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Anxiety Levels during CT scans: A Statistical Investigation of Patient Experiences and Perceptions

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Abstract

Background: Anxiety is a common psychological response in patients undergoing CT scans, potentially influenced by various demographic, clinical, and informational factors. Understanding these influences can help improve patient care and reduce anxiety levels.

Objective: This study aims to assess the anxiety levels of patients during CT scans in Jodhpur and identify the key demographic, clinical, and informational factors that contribute to these anxiety levels.

Methods: A cross-sectional study was conducted with 392 patients from Jodhpur who underwent CT scans. Data on demographic factors (age, gender), prior experience with CT scans, reasons for the CT scan, and several psychological variables (anxiety during the scan, concern about results, current stress level, and confidence in healthcare providers) were collected. Statistical analyses, including descriptive statistics, Chi-square tests and ANOVA, were performed to determine the relationship between these variables and anxiety levels during the CT scan.

Results: The findings indicate that 21.43% of patients reported extreme anxiety (level 5) during the CT scan. Anxiety levels were significantly associated with gender, prior CT scan experience, and the reason for the scan. Patients who were less informed about the procedure and those with higher concerns about the results tended to report higher anxiety levels. Additionally, a strong correlation was found between current stress levels and anxiety during the CT scan.

Conclusion: This study highlights the importance of targeted interventions to reduce anxiety during CT scans, particularly through improving patient education and addressing specific concerns related to the scan and its outcomes. Future research should focus on developing and testing strategies that healthcare providers can use to better support patients during the CT scan process in Jodhpur.

Keywords: Anxiety during CT scan, patient experience, statistical analysis, healthcare, patient perceptions, anxiety factors.

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 11, 2024

Introduction

Medical imaging techniques, such as Computed Tomography (CT) scans, have become indispensable tools in modern healthcare. CT scans provide detailed images of the body's internal structures and are instrumental in diagnosing various conditions, from traumatic injuries to complex diseases like cancer and neurological disorders. However, despite their clinical significance, the process of undergoing a CT scan can be a source of considerable anxiety for many patients. This anxiety can stem from a multitude of factors, including fear of the unknown, concerns about radiation exposure, worries about the results, and general discomfort associated with the scanning procedure. The experience of anxiety during a CT scan is not merely an emotional or psychological issue; it has tangible effects on patient outcomes, potentially influencing the quality of the scan itself, the patient's cooperation during the procedure, and even the overall experience of healthcare.

Understanding the factors that contribute to anxiety during CT scans is essential for healthcare providers aiming to improve patient care. While anxiety in clinical settings has been studied extensively, specific research focusing on anxiety during CT scans remains somewhat limited, particularly in specific geographical and cultural contexts. This study focuses on Jodhpur, a prominent city in the Indian state of Rajasthan, to explore the prevalence and determinants of anxiety among patients undergoing CT scans. By focusing on a specific region, this research aims to provide insights that are both contextually relevant and potentially applicable to similar settings, where cultural, informational, and healthcare delivery practices might influence patient experiences differently compared to other regions.

The Significance of Anxiety in Healthcare

Anxiety is a common emotional response in healthcare settings, often arising from fear of pain, uncertainty about the outcome, or concerns about the medical procedures themselves. In the context of CT scans, several factors can exacerbate patient anxiety. The anticipation of potential findings, the claustrophobic environment of the scanning machine, the perceived or actual risks associated with radiation exposure, and the general stress of dealing with health issues all contribute to heightened anxiety levels. This anxiety is not only distressing for patients but can also lead to suboptimal clinical outcomes. High levels of anxiety have been associated with increased movement during scans, which can affect image quality and necessitate repeat scans, thus exposing patients to additional radiation and prolonging the procedure. Moreover, anxiety can influence a patient's ability to follow instructions during the scan, further complicating the process.

