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Academic role-play and its effectiveness in understanding the Investigation form evaluation among the student radiographers in Puducherry, India

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ABSTRACT

Purpose: Academic Role-play is a learning method in which students handle problems in small groups under the tutor supervision. This method is very useful in health professions education on imparting technical knowledge. In this study I am going to apply Academic role play in the teaching of student radiographers and study the effectiveness of role play method, particularly in understanding the investigation form evaluation in radiography.

Materials and Methods: The study tested students' understanding of completing investigative form evaluation in radiography using a randomized controlled design, comparing the effects of adding the academic role play approach to theoretical lectures and clinical experience vs using theory and clinical experience alone. Following their random selection, the students were assigned to either the experimental or control groups. Valid questionnaires are used to gather information from the pretest and posttest for both the experimental and control groups. After that, an Excel work sheet is used to evaluate the data and produce a result.

Results and Conclusion: Sixty second semester radiography students were split into two groups, the experimental and the control, with thirty students in each. The mean score for the pretest and posttest score are at 102.63 and 179.87 for experimental group with a standard deviation 44.68 and 28.38 respectively while it was 103.00 and 130.70 for the control group with a standard deviation of 44.35 and 38.78 respectively. This study demonstrates that after using the academic role-play module, students' understanding of doing investigation form evaluation in radiography has improved.

1. Introduction

Academic role playing, also referred to as role playing, is a method of instruction that puts students in the position of decision makers who must decide how to allocate resources, create policies, or reach other outcomes. This allows students to apply content right away. Using this method is a great way to get students interested in the work at hand and provide them the chance to collaborate with their classmates while attempting to do the assignment allocated to them in their designated capacity. Students can complete this activity in cooperative groups or by staying in character for the duration of the lesson. As they attempt to answer the topic from the standpoint of their character, students are becoming more involved.

So, in the radiography department, I have planned role-play for investigation from evaluation. The current study was aimed to evaluate the effectiveness role-play in evaluating the investigation from of radiological investigation.

The skills and knowledge of the healthcare sector will probably increase as medical developments continue. The main challenges in medical education are fact knowledge that becomes outdated after 10 years, ineffective cramming, and scientific improvements that happen quickly.

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Modern medical practitioner training programs have therefore focused on more efficient teaching strategies for the acquisition of knowledge and skills. Healthcare worker training programs also need to break away from conventional teaching methods.

In order to enhance communication skills, role-play has been employed extensively in medical education.[1–5] For the problem-centered approach, role plays are strongly advised.[6] Students study more actively when they perform roles.[7] It has been observed that role play encourages student interaction and inspires teamwork. It also helps to increase the communication between the teachers and students. As the students perform the role play with involvement, they can remember it for a long time.[8–11] Many healthcare programmes incorporate simulation-based roleplay learning to prepare students for clinical practice.[12–17]

2. Objective

To study the effectiveness of Academic Role Play method, particularly in teaching investigation form evaluation in radiography for the student radiographers of Puducherry, India..

3. Materials and Methods

3.1. Design

The study adopted a randomized controlled design to examine the impact of adding Academic role play approach to theoretical lectures and hospital experience vs just theoretical lectures and hospital experience on students' knowledge of investigation form evaluation in radiography. After being randomly selected, the students were placed in either the experimental or control groups. In addition to clinical instruction at the hospital and lectures in the classroom, the experimental group received role-playing exercises for the investigation form evaluation tasks that followed.

1. To identify the procedure to be performed
2. To identify the correct patient using at least 3 identifiers hospital number, name and age.
3. To acknowledge the pathological condition of the patient
4. To verify the equipment is operational
5. To verify the appropriate supplies for the examination

The control group, on the other hand, attended hospital lectures and clinical training on the above tasks Academic role play scenarios.

3.2. Sample and sampling technique

Randomization was done to select radiography students who agreed to take part in the current study using a basic random sampling technique. The radiology department provided a record of all radiography students from the college of radiography who are coming to the Indira Gandhi Government General Hospital and Post Graduate Institute (IGGGH&PGI) for clinical training. After that, a computer-generated record was used to choose a random sample of 60 radiography students. Subsequently, 30 students were assigned at random to either the experimental group or the control group. The study comprised radiography students enrolled in Pondicherry University's B.Sc. radiography program in their second semester.

Students enrolled in the second semester of the Bachelor of Science program in radiography at Pondicherry University who were willing to engage in the study met the inclusion criteria for this research. There were seventy-two students registered for the second semester of the B.Sc. Radiography program in Puducherry. Of the 72 students, 60 are willing to take part in this research. By using randomization, they were split evenly so that 30 students were in the experimental group and 30 students in the control group.

