RESEARCH PAPER

A Pre-Experimental Study To Assess The Effectiveness Of Digital Educational Program On Knowledge Regarding Essential Newborn Care Among Primigravida Antenatal Mothers In Selected Hospitals Of Pune City

Mrs. Sonal Kurane[1a*], Dr. Mrs. K. Memchoubi[2b], Mr. Rinit Mathew Samuel[3c], Ms. Alina Francis[4c]

[a]Clinical Instructor, Department of Community Health Nursing, Bharati Vidyapeeth (Deemed to be University) College of Nursing, Pune

[b]Associate Professor, Department of Obstetrics and Gynecology, Bharati Vidyapeeth (Deemed to be University) College of Nursing, Pune

[c]Student, BSc. Nursing, Bharati Vidyapeeth (Deemed to be University) College of Nursing, Pune

***Corresponding Author:** Mrs. Sonal Kurane

ABSTRACT

Introduction: Taking a step into new life is momentous. The newborns are vulnerable and they need the utmost supervision. Hence, essential newborn care is necessary for the best care of these little ones. As a part of care, WHO provides essential newborn care such as – giving warmth to the baby, breastfeeding the baby, the prevention of infection and baby clinic visits. So we can observe that there is inconsistency in urban settings on the awareness and implementation of these practices among the first time mothers.

Aim of the study: The aim of the study is to assess and evaluate the effectiveness of digital educational program on knowledge regarding Essential Newborn Care among primigravida antenatal mothers.

Methodology: Pre-experimental one group pre-test and post-test research design was used and the samples were selected using non-probability purposive sampling technique. A sample size of 60 participants of primigravida antenatal mothers were included. The tool consists of two sections: Section I (Demographic data) and Section II (Structured Questionnaire). The reliability of the study was done by test-retest method. The Karl Pearson's coefficient of the tool was $r = 0.9$. The data overall was analysed by descriptive and inferential statistics.

Result: The result reported that before intervention, 90% mothers had good knowledge while only 1.67% had excellent knowledge. After intervention of digital educational program, 31.67% mothers achieved excellent knowledge and 68.33% maintained good knowledge, hence significant improvement was observed. The statistical significance was ($p<0.001$). Association was significant only for antenatal visits among the other demographic variables.

Conclusion: The study resulted in showing positive effect. Significant improvement was observed in the effectiveness of digital educational program regarding essential newborn care. Digital education can be implied into antenatal care services to enhance maternal awareness and promote better health for newborn.

Keywords: Pre-experimental, Primigravida, Digital Education, Antenatal, Essential Newborn Care.

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INTRODUCTION

Neonatal period is considered as from birth till the first 28 days. In India, health of neonates is still a concern. As a part of care, WHO provides essential newborn care such as – giving warmth to the baby, breastfeeding the baby, the prevention of infection and baby clinic visits. So we can observe that there is inconsistency in urban settings on the awareness and implementation of these practices among the first time mothers.[1]

As first-time mothers, they depend on family members or healthcare providers for getting information on essential newborn practices. This group need high attention and guidance. The studies have shown that the maternal and newborn outcomes and health is improved due to educational intervention during their primigravida antenatal period.[2]

Hospitals of Pune is adapting technology and digital interventions offering opportunities to provide care and interventions. By performing this study, we can assess the basic knowledge of mothers, plan the digital

education and evaluate the knowledge after executing this program.

The goal of this study is to fill the gap by evaluating effectiveness of digital educational program among primigravida antenatal mothers on essential newborn care. This pre-experimental design, will support in making changes in knowledge before and after the intervention. The findings will facilitate in making of new policies and decisions beneficial to reduce mortality and morbidity in neonates.

A study conducted in (2017) included 60 primipara mothers. It was a quantitative pre-experimental study. It was observed that 12% mothers had moderate knowledge 88% had inadequate knowledge, according to the pre-test result. After the intervention, it was observed that 87% had adequate knowledge and 13% exhibited moderate knowledge. There was significant improvement ($p>0.05$) showing paired t-test value of 33.65. Using chi-square analysis, it was seen that knowledge scores and variables were significantly correlated.[3]

NEED OF STUDY

Newborns are a sensitive group and it is important to improve their health from the time of birth itself. The first step towards them is providing them essential newborn care. Primigravida antenatal mothers may lack sufficient knowledge on essential newborn care. By using digital educational program, it will not only improvise knowledge but the mothers will also be able to give proper and safe care to their new-born.

