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Effectiveness Of Nurse Led Educational Programme on Knowledge Regarding Mlearning Safe Delivery App Among Staff Nurses

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ABSTRACT

Introduction: The rapid advancement of mobile health (m-Health) technologies has revolutionized healthcare delivery, particularly in resource-limited settings. The Safe Delivery App is designed to provide evidence-based guidelines for maternal and neonatal care.

Aim: This study aimed to assess the effectiveness of nurse led educational programme on knowledge regarding mLearning Safe Delivery App among staff nurses in selected hospital.

Materials and Methods: Quantitative research approach, Pre-Experimental research design with one group pre and posttest was chosen. The study was conducted at GKMCH in Chennai. Seventy samples who met the inclusion criteria were chosen by the convenient sampling technique. Data were collected by using structured questionnaire.The Safe Delivery App was downloaded in each participant's Android mobile and taught about the App module, content and its usage. The post test was done after a week.

Results: The findings of the study revealed that in pre-test among 70 samples 67 (96%) had inadequate knowledge, 3 (4%) had moderate knowledge. In post-test 48 (69%) had moderate knowledge, 22 (31%) had adequate knowledge and none of them had inadequate knowledge regarding mLearning Safe Delivery App. The post test scores mean value was 16.19 with SD of 3.3. The Paired t test value was 36.124 which was significant at the $P < 0.01$ level.

Conclusion: This present study concluded that Nurse led Educational programme through the mLearning platform, the app allows the staff nurses to practice and test their knowledge and skills interactively and at their own time and pace.Safe Delivery App has proven to be an effective strategy for enhancing staff nurses knowledge and proficiency in utilizing mobile technology for safe delivery practices and thereby empowering the nurses in rendering the high quality care.

Keywords: *Effectiveness, Enhance, mLearning, Nurse-Led Educational Program, Safe Delivery App*

1. INTRODUCTION

A moment of unimaginable joy is what a mother feels when a newborn is placed on her arms – a joy every mother should have the right to experience. But for many pregnant women in India this memory will never come to be, the moment of birth is often frightening (UNICEF).The rapid advancement of mobile health (m-Health) technologies has revolutionized health care delivery, particularly in resource limited settings. The safe delivery app is designed to provide evidence based guidelines for maternal and neonatal care.The most dangerous period for a woman and kid is during childbirth. In 2019, 6,700 babies perished every day, and 2.4 million children died in their first month of life.[1] About 2 million new-borns, or one every 16 seconds, lost away during delivery in that same year.[1] Of the 2,95,000 maternal fatalities that are believed to have occurred globally, 94% were in low- and middle-income nations.[2] The primary cause of these fatalities is the inadequate provision of high-quality, competent care during labour.[3,4] An estimated 1,13,000 maternal fatalities, 5,31,000 stillbirths, and 1,325 million neonatal deaths can be avoided each year with expenditures in high-quality care.[5] One-fifth of the 32,000 yearly maternal fatalities worldwide occur in India.[2] Even while it has significantly decreased to 24.9 in 2019–2021,[6] neonatal mortality still makes up more than 25% of all new-born fatalities.[7] This highlights the critical need to close quality gaps, particularly in primary care settings when referrals are hindered or delayed because of family concerns, cost, or distance. It was discovered that the capacity for intra-partum care in primary healthcare facilities, both in urban and rural locations was poor.[9] Among other reasons, a lack of resources, inadequate training, restricted access to continuing education, and a lack

of professional support from experienced physicians frequently prevent nurses, who handle the majority of births in primary care settings, from offering high-quality treatment.[10] The safe delivery app (SDA) was created to support health workers (HW) in basic emergency obstetric and new-born care by providing them with a self-mobile app that includes animated instruction videos, drug lists, procedures, and e-learning tools. The goal of the SDA is to strengthen the professional competencies of skilled birth attendants in managing Basic Emergency Obstetric and Neonatal Care. (11) Users may test their expertise and get certified as Safe Delivery Champions using its M-Learning feature. (12) In December 2017, the Government of India certified version of the SDA was released in Hindi and English. For Android users, the app may be downloaded for free from the Google Play App Store. So far, 91,335 downloads throughout India is counted. (13) Sodha T.S et al (2022) conducted a study to assess the mhealth learning tool for skilled birth attendants: scaling the Safe Delivery App in India. The results revealed that the App was successfully integrated and implemented in various Government-led QI initiatives. Approximately 20,000 healthcare workers (HCWs) have been trained on the App and selected clinical topics since its launch, and between 2018 and 2021 over 86,000 HCWs across all states and union territories used the App. Moreover, project-specific data showed a significant increase in the knowledge level of users of the App. (14)

AIM:

The main aim of the study was to assess the effectiveness of Nurse led educational program on knowledge on mLearning Safe delivery app among staff nurses.

