Effect of Nurse-led Programme on Knowledge Regarding Identification of Warning Signs in Low Birth Weight Babies among Post-natal Mothers in Selected Hospitals of Mangaluru

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Abstract

A healthy birth weight is extremely important for a newborn. It is estimated that 22 million infants are born yearly, out of which 16 percent are low birth weight (LBW) babies. In South Asia, India has the highest percentage of low birth babies. As per 2010-13 report, it was reported that the majority of the infants died before they completed 28 days of life and about 48.1 percent suffered from LBW and premature birth. Early detection of illness is an important step towards improving new-born survival. In this study to determine the effect of a nurse-led programme on the identification of warning signs in low birth weight babies among post-natal mothers, a pre-experimental research design was adopted with one group pre-test - post-test. Purposive sampling method was used for the selection of 50 post-natal mothers who delivered LBW babies. Among 50 mothers the mean pre-test knowledge score was 13.04 +1.97and post-test score was 17.30+ 2. To find the effectiveness of video teaching programme paired "t" test was used. The obtained "t" value was -32.68 which was less than -2.042 and the p-value was <0.001. There was a difference in mean pre-test and post-test knowledge score. In this study video teaching on the identification of warning signs in LBW babies was found to be effective to improve mother's knowledge. This knowledge helps them to identify the warning signs and immediately seek healthcare facilities to get accurate treatment and reduce the risk of illness.

In India, the normal birth weight of a new-born is 2.5 kg to 3.5 kg. Baby weight below 2.5 kg at birth is low birth weight (LBW) baby. LBW babies are more prone to get many health issues. So such babies need more care and affection from parents, especially from the mothers.

In India, about 8 million LBW babies are born each year, which cause 40 percent of the global burden. Most of the neonatal deaths occur in LBW babies. A higher rate of LBW babies is born at full term. About 80 percent of these babies weigh in a range of 2.0 - 2.4 kg, and approximately 3 percent weigh less than 1.5 kg. A community-based study revealed that simple and low-cost care rendered by community health workers can help LBW babies to survive in the home environment.

Health and survival of the child are also dependent upon the health status of the mother where she is considered to be the best primary caregiver along with awareness and skills. In view of her constant and continued contact with her child, she is the best person to identify the early evidence of illness and major developmental deviations from normal health status. Therefore it is mandatory for the health professionals to create awareness through health education programmes. Helping the mothers to utilise the available health care facilities in the nearby locality is also important.

Birth weight is extremely important for a healthy newborn. Of the 22 million infants born yearly, 16 percent are LBW babies. In terms of region, South Asia has the highest percentage (28%). In South Asia, India has the highest percentage of LBW babies. As per 2010-13 report, majority of infants died before they completed 28 days of life and about 48.1 percent were LBW and were premature birth.

Low birth babies develop illnesses more easily during the neonatal period. They may show illness which appears as warning signs or danger signs such as temperature instability, jaundice, cyanosis, breathing difficulty, refusal to feed, diarrhoea, vomiting, dehydration, skin infection, convulsion, lethargy and abdominal distension which can be easily identified by the mothers. This can be easily treated by early detection and preventing complications. To identify the warning signs at an earlier stage the mother should be knowledgeable.

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A mother should know the changes that take place in her baby which will help her to identify any changes at the earliest and seek help from the health professionals. One of the reasons for increased infant mortality rate is mother's ignorance about danger signs which can be detected early and the risk can be prevented by treating them on time.

Objectives

- To assess the knowledge of mothers on the identification of warning signs in LBW babies.
- To determine the effect of a nurse-led programme on the identification of warning signs in LBW babies among post-natal mothers
- To find the association between pre-test knowledge score and selected demographic variables among post-natal mothers.

Hypotheses

H_1: There will be a significant difference in the knowledge of post-natal mothers before and after nurse-led programme.

H_2: There will be a significant association between pre-test knowledge scores and selected demographic variables

Conceptual framework: The conceptual framework of the present study was developed by the investigator based on Karl Ludwig Von Bertalanffy general system model to find the effectiveness of video teaching programme on warning signs in low birth babies. The major aspects of the systems are: (A) Input (B) Throughput (C) Output (Fig 1).

