Structural Analysis of Child Health Nursing Education and Training based on *objective* structured clinical examination (*OSCE*)

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ABSTRACT

In terms of training various groups, clinical expertise and training are crucial. To some extent, what trainees memorise determines their performance in this sector. The OSCE is a performance-based evaluation for professionals and nursing students. The study used a quantitative research strategy as its research methodology. The activities the researcher made to ascertain nursing students' perceptions and the value of objective structured clinical examination as a method of assessment on specific clinical components in child health nursing are the main topics of this study. The study's research approach was a quantitative research strategy. This study's findings can be explained by the fact that nursing students were not only unfamiliar with the OSCE testing procedure but also with the OSCE stations that simulated real-world circumstances. As a result, on the pretest, both groups' performance was below average.

Keywords: OSCE, Pediatric Nursing, immunization

INTRODUTION

Nursing appraisal is a combination of art and science. 1 The science of nursing incorporates the art of doing a skill so that deviations from the norm can be recognised, assessed, and treated with the appropriate nursing interventions. The nursing interventions that are planned, carried out, and assessed to address the health care needs of patients at every age and at any point along the health-illness continuum in all settings are the fundamental nursing practises. The fundamental requirements of people for physical security and safety are the responsibility of nurses(Shield,2011) . The majority of the time, nursing interventions are tailored to the particular requirements of each client who needs nursing care.In order to train various groups, clinical expertise and training are crucial. To some extent, what trainees memorise determines their

performance in this sector. As per (Coyne and Cowley 2007) the OSCE is a performance-based evaluation for professionals and nursing students.

Leape et al.,(2009) provided an in-depth explanation of how OSCE evaluates students' skills in an organised, impartial manner. By utilising a variety of OSCE stations, an OSCE is designed to determine if students are competent as working professionals. Each station has a new scenario that takes between 5 and 15 minutes to complete and is intended to test a variety of clinical competencies. There are two types of these stations: manned and unmanned. Manned stations, with the ideal number being around 15 stations every phase of assessment, require students to interact with the assessor who then scores them based on their performance. This increases student performance.

A conceptual framework for evaluating clinical skill is provided by Shield (2007) . The many clinical competency domains are described by this pyramidal paradigm. Candidates must not only show that they are aware of the facts supporting clinical practise in order to achieve clinical competency, but also that they are able to apply these facts. They must most importantly demonstrate their ability to carry out clinical activities and skills. This aspect of clinical competence is more behavioural in nature than cognitive. A framework that outlines the stages of abilities pupils should master is called the Miller's pyramid of competence. Students perform in a simulated environment, such as an OSCE, to prove their knowledge and understanding as they move up the pyramid to "shows how."

According to Bishop (2010) , written exams only measure one component of competency—cognitive knowledge. Traditional clinical examinations essentially assess a limited set of clinical competencies while typically being seen by two examiners in a specific clinical case. The main components of a traditional clinical examination include patient histories, physical examination demonstrations, and technical skill assessments. It has been demonstrated to be largely unreliable in assessing student performance and to have a significant degree of examiner-to-examiner variability. According to Darbyshire, (2004), OSCE is trustworthy, accurate, and unbiased, with cost being its one significant disadvantage.

Recent years have seen the development of numerous techniques, instruments, and grounds for evaluating competence, including self-rating scales, bedside observations, evaluation based on laboratory simulations, and portfolios or diaries (Shield,2007). In order to discern between pass and fail grades in nursing school, numerous strategies have been examined and determined to be practical and simple to apply. Many health-care education programmes in western nations, including Australia, have employed OSCE in recent years. In this method, students are evaluated in a simulated setting using predetermined patient scenarios. Simulated learning has become more popular, according to (Jolley, 2010)because practise placements have declined and the demands on the current workforce have increased.

A study on the reliability and validity of clinical competence assessment tools was conducted by Shield (2010) , found that no single method is suitable for evaluating clinical competence among health care students and emphasises the need for a multi-method strategy in clinical competence assessment in health care education. According to (Aein et al .,2009), emphasis has been placed on how well-versed educators are in the challenges associated with the subjective nature of clinical evaluation and the dual roles of clinical instructors as teachers and evaluators when evaluating students who are learning in the clinical setting.

The professors and students need to be made aware of OSCE because currently India has little experience with it. Written exams, bedside viva, and clinical case presentations have historically been the main methods used to evaluate nursing students. These have emphasised the Miller's pyramid of competence's "knows" and "knows how" facets. As a more objective, valid, and trustworthy instrument of assessment, OSCE was established to address the shortcomings of traditional clinical examination. Despite the huge amount of interest in the OSCE (Coyne et al.,2008) , there have only been a few attempts to look at the variables that influence how well students perform in clinical skills. As a result, the focus of this study shifted from reliability and validity concerns to factors that might influence clinical skill performance. The purpose of this study is to examine the knowledge and training structures for child health nurses in Gautam Budh Nagar, Uttar Pradesh, based on OSCE competencies.

