Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 7 (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Perception And Knowledge Of Patients Towards CT Scan

Harshit Sehrawat[*1], Sourabh Chandra[2], Dr. Abhishek Soni (PT)[3], Sachin Chawla[4], Aditya Negi[5]

[*1,2,3]Quantum University, Roorkee, Department of Paramedical Sciences

[4]Guru Kashi University, Talwandi Saho, Bhatinda Punjab

[5]Graphic Era deemed to be University, Dehradun

***Corresponding Author**:

Harshit Sehrawat,

Department of Paramedical Sciences

Email ID: Sehrawatharshit601@gmail.com

Cite this paper as: Harshit Sehrawat, Sourabh Chandra, Dr. Abhishek Soni (PT), Sachin Chawla, Aditya Negi, (2025) Perception And Knowledge Of Patients Towards CT Scan. *Journal of Neonatal Surgery*, 14 (7), 1225-1228.

ABSTRACT

Computed Tomography (CT) scans are vital diagnostic tools, yet patient awareness and perceptions regarding their use and associated radiation risks remain underexplored. This crosssectional study aimed to assess patient knowledge, perception, and experience of CT scans at the Radiology Department of Maharishi Markandeshwar Institute of Medical Sciences and Research (MMIMSR) from December 2021 to April 2022. A retrospective, qualitative survey involving 50 patients was conducted using a questionnaire with open- and close-ended questions. Results revealed that 66% of patients reported no explanation from radiographers about the scan, 86% were unaware of the type of rays involved, and 82% lacked knowledge of radiation risks. Despite this, 46% reported a good post-examination experience, though 62% were dissatisfied with examination room cleanliness. These findings highlight significant gaps in patient education and communication, underscoring the need for improved radiographer-patient interactions and radiation risk awareness to enhance patient-centered care.

Keywords: *Computed Tomography, Patient Perception, Radiation Risk, Patient Knowledge, Radiology Communication*

1. INTRODUCTION

Computed Tomography (CT) has revolutionized medical diagnostics since its introduction in the

1970s by Sir Godfrey Hounsfield, transforming surgical and non-invasive diagnostic approaches

[1]. The technology's evolution from first-generation single-detector systems to seventh generation multi detector arrays has significantly reduced scan times and enhanced image quality [2]. However, the increased utilization of CT scans, rising from 2 million annually in 1980 to approximately 72 million in 2017, has raised concerns about ionizing radiation exposure and its potential stochastic risks, such as carcinogenesis [3,4].

Despite CT's diagnostic benefits, patient awareness of its procedures, radiation risks, and overall experience remains limited. Studies suggest that while patients recognize CT involves radiation, many underestimate its carcinogenic potential or lack clarity about procedural details [5,6]. Misinformation, often amplified by media sensationalism, can lead to anxiety or refusal of necessary scans [7]. This study aims to evaluate patient knowledge, perception, and experiences of CT scans at MMIMSR, identifying gaps in communication and education to improve patient centered care.

2. MATERIALS AND METHODS

2.1 Study Design and Setting

A retrospective, qualitative, cross-sectional study was conducted at the Radiology Department of MMIMSR, Mullana, Ambala, India, from December 2021 to April 2022. The study targeted patients undergoing CT scans during this period.

2.2 Participants

Fifty patients were included based on their willingness to participate in a questionnaire-based survey. Inclusion criteria comprised patients scheduled for a CT scan who consented to the survey. Patients uninterested in completing the

questionnaire were excluded. Ethical clearance was not required as per institutional guidelines.

2.3 Data Collection

Data were collected using a structured questionnaire comprising 19 questions, including both open- and close-ended formats. The questionnaire assessed demographics (age, gender), prior CT experience, radiographer communication, procedural comfort, awareness of radiation risks, and satisfaction with facilities (e.g., cleanliness, changing rooms). Questions included:

- Did the radiographer explain the scan procedure? (Yes/No)
- Are you aware of the type of rays involved in CT scans? (X-rays/Beta rays/Gamma rays/Don't know)
- How did you feel after the examination? (Good/Poor/Unsatisfied/Satisfied)

The survey was administered in person by trained staff, ensuring clarity and addressing patient queries.

2.4 Data Analysis

Data were analyzed using descriptive statistics, including frequency, mean, and percentage, calculated using Microsoft Excel. Responses were categorized to identify trends in patient knowledge, perception, and satisfaction.

3. RESULTS

3.1 Demographic Characteristics

Of the 50 participants, 64% were male (n=32) and 36% were female (n=18). The age distribution was: 20–30 years (16%, n=8), 30–40 years (34%, n=17), 40–50 years (24%, n=12), and 50–60 years (26%, n=13). The 30–40 age group was the most represented (Table 1).

Table 1: Demographic Characteristics of Participants

Age Group	Frequency (n)	Percentage (%)
20–30	8	16
30–40	17	34
40–50	12	24
50–60	13	26
Gender		
Male	32	64
Female	18	36

3.2 Knowledge and Awareness

- **Procedure Explanation**: 66% (n=33) reported that radiographers did not explain the scan procedure, while 34% (n=17) received an explanation.
- **Prior CT Experience**: 56% (n=28) had undergone a CT scan previously, while 44% (n=22) were first-time patients.

3.3 Radiation Knowledge: 86% (n=43) were unaware of the type of rays involved in CT scans, with only 14% (n=7) correctly identifying X-rays. Similarly, 82% (n=41) lacked knowledge of radiation risks, while 18% (n=9) were aware of potential harmful effects

3.4 Perception and Comfort

- **Query Resolution**: 54% (n=27) felt their queries were addressed by radiographers, while 46% (n=23) did not.
- **Procedural Comfort**: When positioned on the CT couch, 46% (n=23) felt scared, 22% (n=11) were comfortable, and 32% (n=16) were neutral.
- **Contrast Injection**: 66% (n=33) found contrast medium injection scary, 22% (n=11) had mixed feelings, and 12% (n=6) were neutral.