METHODS:

The research approach adopted in this study was the Quantitative research. Pre Experimental one group pre and posttest research design was chosen.The study was conducted in Govt. Kilpauk Medical College and Hospital,Chennai which is a tertiary care hospital providing comprehensive health care to the patients. Staff nurses working in the department of Obstetrics and Gynecology were chosen as the samples. The staff nurses who were posted in Antenatal ward, Triage, Labour room, High Dependency unit and postnatal ward were included in the study. The staff nurses who were in night duty, maternity and in medical leave were excluded from the study. Seventy samples who met the inclusion criteria were chosen by convenient sampling technique.

DESCRIPTION OF THE TOOL:

The tool used for data collection was the questionnaire method. It comprises of two sections. **Section A:** A structured questionnaire was used to assess the demographic variables such as age, religion, residence, qualification, experience and source of information.

Section B: It comprises of structured questionnaire regarding the mLearning safe delivery app content, the pregnancy and childbirth related complications and the usage, Each correct answer was awarded as score "1" and wrong answer was given a score of "0". Higher the score indicates good knowledge.The scores were interpreted as adequate, moderate and inadequate knowledge.

2. DESCRIPTION OF THE INTERVENTION

Pretest was done by giving questionnaires to the participants, Nurse Led Educational program was conducted to improve their knowledge. The Safe Delivery App was downloaded in each participant's Android mobile and taught about the App module that includes animated instruction videos, drug lists, procedures, and e-learning tools. The Post-test was conducted after 7 days of Nurse led educational program with the same questionnaire.

RELIABILITY OF THE TOOL:

The tool validity was obtained from the experts of Obstetrics. Reliability of the tool was established by test- retest method. The r value was 0.84.

ETHICAL CONSIDERATION:

The Formal approval was obtained from the Institutional Head ethical committee of GKMCH, Chennai. The purpose and the benefit of the study were explained to the staff nurses and written consent was obtained from each participant before the data collection. Assurance was given to the staff nurses that the confidentiality would be maintained.

DATA ANALYSIS:

The data were analyzed using both descriptive and inferential statistics. Frequency and percentage distribution was used to describe the demographic variables of the samples. Mean and standard deviation was used to assess the effectiveness of Nurse Led Educational Program. Comparison of data among the group of samples the investigator used the inferential statistics by means of paired t test and Chi-square test was used to associate the effectiveness of intervention with the selected demographic variables.

3. RESULTS

Table 1: Distribution of Demographic variables among Staff Nurses

S.NO	DEMOGRAPHIC VARIABLES	FREQUENCY	PERCENTAGE
1	**Age (in years)**		
	<30	07	10.0
	31- 40	57	81.4
	41- 50	06	08.6
2	**Religion**		
	Hindu	38	54.3
	Christian	26	37.1
	Muslim	06	08.6
3	**Residence**		
	Rural	02	02.9
	Urban	42	60.0
	Semi urban	26	37.1
4	**Qualification**		
	GNM	65	92.9
	UG	02	02.9
	PG	03	04.3
5	**Experience**		
	< 10 Yrs	59	84.3
	>10 yrs	11	15.7
6	**Source of Information**		
	Friends	05	07.1
	CNE	0	0.0
	Mass media	0	0.0
	don't know	65	92.9

The data presented in table 1 shows that the 57(81.4%) of staff nurses were in the age group of 31 to 40 years, and 6(8.6%) in 41 to 50 years. Considering the religion, most of them 38(54.3%) belongs to Hindu religion and 6(8.6%) were Muslims. Regarding the residence, out of 70 staff nurses 42(60.0%)were residing in urban area and 2(2.9%) were residing in rural area. Regarding the qualification most of the staff nurses 65 (92.9%) had there qualification as GNM, 2(2.9%) were under graduate and 3(4.3%) were post graduate. Regarding the experiences 59(84.3%) of staff nurses were less than 10 years and 11(15.7%) of staff nurses had more than 10 years of experience. Considering the source of information 65(92.9%) of staff nurses were not aware of SDA App and none of them had received information from CNE and mass media.

