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EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME FOR STAFF NURSES ON ASSESSING FETAL WELLBEING THROUGH CTG IN SELECTED HOSPITALS BANGALORE

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Abstract:

Background: Cardiotocography is a widely used, non-invasive technique for monitoring fetal heart rate (FHR) and uterine contractions, particularly in the third trimester of pregnancy. **Aim:** The aim of the study to evaluate the effectiveness of structured teaching programme for staff nurses on assessing fetal wellbeing through CTG. **Methods:** This study was a quasi-experimental one-group pre-test post-test design. Fifty staff nurses were chosen as the study population using convenient sampling technique based on inclusion criteria. **Results:** The study showed that in pre-test 15(30%) were having inadequate knowledge and 0(0.0%) were having adequate knowledge. Post test results shows that majority 30(60%) were having adequate knowledge and 0(0.0%) were having inadequate knowledge. **Conclusion:** The study found that the structured teaching programme significantly improved staff nurses' knowledge on fetal well-being through CTG.

Keywords: Cardiotocography, Staff nurses, Knowledge, Effectiveness.

INTRODUCTION:

Cardiotocography is a widely used, non-invasive technique for monitoring fetal heart rate and uterine contractions, particularly in the third trimester of pregnancy. It helps assess fetal well-being by detecting any early signs of distress, especially those related to oxygen deprivation. The FHR is regulated by the autonomic nervous system, and variations can indicate potential complications. CTG allows for continuous electronic fetal monitoring, enabling healthcare providers to make timely interventions that could prevent intrapartum fetal death or long-term neurological damage. Despite its promise, the effectiveness of CTG depends largely on proper interpretation and skilled clinical application, especially by nurses and midwives.

Perinatal mortality remains a significant global health concern, with over a million intrapartum stillbirths and nearly as many neonatal deaths annually mostly in low- and middle-income countries. Inadequate access to skilled care, delayed interventions, and limited use of diagnostic tools like CTG contribute to these outcomes. Studies show that improper use and interpretation of CTG, particularly by undertrained staff, can result in missed signs of fetal distress. Conversely, competent use of CTG has been linked to reduced rates of seizures and improved perinatal outcomes. Given the critical role nurses and midwives play in labor monitoring, equipping them with the knowledge and skills to use CTG effectively is essential to improving maternal and neonatal health outcomes, especially in resource-limited settings.

AIM OF THE STUDY:

The aim of the study to evaluate the effectiveness of structured teaching programme for staff nurses on assessing fetal wellbeing through CTG.

MATERIAL AND METHODS:

An evaluative research approach was adopted for this study, as the primary objective was to assess the effectiveness of a structured teaching programme for staff nurses on assessing fetal well-being through cardiotocography (CTG) in selected hospitals in Bangalore. To achieve this objective, a quasi-experimental one-group pre-test post-test design was selected. This design enabled the investigator to measure the knowledge of staff nurses before and after the educational intervention to determine its impact.

The study was conducted in selected hospitals in Bangalore, India, among 50 staff nurses from obstetric and gynecological wards, selected through convenient sampling. Inclusion criteria were willingness to participate, availability during data collection, and at least one year of experience. Nurses who were unwilling or unavailable were excluded.

The investigator developed the data collection tool which comprised of two parts. Part 1 contained the Demographic data: age, Educational qualification, years of experience, source of information about CTG and previous workshops attended. Part 2 comprised 30 multiple-choice questions covering various aspects of CTG: definition (3 questions), indications (4 questions), preparation of the patient (3 questions), procedure (12 questions), aftercare (4 questions), and complications (4 questions).

A structured teaching programme was developed by the investigator to educate the staff nurses on key topics related to CTG, including its definition, indications, patient preparation, procedure, aftercare, and complications. The teaching plan was designed using the lecture method with visual aids like charts and flashcards to enhance learning. The programme was carefully structured by framing an outline, developing content, and selecting appropriate instructional methods and teaching aids.

Data collection for the main study was carried out in November and December 2016. After obtaining formal permission from the concerned hospital authorities, the investigator administered the pre-test on Day 1,

followed by the structured teaching programme. A post-test was conducted on Day 7 to evaluate the knowledge gained by the participants. Throughout the study, confidentiality and voluntary participation were maintained to ensure ethical standards were upheld. Demographics were analyzed by frequency and percentage. A t-test assessed pre-test knowledge vs. demographics ($p < 0.05$).

RESULT:

Table 1: Demographic variables of the students.