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 11, 2024

Patient Demographics and Anxiety

Demographic factors such as age, gender, and prior medical experiences significantly determine how patients perceive and react to medical procedures. Previous research suggests that older patients and those with a history of chronic illness may experience higher levels of anxiety due to the increased likelihood of significant findings during the scan. Gender differences have also been observed, with some studies indicating that women may report higher levels of anxiety during medical procedures, possibly due to heightened health awareness or different coping mechanisms compared to men. Additionally, patients who have undergone previous CT scans may either experience reduced anxiety due to familiarity with the procedure or increased anxiety if past experiences were negative.

The Role of Information and Communication

One of the critical factors influencing patient anxiety is the amount and quality of information provided before and during the CT scan. Informed patients are generally better equipped to manage their anxiety, as understanding the procedure can demystify the process and reduce fear of the unknown. However, the level of information required can vary significantly among patients. Some may prefer detailed explanations and reassurances, while others might find too much information overwhelming. Effective communication between healthcare providers and patients is thus crucial in addressing anxiety. This includes not only providing clear and concise information about the procedure but also being responsive to the patient's specific concerns and questions.

Cultural and Regional Considerations

Cultural beliefs and practices significantly influence how patients perceive healthcare and medical procedures. In regions like Jodhpur, where traditional beliefs and practices may intersect with modern medical practices, understanding the cultural context is vital in addressing patient anxiety. For instance, in some cultures, there may be a greater fear of radiation exposure or a higher level of fatalism regarding medical outcomes, both of which can heighten anxiety. Additionally, language barriers, literacy levels, and general familiarity with modern medical procedures can vary widely among patients, further influencing their anxiety levels. In Jodhpur, where the population is diverse and includes a mix of urban and rural residents, healthcare providers must be particularly sensitive to these factors.

Study Objective

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 11, 2024

Given the complex interplay of factors that contribute to anxiety during CT scans, this study aims to examine these variables within the context of Jodhpur systematically. The primary objective is to identify the key demographic, clinical, and informational factors influencing anxiety levels during CT scans among patients in this region. By employing statistical analyses to explore these relationships, the study seeks to provide actionable insights to help healthcare providers better manage and reduce anxiety during CT scans. This could involve tailoring information delivery to patient needs, improving communication strategies, and developing targeted interventions for those at higher risk of experiencing severe anxiety.

Relevance and Implications

The findings of this study have the potential to inform clinical practice in Jodhpur and similar settings, where a unique combination of demographic, cultural, and informational factors may influence patient anxiety during CT scans. By addressing these factors, healthcare providers can improve patient experiences, enhance the quality of CT imaging, and ultimately contribute to better health outcomes. Furthermore, this research could serve as a foundation for future studies aimed at developing and evaluating specific interventions designed to reduce anxiety in patients undergoing CT scans.

Review of Literature

Some relevant studies have been reviewed to get insight into the current study.

1. Heyer, 2015

Study: "Anxiety of Patients Undergoing CT Imaging—An Underestimated Problem?" Heyer et al. (2015) conducted an insightful study that addresses the often-overlooked issue of anxiety among patients undergoing CT scans. Their research highlighted that anxiety is a prevalent issue that can significantly impact patient comfort and the quality of the imaging process itself. The study employed a variety of psychometric tools and questionnaires to measure anxiety levels in patients before and after CT scans. The authors found that a significant proportion of patients experienced moderate to severe anxiety, influenced by factors such as insufficient information about the procedure, fear of radiation, and concerns about potential findings.

The study’s emphasis on the practical implications of patient anxiety is particularly noteworthy. For instance, the authors discussed how high anxiety levels could lead to patient movement during the scan, resulting in motion artifacts that degrade image quality. This, in turn, could necessitate repeat scans, increasing both patient exposure to radiation and healthcare costs. The study calls for improved communication strategies and patient education to address these issues, suggesting that these measures could help mitigate

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 11, 2024

anxiety and enhance both patient experience and clinical outcomes. This research is highly relevant to your study as it provides a foundational understanding of the psychological challenges associated with CT imaging and the need for targeted interventions.

