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Comparing the Effectiveness of Role-Play Simulation versus Real Patient Transferal Skills Training in Occupational Therapy Students in Saudi-Arabia- A Quasi-Experimental Study

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Purpose: To compare the effectiveness of using role-play simulation as a possible alternative to real-patient training to teach transferal skills to occupational therapy students.

Patients and Methods: Seventy-one occupational therapy students (including those in their second, third and fourth years) participated in a quasi-experimental study. The students were randomly divided into two groups. One group received role-play simulation at the university. The other received training on real patients with mild to moderate stroke and spinal cord injury (one session/week for six weeks) in clinical (inpatient) settings in Jeddah to learn patient transferring skills. Student performance was taken as a measure of teaching method effectiveness, and was evaluated by using a validated OSCE-type assessment tool developed at the end of training. The tool showed good reliability (Cronbach's α was > 0.7) and inter-reliability (Kappa < 0.001).

Results: A total number of 71 students participated in the study. The majority of the students were female (66.2%, N=47) and 33.8% (N=24) were male. About 33.8% (N=24) of students were in the second year, 29.6% (N=21) were in the third year and 36.6% (N=26) were in the fourth year. There were 36 (49.3%) students in the simulation group. The mean age of the students was 20.70 (SD=1.2). There was no significant difference in the students' performance in both groups with a P-value of 0.139.

Conclusion: Role-play simulation can effectively be used for students' training as there was no difference in the outcome of the students' performance in patient transferring skills in both groups. This finding can help in designing and implementing training through simulation, especially in situations where training on severely ill patients may be a safety risk.

Keywords: occupational therapy students, patient transferring skill, simulation, real patient

Introduction

Patient transferring skill (PTS) is one of the core skills within occupational therapy and can be defined as moving patients from one surface to another surface such as moving from the bed to a wheelchair, wheelchair to chair, and chair to the toilet.¹ Patients need to learn how to move from one area to another area to improve their occupational performance in daily living activities in broader contexts.¹ Thus, occupational therapy students must learn how to transfer patients from one setting to another, professionally and safely, during their training. It is also essential for them to learn how to teach the patients PTS, so that the patients can independently engage in the community within different environments, such as malls, schools, and mosques.²

In the health care profession (HCP), acquiring necessary skills in cognition, reasoning, and psychomotor skills is an integral part of learning. To achieve this objective, HCPs need exposure to live patients and scenarios. However, there are ethical concerns, patient safety issues, and other risks involved. Also, many fears and anxieties were found in medical students when they thought about contacting patients for the first time in real-life scenarios. They were fearful about their inadequacies and, felt shy being placed in front of their peers and teachers in case they were judged.³

Many students reported a lack of readiness to start their work with patients in the Intensive Care Unit as they were in critical situations.⁴ This emphasizes the need to work on their preparedness before working in the real life situations with critical patients.⁵

Simulation-based teaching can be an answer to this dilemma. In the simulation, the student can be trained without compromising patient safety, keeping in view the ethical considerations, providing hands-on training, and increasing students' confidence and skills simultaneously. Thus, to perform in today's demanding medical field, a combination of pedagogy comprising traditional teaching, with simulation-based teaching of psychomotor skills before approaching the real-patient transferring (RPT), could result in the best clinical care providers.

Some researchers reported⁶ that American students' transferring skills, knowledge, and confidence improved after the simulation experience. However, it appears that no studies have been conducted in SA using simulation in teaching PTS with occupational therapy students. While there is a large amount of research regarding the use of simulation to teach students in different healthcare fields like medical,⁷ nursing,^{8,9} anesthesia¹⁰ and radiology,^{11,12} there seems to be a shortage of research on examining the effectiveness of using simulation with occupational therapy students¹³ in Arab countries, particularly in SA.

The fact that Occupational therapy is a relatively new field in SA may be a possible reason for the gap in literature and calls for active research in this area. In addition, it might prove to be worthwhile as there are various cultural and social differences when it comes to patient interaction (including opposite gender interaction) as compared to the Western and non-Arab societies, from where most of the data is generated so far.

