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ORIGINAL

Simulation Based Training Concept on Nursing Students at Prince Sattam Bin Abdulaziz University, Saudi Arabia

Concepto de formación basado en simulación para estudiantes de enfermería en la Universidad Príncipe Sattam Bin Abdulaziz (Arabia Saudita)

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ABSTRACT

Introduction: objective of this research was to study simulation-based training concept on nursing students at Prince Sattam Bin Abdulaziz University, Saudi Arabia.
Method: cross-sectional study was conducted to nursing students from level 4 to level 8 as well as nursing interns; at college of nursing, Prince Sattam Bin Abdulaziz University, Al- Kharj, Saudi Arabia during the period between September to October 2024. Selected students were invited to voluntarily complete an anonymous self-administered online survey, data was analyzed by SPSS v. 22, The significance of association was tested by using Pearson Chi-square test for categorical data, and t-test for numerical data with 95 % confidence interval. Reliability of tools was measured by Alpha Cronbach to weight the stability of the tools which was 85 % (0,85).
Results: a total of 308 nursing students have participated in this study. Majority of nursing students 160 (51,9 %) confessed that simulation-based training is definitive and crucial before proceeding to clinical settings, also; majority of nursing students 161 (52,3 %) were clear that simulation-based training is pivotal to gain confidence before approaching real patients in the hospital settings. Lasley vast majority of nursing students 284 (92,9 %) agrees that a good simulation-based training will decrease the incidence of medical errors.
Conclusion: this study revealed that the integration of simulation-based training with other training modalities will strongly enhances nursing student's clinical performance, also it revealed that simulation-based training will decrease the potentiality of medical errors at clinical setting.

Keywords: Nursing Students; Simulation Training; Clinical Performance; Nursing Education.

RESUMEN

Introducción: el objetivo de esta investigación fue estudiar el concepto de formación basada en simulación en estudiantes de enfermería de la Universidad Príncipe Sattam Bin Abdulaziz, Arabia Saudita.
Método: se realizó un estudio transversal a estudiantes de enfermería del nivel 4 al 8 así como a pasantes de enfermería; en la Facultad de Enfermería de la Universidad Príncipe Sattam Bin Abdulaziz, Al-Kharj, Arabia Saudita, durante el período comprendido entre septiembre y octubre de 2024. Se invitó a los estudiantes seleccionados a completar voluntariamente una encuesta anónima en línea autoadministrada, los datos fueron analizados por SPSS v. 22, La importancia de la asociación se probó mediante la prueba de Chi-cuadrado de Pearson para datos categóricos y la prueba t para datos numéricos con un intervalo de confianza del 95 %. Alpha Cronbach midió la confiabilidad de las herramientas para ponderar la estabilidad de las herramientas, que fue del 85 % (0,85).

Resultados: en este estudio han participado un total de 308 estudiantes de enfermería. La mayoría de los estudiantes de enfermería 160 (51,9 %) confesaron que la formación basada en simulación es definitiva y crucial antes de pasar al ámbito clínico, además; La mayoría de los estudiantes de enfermería 161 (52,3 %) tenían claro que la formación basada en simulación es fundamental para ganar confianza antes de acercarse a pacientes reales en el entorno hospitalario. La gran mayoría de los estudiantes de enfermería de Lasley 284 (92,9 %) coincide en que una buena formación basada en simulación disminuirá la incidencia de errores médicos.
Conclusión: este estudio reveló que la integración de la capacitación basada en simulación con otras modalidades de capacitación mejorará fuertemente el desempeño clínico de los estudiantes de enfermería, y también reveló que la capacitación basada en simulación disminuirá la potencialidad de errores médicos en el entorno clínico.

Palabras clave: Estudiantes de Enfermería; Entrenamiento en Simulación; Desempeño Clínico; Educación en Enfermería.

INTRODUCTION

Simulation based training has become a vital component of health education, reflecting how far healthcare providers are trained and acquired competency by providing realistic, immersive learning outcomes that closely resemble clinical circumstances.[1] This technique support students to rehearse their both technical and non-technical skills in a quiet and well settled atmosphere, widely encouraging their readiness for hospital and real clinical practice.[1] The term fidelity in healthcare education simulations describes how realistically a simulation replicates, or, to put it another way, how closely a simulation resembles its real-life counterpart.[2] According to reports, nursing students tend to get learning outcomes from their experiences with simulation-based training throughout the duration of clinical practice training. This methodology is an effective way to address the current shortage of facilities for nursing students' clinical placements, as the fidelity of an integrated simulation experience in nursing education is expected to vary depending on the type of learner.[2] Using Simulation in health training is back to the 1960s with the updating of Resusci Anne, a mannequin sophisticated for training cardiopulmonary resuscitation.[3] Since then, simulation technology has developed dramatically, containing many modalities as virtual reality environments, standardized patients, high fidelity mannequins, and hybrid simulation devices. These technology permits students to practice and master their clinical skills and tasks, from basic to advanced health care procedures.[3]