Table 2: Frequency and percentage distribution of level of Knowledge on mLearning Safe Delivery App among Staff Nurse in Pre-test and Post test

Level of Knowledge (n = 70)	Pre-test		Post test	
	No.	%	No.	%
Inadequate knowledge	67	95.7	0	0
Moderate knowledge	03	4.3	48	68.6
Adequate knowledge	0	0	22	31.4
Total	70	100	70	100

Table 2 represents the level of knowledge regarding usage of mLearning safe delivery app before and after Nurse Led Educational Program. In pre-test among 70 samples 67 (95.7%) had inadequate knowledge, 3(4.3%) had moderate knowledge and none of them had adequate knowledge. In post-test 48 (68.6%) had moderate knowledge, 22 (31.4%) had adequate knowledge and none of them had inadequate knowledge regarding usage of mLearning safe delivery app.

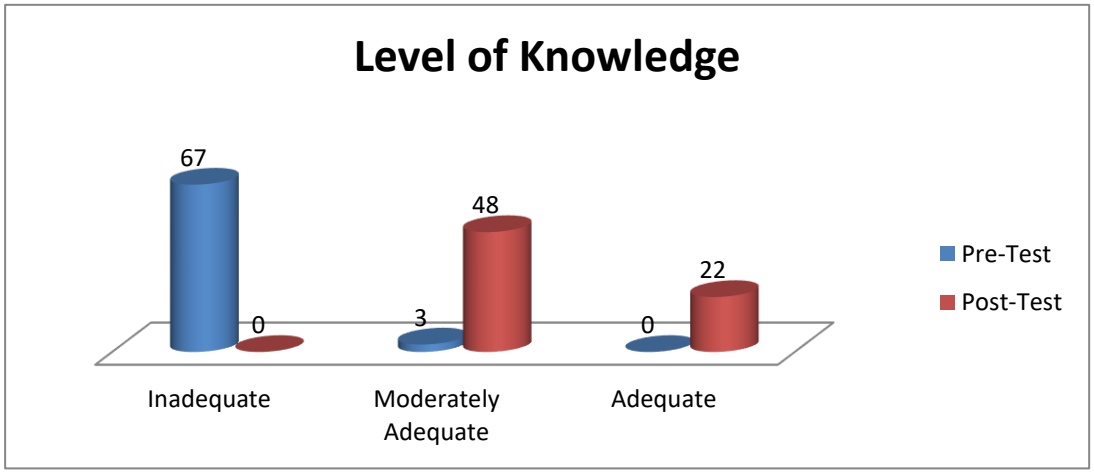

Figure 1: Frequency and percentage distribution of level of knowledge before and after Nurse Led Educational Program.

Table 3: Effectiveness of Nurse Led Program on level of knowledge among staff nurses (n=70)

S. No	Variable	Maximum Score	Pre-test		Post-test		t Value
			MeanS	SD	Mean	SD	
1.	Knowledge	25	6	2.847	17	2.912	2.395*

Note:* = 0.05 level Significance

Table 3 analysis depicted that the level of knowledge was improved from the pretest mean value with SD 6 ± 2.847 to 17 ± 2.912 with the Paired t test value 2.395 which was significant at the P < 0.05 level after the Nurse Led Educational Program.

Table:4 Association between level of Knowledge on mLearning Safe Delivery App and Demographic Variables among Staff Nurses in Pre-Test

Demographic variables	Level of knowledge in pretest				Chi Square and P Value
	Inadequate		Moderate		
	Number	Percentage	Number	Percentage	