This research aims to assess the effectiveness of using role-play simulation (RPS) as a training method for occupational therapy students' PTS at university, compared to teaching using real patients (RP) in clinical settings, using a validated method to assess students' level of competence. We hypothesize that there is no difference in the students' performance in PTS in both groups.

Material and Methods

Design

A quasi-experimental design was used to assess the effectiveness of RPS versus training on RP in teaching clinical skills to occupational therapy students. Before conducting the study, ethical approval was obtained from King Abdullah International Medical Research Center (Study number SP21R/137/03) and informed written consent was taken from all participants to be included in the study.

Staff Training

Before commencing the training, a workshop was provided for three occupational therapy faculty members and two occupational therapists from the hospital. The objectives of each lab, the process of teaching PTS, the description sheet of the lab and the schedule of sessions were explained. Teaching materials focused on transferring skills and relayed points including body mechanism and professionalism. Each was delivered once a week as follows: body mechanics on the first week; moving on and from bed- part 1 (bridging, rolling, scooting, supine to side-lying and side-lying to setting) was given on the second week; moving on and from bed-part 2 (moving from one surface to another) was given in the third week; and clinical decision making related to transfers was delivered in the fourth week. The session's duration was 90 minutes, including a fifteen-minute break.

Staff was also trained on using the 3D model of debriefing. It was used as a framework for our teaching methods. The 3D model is a process based on common phases prevalent in debriefing literature, and is taught at the institute for medical simulation.¹⁴ It is mainly focused on adult learning theory to facilitate all aspects of experiential learning and

learning outcomes. This model was used in this research to help students facilitate learning to enhance their practical skills,¹⁴ particularly in patient transferring. The same staff was trained to conduct the OSCE assessment for their respective groups at the end of the teaching sessions according to the standard OSCE format of the university.

Participants

All occupational therapy students at the university were eligible to be included in the study except for year one students. Students missing two sessions of the transferring lab were excluded.

Data Collection

Seventy-eight occupational therapy students from the second, third, and fourth years were recruited using a non-probability consecutive sampling technique. Students were divided into two groups using systemic randomization. Each student was given a number based on the computer system generator. Students with odd numbers were placed in group one and students who had even numbers were placed in group two.

Group one received training on PTS using RPS in the lab at university whereas group two received training on RP in in-patient wards. Once group one completed all the required lab sessions and group two completed all the required training sessions in the clinic, their clinical skills in transferring patients were assessed. Six students were excluded because they did not attend more than 2 sessions.

The Objective Structured Clinical Examination (OSCE) was developed by the researchers using specific procedures for tool development¹⁵ to assess the student's clinical performance. It was also validated using inter-rater reliability where Cronbach's Alpha was $\alpha > 0.7$ and weighted kappa was 0.833 ($P < 0.001$). This implied a strong agreement between the two raters. One yes-no question was added at the end of OSCE asking the students if they felt confident enough to transfer the patient.

Group one performed the assessment in the lab at the university and group two were assessed in the hospital. The OSCE format of the university was used for clinical skills assessment.

The researchers were not involved in teaching or examining to avoid bias. The students who scored above 60% passed the exam.

Analysis

The Statistical Package for Social Sciences version 21 was used for data analysis. Descriptive and frequency analysis was used for participants' data presentation. Students' *T*-test (independent sample) was performed to compare the mean scores of groups one and two to determine the effectiveness of RPS and training on RP on occupational therapy students' PTS.

Results

This study aims to evaluate the effect of using RPS versus training on RP as a teaching method on the PTS of occupational therapy students at a university in Jeddah.

The total number of students who participated in the study was 71. Most students were female (66.2%, $N=47$). Approximately 33.8% ($N=24$) of students were in the second year, 29.6% ($N=21$) were in the third year and 36.6% ($N=26$) were in the fourth year. They were distributed almost equally in both groups. The number of students in the RPS group was 36 (49.3%) whereas 35 (50.7%) students were in the RP training group. The mean age of students was 20.16 ($SD=3.27$) (see Table 1).

