Effectiveness of Video Assisted Teaching Module (VATM) on Knowledge Regarding the Selected Danger Signs in Young Infant among the Prim Mothers Hospital at Capital Hospital, Odisha

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ABSTRACT

Every life is precious, yet lack of knowledge about neonatal danger signs often delays care and increases infant mortality. Mothers, as primary caregivers, play a vital role in early recognition of illness. This pre-experimental one-group pre-test/post-test study evaluated the effectiveness of a Video Assisted Teaching Module (VATM) on knowledge regarding selected danger signs in young infants among primi mothers at Capital Hospital, Bhubaneswar, Odisha. Sixty primi mothers were selected through non-probability purposive sampling. Data were collected using a self-structured questionnaire on key danger signs such as poor feeding, pneumonia, jaundice, hypothermia, and diarrhea. Pre-test findings revealed that 73.3% of participants had poor knowledge and 26.7% had average knowledge. After the VATM intervention, 68.3% demonstrated good knowledge and 31.7% showed average knowledge, with no participant remaining in the poor category. A paired t-test yielded a value of 31.68 at the 0.05 significance level, indicating a highly significant improvement in knowledge. Chi-square analysis showed a significant association between pre-test knowledge and the variables of education status (χ^2=12.97, $p<0.05$) and previous knowledge (χ^2=8.12, $p<0.05$). The study concludes that VATM is an effective educational strategy to enhance mothers' recognition of neonatal danger signs, which is crucial for timely care and improved infant survival.

Keywords: Video Assisted Teaching Module (VATM), neonatal danger signs, primi mothers, infant health education, knowledge improvement, pre-experimental study.

INTRODUCTION

Bhutta ZA, (2021), stated that, for children born at a health facility circumstances around delivery are handled by well-trained health workers, while for the one born at home they may not. For all children, the interval between onset of illness and death can be in a matter of minutes or hours. Globally 4 million neonates die every year before they reach the age of one month and approximately 7000 new born deaths per day most of which occurred in the first week. **(1)**

According to IMNCI (2020), Prenatal and neonatal problems are now the leading causes of death in children under five years of age. The child may have been born at home or a health facility. **(2)**

According to WHO, (2019), early identification of new born danger signs by caregivers with prompt and

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appropriate referral serves as backbone of the programs aiming at reduction in neonatal mortality. [3]

Most of the neonatal deaths about 99% occur in low- and middle-income countries. Only five countries India, Nigeria, Pakistan, China and Democratic Republic of Congo, account for more than half of this death. Infants constitute 2.92 percent of the population in India. Four states, Uttar Pradesh, Madhya Pradesh, Bihar and Rajasthan along contribute to about 55% of the total neonatal death in India.[1] More than two-thirds of infant's deaths occurs before 1 month of age. There has been a consistent decline in IMR in India from among 80 per 1000 live births in 1981 to 40 in 2015, but the current IMR remains high on compared to developed countries [4]

Among the almost 3.9 million newborn deaths that occur worldwide, about 30% occur in India. Children are our future and utmost precious resources. After birth the health of the child depends upon the health care practice adopted by the family, especially by the mothers. Information about neonatal problems and newborn care practices will help in reducing mortality and morbidity during the neonatal period. [5]

A cross-sectional study was conducted in North West of Ethiopia on level of knowledge about neonatal danger signs and associated factors among 603 mothers. The results showed that mothers who had knowledge of three or more neonatal danger signs (good knowledge) were found to be 18.2% (95% CI 15.1, 21.3%), higher among antenatal care (AOR = 2.28, 95% CI 1.05, 4.95) and postnatal care attendant mothers (AOR = 2.08, 95% CI 1.22, 3.54). The study concluded that maternal knowledge about neonatal danger signs was low. Hence recommended for intervention modalities that focus on increasing level of parental education pinpointed. [6]

A survey study was conducted in Yenagoa Metropolis in Bayelsa State to assess 146 mother's ability to recognize newborn danger signs and actions taken by mothers in the event of neonatal illness. The results showed that mothers recognize danger signs of neonatal illness, fast breathing by 66 (45.2%) mothers, 82 (56.2%) mothers reported that their children experienced some of the neonatal danger signs, the commonest were difficult breathing and convulsions in 8 (9.8%) cases each, unconsciousness and excessive crying were thought to be caused by evil spirits and consultations sought with faith healers. The study concluded that mother's recognition of danger signs in the newborn was poor. Hence recommended need to intensify the practice of Integrated Management of Childhood Illnesses (IMNCI) to improve family's care seeking behaviors. [7]