METHOD

A cross-sectional study was conducted to study simulation-based training concept on nursing students at Prince Sattam Bin Abdulaziz University, Saudi Arabia. Selected students were invited to voluntarily complete an anonymous online survey. Nursing students in preparatory year were excluded as they don't have clinical tasks. Data was analyzed with IBM SPSS version 22. The significance of association was tested using Pearson Chi-square test for categorical data, and t-test for numerical data with 95 % confidence interval to determine the association between the dependent and independent variables. Reliability of the tools was also measured by Alpha Cronbach to weight the stability of the tools which was 85 %.

Ethical consideration

This study was approved by Prince Sattam Bin Abdulaziz University (PSAU), Deanship of Scientific Research – Scientific Committee of Bioethical Research, informed consent was approved for being a questionnaire-based study.

RESULTS

A total of 308 nursing students have participated in this study. As shown in table 1, gender apportionment was similar between males 142 (46,1 %) and females 166 (53,9 %), the number of participants according to their clinical years was: second year 140 (45,5 %), third year 27 (8,8 %) and fourth year 97 (31,5 %), and Interns were 44 (14,3 %). Students' responses to the concern about importance of simulation-based training as illustrated in figure 1, responses; very important 160 representing (51,9 %), important 68 students (22,1 %), neutral 49 students (15,9 %), unimportant 19 (6,2 %) and lastly very unimportant responses were 12 students representing (3,9 %). Furthermore; nursing students' responses to their general concept on simulation-based training enhances their clinical performance as illustrated in figure 2, their responses; strongly agree 161 students representing (52,3 %), agree 64 (20,8 %), neutral 43 (14,0 %), disagree 24 (7,8 %) and lastly strongly disagree responses were 16 representing (5,2 %). Nursing students' opinion on simulation-based training lowering incidence of medical errors as shown in figure 3, their responses were; always 284 representing (92,2 %), frequently 10 (3,2 %),

sometimes 10 (3,2 %), rarely 3 (1,0 %) and lastly never responses were 1 student representing (0,3 %).

Table 1. Association between variables and concept of simulation-based training at Prince Sattam Bin Abdulaziz University, College of Nursing (n = 308)

Item	n		%	P	t
Gender	Male	142	46,1	0,68	0,51
	Female	166	53,9		
Academic year	Second	140	45,5	0,68	0,68
	Third	27	8,8		
	Fourth	97	31,5		
	Interns	44	14,3		
	Total	308	100,0		
Importance of simulation-based training	Very important	165	53,5	0,12	0,75
	Important	67	21,7		
	Neutral	43	13,9		
	Unimportant	21	6,8		
	Very unimportant	12	3,8		
	Total	308	100,0		
Simulation-based training in gaining competency	Strongly agree	161	52,3	0,16	0,67
	Agree	64	20,8		
	Neutral	43	14,0		
	Disagree	24	7,8		
	Strongly disagree	16	5,2		
	Total	308	100,0		
Simulation-based training lowers Medical error	Always	284	92,2	0,62	1,52
	Frequently	10	3,2		
	Sometimes	10	3,2		
	Rarely	3	1,0		
	Never	1	0,3		
	Total	308	100,0		