Overall, there is no significant difference in the students' performance in PTS in both groups at a P -value of 0.139 (>0.05) (see Table 2). It also indicates that students' performance in PTS using RPS was better than those who were trained on RP in professionalism (mean 9.8, $SD \pm 2.7$), transferring methods (mean 10.7, $SD \pm 1.8$) and body mechanism (mean 7.4, $SD \pm 2.1$). However, it was lower in inpatient safety (mean 12.1, $SD \pm 2.5$) although this was not statistically significant.

Although there is no statistically significant difference between the students' performance in both groups in professionalism (P -value 0.450), transferring method (P -value 0.074) and patient safety (P -value 0.217), the RPS group scored significantly higher on body mechanism (P -value 0.003 <0.05).

Table 1 Basic Characteristics of Students

Variable	N=71	%
Gender		
Male	24	33.8
Female	47	66.2
Total	71	100
Age		
Mean	20.07	
SD	1.2	
Year		
Second	24	33.8
Third	21	29.6
Fourth	26	36.6
Type of Training		
Role-play	35	49.3
Real patient	36	50.7

Table 2 Mean Scores of Occupational Therapy Students in Patient Transferring Skills

Scale	Total Score	Overall		Role-Play Simulation		Real Patient Training		P-value
		Mean & SD	Score %	Mean & SD	Score %	Mean & SD	Score %	
Professionalism	12	9.5 ±2.6	79.2	9.8± 2.7	81.7	9.3± 2.4	77.5	0.450
Transferring method	12	10.3 ±1.7	85.8	10.7± 1.8	89.2	9.9± 1.6	82.5	0.074
Patient's safety	15	12.4 ±2.3	82.7	12.1± 2.5	80.7	12.8± 1.9	85.3	0.217
Body mechanism	5	6.4 ±2.7	71.1	7.4± 2.1	82.2	5.5± 3.0	61.1	0.003
Overall	48	38.7± 6.9	80.6	39.9± 7.2	83.1	37.5± 6.5	78.1	0.139

We hypothesized that there is no significant difference between the effectiveness of RPS and training on RP on the occupational therapy students' PTS. Based on our findings we could not reject the null hypothesis at a P-value of 0.139 (>0.05).

The confidence of the students was also taken into account in this study. When the students were asked about how confident they felt with performing patient transferring on RP and RPS, the majority of students (82%, N=29) in the RPS group reported that they were confident compared to those (17.1%, N=35) in the group training with RP. However, most students (72%, N=36) in the RP group stated that they were not so self-reliant to perform PTS on a RP compared to those (27%, N=10) in the RPS group.

Discussion

This study aimed to assess the effectiveness of using RPS and RP training methods in training occupational therapy students on PTS. The study found that there is no significant difference in the overall performance in PTS between the

two groups (RP and RPS) in the four domains (professionalism, transferring methods, patients' safety and body mechanism). The finding of this study is in line with the findings of previous studies.^{16–19} Previous studies have used RPS and simulated patients to compare the effectiveness of both teaching methods on the performance of various undergraduate students. No statistical significance was found in the performance of physiotherapy students in clinical reasoning, confidence¹⁸ and communication skills.¹⁷ Both methods of training were found to be effective, highly accepted and valuable for nursing students training on communication skills.¹⁹

However, the finding of this study where both groups had no significant difference in terms of student performance is in contrast with the outcome of a study by Hosseini et al²⁰ Their study found that when OT students were divided into two groups and each were taught PTS by either simulation or real patient method, there was a significant difference with regards to their knowledge and skills, pre and post-test.