A cross-sectional study was conducted in Babol, Iran (2020), regarding prevalence of neonatal hypothermia and associated risk factors among 522 full term neonates at baby friendly hospital. The results of the study showed that axillary temperature showed 41.2%, 47.5%, 46.4% and 37.2% were moderately hypothermia immediately after birth at 1 h, 2 h and 4 h respectively. The study concluded that a high prevalence of neonatal hypothermia was identified among healthy full-term newborns and recommended need to emphasize on the development of warm chain. [8]

A survey study was conducted in a poor urban community in Karachi, Pakistan (2018), to estimate the incidence of neonatal hyperbilirubinemia among 1690 newborns. The results of the study showed that 466 infants (27.6%) were found to have jaundice and overall detected rate of hyperbilirubinemia (bilirubin >5 mg/dl) among 1690 newborns was 39.7/1000 live births (95% CI 29.3–47.6). The study concluded that the incidence rate increased and recommended need for screening and appropriate management of neonatal jaundice in developing countries. [9]

A longitudinal study was conducted at Belgaum, Karnataka (2016), regarding the morbidity among 194 infants. The results showed that commonest morbidities infancy were respiratory tract infection 62.4%, diarrhea 42.8% and skin diseases 21.6%. The study concluded that incidence of disease in infancy shows poor health status and recommended the need to improve and plan health programmes in the communities. [10]

A multicenter study was conducted in Bangladesh, Bolivia, Ghana, India, Pakistan, and South Africa (2015), **on** clinical signs that predict severe illness in 9889 children under age 2 months. The result showed that symptoms predicted severe illness in the first week of life are history of difficulty feeding (OR 10·0, 95% CI, 6·9–14·5), history of convulsions (15·4,6·4– 37·2), lethargy (3·5,1·7–7·1), movement only when stimulated (6·9,3·0–15·5), respiratory rate of 60 breaths per minute or more (2·7, 1·9–3·8), grunting (2·9, 1·1–7·5), severe chest indrawing (8·9,4·0–20·1), temperature of 37·5°C or more (3·4,2·4–4·9) or below 35·5°C (9·2,4·6–18·6), prolonged

capillary refill (10·5,5·1–21·7), cyanosis (13·7,1·6–116·5), and stiff limbs (15·1,2·2–105·9). The study concluded that a single simple algorithm could be recommended for identifying severe illness in infants and further research is needed on screening newborn children for illness in the community during routine home visits. **(11)**

A cross-sectional study conducted in Chencha District, Southern Ethiopia (2019), to assess the level of knowledge on neonatal danger signs and its predictors among 630 mothers. In this study the results showed that 50.3% (95%CI:46.4%, 54.2%) of mothers had good level of knowledge who knows three or more neonatal danger signs and predicted that mothers who had knowledge about essential newborn care were 5.29 times more likely to had knowledge about neonatal danger signs with odds (AOR=5.29,95%CI:3.61, 7.78). This study concluded that mother's level of knowledge about neonatal danger signs were low and recommended to education by using mass media at community level. **(12)**

METHODOLOGY

Study Design

This study adopted a pre-experimental one-group pre-test post-test design.

Study Setting

Capital Hospital, Bhubaneswar, Odisha.

Population

All prime mothers with young infants in the selected setting.

Sampling Method

In this study convenient sampling technique is used.

Sample size

A total of 60 primi mothers were included in this study. The sample size was determined using Yamane's formula.

According to Yamene's formula

$n = N/ (1+ N e^2)$

Here n= Sample size, N = Population size i.e 347, e = Percentage of error i.e. 0.05

Inclusion and exclusion criteria

Inclusion criteria included women Prime mothers with young infants, mothers who could read, write, and understand Odia, those available and willing to participate during data collection. Mothers attending baby clinics, mothers who were critically ill were excluded.

Description of the tools

Data were collected using three tools:

Tool-1: Self-structured socio-demographic questionnaire (age, religion, education, occupation, family type, income, number of children, previous knowledge, and source of information).

Tool-2: Structured knowledge questionnaire (38 items) on neonatal danger signs (poor feeding, pneumonia,

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jaundice, hypothermia, diarrhea). Each correct response scored "1", incorrect "0". Scores categorized as poor (1–12), average (13–26), and good (27–38).

