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Original Research Article

Impact of the Dakshata structured training module on healthcare professionals' knowledge and practices in intrapartum care: a study in a South Indian tertiary care institute

Priya M.[1], Vijayan Sharmila[2]*, Vandana Kamatham[2], Danasu R.[1], Thirunavukkarasu Arun Babu[3], Rajeswari M.[4]

[1]College of Nursing, All India Institute of Medical Sciences (AIIMS), Mangalagiri, Andhra Pradesh, India
[2]Department of Obstetrics and Gynecology, All India Institute of Medical Sciences (AIIMS), Mangalagiri, Andhra Pradesh, India
[3]Department of Pediatrics, All India Institute of Medical Sciences (AIIMS), Mangalagiri, Andhra Pradesh, India
[4]Department of Biostatistics, All India Institute of Medical Sciences (AIIMS), Mangalagiri, Andhra Pradesh, India

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***Correspondence:**
Dr. Vijayan Sharmila,
E-mail: sharu_jipmer@yahoo.co.in

ABSTRACT

Background: Despite the high rate of institutional deliveries in India, maternal and neonatal mortality rates remain concerning. The Dakshata programme was introduced to enhance the quality of maternal and newborn care through structured training for healthcare professionals. This study evaluates the effectiveness of the Dakshata structured training module on knowledge and practices regarding intrapartum care among healthcare workers in a tertiary care institute.
Methods: A one-group pre test - post test design was used, involving 27 healthcare professionals. A self-developed 15-item multiple-choice questionnaire assessed knowledge, while Objective Structured Clinical Examination (OSCE) stations evaluated practical skills before and after the training intervention. Data were analyzed using IBM Software version 26, employing the Mann-Whitney U test and Spearman correlation for non-normally distributed data.
Results: The intervention significantly improved knowledge scores from a median of 14.00 pre-intervention to 17.00 post-intervention ($p<0.001$). OSCE scores also showed substantial increases across all stations. The correlation analysis revealed a significant positive relationship between pre-test knowledge and OSCE4 performance ($r=0.490$, $p=0.009$), but no significant correlation was found between post-test knowledge and OSCE scores.
Conclusions: The Dakshata structured training module effectively enhanced healthcare workers' knowledge and practical skills in intrapartum care. Continued investment in targeted training programs is essential to improve maternal and newborn care quality.

Keywords: Dakshata programme, Healthcare training, Intrapartum care, Knowledge assessment, Maternal care, Neonatal care, Practical skills

INTRODUCTION

India has achieved over 89% institutional deliveries, (NFHS 5) yet maternal mortality ratio (MMR) stands at 88 per 100,000 live births (2023) and stillbirth rates remain around 6 per 1,000 total births, highlighting persistent gaps in intrapartum care quality.[1-5] Government efforts like LaQshya and infrastructure upgrades have expanded

access, but adherence to evidence-based practices lags, contributing to avoidable maternal and neonatal complications.[6]

In response to this critical need, the Government of India introduced the Dakshata programme in 2015 as one of the first comprehensive quality improvement initiatives for maternal and newborn care in the country. The programme aims to enhance the capacity of healthcare providers through structured training, adherence to evidence-based critical practices, and improved availability of essential supplies and data management. By targeting the quality of intra-partum and immediate post-partum care, the Dakshata programme seeks to bridge the gap between high institutional delivery rates and the persistent high maternal and newborn mortality rates, thereby improving outcomes for mothers and newborns across the country.[7-9]

A series of studies highlight the impact of targeted training programs on maternal and child healthcare in various countries. In Nigeria, a structured training program significantly improved postnatal care knowledge among healthcare workers.[10] In Cambodia, despite training, midwives and nurses struggled with accurate labor monitoring using the partograph, revealing a need for improved education strategies.[11] India's Dakshata program, through continuous mentoring and technical support, enhanced adherence to evidence-based practices in labor wards, reducing maternal and neonatal complications.[12,13] Similarly, short-term 'skills and drills' training in sub-Saharan Africa and Asia boosted emergency obstetric and newborn care skills, although some areas saw less improvement.[14] In the Solomon Islands, the WHO's Early Essential Newborn Care program initially raised healthcare workers' knowledge and skills, but these gains diminished over time, suggesting the need for ongoing quality improvement measures.[15] Collectively, these studies underscore the importance of continuous, targeted training and support to maintain and enhance healthcare quality.

Furthermore, emerging healthcare challenges, rising patient expectations, and the shifting burden of disease demand that healthcare workers stay updated with current best practices. Regular capacity-building initiatives are therefore critical to ensure that providers deliver safe, timely, and respectful care in line with national and global recommendations.