N= 50

Characteristic's	Category	Respondents	
		Number	Percent
Age group (years)	20-23	12	24
	24-27	24	48
	28-31	14	28
Educational Qualification	ANM	11	22
	GNM	23	46
	BSc(N)	16	32
Total years' experience	1-4	10	20
	5-8	25	50
	9-12	15	30
Total experience in OBG ward	1-2	7	14
	3-4	17	34
	5-6	26	52
Source of information@	Newspaper	16	32
	Books	10	20
	Magazines	14	28
	Television	10	20
Attend workshop on CTG	Yes	15	30
	No	35	70

Table 1 shows the demographic details of 50 staff nurses. Most participants (48%) were aged 24–27 years. The majority held a GNM qualification (46%), followed by BSc Nursing (32%) and ANM (22%). Half of the nurses had 5–8 years of total experience, and 52% had 5–6 years of experience in the OBG ward. Newspapers were the most common source of CTG information (32%), and only 30% had attended a CTG-related workshop. These findings highlight a lack of formal training, indicating the need for structured teaching programmes.

Table 2: Compare the pretest and posttest level of knowledge among the students.**N=50**

Knowledge level	Classification of Respondents			
	Pre test		Post test	
	Number	percent	Number	Percent
Inadequate Knowledge	15	30	0	0
Moderate Knowledge	35	70	20	40
Adequate Knowledge	0	0	30	60
Total	50	100	50	100

The above table shows that in pre-test 15(30%) were having inadequate knowledge and 0(0.0%) were having adequate knowledge. Post test results shows that majority 30(60%) were having adequate knowledge and 0(0.0%) were having inadequate knowledge. (Table 2)

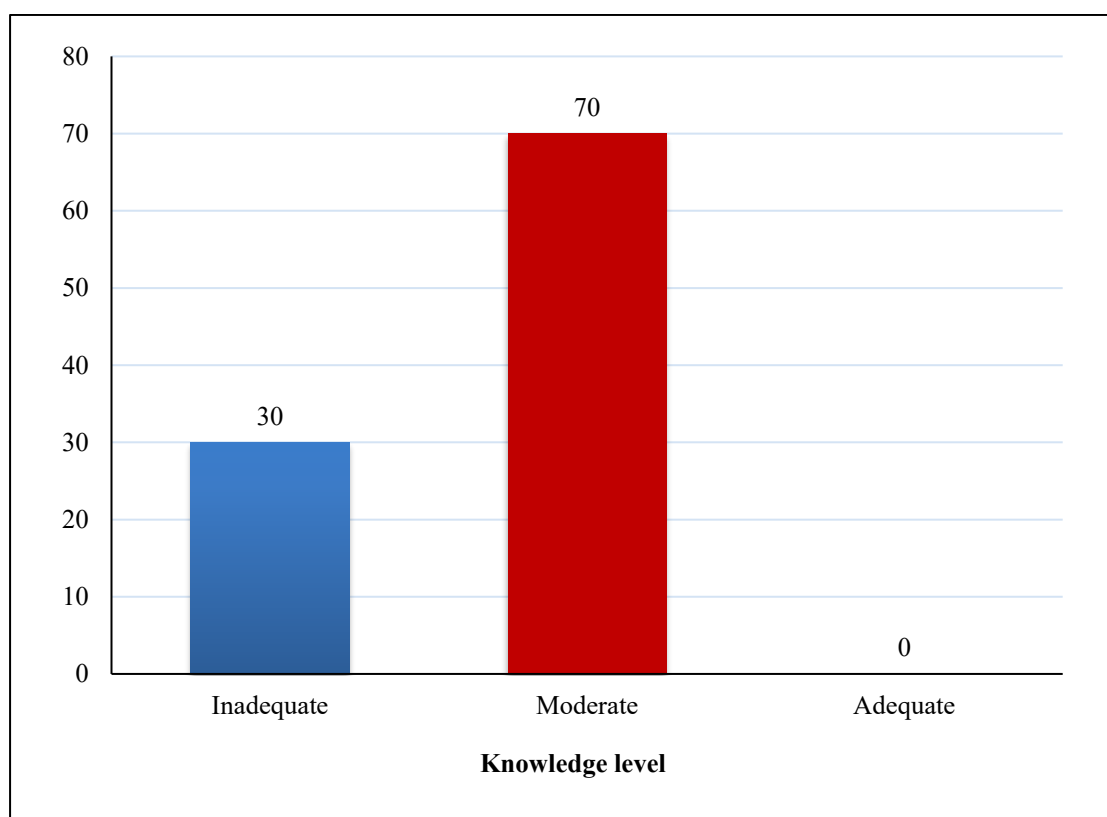


Figure 1: Bar diagram representing the pre-test knowledge level on CTG at OBG ward

Table 3: Level of practice regarding body mechanics.