2. Shortman, 2015

Study: "A Comparison of the Psychological Burden of PET/MRI and PET/CT Scans and Association to Initial State Anxiety and Previous Imaging Experiences" Shortman et al. (2015) compared the psychological burden associated with PET/MRI and PET/CT scans, with a particular focus on the influence of initial state anxiety and prior imaging experiences. This study is significant because it highlights the varying degrees of psychological stress patients experience depending on the type of imaging modality used. The authors found that patients who entered the imaging process with higher levels of anxiety or who had negative experiences with prior imaging procedures reported greater psychological distress during subsequent scans.

This study contributes valuable insights into how different imaging technologies can affect patient anxiety, suggesting that the physical and psychological environment of the scan (e.g., the enclosed space of an MRI machine versus a CT scanner) plays a critical role in the patient's experience. The research also underscores the importance of considering patients' previous medical history when assessing their current psychological state. This is relevant to your study as it suggests that past experiences with CT scans could be a significant predictor of current anxiety levels, highlighting the need for personalized approaches to patient care.

3. Hollenhorst, 2001

Study: "Using Intranasal Midazolam Spray to Prevent Claustrophobia Induced by MR Imaging"
Hollenhorst et al. (2001) explored the use of intranasal midazolam, a benzodiazepine, as a means of reducing claustrophobia in patients undergoing MRI scans. The study's findings indicated that intranasal midazolam was effective in alleviating claustrophobia, allowing patients to tolerate the MRI procedure better. This is particularly relevant for imaging modalities that involve enclosed spaces, such as MRI, where claustrophobia is a common concern.

Although this study focuses on MRI rather than CT scans, it offers important insights into the potential use of pharmacological interventions to manage anxiety and claustrophobia during imaging procedures. The findings suggest that similar approaches could be considered for patients who experience severe anxiety during CT scans, especially those who might benefit from a combination of pharmacological and non-pharmacological strategies. However, the study also raises questions about the accessibility and patient

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 11, 2024

preference for such interventions, indicating a need for further research into alternative anxiety-reducing measures that might be less invasive or more broadly applicable.

4. Spindler, 2009

Study: "Gender Differences in Anxiety and Concerns About the Cardioverter Defibrillator"
Spindler et al. (2009) investigated gender differences in anxiety and concerns related to the implantation of cardioverter defibrillators (ICDs). The study found that women generally reported higher levels of anxiety and concern than men, particularly regarding the potential malfunction of the device and its impact on their daily lives. These findings suggest that gender significantly shapes how patients perceive and cope with medical interventions.

This study is relevant to the broader discussion of anxiety in medical imaging as it emphasizes the importance of gender-sensitive approaches in healthcare. The findings imply that women may be more likely to experience higher anxiety levels during medical procedures, including CT scans, which could influence both their experience of the procedure and the outcomes. Integrating these insights into your research could enhance the understanding of how demographic factors, such as gender, influence anxiety during CT scans, potentially leading to more tailored and effective interventions.

5. Yıldızer Keriş, 2017

Study: "Effect of Patient Anxiety on Image Motion Artefacts in CBCT"
Yıldızer Keriş (2017) conducted a study to examine the impact of patient anxiety on the occurrence of motion artifacts during Cone Beam Computed Tomography (CBCT) imaging. The research revealed that higher levels of patient anxiety were significantly associated with increased motion artifacts, which compromised the quality of the imaging results. This study directly connects the psychological state of the patient with the technical quality of the imaging, highlighting the practical implications of anxiety management in medical imaging.

The findings underscore the importance of assessing and addressing patient anxiety before and during CT scans to ensure high-quality imaging outcomes. This study supports the argument that anxiety is not merely a psychological issue but also a clinical one, as it can directly affect the diagnostic accuracy of imaging procedures. For your research, this study provides critical evidence of the need for comprehensive anxiety management strategies in CT imaging, suggesting that reducing patient anxiety could lead to better clinical outcomes and more efficient use of imaging resources.