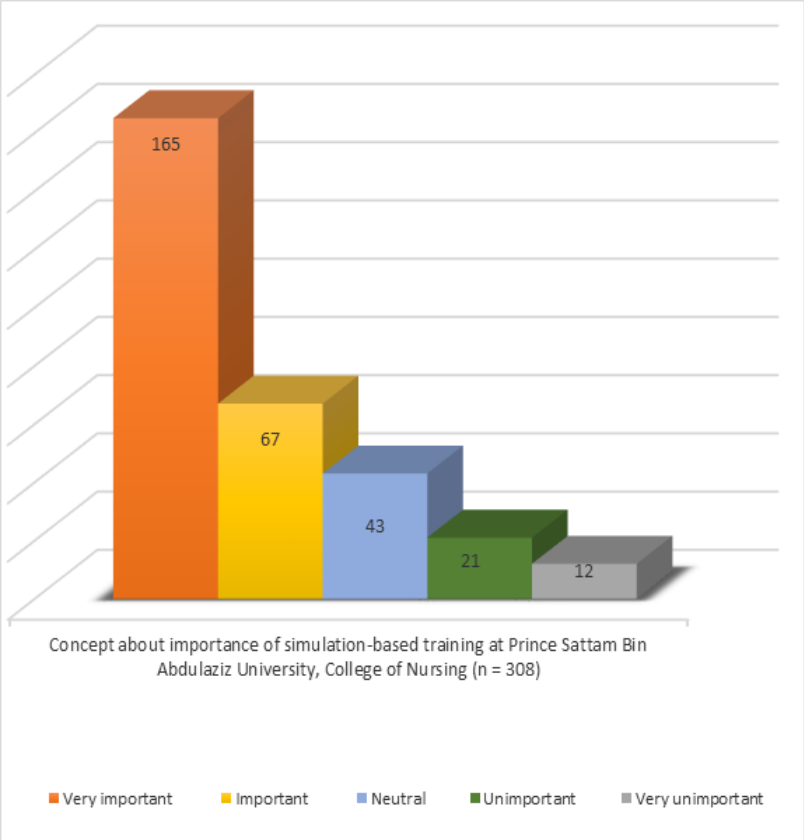

Figure 1. Nursing students' concept in importance of simulation-based training at Prince Sattam Bin Abdulaziz University, College of Nursing (n = 308)

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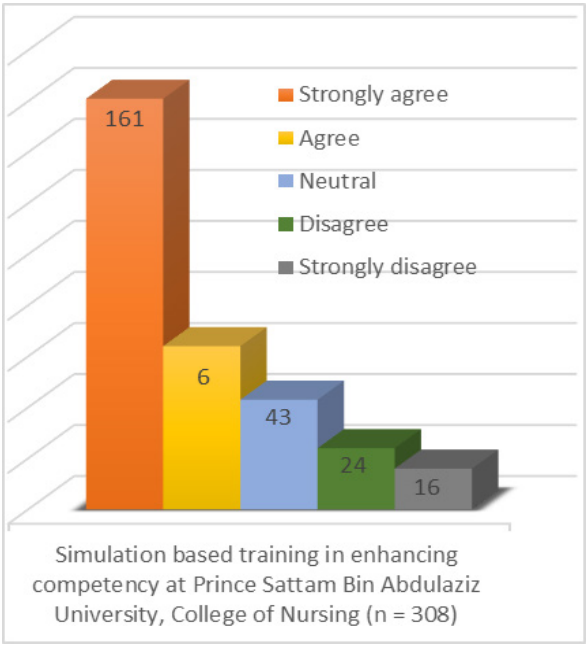

Figure 2. Simulation-based training concept in enhancing competency at Prince Sattam Bin Abdulaziz University, College of Nursing (n = 308)

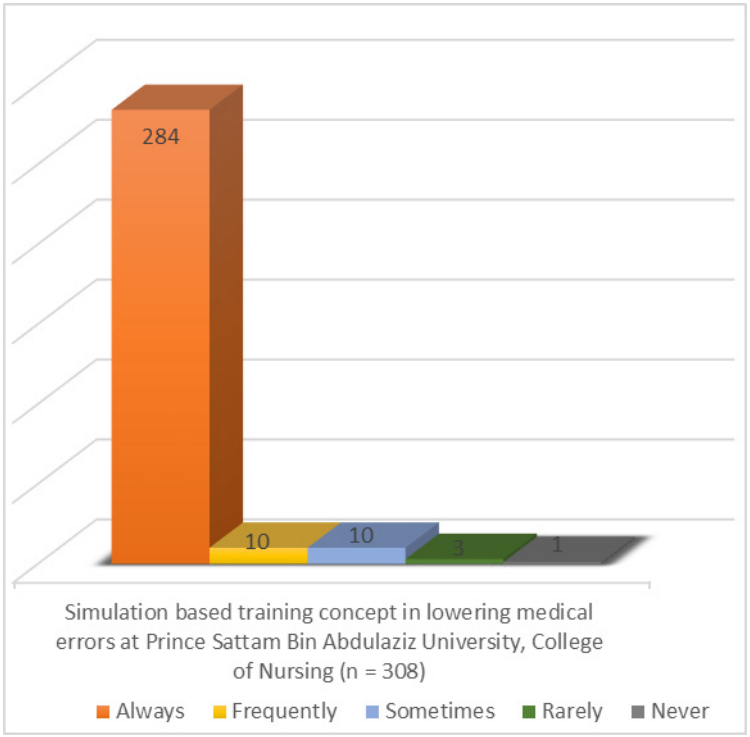

Figure 3. Simulation based training concept in lowering medical errors at Prince Sattam Bin Abdulaziz University, College of Nursing (n = 308)