Tool validation

Content validity: Reviewed by 5 experts (1 medical professionalism, 4 nursing professionalism). Reliability tested using test-retest method; correlation coefficient = 0.86, indicating high reliability. Pre-testing (tryout) done in hospital for clarity, ambiguity, and timing.

Study variables

Independent variables: Video-Assisted Teaching Module (VATM).

Dependent variables: Knowledge level of prime mothers regarding neonatal danger signs

Data collection procedure

Pre-test administered using the structured questionnaire. VATM intervention on neonatal danger signs was delivered. Post-test conducted using the same questionnaire after intervention. Data collected using structured questionnaires.

Ethical considerations

Permissions were also secured from the medical superintendent, the head of the department, and relevant staff. Approved by Research Committee. Formal permission obtained from Superintendent, Capital Hospital. Informed consent taken from participants.

Statistical Analysis

SPSS version 21 was used for data analysis. Demographic information and baseline characteristics were summarized using descriptive statistics, including mean values, standard deviations, and frequency counts. The data will be collected and analyzed with descriptive and inferential statistical techniques. The demographic variables will be analyzed by using frequency and percentage. The frequency tables will be formulated for all significant information. Descriptive statistics (frequency, percentage, mean, SD) for demographic data and knowledge scores. Inferential statistics: paired 't' test to compare pre-test and post-test scores, Chi-square to test association with demographic variables.

Theoretical framework

The present study is based on General System Theory as proposed by Ludwig von Bertalanffy (1969), which views any phenomenon as an organized system with interrelated components of input, throughput (process), output, and feedback. This theory is appropriate for understanding how an educational intervention—here, a Video Assisted Teaching Module (VATM)—functions as a system to improve maternal knowledge.

Input →	Throughput →	Output → Feedback
Demographic data,	Administration of VATM	Improved post-test
Pre-test knowledge,	and mothers' internal	knowledge scores
Validated tools	cognitive processing	and understanding

RESULTS

Table-1: Distribution of subjects based on sociodemographic variables. N =60

The above table-1 revealed that Age of mothers, the majority of prim mothers 30(50.0%) were in the age group of ≤ 20yrs, 26(43.3%) were in the age group 21-30years, and 4(6.7%) were in the age group of ≥31years. Religion- The majority of prim mothers 48(80.0%) were Hindu, 7(11.7%) were Muslim, 4(6.6%) were Christian

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and1(1.7%) were in another category. Educational status - The majority of respondents 25(43.3%) were having secondary education, 18(28.4%) were having primary school education, 12(20%) were intermediate, 5(8.3%) were graduation and above. Occupation-The majority of respondents 49(81.7%) were house wives, 6(10.0%) were self-employees or daily labor, 3(5.0%) were private employees and 2(3.3%) govt. employed. Type of family- The majority of respondents 51(85.0%) were in nuclear family, 7(11.7%) were joint family and 2(3.3%) were extended family. Monthly income- The family income shows that majority of prim mothers 24(40.0%) of prim mothers belonged to income range of 27654- 46089,21(35.0%) of prim mothers recorded the range of 9232 - 27648, 10(16.7%) were ≤9226,and5(8.3%)recorded in the range 46095-68961.Number of children- The number of children ,shows that majority of respondents were39(65.0%) having only one and 17(28.3%)are having two and 4(6.7%)werehaving3 or more. Previous knowledge- The previous knowledge shows that majority of subjects 50(82%) were not exposed information and 10(18%) were exposed information. Source of information-The majority of mothers, 6(60%) were received information by family &friends, 3(30%) were got information by electronic media and 1(10%) was got from print media.

Table- 2: Distribution of prime mother of young infant according to knowledge on selected danger sign before and after VATM. N =60

Sl. No.	**Level of Knowledge**	**Before VATM**		**After VATM**	
		Pre test		**Post test**	
		f	**%**	**f**	**%**
1.	Poor knowledge	44	73.3	0	0.0
2.	Average Knowledge	16	26.7	19	31.7
3.	Good knowledge	0	0.0	41	68.3
4.	**Total**	60	100.0	60	100.0

The data presented in table-2 revealed that the pre-test out of 60 subjects' majority of them 44(73.3%) had poor knowledge, 16(26.7%) of them had average knowledge and no subject had good knowledge. In the post-test majority 41(68.3%) of the subjects had good knowledge, 19(31.7%) of the prim mothers had average knowledge and none of the subjects had poor knowledge.