Aspects	Respondents' knowledge score				Paired t test
	Mean	SD	Mean	SD	
Pre test	23.2	11.2	77.3	37.3	14.48*
Post test	26.30	14.18	87.6	47.26	
Enhancement	3.1	2.98	10.3	9.96	

*Significant 5% level

t (0.05, 39df) = 1.96

The difference between pre-test and post-test scores indicated the nurses' knowledge was increased. The mean and SD of the pre-test score were 23.2 (77.3%) and 37.3 respectively. The mean and SD of the post-test score were 26.3 (87.6%) and 47.26 respectively. The mean and SD of the knowledge gain score were 3.1 (10.3%) and 9.96 respectively. The calculated t-value 14.48 was much more than the table value at the 0.05 level, hence it was concluded that the structured teaching programme was effective. (Table 3)

Table 4: Association between the post-test score of staff nurses on CTG with demographic variables.

Demographic variables	Category	Sample	Respondents' knowledge				X ² value	P value
			Moderate		Adequate			
			N	%	N	%		
Age Group (years)	20-23	12	4	40.0	6	60.0	0.04 NS	>0.05
	24-27	24	7	36.8	7	63.2		
	28-31	14	4	36.4	5	63.6		
Educational Qualification	ANM	11	1	9.1	10	90.9	8.45 *	<0.05
	GNM	23	10	56.5	10	43.5		
	BSc(N)	16	1	16.5	5	83.3		
Total Experience (years)	1-4	10	2	25.0	6	75.0	2.67 NS	>0.05
	5-8	25	10	50.0	10	50.0		
	9-12	15	3	25.0	9	75.0		
Total experience in OBG ward	1-2	7	2	40.0	3	60.0	0.73 NS	>0.05
	3-4	17	6	46.2	7	53.8		
	5-6	26	7	31.8	15	68.2		
	Yes	15	1	10.0	9	90.0		

Attended workshop	No	35	14	46.7	16	53.3	4.30 *	<0.05
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N.S – Not Significant

The chi-square analysis of post-test knowledge levels showed a significant association with educational qualification and attendance at CTG workshops ($p < 0.05$), supporting the research hypothesis. However, no significant association was found with age, total years of experience, or OBG ward experience. (Table 4)

DISCUSSION:

The result of the study showed that the structured teaching programme was effective in increasing the knowledge of staff nurses on fetal well-being with the help of CTG. The mean knowledge score and the percentage of the participants revealed that most of the nurses 70% ($n = 14$) had moderate knowledge about fetal well-being through CTG in the pre-test with none in the adequate category. In the post-test the percentage of participants who achieved adequate knowledge was 62.5% ($n = 12$) and none was inadequate after the implementation of structured teaching programme indicating the effectiveness of the structured teaching programme. The overall mean knowledge score of the study participants was 77.3 % with a mean gain of 10.3% in the post-test as compared to the pre-test which was 87.6 %. The calculated t-value was 14.48, which was found to be highly significant at $p \leq 0.05$ level.

The association analysis revealed that pre-test knowledge was significantly related to age, total professional experience, OBG ward experience, and prior CTG workshop attendance. In contrast, educational qualification showed no significant association. Post-test knowledge, however, showed a significant association with educational qualification and CTG workshop attendance, while age and experience did not show any notable link. These results support the hypothesis that structured educational interventions can significantly improve nurses' knowledge and emphasize the importance of continuous professional development, especially in critical areas like fetal monitoring through CTG.

CONCLUSION:

The study found that the structured teaching programme significantly improved staff nurses' knowledge on fetal well-being through CTG. Post-test scores showed marked improvement, confirming the effectiveness of the intervention. Key demographic factors like educational qualification and prior training were associated with knowledge levels, highlighting the importance of ongoing education for better clinical outcomes.

RECOMMENDATION:

The same research can also be replicated with a bigger sample-size to increase the range of applicability of the findings. Besides, the future studies may use a control group in order to enhance the validity of the findings. The effectiveness of different teaching strategies in enhancing knowledge and skills in staff nurses may also be evaluated by undertaking comparative studies.

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