DISCUSSION

The degree of realism that a simulation replicates, or the resemblance between a simulation and its real-life equivalent, is known as fidelity in healthcare education.[2] It has been noted that during clinical practice training, nursing students rehearse the learning objectives from their experiences by support of simulation-based training. This methodology is considered a functional strategy for filling the gap of facilities shortage nowadays for nursing students' clinical training. In nursing education, the fidelity of combined simulation experience is expected to vary for each type of learner.[2,3] The results of this study are comparable to those of a study conducted in Saudi Arabia in 2023 by Jarelnape and Sagiron, which assessed the efficacy of simulation-based instruction in nursing education and showed that simulation-based training enhanced nursing students' clinical reasoning skills, knowledge, and decision-making as well as their effects on clinical behaviors and patient

outcomes.[4] Simulation-based training has demonstrated potential for improving learning in the cognitive, emotional, and psychomotor domains.[4,5] Additionally, the results of this study are identical to those of a study conducted by César Leal-Costa, which concluded that clinical simulation-based training enhances student nurses' evidence-based practice by promoting evidence-based practice, which in turn enhances the quality of patient care, and that high fidelity simulation helps nursing students improve their evidence-based practice competency.[5,6] The hypothesis that simulation is a useful training tool for enhancing teamwork and nursing leadership in the novel setting of shared leadership for cardiopulmonary resuscitation is supported by research findings conducted in New Zealand by Patrick ARMSTRONG and Brad PECKLER.[6,7] According to Guerrero et al.'s randomized controlled experiment, nursing interns' clinical practice is enhanced by regular exposure to high fidelity simulations, which may increase their competency. Thus, in addition to traditional hands-on training, additional high-fidelity simulation can improve nurses' clinical competency.[8,9] The advantages of simulation-based training for enhancing competency and performance depend on the simulation program's impact and methodology, as well as the nurse's metacognitive direction of medical affairs in their academic and clinical tasks.[10,11] Simulation programs may also contribute to reducing clinical mistakes and making improvements for safer healthcare practice.[12,13] These results are consistent with the study's conclusion that, in order to achieve the objectives of simulation, a suitable simulation modality and a well-structured scenario run by a qualified simulation facilitator in a well-equipped simulation environment are essential. Additionally, integrating the two simulation modes offers a substantial benefit for participants' knowledge and skill development.[14,15] Lastly; simulation is a well-known technique for enhancing nurse's clinical performance that reflecting on patient safety, therefore, a combination of a well-structured simulation-based training for nurses' professional development is useful to enhance their knowledge and skills, thus enhancing their professional competence and confidence in practice.[16,17] Through the use of simulation, participants can develop their own problem-solving techniques throughout the learning process, adapt and apply these techniques to pertinent circumstances, and ultimately raise their awareness and problem-solving skills.[18] Through an analysis of 160 publications, an integrated evaluation verified the effectiveness of simulation instruction in nursing education. 31,9 % of research employed training skills to develop clinical reasoning, whereas 68,1 % of studies used simulation teaching.[19] People with high levels of self-efficacy are more likely to adjust to the demands of a given circumstance, while those with low levels of self-efficacy have significant difficulties when carrying out certain tasks, according to Bandura's hypothesis.[20] Clinical certainty is formed by a number of important criteria, including clinical experience and adequate education. Higher self-efficacy students are effective and self-reliant while dealing with obstacles in the future.[20] Most students are accustomed to playing computer games and using sophisticated computer equipment. Because of this, some computer simulations are comparatively comfortable, especially when it comes to giving students real-time audio and video feedback, which makes it easier for them to execute a skill. The controlled and completely safe environment in which instructor can conduct a laboratory is another element that contributes to a student's success and education.[21] Students are interested in simulation since it is a potent method of skill transfer and one of the interactive learning formats. Simulation can be used in small groups or individually.[22] There are numerous kinds of simulation, including role-playing, structural, virtual, live, and mannequin-based simulations. Through performance reflection, simulation aids students in comprehending the significance of nursing interventions for patient outcomes. Several studies have shown that simulation improves nursing students' confidence, interest, and clinical abilities.[23] The use of traditional, passive education in clinical training and practical skills is one of the main issues with nursing student education. This makes it hard for the students to follow the clinical decision route, critical thinking, and problem-solving abilities.[24] Nursing students are essential to the ongoing care and enhancement of patients' health as well as the future efficiency of the healthcare system. However, improving the quality of the healthcare system is a top priority, and one key element influencing healthcare quality is the work of nurses. Effective nurses, on the other hand, require qualities like problem-solving and clinical situation decision-making. Clinical performance is crucial to the nursing education system as a result.[25,26] Given the unique status of teaching and utilizing simulation-based training, as well as the sensitivity of teaching clinical skills, the significance and necessity of this study are evident.

CONCLUSION

This study revealed a low prevalence of intimidation on nursing students as well as nursing interns at Prince Sattam Bin Abdulaziz University. Academic intimidation was the most significant type measured. Promoting a more positive environment for nursing students through enhancing the clinical instructor and student's relationship is crucial. College should also counter intimidation behaviors through clear guidelines.

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CONFLICT OF INTEREST

The author declares that there is no conflict of interest.

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