1.Age (in years)					$\chi 2 = 6.764$
a. < 30	04	57.1	03	42.9	d.f =2
b. 31- 40	47	82.4	10	17.5	p= 0.034 *
c.41 -50	02	33.3	04	66.7	
2. Religion					$\chi 2 = 0.373$
a. Hindu	21	84.0	04	16.0	d.f =3
b. Christian	28	73.7	10	26.3	p= 0.542 (N.S)
c. Muslim	04	66.7	02	33.3	
d. others	01	100	0	0	
3. Area of residence					$\chi 2 = 0.271$
a. Rural	01	50.0	01	50.0	d.f = 2
b. Urban	30	71.4	12	28.6	p= 0.602 (N.S)
c. Semi urban	12	46.1	14	53.9	
4. Prof. Qualification					$\chi 2 = 6.667$
a. GNM	54	83.0	11	17.0	d.f = 2
b. UG	01	50.0	01	50.0	p= 0.010 *
C. PG	02	66.7	01	33.3	
5. Total experience					$\chi 2 = 4.286$
a. <10 years	51	86.4	08	13.5	d.f = 1
b. > 10 years	08	72.8	03	27.2	p= 0.038 *
6.Source of information					$\chi 2 = 1.429$
a. Friends	04	80	01	20.0	d.f = 3
b.CNE	0	0	0	0	p= 0.232 *
C.Mass media	0	0	0	0	
d. Don't know	60	92.3	05	7.7	

Note: *indicates P<0.05 Level of Significance

Table 4 analysis showed that there is an association in pre-test level of knowledge with demographic variables such as age, qualification, total experience and source of information at P<0.05 level of significance

Table:5 Association between level of Knowledge on mLearning Safe Delivery App and Demographic Variables among Staff Nurses in Post-Test

Demographic variables	**Level of knowledge in post test**				**Chi Square and P Value**
	Moderate		**Adequate**		
	Number	**Percentage**	**Number**	**Percentage**	
1. Age (in years)					
a. < 30	05	71.4	02	28.6	$\chi 2 = 5.455$
b. 31- 40	49	86.0	08	14.0	d.f =2
c.41 -50	04	66.7	02	33.3	p= 0.065 (N.S)
2. Religion					

a. Hindu	20	80.0	05	20.0	$\chi 2 = 2.516$
b. Christian	29	76.3	09	23.7	d.f =3
c. Muslim	03	50.0	03	50.0	p= 0.113 (N.S)
d. others	01	100	0	0	
3. Area of residence					$\chi 2 = 1.833$
a. Rural	01	50.0	01	50.0	d.f = 2
b. Urban	25	59.5	17	40.5	p= 0.176 (N.S)
c. Semi urban	20	77.0	06	23.0	
4. Prof. Qualification					
a. GNM	60	92.3	05	7.7	$\chi 2 = 2.222$
b. UG	01	50.0	01	50.0	d.f = 2
c. PG	01	33.3	02	66.7	p= 0.138 (N.S)
5. Total experience					$\chi 2 = 1.429$
a. < 10 years	49	83.0	10	17.0	d.f = 1
b. > 10 years	09	82.0	02	18.0	p= 0.232 (N.S)
6. Source of information					
a. Friends	04	80.0	01	20.0	$\chi 2 = 1.429$
b.CNE	0	0	0	0	d.f = 3
C.Mass media	0	0	0	0	p= 0.232 (N.S)
d. Others	60	92.3	05	7.7	

Note: *indicates $p<0.05$ level of significance

Table 5 shows that there is no association found between post-test level of knowledge and socio demographic variables at $p<0.05$ level of significance.

4. DISCUSSION

With the rapid development of advanced technology, there is an increasing amount of usage of portable devices which helps the learner to have a quick access to the medical information and also plays a major role in quality care.

The data presented in the table 2 shows that the level of knowledge regarding usage of mLearning safe delivery app before and after Nurse Led Educational Program. In pre-test among 70 samples 67 (95.7%) had inadequate knowledge, 3(4.3%) had moderate knowledge and none of them had adequate knowledge. In post-test 48 (68.6%) had moderate knowledge, 22 (31.4%) had adequate knowledge and none of them had inadequate knowledge regarding usage of mLearning safe delivery app. The present study results are consistent with the study by Choure.J et al. titled a study to assess the effectiveness and utility of "safe delivery app" among staff nurses working in People's Hospital Bhopal provided evidence in favour of this goal. Fifty staff nurses in total were recruited to utilize the safe delivery app for four weeks. At the conclusion of the trial, improvements in outcomes were quantified using a knowledge score checked scale. The study's objectives were made clear to participants before pre-test , the safe delivery app is installed on their phones, and all staff nurses' contact information is gathered to create a Whatsapp group. After the 4-week mark, a weekly follow-up with staff nurses was carried out. With a t-test value of 9.4043 and a P value of >0.005, the pre-test mean and SD were 12.58 and 5.22, respectively, while the post-test mean and SD were 22.00 and 4.79. (14)