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MATERIALS & METHODS

This study focuses on the actions the researcher took to determine nursing students' perceptions as well as the usefulness of objective structured clinical examination as a technique of assessment on chosen clinical components in child health nursing. The study used a quantitative research strategy as its research methodology.

Study design

R -Generating a random sample of nursing students from the chosen colleges.

O1 - Evaluation of demographic factors, OSCE station skills, and OSCEperception in the pre-test for both the study group and the control group

O2 - Assessment of OSCE station skills and OSCE perception in the post test

X - using a checklist to intervene at OSCE stations for the study group. Pre-test and post-test designs were used in this study's quasi experimental methodology to examine the variables. The purpose of this study was to determine nursing students' perceptions as well as the efficacy of objective structured clinical examination as a technique of assessment on chosen clinical components in child health nursing.

Criteria for sample selection

Inclusion criteria

- Nursing students who had child health nursing as their study subject at the time of data collection.

- Students who were in IV year B.Sc. (N), I year P.B.B.Sc (N) and II year DGNM.

- Nursing students belonging to nursing colleges in Gautam Budh Nagar.

Exclusion criteria

- Students undergoing ANM course.

- Students pursuing Post graduation in nursing.

- Students who were not available at the time of data collection.

- Students who were sick at the time of data collection.

Data collection procedure

Data collection was carried out from 2017- 2020.After obtaining formal written permission from the head of the institution, the procedure for data collection was explained to the samples and the willingness of the samples to participate in the study was confirmed. Written permission was obtained from the heads of the colleges from where the samples were chosen for the study. Written informed consent was obtained from the participants individually after discussing with them in detail about the study and its significance.

Data collection was done in ten OSCE stations. The researcher utilized the service of three research assistants. The researcher assessed skill performance of samples in four OSCE stations. The other three research assistants who were trained & certified in OSCE were assessing the skill performance in two OSCE stations respectively.

Statistical Analysis

The data collected was statistically analyzed using the statistical software packages such as Statistical Packages for Social Sciences (SPSS Version 16), statistics and data analysis software (STATA Version 10) . Analyzed data were interpreted according to the objectives and hypotheses of the study under the following sections.

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RESULTS

Table 1 . Description of variables of the nursing students undertaking OSCE as challenges faced in child health Nursing

Demographic variables		Group				Chi square test
		Study group (n=196)		Control group (n=196)		
		n	*%*	*n*	*%*	
Age	17 -18 years	0	00.0%	0	0.0%	2=0.07 P=0.78 DF=1 NS
	18 -19 years	33	16.8%	31	15.8%	
	>19 years	**163**	**83.2%**	**165**	**84.2%**	
Sex	Male	28	14.2%	25	12.75%	2=0.0 P=1.00 DF=1 NS
	Female	**168**	**85.7%**	**171**	**87.24%**	
Course of study	DGNM	36	18.3%	25	12.75%	☐2=0.00 P=1.00 DF=2 NS
	B.SC (N)	**146**	**74.4%**	**171**	**87.25%**	
	P.B.B.Sc(N)	14	07.1%	-	-	
Year of study	III year DGNM	36	18.3%	25	12.75%	☐2=0.00 P=1.00 DF=2 NS
	IV year B.SC (N)	**146**	**74.4%**	**171**	**87.24%**	
	P.B.B.Sc.(N)	14	07.1%	-	-	

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Exposure to information regarding OSCE	Workshop/ conference	5	02.6%	4	2.1%	2=0.11 P=0.94 DF=2 NS
	Book/Journals	2	1.0%	2	1.0%	
	Previous examination	0	0.0%	0	0.0%	
	None of the above	**189**	**96.4%**	**190**	**96.9%**	
Place of living	Urban	62	31.6%	48	24.5%	2=2.47 P=0.12 DF=1 NS
	Rural	**134**	**68.4%**	**148**	**75.5%**	
Religion	**Hindu**	**179**	**91.3%**	**178**	**90.8%**	2=0.27 P=0.88 DF=2 NS
	Muslim	5	2.6%	4	2.0%	
	Christian	12	6.1%	14	7.2%	

The above table shows the distribution of demographic variables of the nursing students. With regard to age, it was evident that in the study group, 163 (83.2%) samples, in the control group, 165 (83.2%) samples were in the age group of above 19 years. With regard to sex, in the study group, 168 (85.71%) and in the control group, 171 (87.24%) samples were females. With regard to course of study, in the study group and control group, 146 (74.49%) samples were B.Sc (N), 36 (18.36%) were DGNM students and 14 (07.14%) samples were P.B.B.Sc (N) students. In the control group, 171 (87.24%) were B.Sc (N) and 25 (12.75%) were DGNM students.

