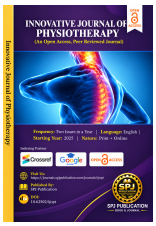
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Original Research

Knowledge and Awareness of Routine Radiographic Projections Among BPT Students: A Cross-Sectional Study

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ABSTRACT

Background: Radiographic imaging plays an important role in the assessment and management of musculoskeletal conditions commonly encountered in physiotherapy practice. Basic knowledge of routine radiographic projections helps physiotherapy students understand imaging findings and their clinical relevance.
Objective: To assess the knowledge and awareness of routine radiographic projections among Bachelor of Physiotherapy (BPT) students at Brainware University.
Methods: A descriptive cross-sectional study was conducted among 112 BPT students at Brainware University, Kolkata, West Bengal, from 24 January to 28 February 2026. Participants were recruited using convenience sampling. Data were collected through a structured, self-administered questionnaire covering common radiographic projections, anatomical positioning, clinical applications, and radiation safety principles.
Results: The illustrative findings indicated that 64.3% of participants demonstrated good awareness, 26.8% showed moderate awareness, and 8.9% demonstrated poor awareness. Participants showed comparatively better knowledge of lateral projections (90.2%), AP projections (87.5%), and chest PA projections (85.7%). Awareness of the ankle mortise view was comparatively lower (73.2%).
Conclusion: The findings suggest that most BPT students demonstrated good awareness of routine radiographic projections.

Keywords: Radiography, Radiographic Projections, Knowledge, Awareness

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INTRODUCTION

Radiography is an essential diagnostic imaging modality used in modern healthcare for evaluating musculoskeletal, respiratory, and traumatic conditions. Conventional X-ray examinations provide valuable information about fractures, dislocations, joint spaces, bone alignment, and degenerative changes. Understanding basic radiographic examinations is important for physiotherapy students because imaging findings support clinical assessment, treatment planning, and rehabilitation decisions. [1] Knowledge of routine radiographic projections also facilitates communication with radiologists and other healthcare professionals. [2] Radiographic projections describe the direction of the X-ray beam through the patient's body. Common projections include anteroposterior (AP), posteroanterior (PA), lateral, oblique, and specialised views. [3] The selection of an appropriate projection depends on the anatomical region, suspected pathology, and diagnostic requirements. [4] Familiarity with routine views of the spine, pelvis, shoulder, knee, ankle, and other anatomical regions is therefore important for understanding clinical imaging. [5] Bachelor of Physiotherapy (BPT) students frequently encounter radiographic investigations during orthopaedic and musculoskeletal clinical practice. Conditions such as fractures, osteoarthritis, spinal disorders, and sports injuries may require radiological evaluation before treatment or rehabilitation. [6,7] Although physiotherapists are not responsible for primary radiological diagnosis, understanding basic projections

and anatomical structures can improve clinical awareness and multidisciplinary communication. [8] Radiographic knowledge also includes patient positioning, central-ray direction, anatomical coverage, and image orientation. [9] Awareness of radiation protection principles, including justification, optimisation, and ALARA, is equally important for promoting safe imaging practices. [10,11] Appropriate understanding of these principles helps healthcare students recognise the importance of minimising unnecessary radiation exposure. [12]

Despite the clinical relevance of diagnostic imaging, radiology education may receive limited attention in some undergraduate healthcare programmes. Structured teaching, practical demonstrations, and image-based learning can improve students' understanding of radiographic anatomy and clinical applications. [13–15] Therefore, the present study aims to assess the knowledge and awareness of routine radiographic projections among BPT students at Brainware University through a cross-sectional approach. The findings may identify educational gaps and help strengthen radiography-related knowledge within physiotherapy education. [16–20]

MATERIALS AND METHODS

Study Design: The present study was conducted using a descriptive cross-sectional observational study design to assess the knowledge and awareness of routine radiographic projections among Bachelor of Physiotherapy (BPT) students.

Study Setting: The study was conducted at Brainware University, Kolkata, West Bengal, India, among undergraduate students enrolled in the Bachelor of Physiotherapy programme.

Study Duration: The study was conducted over a period of approximately five weeks, from 24 January 2026 to 28 February 2026.

Study Population and Sample Size: The study included 112 undergraduate students enrolled in the Bachelor of Physiotherapy (BPT) programme at Brainware University, Kolkata, West Bengal, India. Participants were recruited based on their availability and willingness to participate during the study period.

Sampling Technique: A convenience sampling technique was used to recruit eligible participants based on their availability and willingness to participate in the study.

Inclusion Criteria: Students currently enrolled in the BPT programme at Brainware University, Students willing to participate in the study, Students who provided informed consent.

Exclusion Criteria: Students unwilling to participate, Incomplete or improperly filled questionnaires, Students from programmes other than BPT.

Data Collection Tool: Data were collected using a structured, self-administered questionnaire designed to assess students' knowledge and awareness of routine radiographic projections. The questionnaire covered basic radiographic terminology, AP and PA projections, lateral and oblique views, routine projections of different anatomical regions, clinical applications, and radiation safety principles.