Given these concerns, the present study is essential as it seeks to assess current gaps, implement a targeted educational or training intervention, and evaluate its effectiveness. The findings will provide valuable insights for policymakers, educators, and clinical administrators to develop sustainable strategies for continuous professional development and improved patient outcomes.

This background highlights the need for targeted training for healthcare workers within the Dakshata programme to strengthen their skills and knowledge in delivering high-quality maternal and newborn care. We conducted this study to evaluate the utility of this 'Dakshata training module' using the 'Analyse, Design, Develop, Implement and Evaluate (ADDIE) model' for training Health care workers. The study aimed to assess the effectiveness of Dakshata training programme on knowledge and practice level on intrapartum care among Health care professionals who gave maternity care at tertiary care centre. The objectives of the study are to assess the changes in healthcare provider knowledge and skills by comparing pretest and post-test scores before and after participation in the Dakshata programme; to examine the correlation between the knowledge levels of healthcare providers and their skill levels, as measured through assessments conducted before and after participation in the Dakshata programme and to study the association between demographic variables with levels of knowledge and skill scores among healthcare providers who participated in the Dakshata programme.

METHODS

Study design, setting, population

This study employed a one-group pretest-posttest design and was conducted in the OBG seminar room at the IPD of AIIMS, Mangalagiri, over a three-day period from the 11th April 2024 to 14th April 2024. The target population comprised healthcare providers involved in maternity care. Inclusion criteria were healthcare providers working in the maternity area, while the exclusion criteria excluded those who were not interested in participating in the training program**.**

A convenient sampling method was used include all health care professionals who providing maternity care in AIIMS, Mangalagiri. Twenty-seven Health care professionals participated in the training programme. A self- developed 15item multiple choice questions, each comprising four responses with one correct response, was used to evaluate the knowledge of the participants regarding Dakshata programme. The questionnaire was filled by the participants before the beginning of the training programme and again after the completion of three days training programme. Participants were given 15 minutes to fill the questionnaire. Two manned stations kept to assess the skill level of the participants before the beginning of the training and again after completion of the programme. For each station five minutes given for participants to complete eachstation. Two more unmanned stations kept as a case scenario and requested the participants to fill it.

Intervention

Based on a comprehensive literature review and the GOI recommended Intranatal care for mothers and neonates, an educational package was developed for training of Health care workers. The training was conducted to improve the knowledge and practice of healthcare workers about the

recommended standard of care for the mother and neonate during the Intranatal period.

The three-day training programme comprised the theory sessions and demonstration of Intrapartum care stations. The skill stations were prepared and conducted for antenatal palpation, pervaginal examination, normal vaginal delivery, newborn resuscitation, PPH management and baloon tamponade. The demonstration of each station was carried out after dividing the participants in to small group and carried out the demonstrations.

Outcome measure

The primary outcome measure was knowledge and practice score obtained by each respondent after the intervention.

Data analysis plan

The date will be entered in Microsoft Excel and data will be analyzed using IBM Software version 26. Since the participants' data were not normally distributed, the Wilcoxson rank sum was employed to analyze the differences in pre- and post-test levels of knowledge and practice. For all the respondents, the association between their baseline level of knowledge and practice with sociodemographic characteristics was analyzed using Spearman correlation.

RESULTS

A total of 27 healthcare workers participated in the training program, with a 100% response rate. The group consisted of 7% males and 93% females, including 52% junior doctors, 41% Nursing officers, and 7% faculty members (Figure 1). Additionally, 50% of participants had over a year of prior experience in obstetrics and gynecology.

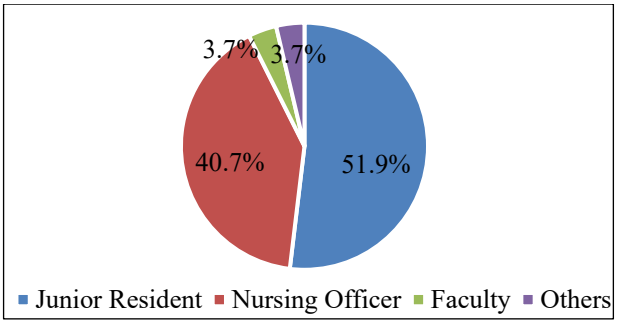

Figure 1: Designation of health care workers.

The intervention led to significant improvements in both knowledge and OSCE performance. The median knowledge score increased from 14.00 pre-intervention to 17.00 post-intervention, with a highly significant p-value (<0.001) (Table 1, Figure 2). Similarly, OSCE scores across all four stations saw substantial increases, with highly significant p-values (<0.001) for each. For instance, OSCE1 scores rose from a median of 2.00 to 7.00, while OSCE4 scores increased from 8.00 to 10.00. In summary, the intervention effectively enhanced both the knowledge and practical skills of participants, as reflected by significant improvements in all measured outcomes.