Some of the identified determinants of neonatal mortality were the number of births, place of delivery, frequency of antenatal care use, gestation age at birth, twin delivery, presence of premature rupture of membrane, complication during labor, low birth weight, and neonatal care practice. In addition to these maternal ages, the gestational age of the rst antenatal care visit and knowledge of the mothers on newborn danger signs and newborn care was factors associated with good neonatal feeding practice. The single most cost-effective intervention to reduce neonatal mortality and morbidity both in developed and developing countries is the promotion of appropriate Essential newborn care practices.[4]

The study (2025) stated how well video assisted instructions was received by primigravida mothers on prenatal care. The findings were, it involved 60 mothers and the majority were from age between 21 and 25, had completed secondary schooling and were from nuclear households. The improvement of knowledge was seen as the result got was, according to pre-statistic, most participant had less knowledge on prenatal care.[4]

AIM OF THE STUDY

It is to assess the effectiveness of digital educational program on knowledge regarding essential newborn care among mothers in Pune city. Also, to assess the association between demographic variables and pre-test.

RESEARCH METHODOLOGY

A quantitative research approach with pre-experimental research design was taken. Non-Probability purposive sampling technique was used and 60 samples were selected.

The objectives were as follows for this study

1. To assess the pre-test knowledge of primigravida antenatal mothers regarding Essential Newborn Care before intervention.
2. To assess the knowledge of primigravida antenatal mothers regarding Essential Newborn Care after intervention.
3. To compare pre-test and post-test knowledge scores to assess the effectiveness of digital educational program.
4. To determine the association between the demographic variables of primigravida antenatal mothers and the analysis of pre-test knowledge scores on Essential Newborn Care.

The self-structured questionnaire consists of two sections: Section 1 – Demographic variables (age, educational level, occupation, socioeconomic status, gestational week and antenatal care visits), Section 2 - Structured questionnaire (consisting of 24 items). The validation was done through content validity method. For validity research tool was submitted to 6 experts. In this study the reliability was determined by providing self-structured questionnaire. Reliability of sample was done through test re-test method and r value was 0.95. Pilot study done and the result were consistent.

RESULT

Table no.1 - The analysis related to demographic variable, frequency, percentage distribution

Demographic Variable	Frequency (n)	Percentage (%)
Age (years)		
19-20	5	8.33%
21-27	50	83.33%
28-35	5	8.33%
Education		
Informal education	2	3.33%
Primary	34	56.67%
Secondary	21	35.00%
Higher	3	5.00%
Occupation		
Homemaker	56	93.33%
Employed	4	6.67%
Socio-economic Status (Income)		
< ₹5000	12	20.00%
₹5000–10,000	40	66.67%
₹10,001–20,000	5	8.33%
₹20,001–30,000	1	1.67%
> ₹30,000	2	3.33%
Gestational Weeks		
28–36 weeks	57	95.00%
>37 weeks	3	5.00%
ANC Visits		
1–3 visits	1	1.67%
4–7 visits	45	75.00%
>8 visits	14	23.00%

Table 1 depicts that the findings shows that most primigravida mothers were aged 21–27 years, had completed primary education, were homemakers, and belonged to the lower income group. The majority were in the 28–36 weeks of gestation and had attended 4–7 antenatal visits. Pre-test results revealed that most participants had good knowledge, indicating an adequate baseline understanding of essential newborn care prior to the intervention.

Table No.2 - Pre-test knowledge of primigravida antenatal mothers regarding ENBC before intervention.

n= 60

KNOWLEDGE LEVEL	PRE-TEST SCORE	PERCENTAGE (%)
Poor (0 - 6)	0	0%
Average (7 - 12)	5	8.33%
Good (13 - 20)	54	90%
Excellent (21 - 24)	1	1.67%

From this table 2, it shows that most mothers had good baseline knowledge (90%) but only (1.67%) demonstrated excellent knowledge. This indicates the need for further structured education.

Table No.3 - Post-test knowledge of primigravida antenatal mothers regarding ENBC after intervention.