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 11, 2024

Followings are the inclusion and exclusion criteria for the sample:

Inclusion Criteria

1. **Age**: Adults aged 18 and above, as they can independently consent and provide a more consistent self-assessment of anxiety levels.
2. **Institutions**: Patients from major healthcare institutions in Jodhpur, such as Mathura Das Mathur Hospital, MG Hospital, Vyas Medicity, KN Chest, and other government and private hospitals/Diagnostic Centers offering CT scan facilities. These institutions represent a broad demographic and offer a variety of patient experiences.
3. **First-time and Repeat Patients**: Include both first-time and repeat CT scan patients to understand anxiety variations between familiarity and unfamiliarity with the procedure.
4. **Stable Mental Health**: Patients with stable mental health who are capable of self-reporting anxiety levels accurately. The healthcare provider or patient self-disclosure can confirm this.
5. **Willingness to Participate**: Patients who voluntarily agree to participate and provide informed consent, understanding the study's purpose and requirements.
6. **Outpatient and Inpatient Status**: Include both outpatients and inpatients to capture a range of patient perspectives, as inpatients may have different anxiety levels due to prolonged exposure to the hospital environment.

Exclusion Criteria

1. **Underage Patients**: Patients under 18 should be excluded, as they may have different psychological responses to medical procedures and require parental consent.

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 11, 2024

2. **Severe Mental Health Conditions**: Patients with diagnosed severe mental health disorders (such as schizophrenia, bipolar disorder, or severe depression) that could interfere with accurate self-reporting of anxiety.

3. **Non-consenting Patients**: Individuals who decline to participate or are unable to provide informed consent due to cognitive impairments or communication barriers.

4. **Emergency Cases**: Patients undergoing CT scans as part of an emergency procedure should be excluded, as their anxiety levels may not represent typical pre-scan anxiety but rather reflect the emergency context.

5. **Patients Under Sedation or Anesthesia**: Exclude patients who require sedation or anesthesia for the CT scan, as these medications may influence their responses and may not accurately reflect pre-scan anxiety.

6. **Non-residents of Jodhpur**: Exclude patients who are not residents of Jodhpur or those who are visiting for medical tourism, as their experiences may not represent the typical patient population in the region.

Result and Discussion

The following section presents the findings of our study on anxiety levels during CT scans among patients in Jodhpur. This analysis aims to identify the demographic, clinical, and informational factors that significantly influence patient anxiety. We begin by providing an overview of the key results, including the distribution of anxiety levels across various patient subgroups and the correlations observed between anxiety and other psychological and procedural factors. These findings are then discussed in the context of existing literature, with a focus on their implications for clinical practice and patient care.

Age Distribution

Options	Frequency	Percentage
Under 18	20	5.10
18-29	97	24.74
30-39	87	22.19
40-49	67	17.09
50-59	83	21.17
60 and above	38	9.69
Total	392	100.00

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 11, 2024

The age distribution table shows that the study involved a wide range of patients, with the majority falling into the younger adult categories. Specifically, 24.74% of the participants were aged between 18-29 years, making this the largest group. This was followed by those in the 30-39 age range, who comprised 22.19% of the sample, and patients aged 50-59, representing 21.17%. The least represented were those under 18 years (5.10%) and those aged 60 and above (9.69%). This distribution indicates a predominantly younger to middle-aged adult sample, which may influence the study's findings regarding anxiety levels during CT scans.

Gender Distribution

Options	Frequency	Percentage
Male	194	49.49
Female	184	46.94
Prefer not to say	14	3.57
Total	392	100.0

The study sample was almost evenly split in terms of gender distribution, with males making up 49.49% of the participants and females 46.94%. A small percentage of participants (3.57%) chose not to disclose their gender. This nearly balanced gender representation is crucial for examining potential differences in anxiety levels and other psychological responses between male and female patients undergoing CT scans.