For the second objective, the analysis revealed that pre-test knowledge (Knowledge Pré) had a significant positive correlation with OSCE3 pre (r=0.490, p=0.009), indicating that participants with higher pre-test knowledge performed better in OSCE3 before the intervention. However, no significant correlations were observed between pre-test knowledge and other OSCE scores (Figure 3). Post-test knowledge did not show any significant correlations with OSCE scores, suggesting that post-intervention knowledge did not strongly influence practical OSCE performance. The p-value is greater than 0.05, indicating that post-intervention knowledge did not significantly influence practical OSCE performance.

Table 1: Pre and posttest knowledge, OSCE scores of health care worker.

	N	Median	Quartile 1	Quartile 3	After	N	Median	Quartile 1	Quartile 3	P value
Knowledge_ preScore	27	14.00	13.00	16.00	Knowledge_ postScore	27	17.00	16.00	17.00	<0.001
OSCE1_ prescore	27	2.00	2.00	3.00	OSCE1_ postscore	27	7.00	6.00	8.00	<0.001
OSCE2_ prescore	27	4.00	4.00	5.00	OSCE2_ postscore	27	9.00	8.00	9.00	<0.001
OSCE3_ prescore	27	4.50	4.00	5.50	OSCE3_ postscore	27	6.00	5.00	7.00	<0.001
OSCE4_ prescore	27	8.00	7.00	10.00	OSCE4_ postscore	27	10.00	9.00	11.00	<0.001

For the third objective, a comparison of knowledge scores between junior residents and nursing officers revealed no significant differences. Junior residents had slightly higher pre-test knowledge scores (Median=14.50) compared to nursing officers (Median=13.00), while nursing officers had marginally higher post-test knowledge scores

(Median=17.00 vs. 16.50). However, these differences were not statistically significant (p>0.05). Although age was significantly correlated with experience, neither age, experience, nor professional role had a significant impact on knowledge scores (Table 2). The p-value being greater than 0.05 suggests no significant difference in knowledge scores between the two groups.

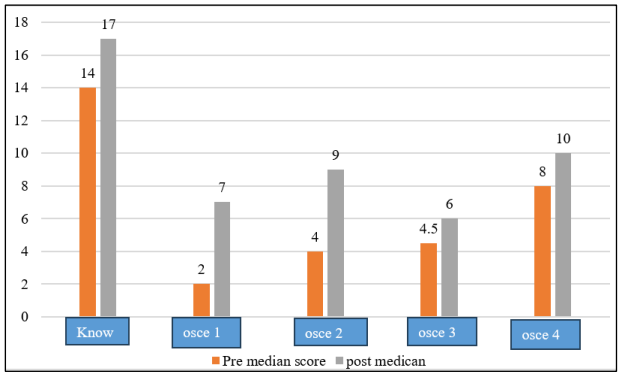

Figure 2: Pre and post test score of knowledge and OSCE of health care workers.

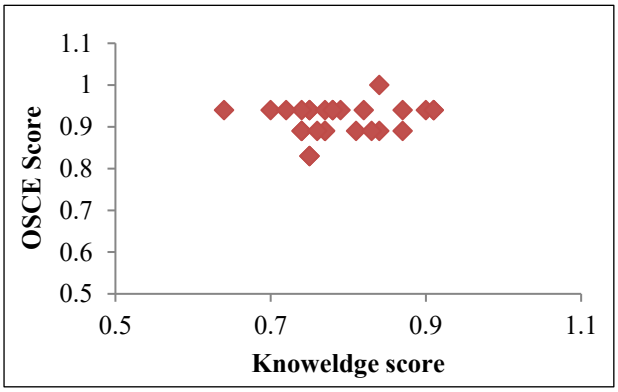

Figure 3: Overall correlation between knowledge scores and practice scores of healthcare workers.

Table 2: Correlation of demographic variables with knowledge scores of health care workers.

Variables		Knowledge prescores	Knowledge post score
Age	Correlation coefficient	-0.104	-0.011
	P value	0.605	0.957
Experience months	Correlation coefficient	0.225	-0.098
	P value	0.259	0.628

Subjective feedback from participants highlighted the overall success and effectiveness of the program. An overwhelming 97% of respondents rated the program as excellent and beneficial for their daily practice. Feedback collected over three days showed a consistently positive trend (Figure 4). On Day 1, 81.5% of participants rated the program as "very good" and 18.5% as "good." By Day 2, 95.7% of participants rated it as "very good," with only 4.4% rating it as "good." On Day 3, the positive feedback continued, with 93% of participants rating the program as "very good" and 7% as "good." Participants shared encouraging comments, noting that they enjoyed the seminar, valued the knowledge and skills they gained, and expressed a desire for more workshops in the future to stay updated. This feedback demonstrates the program's success in enhancing participants' skills and highlights their eagerness for continued professional development opportunities.