The analysis depicted in table 3 shows that the level of knowledge was improved from the pretest mean value with SD 6 ± 2.847 to 17 ± 2.912 with the Paired t test value 2.395 which was significant at the $P < 0.05$ level after the Nurse Led Educational Program. The study findings were supported by the research on "Safe delivery application with facilitation increases knowledge and confidence of obstetric and neonatal care among frontline health care workers in India" by Sarin E. et al. provided evidence in favour of this goal. Randomization was used to split 30 facilities' worth of staff nurses and nurse midwives across two states into control and intervention groups. At baseline and six months later, knowledge and confidence were measured. The study revealed that compared to the baseline, healthcare professionals' knowledge and

confidence were greatly increased to 4 percentage points ($P < 0.001$) over the finish line. There was a greater mean score difference among control and experimental group. (15)

Table 4 analysis showed that there is an association in pre-test level of knowledge with demographic variables such as age, qualification, total experience and source of information. These findings were consistent with the following studies. The present study reveled that there is an association between the age with the knowledge on Safe Delivery which is consistent with the study by Schaefer et al. (2019) on mobile health interventions. The study revealed that age significantly impacted the engagement and effectiveness of health applications. Younger participants (under 30) were more likely to use mobile apps and gained knowledge effectively, whereas older participants (above 40) had less engagement but might still showed improvement after education on the platform (16). Considering the association between the qualification with the knowledge on Safe Delivery app, qualification or education level is a key determinant of knowledge acquisition. Higher education typically correlates with higher knowledge of health topics, including safe delivery practices which is consistent with the study by Jain et al. (2021). This study evaluated the knowledge gaps in maternal health and found that women with higher educational qualifications had more accurate knowledge about safe delivery practices when using apps and other digital health tools (17).

Regarding the association between the total year of experience with the knowledge on Safe Delivery app**,** total experience in healthcare or maternal care can positively influence knowledge on safe delivery practices, as experienced individuals tend to have a better understanding of real-world scenarios, even before using mobile apps. The present sutdy is consistent with the study conducted by Sinha and Choudhury (2019) found that healthcare workers and midwives with extensive experience in maternal care had a stronger pre-test knowledge of safe delivery, though their performance improved significantly with app-based interventions, especially when the content was interactive (18).

Considering the association between the source of information with the knowledge on Safe Delivery app, the source of information plays a critical role in shaping individuals' pre-test knowledge. Access to credible and accurate sources, such as healthcare professionals or reputable apps, has been found to increase knowledge levels on safe delivery which is supported by the study by Bhatt et al. (2021). The study showed that the pregnant women who used a safe delivery app sourced from healthcare professionals had better outcomes than those who used non-professional sources, such as social media or word of mouth (19).

The present study findings showed that that there is no association found between post-test level of knowledge and socio demographic variables. The findings was supported by a study by Kumar et al. (2021) explored the relationship between post-test levels of knowledge on a safe delivery app and socio-demographic variables. The study found that while some demographic factors (like age and education) influenced pre-test knowledge levels, no significant association was found between socio-demographic variables and post-test knowledge scores after using the app. (20)

5. CONCLUSION

The present study highlighted that the implementation of a Nurse-Led Educational Program focusing on the m-Learning Safe Delivery App has proven to be an effective strategy for enhancing staff nurses' knowledge and proficiency in utilizing mobile technology for safe delivery practices. The significant increase in knowledge levels post-intervention highlights the program's role in addressing knowledge gaps and promoting evidence-based practices among staff nurses. By equipping staff with the necessary skills and resources, healthcare institutions can improve the quality of maternal care and ensure better outcomes for mothers and infants. Future research should explore long-term retention of knowledge and the impact of such educational initiatives on patient care and safety outcomes. Overall, this study underscores the importance of ongoing education and the potential of mobile learning tools in fostering a competent nursing workforce.

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