As for as year of study is concerned, in the study group, 146 (74.49%) samples were studying IV year B.Sc (N), and in the control group, 171(87.24%) were in IV year B.Sc (N).

In relation to exposure to information on OSCE, in the study group, 189 (96.4%) and in the control group, 190 (96.9%) were not exposed to any kind of information on OSCE.

With regard to place of living, in the study group, 134 (68.4%) were from rural area and 62(31.6%) were from the urban area. In the control group, 148 (75.5%) were from the rural area and 48 (24.5%) were from the urban area. In religion, in the study group, 179 (91.3%) were Hindus,12(6.1%)wereChristiansand5(2.6%)were Muslims. In the control group, 178 (90.8%) were Hindus, 14 (7.2%) were Christians and only 4 (2.0%) were Muslims. Chi square analysis proved that there was no significant difference found between study group and control group. Homogeneity was confirmed at p<0.05 level.

Table 2 . Comparison of Mean Score of pretest in all components of level of skill performance on selected clinical components within study group and control group.

S.No	OSCE STATIONS	Group n=392				Mean	Difference	Student independent t-test
		Study group (n=196)		Control group (n=196)				
		Mean score	%	Mean Score	%			
1	Recording temperature	**4.16**	0.49	**4.09**	0.62		**0.07**	t=1.35 p=0.17NS
2	Measuring Blood Pressure	**4.30**	0.74	**4.22**	0.77		**0.08**	t=0.99 p=0.32NS
3	Physical Examination	**4.05**	0.56	**4.15**	0.77		**-0.10**	t=1.40 p=0.16NS

4	NewBorn Resuscitation	**4.17**	0.59	**4.06**	0.61	**0.11**	t=1.83 p=0.07NS
5	Kangaroo Mother Care	**4.11**	0.71	**4.03**	0.70	**0.08**	t=1.20 p=0.22NS
6	Care of baby in Phototherapy	**4.23**	0.56	**4.17**	0.69	**0.06**	t=0.96 p=0.33 NS
7	Care of baby in Radiant warmer	**4.11**	0.63	**4.16**	0.73	**-0.05**	t=0.73 p=0.47NS
8	Anthropometric measurement	**4.18**	0.59	**4.09**	0.69	**0.09**	t=1.32 p=0.18 NS
9	History collection	**4.18**	0.62	**4.25**	0.68	**-0.07**	t=1.07 p=0.28 NS
10	Restraints	**4.26**	0.61	**4.23**	0.64	**0.03**	t=0.40 p=0.68NS
	Overall	**41.75**	2.02	**41.45**	2.19	**0.30**	t=1.41 p=0.16NS

p< 0.5 NS Not Significant

The data presented in the table above demonstrates that the study group had a pretest skill score of 4.16 in the domain of recording oral temperature using mercury thermometers, whereas the control group had a score of 4.09. When it came to the domain of measuring blood pressure, the study group had a pretest skill score of 4.30, while the control group had a score of 4.22. Both the study group and the control group had a score of 4.05 on their pre-test for the Physical Examination domain, however the control group had a score of 4.15. In the area of New Born Resuscitation, those in the study group had a pretest skill score of 4.17, while those in the control group had a score of 4.06. When it came to Kangaroo Mother Care, the research group had a pretest competence score of 4.11, while the control group only had a score of 4.03. When it came to taking care of babies during phototherapy, those in the study group had a pretest competence score of 4.23, whereas those in the control group only had a score of 4.17. For the topic of Care

of infant in Radiant warmer, the pretest competence score for the study group was 4.11, whereas the score for the control group was 4.16. When anthropometric measurement was taken into consideration, the study group had a pretest skill score of 4.18, while the control group had a score of 4.09. When it came to the History collection, the study group had a pretest skill score of 4.18, while the control group had a score of 4.25. When it came to Restraints, the study group had a pretest skill score of 4.26, while the control group had a score of 4.23. The average skill score on the pre-test for the study group was 41.75, whereas the score for the control group was 41.45. It was a 0.30 point difference. This difference was insignificant when compared to others based on statistical criteria.

DISCUSSION

Because OSCE is so helpful for the demand in the present clinical needs for nurses, an experimental study on it was done in child health nursing. Due to the complexity of the professional nursing curriculum, it is currently a significant challenge for nurse educators to impart quality and solid theoretical and practical knowledge to nursing students. In order to strengthen the use of OSCE in nursing curricula, this study helps the students comprehend and critically examine OSCE as a technique of assessment.