Data Collection Procedure: The questionnaire was distributed to eligible participants after explaining the purpose of the study. Participation was voluntary, and respondents were given sufficient time to complete the questionnaire. Completed responses were collected and checked for completeness before analysis.

Outcome Measures: The primary outcome was the level of knowledge and awareness regarding routine radiographic projections among BPT students. Secondary outcomes included awareness of anatomical positioning, clinical applications of common radiographic views, and basic radiation protection principles.

Statistical Analysis: Collected data were organised in Microsoft Excel and analysed using appropriate statistical methods. Descriptive statistics, including frequencies and percentages, were used to summarise categorical responses. Mean and standard deviation were used for numerical knowledge scores, where applicable.

RESULT

A total of 112 Bachelor of Physiotherapy (BPT) students from Brainware University participated in the study. The findings demonstrated an overall good level of knowledge and awareness regarding routine radiographic projections, including common radiographic views, anatomical positioning, clinical applications, and basic radiation safety principles.

Table 1. Distribution of participants according to knowledge and awareness level

Knowledge level	Score (%)	Frequency (n)	Percentage (%)
Good awareness	75–100	72	64.3
Moderate awareness	50–74	30	26.8
Poor awareness	Below 50	10	8.9
Total		**112**	**100.0**

The findings indicate that most participants (64.3%) demonstrated good awareness of routine radiographic projections, while 26.8% exhibited moderate awareness and only 8.9% demonstrated poor awareness.

Table 2. Knowledge regarding common radiographic projections

Assessment parameters	Correct responses (n)	Percentage (%)
Understanding of AP projection	98	87.5
Understanding of PA projection	91	81.3
Identification of lateral projection	101	90.2
Understanding of oblique projection	88	78.6

Knowledge of AP pelvis projection	95	84.8
Knowledge of knee radiographic views	89	79.5
Knowledge of ankle mortise view	82	73.2
Understanding of chest PA projection	96	85.7
Knowledge of spinal radiographic views	86	76.8
Awareness of radiation protection	92	82.1

The highest level of correct responses was observed for the identification of lateral projections (90.2%), followed by understanding of AP projections (87.5%). Awareness of the ankle mortise view was comparatively lower (73.2%), indicating an area where additional educational attention may be beneficial.

Table 3. Overall summary of knowledge and awareness

Parameter	Result
Total participants	112
Participants with good awareness	72 (64.3%)
Participants with moderate awareness	30 (26.8%)
Participants with poor awareness	10 (8.9%)
Participants demonstrating good or moderate awareness	102 (91.1%)

The study findings suggest that the majority of BPT students demonstrated good awareness of routine radiographic projections and their clinical relevance. Students showed comparatively stronger knowledge of common projections, particularly AP, PA, and lateral views. However, some variation was observed in knowledge of specialised projections, including the ankle mortise view and spinal radiographic examinations. These findings highlight the importance of incorporating structured radiographic education and practical image-identification sessions into the BPT curriculum.

DISCUSSION

The present study assessed the knowledge and awareness of routine radiographic projections among 112 Bachelor of Physiotherapy (BPT) students at Brainware University. The findings indicated that most participants demonstrated a good level of awareness regarding commonly performed radiographic projections and their clinical applications. Approximately 64.3% of students demonstrated good awareness, while 26.8% showed moderate awareness and 8.9% demonstrated poor awareness. This suggests that the majority of participants possessed a satisfactory understanding of basic radiographic concepts relevant to physiotherapy practice.

Students demonstrated comparatively better knowledge of lateral projections (90.2%), AP projections (87.5%), and chest PA projections (85.7%). These findings may reflect greater familiarity with commonly performed radiographic examinations encountered during academic learning and clinical exposure. Understanding these projections is important for physiotherapists because radiographic findings frequently assist in evaluating musculoskeletal injuries, fractures, joint abnormalities, and spinal conditions. However, comparatively lower awareness of specialised projections, particularly the ankle mortise view (73.2%) and spinal radiographic views (76.8%), indicates potential gaps in students' understanding of specific anatomical positioning and imaging techniques.

Radiation protection awareness was also satisfactory, with 82.1% of participants correctly responding to related questions. Knowledge of radiation safety principles is important for healthcare professionals to promote appropriate imaging practices and minimise unnecessary radiation exposure. The findings support the importance of integrating radiographic positioning, projection identification, and radiation protection into undergraduate physiotherapy education.

CONCLUSION

The study indicates that most BPT students demonstrated good knowledge and awareness of routine radiographic projections. However, gaps in understanding specialised views highlight the need for additional practical training and radiography-focused educational activities to strengthen their clinical knowledge and confidence.

DECLARATIONS

Ethical Approval: The study was conducted after obtaining NOC from the Department of Allied Health Sciences, Brainware University, Kolkata, India.

Informed Consent: Written informed consent was obtained from all participants before enrolment in the study.

Funding: This research received no external funding.

Conflict of Interest: The authors declare no conflicts of interest related to this study.

Data Availability: The data supporting the findings of this study are available from the corresponding author upon reasonable request, subject to institutional policies and participant confidentiality requirements.

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