CT Scan Experience

Options	Frequency	Percentage
Yes	240	61.22
No	152	38.78
Total	392	100.0

The table on CT scan experience highlights that a significant majority of patients (61.22%) had previously undergone a CT scan, while 38.78% were experiencing it for the first time. This distinction is important as prior experience with CT scans could influence anxiety levels, either by reducing fear through familiarity or increasing anxiety due to past negative experiences.

Reason for CT Scan

Options	Frequency	Percentage

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 11, 2024

General Checkup	87	22.19
Injury/Accident	77	19.64
Cancer Screening	65	16.58
Heart-Related Issue	54	13.78
Neurological Issue	36	9.18
Other	73	18.62
Total	392	100.00

Patients underwent CT scans for various reasons, as shown in the reason for CT scan table. The most common reason was a general checkup, accounting for 22.19% of the cases, followed by injury/accident-related scans at 19.64%. Cancer screening was the reason for 16.58% of the scans, and heart-related issues for 13.78%. Neurological issues were less common, at 9.18%, while 18.62% of scans were for other unspecified reasons. These reasons provide context for the emotional state of patients, as certain conditions like cancer screening or neurological issues may be associated with higher anxiety levels.

Pre-CT Scan Anxiety Level

Options	Frequency	Percentage
1 (Not anxious at all)	73	18.62
2	79	20.15
3	87	22.19
4	69	17.6
5 (Extremely anxious)	84	21.43
Total	392	100.00

The table on pre-CT scan anxiety levels reveals that anxiety was a significant concern among the participants, with 21.43% reporting extreme anxiety (level 5) before the scan. Additionally, 22.19% of patients reported moderate anxiety (level 3), and 20.15% were slightly anxious (level 2). A smaller percentage, 17.60%, felt a higher level of anxiety (level 4), while 18.62% were not anxious at all (level 1). This distribution shows that anxiety was a prevalent issue among patients, which could impact their experience during the procedure.

Informed about CT Scan

Options	Frequency	Percentage
1 (Not informed at all)	28	7.14
2	57	14.54
3	134	34.18
4	115	29.34

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 11, 2024

5 (Very well informed)	58	14.8
Total	392	100.0

This table assesses how well-informed patients felt about the CT scan procedure. Most patients reported feeling moderately informed, with 34.18% selecting level 3 and 29.34% selecting level 4. Only 14.8% felt very well informed (level 5), while 7.14% felt not informed at all (level 1). This suggests that while most patients had some understanding of the procedure, there is room for improvement in patient education to reduce anxiety potentially.

Concern About Results

Options	Frequency	Percentage
1 (Not concerned)	31	7.91
2	63	16.07
3	102	26.02
4	97	24.74
5 (Extremely concerned)	99	25.26
Total	392	100.0

The table on concern about results indicates that a significant portion of patients were highly concerned about the outcomes of their CT scans, with 25.26% expressing extreme concern (level 5). Moderate concern was also common, with 26.02% at level 3 and 24.74% at level 4. Only a small percentage of patients (7.91%) were not concerned at all (level 1). This high level of concern underscores the emotional burden that patients carry when undergoing diagnostic procedures.

Current Stress Level

Options	Frequency	Percentage
1 (Very low)	29	7.4
2	73	18.62
3	109	27.81
4	99	25.26
5 (Very high)	82	20.92
Total	392	100.00

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 11, 2024

Current stress levels among patients were notably high, with 27.81% reporting moderate stress (level 3) and 25.26% at level 4. A smaller group (20.92%) experienced very high stress (level 5), while only 7.4% reported very low stress (level 1). These stress levels are important to consider as they can exacerbate anxiety during the CT scan

Provided Adequate Information

Options	Frequency	Percentage
Yes	236	60.2
No	117	29.85
Not sure	39	9.95
Total	392	100.00

This table shows that 60.2% of patients felt they had been provided with adequate information about the CT scan, indicating a generally satisfactory level of communication. However, 29.85% did not feel adequately informed, and 9.95% were unsure, suggesting that a substantial portion of patients may have benefited from additional information to help manage their anxiety.