Input is the basic attribute of the post-natal mothers and the pre-existing knowledge about warning signs and identification in low birth weight babies. Throughput is the video teaching programme to transform knowledge on identification of warning signs in LBW babies. Output refers to how video teaching programme has influenced the mother's knowledge which will be assessed by the same knowledge questionnaire, which may have a positive, negative or neutral effect.

Review of Literature

A cross-sectional descriptive study was conducted on knowledge of neonatal danger signs among 414 mothers attending the well-baby clinic in Nakuru Central District, Kenya, who were interviewed. The result showed that 57.2 percent of mothers were not educated by health care providers and also not able to identify the warning signs of the newborn. Majority of mothers (350) identified less than three neonatal danger signs. Hotness of the body (fever) was the commonly recognised danger sign by 310 (74.9%) post-natal mothers.

A study among 30 mothers on awareness of newborn danger signs with the help of planned teaching programme at CAIMS Hospital, Karimnagar showed that among 30 mothers, 56.6 percent had knowledge below average and improved to 70 percent after administering teaching programme.

A community survey of 765 recently delivered women was conducted in South West Uganda

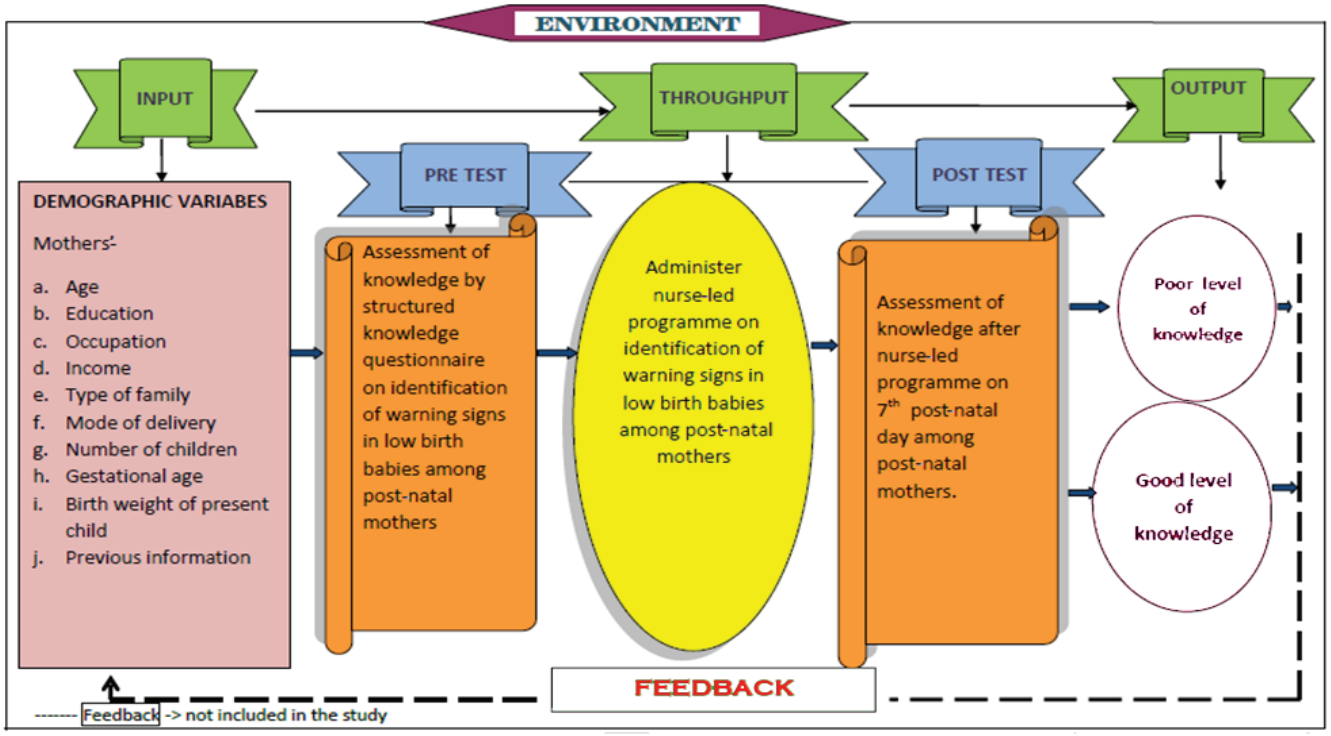

Fig 1. Conceptual framework based on Von Bertalanffy General System Model.