The discrepancies between the results of our study and other studies could be due to the differences in the domains selected to be measured. For example, professionalism, transferring method and body mechanism were measured during patient transferring in this study, whereas other domains like knowledge and attitude were measured in others.²⁰

Another reason could be that the severity of their condition/diagnosis of patients who were transferred may influence the students' performance. In our study, patients with different conditions were used, including stroke patients and those with spinal cord injury, whereas in the previous study only patients with spinal cord injuries, who may have a severe injury, were transferred.²⁰

One significant finding in our study was that most of the students who were in the RPS group reported that they were confident in transferring patients, which was not the case in the RP group. This finding broadly supports the recent work of other studies, which found that occupational therapists were nervous and stressed when they performed their practical examination on a standardized patient following practical training.¹⁶

Some researchers²¹ also carried out a study to assess the Swedish occupational therapy students' perception of simulated patient learning. They found that learning through simulated patients provoked anxiety among occupational therapy students. Lack of confidence to transfer patients among occupational therapy students could be normal because of the fear of harm they might bring to the patients instead of benefit, therefore fear negative emotions from the patient and staff.³

Another big issue with students in their early years of education is that of personal readiness. They may feel unprepared and nervous for new and demanding situations like managing immobile patients or working in the emergency department. They may be concerned that they may have a negative impact on the patients and therefore fear negative emotions from the patient and staff.³ Thus, preparedness to deal with real patients through training on RPS might increase the confidence of occupational therapy students, as seen in our study.

In addition, several researchers²¹ discussed that using simulated patients helped develop professionalism such as communication and history-taking skills, therefore preparing occupational therapy students for clinical practice. This is in line with our study where both sets of students scored similarly in the professionalism domain.

Limitations

Our study assessed one skill (PTS) only. Also, the sample of the study only included undergraduate occupational therapy students from one university in SA due to feasibility and finding issues. Thus, the results cannot be generalized to all occupational therapy students, other HCP or post-graduate students.

Additionally, patients who were transferred during training and OSCE assessment had mild to moderate impairment in both groups, which therefore left out the more severely ill patient group.

More studies, which take these variables into account, will need to be undertaken, including a large sample of occupational therapy students, to assess their performance in PTS in different universities in SA.

Conclusion

Using RPS and RPT for students' training showed that the outcomes of the occupational therapy students' performance in PTS in both groups were not different when assessed using a reliable and valid assessment tool.

Practical Implications

The results of our study have very important implications. It highlighted the possibility that training through simulation can yield almost similar results as real patient training, without the fear of issues such as patient safety, students' nervousness, or lack of availability of real patients for occupational therapy students. Although this study was performed in one setting and considered only one occupational therapy skill, it has opened avenues for future research in this area where further large-scale studies assessing multiple skills in occupational therapy could be assessed similarly. This can prove to be a breakthrough in the teaching and training of occupational therapy students by incorporating training through simulation as an integral part of the conventional teaching model.

The findings of this study can inform the future training modalities in the field of OT. In situations where on-patient skill training is not possible due to patient safety issues or lack of adequate turnover of the cases at a particular teaching facility, simulation can be successfully used to train these important skills to undergraduate or postgraduate students.

Findings from this study can be replicated using multicenter participants and multiple skills training to further expand the scope of training through simulation. RPS can prove to be a more cost-effective alternative to RPT, however, this calls for further research and evidence.

Data Sharing Statement

The datasets generated during and analyzed during the current study are available from the corresponding author on reasonable request.

Ethics Approval and Informed Consent

Prior to conducting the study, ethical approval was obtained from an institutional review committee and informed written consent was taken from all participants involved in the study.

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Author Contributions

The authors confirmed their contribution to the paper as follows.

- 1- Study concept and design: Areej, Dr. Aalia, Dr Nouf Alharbi and Dr Noof Albaz
- 2- Analysis and interpretation of results: Areej, Dr Mohamed, Dr Aalia, Dr. Waqas and Mohammed.
- 3- Draft manuscript preparation: Areej, Dr Aalia and Dr. Mohammed.
- 4- Substantially revised or critically reviewed the article: Dr. Waqas, Dr Nouf Alharbi, Dr. Noof Albaz and Mohammed.
- 5- All authors have agreed on the journal to which the article will be submitted.
- 6- All authors reviewed and agreed on all versions of the article before submission, during revision, the final version accepted for publication, and any significant changes introduced at the proofing stage.
- 7- All authors agree to take responsibility and be accountable for the contents of the article.

Disclosure

The authors report no conflicts of interest in this work.

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