3.3. Setting

This research was carried out at IGGGH&PGI. The four-year bachelor radiography curriculum consists of six semesters and a one-year required internship. The language of instruction and assessment is English, and the textbooks used are identical to those advised by international universities. The radiography students received clinical instruction in a variety of radiography modalities, such as specific procedures, CT scans, MRIs, mammograms, CR, and DR, in addition to standard radiography. This institution has installed power point presentation equipment in its classes. IGGH&PGI finds it easy to apply the academic role-play scenario because the institute has theory classrooms and a clinical setup.

3.4. Data collection procedure

The project proposal was approved to proceed with the study after being submitted to the IGGGH&PGI Institution Scientific Advisory Committee and Institution Ethics Committee.

Sixty radiography students were randomly assigned to the experimental or control group using random selection. For both the experimental and control groups, a written test testing knowledge in investigation form evaluation was administered. To protect their participation and maintain the privacy of their data, a code number was given to every student in the entire sample.

The experimental group received the allocated lectures in the IGGGH&PGI classroom, and they also received clinical instruction for the whole three-month semester. However, the academic role-play scenarios pertaining to

the investigation form evaluation tasks that were mandated by the current curriculum were given to the experimental group. The lectures combine PowerPoint presentations and class discussions to impart knowledge to the students. To standardize the students' understanding of investigative form evaluation in radiography, the entire sample was given theoretical and clinical instruction in the hospital.

The identical instructor delivered the informative lecture twice a week for around 1.5 hours each time. For three months, the experimental and control groups received two days a week of clinical training in a hospital setting using all available imaging modalities. Following that, the 30 students who had participated in the academic role-playing exercise were split up into 3 groups, with 10 students in each group, in order to facilitate demonstrations. For every group, the researcher employed identical settings. This session's challenges typically involve students expressing their experiences while describing a series of real-world occurrences.

The students in the experimental group received 16 hours of academic role play in total. The researcher provided the group with an explanation of each situation along with an actual demonstration of the necessary inquiry and evaluation skills. The researcher next requested each student to rehearse and exhibit the necessary scenario and skills while keeping a close eye on them. The students' practical skills and critical thinking abilities were evaluated through these scenarios. Prior to the students' clinical training in the hospital, these scenarios were put into practice over the first two weeks. The posttest, a written assessment in the form of an investigative form evaluation, was finished by both the experimental and control groups.

3.5. Instrument

Based on the goals of the study, a standardized questionnaire was used to collect the necessary data. The study's goals and informed consent are briefly stated at the beginning of the questionnaire. The initial element of the tool includes demographic data including gender, age, and roll number. The test measured knowledge of investigation form evaluation with 50 multiple-choice questions. This test was specifically designed for the ongoing investigation. Five marks were given for the right answer, and zero for the incorrect one. A higher score indicated more knowledge, and the total score varied from 0 to 250. A range of resources, including relevant books, websites, and textbooks, were used to compile the questions.

Three experts from the radiography faculty of the institution evaluated the tool's face validity, and they concluded that it was valid. The content validity was evaluated by two more outside radiologists. Ten radiography students who met the inclusion criteria but weren't included in the final sample size were used for a pilot test of the whole questionnaire. The findings showed that there were no problems with the scoring, coding, or delivery of the questionnaire. The questionnaire has to be completed in about sixty minutes.

3.6. Ethical issues

The current work has been approved by the Institution Scientific Advisory Committee and the Institutional Ethics Committee of IGGGH&PGI, Puducherry, India. All of the participants who agreed to take part in the study provided informed consent prior to the start of data collection. The students were assured that their answers would be kept completely confidential and that their participation was completely voluntary. To ensure their privacy, a code number was assigned to each participant. All completed questionnaires were stored in a locked cabinet in order to protect the privacy and confidentiality of the data gathered. There were no consequences for participants who left the research at any time. There was no risk or injury to the subjects' physical, psychological, social, or financial well-being.

3.7. Data analysis

Spreadsheet software for Microsoft Excel was used to assess the data. The features of the sample and the degree of competency (SD) were described using descriptive statistics like mean (M) and standard deviation (SD). To determine if knowledge and confidence between the experimental and control groups differed statistically significantly at the pre- and post-test levels, an independent t-test was utilized. A paired t-test was used to compare the mean pre- and post-test assessments of knowledge and confidence between the experimental and control groups.

4. Results

4.1. Sample characteristics

At the pretest, thirty students from each of the sixty radiography students from the second semester were randomly assigned to the experimental or control group. The pupils' average age was 20.43 years old (SD=0.70, standard deviation). The study included 31 female students and 29 male students. Chi-square analysis revealed that there was no statistically significant gender difference between the control and experimental groups. Furthermore, the results of the independent t test showed that there was no statistically significant difference in the groups' pretest knowledge and age. Table 1 showed that there was no discernible difference in baseline demographics or other relevant characteristics between the two groups.