regarding newborn danger signs and the result showed that mothers had poor knowledge of danger signs. Of that, 58 percent identified one and 14.8 percent identified two danger signs. There was no association between knowledge and number of antenatal visits.

A systematic review of the proportion of caregivers that sought care for illness or suspected illness in neonates was done by analysing 784 studies described relevant data from community household survey, facility-based survey and intervention trials data. The result was that with a median of 59 percent, care seeking behaviour ranged from 10 - 100 percent. The limited studies done in urban settings found huge gaps between illness and care-seeking behaviour.

Material and Methods

The study design adopted was a pre-experimental research design with one group pre-test - post-test. Purposive sampling method was used for the selection of 50 post-natal mothers who delivered LBW babies. Knowledge of post-natal mothers regarding warning signs in LBW babies was the dependent variable. Video teaching programme on warning signs in LBW babies was the independent variable.

All post-natal mothers with LBW babies were included in the study. Mothers identified with post-natal complications and having LBW babies with congenital anomalies were excluded.

The study was conducted in two selected hospitals at Mangaluru. The researcher selected study settings in terms of availability of samples, the feasibility of conducting study and homogeneity of the characteristics of the study participants.

The existing knowledge of mothers regarding the identification of warning signs in LBW babies was assessed by a pre-test on the 2nd day of delivery with the help of structured knowledge questionnaire by interview schedule. Mothers were educated on how to identify the warning signs in LBW babies after discharge from the hospital with the help of a video teaching programme and post-test was conducted on the 7th post-natal day to find the effect of video teaching programme with the help of the same tool.

Instruments Used: Tool 1- Questionnaires to elicit baseline characteristics of the participants; Tool 2- Structured Questionnaire to assess knowledge on warning signs of LBW babies among mothers.

Data Collection Procedure

Permission from institutional ethics committee and the hospital authority was obtained. Post-natal mothers with LBW babies were selected as per inclusion criteria. The purpose of the study was explained to the post-natal mothers and written informed consent was provided. The participants were assured that the information provided by them will be kept confidential. The existing knowledge of mothers was assessed by pre-test with the help of structured knowledge questionnaire. Mothers were given education regarding how to identify the warning signs in LBW babies after discharge from the hospital, with the help of a video teaching programme on day 2 of delivery. Post-test knowledge level was assessed on post-natal day 7 with the help of structured knowledge questionnaire.

Results

Baseline characteristics of post-natal mothers

Most of the post-natal mothers (36%) belonged to the age group of 18-22 years (Table 1). Majority of them (44%) had completed PUC. Sixty percent of mothers were housewives. 70 percent mothers had monthly family income below Rs 15000 and 50 percent belonged to joint and nuclear family. Majority of the mothers (62%) had undergone normal delivery. Among the mothers, 70 percent delivered in below 38 weeks and 30 percent delivered above 38 weeks of their gestational age. Most of the mothers (52%) had only 1 child whereas (40%) had 2 children and 8 percent had more than 2 children. According to the birth weight status of mothers' present child, 76 percent were between 2.01-2.49 kg and 24 percent below 2.01 kg. None of the mothers received information regarding the identification of warning signs in LBW babies before.

Majority of the mothers (n=45, 90%) had poor knowledge and 5 (10%) had average knowledge about identification warning signs in LBW babies during pre-test, whereas in post-test 3 (6%) mothers had good level of knowledge, 38 (76%) of mothers had average knowledge and 9 (18%) had a poor level of knowledge (Table 2). It shows that video teaching enhanced knowledge in mothers about the identification of warning signs in low birth babies.