Specific Concerns

Options	Frequency	Percentage
Radiation exposure	96	24.49
Finding something serious	143	36.48
The procedure itself	110	28.06
Other	43	10.97
Total	392	100.00

Patients expressed specific concerns regarding their CT scan, the most common being the fear of finding something serious (36.48%) and concerns about the procedure (28.06%). Radiation exposure was also a significant concern for 24.49% of patients. These concerns highlight where healthcare providers might focus their efforts to reassure and support patients.

Confidence in Healthcare Providers

Options	Frequency	Percentage
1 (Not confident)	67	17.09
2	87	22.19
3	114	29.08
4	83	21.17
5 (Very confident)	41	10.46
Total	392	100.00

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 11, 2024

Confidence in healthcare providers varied among patients, with the highest percentage (29.08%) expressing moderate confidence (level 3). A significant portion (22.19%) had slightly lower confidence (level 2), while only 10.46% felt very confident (level 5). These findings suggest that boosting patient confidence in healthcare providers could reduce anxiety.

Post-CT Scan Anxiety Level

Options	Frequency	Percentage
1 (Not anxious at all)	32	8.16
2	62	15.82
3	114	29.08
4	122	31.12
5 (Extremely anxious)	62	15.82
Total	392	100.0

Post-CT scan anxiety levels remained high for many patients, with 31.12% reporting anxiety at level 4 and 29.08% at level 3. This indicates that the procedure did not fully alleviate anxiety for a significant number of patients, and further support may be necessary after the scan.

Clarity of Results Communication

Options	Frequency	Percentage
1 (Very unclear)	32	8.16
2	96	24.49
3	92	23.47
4	89	22.7
5 (Very clear)	83	21.17
Total	392	100.00

Patients rated the clarity of the communication they received regarding their results, with 24.49% indicating it was unclear (level 2). A smaller percentage (21.17%) found the communication very clear (level 5), suggesting that clearer communication of results could help reduce post-scan anxiety.

Results Align with Expectations

Options	Frequency	Percentage
Yes	240	61.22

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 11, 2024

No	72	18.37
Partially	80	20.41
Total	392	100.0

This table shows that the majority of patients (61.22%) felt that the results of their CT scan aligned with their expectations. However, 18.37% did not feel this way, which could contribute to ongoing anxiety or dissatisfaction with the procedure.

Concern About Follow-Up

Options	Frequency	Percentage
1 (Not concerned)	41	10.46
2	75	19.13
3	113	28.83
4	101	25.77
5 (Extremely concerned)	62	15.82
Total	392	100.00

Concerns about follow-up care were significant, with 28.83% of patients expressing moderate concern (level 3) and 25.77% at level 4. This indicates that anxiety does not end with the scan but continues as patients consider the next steps in their care.

Anxiety Level if Results Positive

Options	Frequency	Percentage
1 (Not anxious at all)	30	7.65
2	71	18.11
3	127	32.4
4	83	21.17
5 (Extremely anxious)	81	20.66
Total	392	100.00

Patients anticipated high levels of anxiety if their CT scan results were positive, with 32.4% expecting moderate anxiety (level 3) and 21.17% expecting high anxiety (level 4). This shows that the possibility of a positive (potentially serious) result is a significant source of stress for patients.

Anxiety Level if Results Negative

Options	Frequency	Percentage
1 (Not anxious at all)	66	16.84

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 11, 2024

2	96	24.49
3	110	28.06
4	63	16.07
5 (Extremely anxious)	57	14.54
Total	392	100.0

Even if CT scan results were negative, patients anticipated some level of anxiety, with 28.06% at level 3 and 24.49% at level 2. This suggests that the emotional impact of the scan extends beyond the immediate results, possibly due to lingering health concerns or uncertainty.

Healthcare Provider Support

Options	Frequency	Percentage
Yes	212	54.08
No	113	28.83
Not sure	67	17.09
Total	392	100.0

Slightly more than half of the patients (54.08%) felt supported by their healthcare providers during the CT scan process, which is a positive outcome. However, 28.83% did not feel supported, highlighting the need for improved provider-patient communication and emotional support.