❖ **Radiographer Demeanor**: 58% (n=29) perceived radiographers as cheerful, while 42% (n=21) did not.

3.5 Satisfaction and Experience

❖ **Timeliness**: 54% (n=27) reported scans performed on time, while 46% (n=23) experienced delays.

❖ **Result Communication**: Only 8% (n=4) received a full explanation about test result delivery, 64% (n=32) received partial explanations, and 28% (n=14) received none.

❖ **Facility Satisfaction**: 62% (n=31) were dissatisfied with the cleanliness of the examination couch, sheets, and pillows, while 38% (n=19) were satisfied. However, 64% (n=32) confirmed adequate changing room availability for both genders.

❖ **Overall Experience**: Post-examination, 46% (n=23) reported a good experience, 32% (n=16) were satisfied, 18% (n=9) were unsatisfied, and 4% (n=2) had a poor experience due to contrast reactions or technical issues (Table 2).

Table 2: Post-Examination Experience

Experience	Frequency (n)	Percentage (%)
Good	23	46
Satisfied	16	32
Unsatisfied	9	18
Poor	2	4

4. DISCUSSION

This study reveals critical insights into patient knowledge, perception, and experiences with CT scans, highlighting areas for improvement in radiology practice. The finding that 66% of patients received no explanation about the scan procedure contrasts with a study by Lambertova et al., where 86% were informed pre-examination [8]. This discrepancy suggests inconsistent communication practices, possibly due to time constraints or lack of standardized protocols at MMIMSR. Effective communication is essential to alleviate patient anxiety, particularly for the 46% who felt scared on the CT couch, a sentiment potentially linked to first-time scans or claustrophobia [9].

The low awareness of radiation risks (82% unaware) and the type of rays involved (86% unaware) aligns with findings by Sweetman., where only 25% recognized CT's higher cancer risk compared to X-rays [10]. This knowledge gap may stem from inadequate patient education or media-driven misconceptions that exaggerate risks without contextualizing benefits [7]. While 18% were aware of radiation risks, possibly due to prior education or departmental signage, the majority's lack of understanding underscores the need for targeted educational interventions.

Patient satisfaction was mixed, with 46% reporting a good experience and 32% feeling satisfied, driven by timely scans and helpful staff. However, dissatisfaction with cleanliness (62%) and result communication (28% received no explanation) indicates operational shortcomings. These findings contrast with Power et al.'s emphasis on radiation risk concerns but align with their call for improved patient-centered care [11]. The 100% consent form compliance reflects adherence to ethical protocols, yet the 66% who found contrast injection scary highlights a need for better preprocedural counseling.

Limitations include the small sample size (n=50), which may limit generalizability, and the retrospective design, which relies on patient recall. Future studies should employ larger, multicenter cohorts and longitudinal designs to assess long-term perceptions and the impact of educational interventions.

5. CONCLUSION

This study underscores significant gaps in patient knowledge and communication regarding CT scans at MMIMSR. The majority lacked awareness of radiation risks and procedural details, and many experienced fear or dissatisfaction due to inadequate explanations and facility issues. To enhance patient-centered care, radiology departments should implement standardized communication protocols, improve patient education on radiation risks, and address operational deficiencies like cleanliness. These measures can reduce anxiety, improve compliance, and ensure informed decision-making, aligning with the principles of safe and effective diagnostic imaging.

6. ACKNOWLEDGMENTS

We thank the Radiology Department staff at MMIMSR for their support in data collection and the patients for their participation.

REFERENCES

[1] Hounsfield GN. Computerized transverse axial scanning (tomography): Part 1. Description of system. Br J Radiology. 1973;46(552):1016-1022.

[2] Kalender WA. Computed Tomography: Fundamentals, System Technology, Image Quality, Applications. 3rd ed. Erlangen: Public Publishing; 2011.

[3] Brenner DJ, Hall EJ. Computed tomography—an increasing source of radiation exposure. N Engl J Med. 2007;357(22):2277-2284.

[4] Power SP, Moloney F, Twomey M, et al. Computed tomography and patient risk: Facts, perceptions and uncertainties. World J Radiology. 2016;8(12):902-915.

[5] Lambertova A, Harsa P, Lambert L, et al. Patient awareness, perception and attitude to contrast-enhanced CT examination: implications for communication and compliance. Radiation Protection Dosimetry. 2019;185(3):302-310.

[6] Sweetman SJ, Bernard J. Patient knowledge and perception of radiation risk in diagnostic imaging: a cross-sectional study. J Med Imaging Radiation Sci. 2020;51(2):264-270.

[7] McCullough CH, Bushberg JT, Fletcher JG, et al. Answers to common questions about the use and safety of CT scans. Mayo Clinic Proc. 2015;90(10):1380-1392.

[8] Lambertova A, et al. Patient awareness, perception and attitude to contrast-enhanced CT examination. Radiation Protection Dosimetry. 2019;185(3):302-310.

[9] Alsafi KG. Radiation protection in X-ray computed tomography: a review. J Radiology Prot. 2020;40(2): R47-R66.

[10] Sweetman SJ, et al. Patient knowledge and perception of radiation risk in diagnostic imaging. J Med Imaging Radiation Sci. 2020;51(2):264-270.

[11] Power SP, et al. Computed tomography and patient risk: Facts, perceptions and uncertainties. World J Radiology. 2016;8(12):902-915.