Among 50 mothers the mean pre-test knowledge score was 13.04 ±1.97 and post-test score was 17.30±2 (Table 3 and Fig 2). To find the effectiveness of video teaching programme paired "t" test was used. The obtained "t" value was -32.68 which is less than -2.042 (critical value of the degree of freedom 49 at 5% level of significance) and the p value was <0.001. Hence, there is a difference in mean pre-test and post-test knowledge score. Therefore, the research hypothesis (H1) is accepted at 5 percent level of significance. Thus, video teaching programme was effective in gaining knowledge among post-natal mothers.

Difference in level of knowledge before and after video teaching programme on the identification of

Table 1: Distribution of mothers according to their baseline characteristics (n=50)

Characteristics	f	%
Age of mothers (in years)		
18 - 22	18	36
23 - 27	16	32
28 - 32	13	26
33 - 37	3	6
Educational status		
Primary	3	6
Secondary	9	18
PUC	22	44
Graduate	14	28
PG	2	4
Occupation of mother		
Housewife	30	60
Private worker	18	36
Government employee	2	4
Monthly family income (Rs)		
Rs.10,001 – 15,000	15	30
<15000	35	70
Type of family		
Nuclear	25	50
Joint	25	50
Mode of delivery		
Normal	31	62
Caesarean	19	38
Total number of children		
One	26	52
Two	20	40
Three	3	6
>3	1	2
Gestational age (in weeks)		
36 - 37	13	26
37 - 38	22	44
38 - 39	8	16
39 - 40	7	14
Birth weight of present child (kg)		
0.5 - 1.0	3	6
1.01 - 1.5	3	6
1.5 - 1.2	6	12
2.01 - 2.49	38	76
Information received		
Yes	0	0
No	50	100

warning signs

• Among 50 mothers, 41 (82%) mothers had good knowledge about the weight of baby that is considered as LBW during pre-test and in post-test it was 48 (96%). During pre-test 35 (70%) mothers had good knowledge regarding jaundice and change of urine colour during jaundice 34 (68%). In post-test, it rose to 48 (96%) and 46 (92%) respectively.

Table 2: Level of knowledge about the identification of warning signs among post-natal mothers

Level	Pre-test		Post-test	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Poor (<15)	45	90	9	18
Average (16-20)	5	10	38	76
Good (21-25)	0	0	3	6

Table 3: Effectiveness of video teaching programme by using paired "t" test (n=50)

	Mean	SD	't' value	p value
Pre-test	13.04	1.97	-32.68	<0.001
Post-test	17.30	2.00		

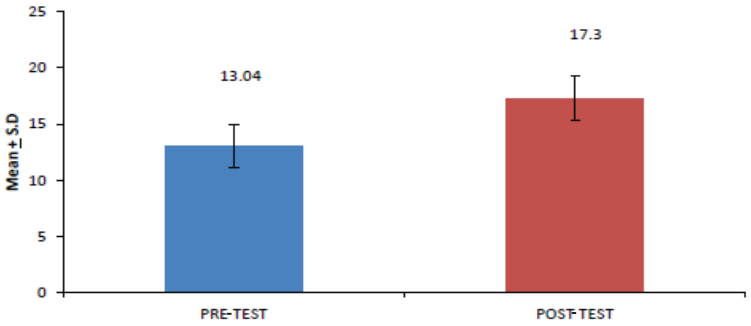

Fig 2: Effectiveness of video teaching programme on identification of warning signs in low birth weight babies.

• Mothers knowledge about diarrhoea (n=30, 60%), vomiting (n=26, 52%) and dehydration (n=25, 50%) were increased in post-test to 37 (74%), 31 (62%) and 37 (72%) respectively. Only a few mothers had knowledge about cyanosis (n=25, 50%), the reason for poor fed (n=21, 42%), hypothermia (n=24, 48%) and cause of convulsion (n=20, 40%) during pre-test but in post-test, there was an increase in knowledge of mothers. Mothers had very less knowledge about normal respiration rate 13 (26%), convulsion 19 (38%) and also regarding lethargy 21 (42%).

Association between baseline characteristics and pre-test knowledge score by using Likelihood ratio or chi-square test

The obtained p values were more than 0.05. So there is no association between demographic variables and pre-test knowledge score.