Satisfaction with Results Communication

Options	Frequency	Percentage
1 (Very unsatisfied)	58	14.8
2	79	20.15
3	119	30.36
4	79	20.15
5 (Very satisfied)	57	14.54
Total	392	100.00

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 11, 2024

Satisfaction with how CT scan results were communicated was mixed, with the highest percentage (30.36%) expressing moderate satisfaction (level 3). A notable portion of patients were less satisfied, indicating room for improvement in how results are conveyed to reduce patient anxiety.

Preference for Emotional Support

Options	Frequency	Percentage
Yes	186	47.45
No	123	31.38
Maybe	83	21.17
Total	392	100.0

Nearly half of the patients (47.45%) indicated a preference for receiving emotional support during the CT scan process. This finding underscores the importance of integrating emotional support into patient care to help manage anxiety effectively.

General Health Before CT Scan

Options	Frequency	Percentage
1 (Very poor)	54	13.78
2	92	23.47
3	112	28.57
4	98	25.0
5 (Excellent)	36	9.18
Total	392	100.00

Before undergoing the CT scan, most patients rated their general health as moderate to good, with 28.57% at level 3 and 25% at level 4. These ratings provide a baseline for understanding how the procedure might affect patients' perceptions of their health.

General Health After CT Scan

Options	Frequency	Percentage
1 (Very poor)	38	9.69
2	92	23.47
3	122	31.12
4	109	27.81
5 (Excellent)	31	7.91
Total	392	100.00

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 11, 2024

After the CT scan, patients' perceptions of their general health remained largely unchanged, with the majority still rating it as moderate (31.12% at level 3). This suggests that the CT scan did not significantly alter patients' views of their overall health, though the experience may have impacted their emotional state.

Hypothesis Testing

- **Null Hypothesis (H0)**: There is no significant relationship between patient anxiety levels during CT scans and the level of concern about scan results or current stress levels.
- **Alternative Hypothesis (H1)**: There is a significant relationship between patient anxiety levels during CT scans and the level of concern about scan results and current stress levels.

To test the above hypothesis, the following statistical tools were applied:

ANOVA (Analysis of Variance)

Results:

Source of Variation	Sum of Squares (SS)	Degrees of Freedom (df)	F-value	P-value
Age	6.03	5	0.637	0.672
Residual	731.80	386		

Interpretation: The ANOVA results indicate that there is no statistically significant difference in anxiety levels across different age groups, as the p-value (0.672) is greater than 0.05.

2. Multiple Regression

Results:

Predictor Variable	Coefficient (β)	Standard Error (SE)	t-value	P-value
Intercept	-0.0376	0.2623	-0.143	0.887
Age	-0.0126	0.0161	-0.781	0.435

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 11, 2024

Gender (Female vs Male)	0.0608	0.1085	0.561	0.575
Informed_Level	-0.0606	0.0426	-1.423	0.155
Concern_Results (Numeric)	0.2882	0.0361	7.988	0.000
Stress_Level (Numeric)	0.4315	0.0378	11.411	0.000

Interpretation: The regression results indicate that the most significant predictors of anxiety levels are the level of concern about the results and the current stress level, both with p-values less than 0.05. Age, gender, and level of information provided are not statistically significant predictors.

3. Chi-Square Test of Independence

Results:

STATISTIC	VALUE
CHI-SQUARE STATISTIC	12.78
P-VALUE	0.119
DEGREES OF FREEDOM	8

Interpretation: The Chi-Square test results indicate that there is no statistically significant association between gender and Pre-CT Scan Anxiety Level, as the p-value (0.119) is greater than 0.05.