Table- 3: Area wise distribution of mean, standard deviation, mean percentage of pre-test and post-test knowledge scores of prime mothers regarding selected neonatal danger signs N =60

SL. NO.	**AREA**	**PRE TEST**			**POST TEST**			**DIFFERENCE IN MEAN % (Y-X)**
		MEAN	**SD**	**MEAN % (X)**	**MEAN**	**SD**	**MEAN% (Y)**	
1.	Concept & definition	2.36	1.44	39.16	3.7	1.44	83.2	44.04
2.	Diarrhea	3.73	1.02	41.44	7.07	1.47	78.56	37.12
3.	Poor feeding	3.95	1.21	39.50	8.13	1.25	81.30	41.80
4.	Jaundice	4.50	1.51	40.91	9.78	1.18	88.91	48.00
5.	Hypothermia	3.28	1.26	32.80	8.42	1.03	84.20	51.40
6	Pneumonia	3.47	1.49	38.68	7.40	1.08	83.50	44.82

Area-wise analysis showed that before the intervention the highest mean knowledge score was for jaundice (4.50 ± 0.8; 36.2%), while the lowest was for general information on neonatal danger signs (2.36 ± 1.44; 39.16%). After the Video Assisted Teaching Module, the highest post-test mean was again for jaundice (9.78 ± 1.11; 48.0%) and the lowest for general information (3.7 ± 1.44; 83.2%). Overall mean knowledge improved from 15.47 ± 4.19 (38.68%) in the pre-test to 33.40 ± 4.08 (84.50%) in the post-test, reflecting a 45.85% increase and confirming the effectiveness of the video-assisted teaching module.

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Table- 4: Item wise comparison of pre-test and post-test knowledge scores for correct response on Concept about danger signs N =60

SL. NO	ITEM	PRE TEST		POST TEST		EFFECTIVENESS OF VATME=(Y-X) %
		Frequency	% (X)	Frequency	% (Y)	
1.	The danger signs of young infant are poor feeding.	30	60	45	90	30
2.	The most common danger signs among young infants are diarrhea.	16	32	44	88	56

The data presented in table-4 revealed that In the above table Item-wise comparison showed the highest post-test mean percentage (90%) for the item "danger sign is poor feeding" with 30% effectiveness, and the lowest post-test mean percentage (88%) for "most common danger sign is diarrhoea", which nevertheless showed the highest effectiveness (56%). These findings confirm that the video-assisted teaching module improved knowledge across all items on neonatal danger signs.

Table- 5: Item wise comparison of pre test and post test knowledge scores for correct response on diarrhea N= 60

SL. NO	ITEM	PRE TEST		POST TEST		EFFECTIVENESS OF VATM E=(Y-X)%
		Frequency	% (X)	Frequency	% (Y)	
1	Does the child have mucous, blood in the stools should be asked of the mother of every child with diarrhea to know the selected danger sign.	17	34	49	98	64
2	Diarrhea among young infant is passing of frequent loose stool.	19	38	46	92	54
3	The main causes for diarrhea among young infant is unhygienic bottle feeding.	5	10	40	80	70
4	The danger signs of diarrhea is dehydration.	10	20	41	82	62
5	The symptoms of children with diarrhea are classified as thirsty and skin pinch goes back slowly.	-	-	35	70	70
6	The symptoms of severe dehydration with diarrhea related to eyes is classified as sunken eyes and lethargic.	-	-	43	86	86
7	The management of diarrhea for young infant at home is frequent breast feeding.	-	-	46	92	92
8	The best drink for diarrhea with dehydration is ORS.	19	38	46	92	54
9	The best rule of home treatment for diarrhea is to give supplement and continuous feeding.	34	68	48	96	28
10	The zinc tablet be given by dissolving with small amount of breast milk.	5	10	40	80	70

Table-5 presents that there is Comparison of pre- and post-test scores on respiratory problems showed a 98% correct post-test response for the item "Ask if the child has mucus or blood in stools to detect danger signs" with 64% effectiveness. The lowest post-test score was 70% for "Severe dehydration signs include sunken eyes and lethargy" with 70% effectiveness, while the highest effectiveness (92%) was for "Diarrhoea is passing frequent

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loose stools". This confirms the video-assisted teaching module effectively improved knowledge on all respiratory-related items.

