table 1: Characteristics of Respondents Based on Gender Before Interventional Radiodiagnostic Procedures Using CT Scan Modality with Contrast Media

| Characteristics Based on Gender | Number |
|---------------------------------|-----------|
| Male | 25 people |
| Female | 25 People |
| Total | 50 People |

Characteristics of Respondents Based on Gender Before Interventional Radiodiagnostic Procedures Using CT Scan Modality with Contrast Media at Arifin Achmad Regional General Hospital in Riau Province show that the number of male respondents is 25, and the number of female respondents is also 25.

Table 2: Characteristics of Respondents Based on Age Before Interventional Radiodiagnostic Procedures Using CT Scan Modality with Contrast Media.

| Characteristics of Respondents Based on Age Number | Number |
|--|-----------|
| 17-19 Years | 1 People |
| 20-29 Years | 2 People |
| 30-39 Years | 15 People |
| 40-49 Years | 7 People |
| 50-59 Years | 20 People |
| >59 Years | 5 People |
| Total | 50 People |

Characteristics of Respondents Based on Age Before Interventional Radiodiagnostic Procedures Using CT Scan Modality with Contrast Media at Arifin Achmad Regional General Hospital in Riau Province reveal that the highest number of patients falls within the age group of 50-59 years, with a total of 20 individuals, while the lowest is in the 17-19 years age group, with only 1 individual. Frequency Distribution of Respondent Anxiety Before Interventional Radiodiagnostic Procedures Using CT Scan Modality with Contrast Media

Data on the anxiety levels of patients before interventional radiodiagnostic procedures using CT Scan modality with contrast media at the Radiology Department of Arifin Achmad Regional General Hospital in Riau Province were obtained based on respondents' answers to the questionnaire. The frequency analysis is presented in the following table:

Table 3: Frequency Distribution of Patient Anxiety Before Interventional Radiodiagnostic Procedures Using CT Scan Modality with Contrast Media

| Anxiety Category | Total | Percentage (%) |
|----------------------|-------|-------------------------------------|
| Very serious anxiety | 0 | $\frac{0}{50} \times 100\% = 0\%$ |
| Very worried | 6 | $\frac{6}{50} \times 100\% = 12\%$ |
| This is medium | 36 | $\frac{36}{50} \times 100\% = 72\%$ |
| Mild Anxiety | 8 | $\frac{8}{50} \times 100\% = 16\%$ |
| Not Anxious | 0 | $\frac{0}{50} \times 100\% = 0\%$ |
| Total | 50 | 100 % |

The data analysis results in the table above indicate that the distribution of anxiety levels among respondent patients before interventional procedures using CT Scan modality with contrast media at Arifin Achmad Regional General Hospital in Riau Province shows that the majority experience moderate anxiety, with 36 respondents (72%), followed by mild anxiety in 8 respondents (16%), and severe anxiety in 6 respondents (12%).

Research Discussion

The data analysis results on anxiety levels from 50 respondents undergoing interventional radiodiagnostic procedures using CT Scan modality with contrast media at Arifin Achmad Regional

General Hospital in Riau Province show that the majority experience moderate anxiety, with 36 individuals (72%), 8 individuals (16%) experience mild anxiety, and 6 individuals (12%) experience severe anxiety. These results are supported by the theories presented in the theoretical framework of chapter two, where [9] suggests that factors influencing patient anxiety include intrinsic factors such as age, patient experience, self-concept, and role, as well as extrinsic factors such as medical conditions, educational level, access to information, adaptation processes, socioeconomic status, and the type of procedure. Women tend to have greater fears about examination results, radiation exposure, contrast administration, and claustrophobia. Patients with known malignancies exhibit significantly higher anxiety levels regarding their CT scan results [7].

[10] defines anxiety as a subjective feeling of mental tension that makes an individual feel anxious as a common reaction to a lack of security or an individual's inability to cope with problems. The emergence of feelings of worry, anxiety, and fear in response to real or imagined threats to one's safety is characteristic of anxiety. [11] explain that anxiety is similar to fear but with a less specific focus. Fear is a response to direct threats, while anxiety is marked by worries about unforeseen dangers. The onset of anxiety in patients before an examination indicates physiological and psychological responses, affecting emotions and thoughts. Patients undergoing interventional radiodiagnostic procedures with CT Scan modality may exhibit both conscious and unconscious actions due to anxiety, leading to changes in emotions and thoughts.

Observations by the researcher indicate that, besides claustrophobia, a lack of information about planned imaging seems to influence patient anxiety before undergoing interventional radiodiagnostic procedures with CT Scan modality and contrast media. Patients experience anxiety, especially females and those under 25 years old. First-time patients undergoing interventional radiodiagnostic procedures with CT Scan modality and contrast media tend to experience anxiety.

Patients who have had previous medical procedures state that they are less anxious as they have undergone similar examinations before. This result is consistent with the study conducted by [7], which found that nearly 25% of participants expressed anxiety ('moderate' or 'very anxious') about the planned application of contrast media. These numbers align with Thorp et al.'s observation, documenting a rate of 29.4% in a small group of 40 patients investigated for anxiety about contrast media injection during CT.

These findings demonstrate that the intravenous administration of contrast media can trigger anxiety in most scheduled patients [12]. However, this study's limitation is that differentiating anxiety caused by contrast application from fears of confined spaces and needles is not possible. The extent to which the latter affects study results, at least in outpatient patients receiving intravenous lines just before CT, can only be speculated. Additionally, it should be emphasized that the possible relationship between contrast media administration and other phobias is not ruled out.

Observations made by the researcher show that patients with moderate anxiety appear confused, slightly nervous, and somewhat restless. In contrast, patients with severe anxiety exhibit confusion, nervousness, fear or restlessness, and a lack of concentration. Patients experiencing severe anxiety report anxiety due to their first-time experience with interventional radiodiagnostic procedures using CT Scan modality and contrast media, while those with moderate anxiety are less concerned due to previous experiences with interventional radiodiagnostic and radiotherapy examinations.

4. CONCLUSION

The conclusion that can be drawn from the data analysis and discussion above is that the level of anxiety among patients before interventional radiodiagnostic procedures with CT Scan modality at Arifin Achmad Regional General Hospital in Riau Province, involving 50 patients, consisting of 25 males (50%) and 25 females (50%), falls into the categories of moderate anxiety, mild anxiety, and severe anxiety. This can be seen from the research results, indicating that there are 36 respondents (72%) with moderate anxiety, 8 respondents (16%) with mild anxiety, and 6 respondents (12%) with severe anxiety. The highest frequency is found in patients with moderate anxiety, with 36 respondents, accounting for a percentage of 72%. Observations conducted by the researcher on patients with moderate anxiety show signs of confusion, slight nervousness, and mild restlessness. For patients with severe anxiety, signs include confusion, nervousness, fear or restlessness, and a lack of

concentration. In the category of mild anxiety, patients appear normal/ordinary but slightly concerned. Patients experiencing severe anxiety report feeling anxious because it is their first experience with interventional radiodiagnostic procedures using CT Scan modality and contrast media. Meanwhile, patients with moderate and mild anxiety are less anxious due to previous experiences with interventional radiodiagnostic and radiotherapy examinations.

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