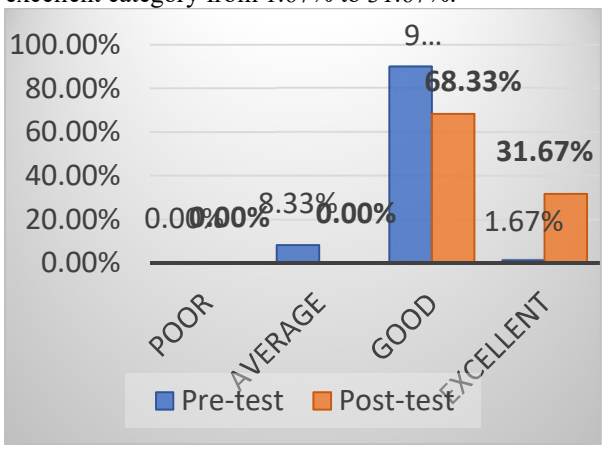
n= 60

KNOWLEDGE LEVEL	POST-TEST SCORE	PERCENTAGE (%)
Poor (0 - 6)	0	0%
Average (7 - 12)	0	0%
Good (13 - 20)	41	68.33%
Excellent (21 - 24)	19	31.67%

Table No.3 shows that post-test findings has improvement with 31.67% attaining excellent knowledge and 68.33% achieving good knowledge after the digital educational program.

Figure No.1 - Compare Pre-test and Post-test knowledge scores to assess effectiveness of digital educational program.

Figure No.1 depicts that the educational intervention on ENBC led to a notable improvement in the knowledge levels of primigravida antenatal mothers. Initially, most mothers possessed good knowledge, but only a minimal fraction demonstrated excellent understanding. After the intervention, there was a clear upward shift, with a substantial increase in the excellent category from 1.67% to 31.67%.



DISCUSSION

Present study reveals that most of mothers who attended were young mothers whose age comes between 21-27. The women in this age group can easily utilise, greatly adaptable and can gain technology-based learning concepts. More than half of the participants comes in primary level education category, from the pre-test findings clearly shows high proportion of mothers had good baseline knowledge. In occupation-wise, the predominance of homemakers was identified as an advantage , as it made easier to engage with digital learning materials. At the same time, depending on family advise shows the need of evidence-based education so that everyone gets the same information. Socio-economic analysis indicates that most of the mothers are low-income households. The digital educational intervention is cost-effective and inclusive strategy, effectively connecting knowledge gaps without giving financial strain on the participants.

Analysis of effectiveness explained a statistically significant improvement in post-test knowledge score ($p< 0.001$), with 17.40% increase after the intervention. Earlier studies, has same result shows the consistency with present study. It highlights the utility of digital education among urban and semi-urban antenatal populations. Only, antenatal care visits showed a significant association and it once again confirms the critical role of regular engagement with healthcare professionals in enhancing the maternal awareness.

The present findings are also in line with study done in Joshi N, Bisht B (2023) , who also reported same after the structured teaching programme for mothers. Their study showed an increase in the mean knowledge from 8.46 to 17.38 after the intervention. Proving it is highly effective to strengthen the maternal understanding about newborn care. Overall, the conclusion is the result indicates the digital educational intervention are effective and suitable for primigravida antenatal mothers without considering demographic diversity.[5]

CONCLUSION

This study shows that a digital education program can improve the knowledge of primigravida antenatal mothers about essential newborn care. It helped in reducing the lack of awareness seen among first time mothers. Although many mothers had some basic knowledge before the program, the digital teaching helped them to understand about the importance of keeping baby warm, breastfeeding, hygiene, and early newborn care. The teaching improved the maternal

knowledge and also helps mother to feel more confident and prepared to care and how to handle newborn in certain conditions. The study supports the use of digital learning as a part of antenatal education, especially in urban health settings.

Digital education can be effectively integrated with conventional teaching methods to enhance maternal learning. First-time mothers often rely on guidance and support, and digital educational approaches offer a flexible, accessible, and reliable source of information. Although the present study focused primarily on knowledge improvement, the findings suggest that digital educational programs can be expanded for use across different languages and adapted to various maternal health topics. Future research should explore the long-term retention of knowledge and evaluate whether such interventions lead to sustained improvements in actual newborn care practices.[6]

Conflict of Interest

There is no any conflict of interest.

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