The mean score for the pretest and posttest score are at 102.63 and 179.87 for experimental group with a standard deviation 44.68 and 28.38 respectively while it was 103.00 and 130.70 for the control group with a standard deviation

Table 1: Sample characteristics at base line and the pre-test of knowledge for the experimental and thecontrol group (n=60)

Variable	Total sample n=60	Experimental group n=30	Control group n=30
Age(in years)M (SD)	20.43 (0.70)	20.37 (0.72)	20.50 (0.68)
Male (nos)	29	14	15
Female (nos)	31	16	15
Pretest score M (SD)		102.63 (44.68)	103.00 (44.35)

Table 2: Pre and post test mean score for experimental and control group

	Experimental Group		Control Group	
	Pre-test	Post-test	Pre-test	Post-test
Mean	102.63	179.87	103.00	130.70
SD	44.68	28.38	44.35	38.78
P-value for paired T-test	5.32E-14		1.9E-07	

of 44.35 and 38.78 respectively. In addition, a paired t test revealed that the significance of the data.

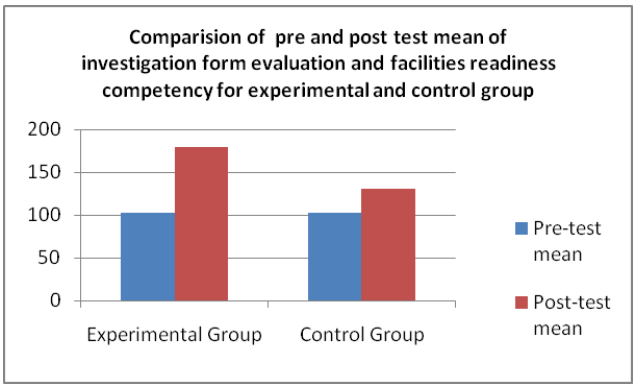

Figure 1: Chart showing comparison of pre test mean and post test mean in control and experimental group for the investigation form evaluation

In conclusion, following the implementation of either theoretical or clinical training in the control group, students' expertise in executing investigation form evaluation in radiography greatly improved. But as Table 2 illustrates, the results demonstrated that, in comparison to theoretical and clinical experiences alone, student knowledge and proficiency in conducting investigative form evaluation was much higher in the academic role-play module group.

5. Discussion

This study sought to determine the effects of academic role-play on radiography students' comprehension and self-assurance in their ability to investigate and evaluate standard radiography techniques. The knowledge of the experimental group was significantly higher than that of the control group, according to the data. This conclusion is consistent with other research findings. In the process of getting ready for the role play, the students will discover a lot about themselves from reading books and browsing the internet, as well as from their teachers through class discussions and even from their peer groups. They will remember this for the rest of their lives as they are learning it with interest and applying it. As student radiographers, they must deal with a wide range of scenarios during their clinical rotations.

Students studying radiography have the chance to practice their skills under the guidance of qualified personnel in an actual setting. The notion that students, such as those studying radiography, must feel comfortable and protected in order to express themselves during the academic role play, lends credence to this.

Four years make up the Pondicherry University Undergraduate Radiography program: general courses in year one, specialized basic courses in year two, applied studies only in year three, and hands-on clinical training in year four. Many of the students who responded to our questions about their impressions of the practical training said they had never seen anything like it, that they were excited to apply what they had learned, and that the academic role-playing approach had been useful.

Students may obtain specialized knowledge through hands-on education, covering crucial elements and cognitive processes in clinical practice, by using their own knowledge and developing workflows in groups during academic role plays. Using a workflow they developed, students may also use their knowledge as radiological technicians by conducting investigation and evaluation in radiography. Consequently, as academic role-play allowed for self-directed learning, students' self-efficacy increased. We proved that it might be advantageous to include the academic role-play teaching approach in radiography curricula, especially when it comes to investigation form evaluation.

6. Limitations, Recommendations and Implications

Because the results have limited generalizability, the convenience sample of radiography students that was chosen has an effect on the external validity of the findings. The study's author recommended that it be done again with a larger, more varied sample of Indian radiography students.

Moreover, additional studies are required to determine the influence of academic role-playing on investigation form evaluation radiography departments nationwide. Numerous studies conducted both domestically and internationally have demonstrated the significant influence that academic role-play has on radiography practice. Additionally, this study contributes to the body of evidence demonstrating that academic role-play is a useful tactic for enhancing proficiency in investigation and evaluation.

7. Conclusion

According to the study's findings, academic role-play significantly and favorably affects radiography students' understanding of how to apply investigative form evaluation in the field. This research contributes to the body of knowledge already available, which suggests that using academic role-playing as a teaching tool can enhance students' performance in completing investigative form evaluation in radiography. Furthermore, it is significant that the self-efficacious attitude emerged following role-playing instruction. We were able to confirm the effects of the academic role-play approach despite the small number of study participants and the inability to completely exclude the influence of other lectures and training sessions that took place concurrently with the academic role-play practice training.

8. Declaration of Competing Interest

The author declares that he has no known competing financial interests or personal ties that may have influenced the work presented in this publication.

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