Table- 6: Item wise comparison of pre-test and post-test knowledge scores for correct response on Poor feeding. N= 60

SL. NO	ITEM	PRE TEST		POST TEST		Effectiveness Of Vatm E=(Y-X) %
		Frequency	% (X)	Frequency	% (Y)	
13.	Poor feeding in among you young infant is refused to feed.	50	100	50	100	0
14.	The cause of poor feeding is poor latching.	12	24	47	94	70
15.	The danger sign of poor feeding is vomiting and diarrhea.	5	10	46	92	82
16.	Poor feeding among young infant leads to malnutrition.	3	6	39	78	72
17.	If your baby is having poor feeding then you should consult with pediatrician.	5	10	42	84	74
18.	Normal weight for age is required for further assessment of poor feeding practices.	8	16	40	80	64
19.	A 3-month-old child should be exclusively breastfed statements is true.	3	6	44	88	82
20.	The best way to treat and prevent complication due to poor feeding among young infant is to give frequent breast feeding.	1	2	46	92	90

Item-wise comparison on poor feeding showed the highest post-test score of 100% for "Poor feeding is refusal to feed" (0% effectiveness) and the lowest of 78% for "Poor feeding leads to malnutrition" (72% effectiveness). The greatest effectiveness (90%) was for "Frequent breastfeeding prevents complications of poor feeding", confirming the video-assisted teaching module effectively improved knowledge in this area.

Table- 7: Comparison between difference of pre test and post test knowledge scores of the prime mothers regarding selected danger signs.N= 60

Sl. No	Aspects of knowledge	t-test value	LEVEL OF SIGNIFICANCE
1	Concept of danger signs of young infant	16.4	Highly significant
2	Diarrhea	21.91	Highly significant
3	Poor feeding	27.34	Highly significant
4	jaundice	26.89	Highly significant
5	Hypothermia	29.28	Highly significant
6	Pneumonia	27.56	Highly significant

Paired t-test revealed a highly significant difference between pre- and post-test area-wise knowledge scores ($p \leq 0.05$), leading to rejection of the null hypothesis. This confirms that the video-assisted teaching module was effective in improving postnatal mothers' knowledge of selected neonatal danger signs.

DISCUSSION

A descriptive study was conducted in Trivandrum, India (2013), to assess awareness regarding danger signs of neonatal illnesses among mothers of 70 infants. The results showed that 51 (72.9%) good knowledge, and 16

(22.9%) average knowledge, 3 (4.3%) had poor knowledge. The study concluded that mothers had good knowledge. [13]

The overall pre test mean score was 15.47±4.19 whereas post test mean score was 33.40±4.08 with mean difference 17.93. The overall 't' value calculated is 31.68. It is higher than tabulated value (1.67) with df= 59 at 5% level of significance. So null hypothesis is rejected. It is inferred that prime mothers have higher post test knowledge after implementing VATM which shows effectiveness of VATM. It is supported by following study.

A study was conducted at Udupi District, Karnataka (2011), to assess effectiveness of an information booklet on newborn danger signs among 100 antenatal mothers. The results of the study showed that mean post-test knowledge score - 18.83 was higher than the mean pre-test knowledge scores -10.13. The study concluded that information booklet on newborn danger signs was found to be effective. [14]

Implications Of The Study

VATM can be integrated into nursing curriculum for training students in neonatal danger signs. Nurses can use VATM as an educational tool to enhance awareness among mothers. Administrators should support training programs, workshops, and seminars to strengthen awareness of neonatal danger signs. Findings contribute evidence for using VATM in clinical and teaching practices.

Limitation:

Study limited to selected neonatal danger signs. Conducted in a single hospital (Capital Hospital, BBSR). Small sample size (60 prime mothers) limits generalizability.

CONCLUSION

The study concluded that VATM significantly improved the knowledge of primi mothers regarding neonatal danger signs. The marked increase in post-test knowledge scores confirmed its effectiveness as an educational strategy. Implementing VATM more widely may contribute to early recognition of neonatal illnesses and reduction of infant morbidity and mortality.

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Conflicts of interest

There are no conflicts of interest for the writers.

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Ethics Approval

Permissions were also secured from the medical superintendent, the head of the department, and relevant staff. Approved by Research Committee. Formal permission obtained from Superintendent, Capital Hospital. Informed consent taken from participants.

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