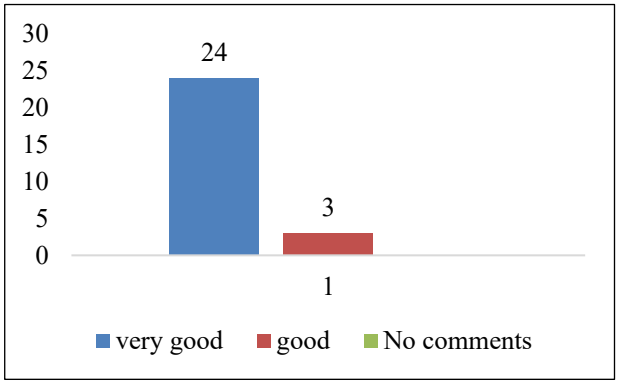

Figure 4: Overall feedback of the Dakshata training programme from the health care workers.

DISCUSSION

The Dakshata programme was designed to improve maternal and newborn health outcomes in India, addressing the significant gap in the quality of care despite high institutional delivery rates. In this study, we evaluated the effectiveness of a structured training module on intrapartum care, targeting healthcare professionals in a tertiary care setting.

Several studies support the findings of this study, demonstrating that the training program was highly effective in improving both knowledge and practical skills among healthcare workers.[10,14,15] The significant increase in median knowledge scores from 14.00 pre-intervention to 17.00 post-intervention (p<0.001) reflects the successful transfer of theoretical knowledge. Additionally, the substantial improvements in OSCE performance across all stations, with highly significant p values (<0.001), indicate the program's effectiveness in enhancing practical skills. This aligns with previous studies showing that targeted educational interventions can significantly improve healthcare providers' knowledge and clinical performance in obstetrics and gynecology.

The positive correlation between pre-test knowledge and OSCE4 performance before the intervention (r=0.490, p=0.009) suggests that participants who entered the program with higher baseline knowledge tended to perform better in practical skills related to OSCE4. However, previous research strongly suggests that training programs can improve the competency levels of healthcare

workers in maternity care settings.[13] This contrasts with the present study, where the lack of significant correlations between post-test knowledge and OSCE scores suggests that, while knowledge improved overall, it did not directly influence OSCE performance in the post-test phase. This may be because OSCE performance is influenced by practical skill development and confidence, in addition to theoretical knowledge, requiring more than just cognitive improvement and possibly a longer training duration.

When comparing knowledge between junior residents and nursing officers, no significant differences were found. Both groups showed comparable levels of knowledge improvement, suggesting that the training program was equally effective across professional roles. Previous findings support this by indicating that such training curricula are suitable for a diverse range of healthcare workers, regardless of their position or prior experience.[16] Additionally, while age was correlated with experience, similar to findings from earlier studies, neither factor significantly affected the knowledge scores, further supporting the broad applicability of the program.

These findings underscore the importance of continuous professional development through structured training programs. Regular updates in both knowledge and clinical skills are crucial for healthcare workers, especially in dynamic fields such as obstetrics and gynecology. The participants' eagerness for more workshops also indicates a strong demand for ongoing learning opportunities, which should be considered in future training initiatives.

In conclusion, this training program successfully enhanced both theoretical knowledge and practical skills among healthcare workers, and its broad applicability across different professional roles was demonstrated. The high levels of participant satisfaction further emphasize the need for ongoing, hands-on training programs to ensure healthcare professionals remain equipped with the latest knowledge and skills to provide the best possible care.

This study has few limitations. Although the module included all three domains of learning, and it addressed the basic levels of Blooms taxonomy, that is remembering and understanding. It also includes psychomotor components. The study did not include a follow up of the participants to observe the implementation of the gained knowledge at the workplace.

CONCLUSION

In conclusion, this training program successfully enhanced both theoretical knowledge and practical skills among healthcare workers, and its broad applicability across different professional roles was demonstrated. The high levels of participant satisfaction further emphasize the need for ongoing, hands-on training programs to ensure healthcare professionals remain equipped with the latest knowledge and skills to provide the best possible care. The feedback obtained from the trainers as well as the participants may be used to further strengthen the module.

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