In terms of gender, there were 168 (85.71%) female students in the study group and 28 (14.29%) male students, compared to 171 (87.24%) female students and 25 (12.75%) male students in the control group. The majority of the population were female students (around 87 percent). The justification is that this representation is important because the nursing profession still has a high female to male ratio (Lam et al .,2006).

Regarding the study programme, there were 146 (74.49%) B.Sc (N) students, 14 (7.14%) P.B.B.Sc (N) students, and 36 (18.36%) DGNM students in the study group. 171 (87.24%) of the participants in the control group were B.Sc. (N.), and 25 (12.75%) were DGNM. The study population has 74% B.Sc. graduates, which is a fairly unusual proportion of the population.

(N) pupils and 7% P.B.B.Sc(N), for a combined grade of almost 81 percent B.Sc (N). Due to the same weighting of both courses and their classification as B.Sc (N). Over 85% of the samples in the control group likewise came from B.Sc (N) students, but there were no P.B.B.Sc (N) students. This is because there aren't as many universities providing this course as there are for

the B.Sc (N) degree, and admissions are still open for this course. The most notable aspect is that, following graduation, both programmes are deemed as equivalent in terms of work chances by the nursing regulating organisations. On the other hand, there were also students studying DGNM in the population. This three-year nursing diploma programme is being offered. The clinical competency requirements for this course are essentially identical to those for the baccalaureate programme. Between 12 and 18 percent of the study group's members and the control group's members are DGNM students.

Regarding the year of study, 146 (74.49%) of the study group's students were enrolled in the IV-year B.Sc. (N), 36 (18.36%) in the II-year DGNM, and 14 (7.14%) in the I-year P.B.B.Sc. (N), whereas in the control group, 171 (87.24%) were enrolled in the IV-year B.Sc. (N), and 25 (12.75%) were enrolled in This information shows that all of the B.Sc. (N) samples were from the fourth year, P.B.B.Sc. (N) students from the first year, and DGNM students from the second year. As the study examined the efficiency of OSCE in the child health nursing specialisation, the placement of child health nursing in each course's curriculum is what caused this disparity. Child health nursing is studied in the IV year for B.Sc. (N), the I year for P.B.B.Sc. (N), and the II year for DGNM. After passing their exams in the second year and beginning the third year, students were available. In terms of residence, 148 (75.5%) of the pupils in the control group and 134 (68.4%) of the research group were from rural areas, respectively. Pyke et al., (2006) Since the researcher is from a place where there are more rural residents than urban residents. Therefore, in both groups, 68–75% of the samples were from rural areas. This result also indicates that there are more rural residents than urban residents among the students in this area. This demonstrates that the OSCE paradigm has not yet permeated the rural people.

In terms of religion, 179 (91.3%) of the students in the study group and 178 (90.8%) of the control group identified as Hindus. Only a small percentage of samples (6-7%) and 2%, respectively, were Christian and Muslim. Again, it's crucial to remember that the research population is overwhelmingly Hindu (91 percent), even though the importance of any particular community is debatable. Instead, what counts most is how useful OSCE is for nursing curricula regardless of faith.

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The analysis's results showed that the mean score for each domain in the study group and control group is as follows: Care of the kangaroo mother (4.11:4.03), care of the baby in phototherapy (4.23:4.17), care of the baby in radiant warmer (4.11:4.17), recording oral temperature domain (4.16:4.09), measuring blood pressure (4.30:4.22), physical examination (4.05:4.15), new-born resuscitation domain (4.17:4.06), anthropometric measurement (4.18:4.09), history collection (4.18:4.25), and restrain (4.26:4.23).

In comparison to the control group, the study group's total mean performance score was 41.75 percent, while it was 41.45 percent. This image clearly shows that the mean and percentage scores in all the domains were almost identical in the study group and control group, and that the overall score likewise stayed nearly identical in both groups. This demonstrated that the pretest performance scores for both groups were below average.

Comparing the pretest performance levels of the study group and control groups reveals that, according to the OSCE method of evaluation, 194 (98.9%) of the study group's samples performed below averagely while 191 (97.4%) of the control group's samples performed below averagely on some of the clinical components.

This study finding explained by the fact that the nursing students were unfamiliar with the OSCE method of testing, and even the OSCE stations that replicated real-world settings were unfamiliar to them. As a result, both groups performed below average on the pretest.

CONCLUSION

The conclusion drawn from the aforementioned data is that regular OSCE practise during curricular instruction itself may result in improved student perception. The OSCE method of nursing practise in a clinically simulated setting is typically unknown to students. The OSCE is

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very effective, but its usefulness increases its efficacy, and as students use it often, their perception of the OSCE will improve.

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