Discussion

Distribution of mothers according to baseline characteristics

Most of the post-natal mothers (36%) belonged to age group of 18-22 years. Among them, 50 mothers (62%) underwent normal delivery and 38 percent caesarean section. The study also reveals that 60 percent mothers were housewives, 36 percent private workers and 4 percent are government workers.

The present study is supported by a descriptive corelational survey to estimate the knowledge and practice among post-natal mothers regarding newborn care and result revealed that most of the mothers (80%) within 21-30 years of age, 50 percent of the mothers had vaginal delivery whereas same percentage had LSCS. Most of them (63.3%) belonged to joint family and 56.7 percent were housewives.

Distribution of level of knowledge of mothers regarding identification of warning signs in LBW babies

A supportive study was conducted to assess the knowledge and practice in newborn care among 100 post-natal mothers admitted in Tribuvan University Hospital Nepal and the result showed that 52 percent mothers had knowledge regarding diarrhoea, 47 percent had knowledge about vomiting and 26 percent knowledge regarding lethargy respectively.

Effectiveness of video teaching programme by using paired "t" test

Among 50 mothers the mean pre-test knowledge score was 13.04±1.97 and post-test score was 17.30±2 (Table 3). To find the effectiveness of video teaching programme paired "t" test was used. The obtained "t" value was -32.68 which is less than -2.042 (critical value of degree of freedom 49 at 5 percent level of significance) and the p value is <0.001.

This study was supported by a one conducted to assess the effect of structured teaching programme on knowledge regarding care of LBW babies among (NICU) staff nurses in 6 tertiary hospitals in Punjab where the results showed pre-test mean of 15.60± 5.98 whereas post-test mean score was 22.68±4.55 and the t value was 14.46 which was statistically significant at p<0.005 level of significance.

Association between baseline characteristics and pre-test knowledge score by using Likelihood ratio or chi-square test

The obtained p values were more than 0.05. So there is no association between demographic variables and pre-test knowledge score. Therefore, research hypothesis is rejected at 5 percent level of significance.

The present study findings were contradictory to the one conducted to assess the level of knowledge on neonatal danger signs among 630 mothers in southern Ethiopia where the result showed 50 percent of mothers having very good knowledge on danger signs and place of residences had significant association with knowledge level of mothers regarding danger signs.

Implications

Nursing Practice

- Nurse/ Midwife can be motivated to be with the post-natal mothers and provide comfortable practice to assure the safety and security of their babies.
- Video teaching helps to understand about the identification of warning signs in LBW babies and when to seek health care facilities.

Nursing Education

- The nurse educator can create an awareness among post-natal mothers on how to identify warning signs in LBW babies
- Nurse educator can educate the nursing students so that students when posted in NICU and post-natal wards can educate mothers regarding warning signs.

Nursing Administration

- Inservice education to clinical nurses and educators should be provided to enhance their knowledge and update different methods of identification of warning signs in LBW babies.
- Nurse administrator should encourage video-based teachings to conduct awareness programmes.
- Nurse administrator should take initiatives to develop protocols regarding warning signs in LBW babies.

Nursing Research

- The study findings help to motivate nurses to conduct research on identification of warning signs with the help of video teaching, instructional modules or any other methods.
- The study can also be conducted on a large population for generalisation.

Recommendations

- Study can be replicated on large samples.
- Similar study can be conducted to assess the knowledge regarding warning signs among antenatal mothers.
- A self instructional module can be prepared as guidance tool to enhance the knowledge among rural mothers.

Conclusion

Mothers are the natural guardians of a newborn who first observe any change in the baby's condition or behaviour. Due to ignorance, they may fail to observe any deviation of newborn health status which requires the need for education and support from healthcare personnel. This study enhanced the researcher's knowledge about how an AV aid can strengthen or improve the understanding of mothers' knowledge. So, health care providers need to create awareness with the help of an AV aid. This nurse-led programme on early identification of warning signs among post-natal mothers had shown a substantial gain in knowledge with video teaching. Such awareness among mothers will have an impact on reducing the infant mortality rate.

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