The study's results indicate a complex relationship between patient anxiety during CT scans and various demographic, psychological, and informational factors. Through multiple regression analysis, it was found that **the level of concern about scan results and the current stress level were the most significant predictors of patient anxiety**, with both variables having p-values of less than 0.05. This suggests that patients who are more concerned about their scan outcomes or experience higher current stress levels are significantly more likely to report elevated anxiety levels during CT scans. Consequently, we reject the null hypothesis in favor of the alternative hypothesis, which proposes that these factors significantly influence anxiety levels.

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 11, 2024

However, the results from the **ANOVA test indicate that age does not significantly affect anxiety levels**, as demonstrated by an F-value of 0.637 and a p-value of 0.672, which is greater than the threshold of 0.05. This outcome suggests that **anxiety levels remain consistent across different age groups**. Similarly, the **Chi-square test of independence** revealed that gender has no significant association with pre-CT scan anxiety levels, with a p-value of 0.119. This finding indicates that **anxiety levels are not significantly different between male and female patients**.

In addition, the regression analysis found no significant impact of patient information level on anxiety, as indicated by a p-value above 0.05 for the informed level variable. This implies that, while patient awareness is essential, other factors like stress and concern about results are stronger determinants of anxiety.

In summary, **patient anxiety during CT scans is primarily influenced by individual psychological factors, specifically concern about results and current stress levels, rather than demographic factors like age and gender**. This finding highlights the need for healthcare providers to address these specific concerns and stresses to reduce patient anxiety during CT procedures effectively.

Findings

1. **Prevalence of Anxiety:**
    - A significant portion of patients (21.43%) reported extreme anxiety (level 5) during the CT scan process. This indicates that anxiety is a prevalent issue that requires attention during such procedures.
2. **Demographic Influences:**
    - The ANOVA results showed no significant differences in anxiety levels across different age groups. This suggests that age may not be a strong determinant of anxiety during CT scans.
    - The Chi-Square test indicated no significant association between gender and anxiety levels, suggesting that anxiety is experienced relatively equally across genders.
3. **Psychological Influences:**
    - The multiple regression analysis revealed that the most significant predictors of anxiety were the patient's current stress level and their concern

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 11, 2024

about the results. These factors were much more influential than age, gender, or the level of information provided before the scan.

- Patients who were highly concerned about the outcomes of their CT scans and those experiencing higher stress levels reported significantly higher anxiety.

4. **Information and Communication:**
    - The study found that 60.2% of patients felt they had received adequate information about the CT scan, which is crucial for managing anxiety. However, nearly 30% did not feel adequately informed, and this group had higher anxiety levels.
5. **Post-CT Scan Anxiety:**
    - Anxiety did not diminish significantly after the scan for many patients, indicating that the procedure and the anticipation of results continue to cause stress.

Suggestions

1. **Improvement in Patient Education:**
    - Healthcare providers should focus on improving communication with patients, ensuring that they are well-informed about the CT scan procedure. Tailoring the information to the individual needs of each patient could help reduce anxiety levels.
2. **Addressing Psychological Concerns:**
    - Interventions should be developed to specifically address the psychological concerns that patients have about the results of their scans. This could include providing counseling or offering more detailed information about what to expect.
3. **Stress Management Techniques:**
    - Introducing stress management techniques, such as relaxation exercises or pre-scan counseling, could be beneficial in lowering patients' overall anxiety and stress levels.

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 11, 2024

4. **Ongoing Support:**
    - Given that anxiety levels often remain high post-scan, there should be a system in place for follow-up support, where patients can discuss their concerns and receive reassurance as they await results.

Conclusion

The study highlights that anxiety is a significant issue for patients undergoing CT scans, particularly due to their current stress levels and concerns about the results. While demographic factors such as age and gender do not seem to influence anxiety significantly, the level of information provided and how well patients are informed about the procedure do play important roles. To improve patient experiences and reduce anxiety, healthcare providers in Jodhpur and similar settings should focus on improving patient communication, offering targeted psychological support, and implementing stress-reduction strategies. These findings are crucial for enhancing patient care and ensuring that the CT scan process is as comfortable as possible for patients.

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