A Study to Assess the Effectiveness of Structured Teaching Program on Prevention of Neonatal Infection Among the Postnatal Mothers in Selected Hospital at Salem District

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Abstract

Neonatal infections are major cause of morbidity and mortality in children, particularly significant in developing countries like India. Patient attendance attributed to neonatal infections is high 20–40% of all out patients, 12–35% of in patients. Neonatal infections are infections of the neonate (newborn) acquired during prenatal development or in the first four weeks of life (neonatal period). Neonatal infections may be contracted by mother to child transmission, in the birth canal during childbirth, or contracted after birth. The title of the study is "Effectiveness of structured teaching Program on prevention of neonatal infections among the post-natal mothers in selected hospitals at Salem District, Tamilnadu". *Objectives: (*1) To assess the existing knowledge on prevention of neonatal infection among postnatal mothers. (2) To determine effectiveness of structured teaching Program on regarding prevention of neonatal infections among postnatal mothers. (3) To fine the association between post-test knowledge level regarding postnatal mothers of neonates with their selected demographic variables. *Methodology:* Quasi–experimental research design was used. Among 60 mothers using non-probability convenient sampling and data was collected using structured knowledge questionnaire regarding neonatal infection & its prevention among postnatal mothers. *Results:* In pre-test the mean score of general information regarding neonatal infections is 1.58, Eye infection was 2.18 Umbilical cord infection was 2.27, skin infection was 2.38 and oral thrush was 2.97. During the pre-test 95% of the samples had inadequate knowledge, 5% of samples had moderate knowledge and 0% of the samples had adequate knowledge. And during post-test 10% of postnatal mothers of neonates had moderately adequate knowledge and 86.67% of postnatal mothers of neonates had adequate knowledge and 3.33% of postnatal mothers of neonates had inadequate knowledge. During post-test knowledge mean score was 23.72 and in pre-test the mean was 11.38 and the mean difference was 12.34 and the obtained' *t*-test value = 45.018 which was significant ($p < 0.05$). Hence, concluded after structured teaching Program the level of knowledge is increased.

Keywords: Neonatal; Infection; Newborn; Child & Postnatal mother.

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Introduction

According to World Health Organization (WHO) estimates, there were about 5 million neonatal deaths in 1995, 98% of which occurred in less developed countries. The number of neonatal deaths decreased to 4 million in 2005, but 98% still occurred in less developed countries. Among them, infection was a main cause. Neonatal infection can

be acquired in utero, during the birth process, or soon after birth. Not all types of neonatal infections are apparent at birth but may manifest with signs of disease in weeks, months, or years. After birth, neonates are exposed to infectious agents in nurseries or community. Postnatal infections may be transmitted by direct contact with hospital personnel, mothers, family members, breast milk, or various in animate sources. In Korea, postnatal care for the mother and newborn baby was traditionally carried out at home by all family members including maternal and paternal grandmothers to prevent neonatal infections.[1-4]

Among neonatal deaths, three fourths occur during the first week of life, while 25–45% occur within the first 24 hours after birth. The majority occur at home. A strategy that promotes universal access to antenatal care, skilled birth attendance and early postnatal care has the potential to contribute to sustained reductions in neonatal mortality. To complement facility-based care, home-based strategies to promote optimal neonatal care practices have been proposed. Two related modalities for this purpose have been attempted in Programs and research trials in the last decade. The first involves home visits for the promotion of optimal neonatal care; the second includes home-based management of neonatal infections and other neonatal problems arising during birth, including neonatal resuscitation if required, plus the promotion of preventive interventions.[5-8]

Need for the study

The first week of life is the most crucial period in the life of an infant. In India 50–60% of all infant death occurs within the first month of life. The risk of death is greatest during the first 24–48 hrs after birth. Neonatal infection of the leading cause for neonatal mortality, now account up to two-thirds of all infant deaths and half of under five child mortality in developing countries. Current status of neonatal health services in India was disorganized. Recently 20 to 125 medical colleges in the country have special care neonatal units. A series of Services of neonatal centers conducted in the country revealed that, out of 28 units, only 50% had satisfactory resuscitation facilities while 33% had inadequate. the present figure of 40 per 100 live births in India is too high. Neonatal morbidity was as 56.8% and 37.3% amongst slum. Neonatal morbidity distribution among the non-slum areas in Luck now was respiratory illness 12%, eye-infections 4% and five neonates from slums were taken to quacks, out of which four had very

severe disease symptoms. Two of these neonates subsequently died within 4–6 weeks of life, one due to probable meningitis and the other due to neonatal sepsis.

Major causes of death in neonates were due to respiratory disorders, GI disturbances and Chickengunya. More than 1.25 million suspected cases have been reported from Karnataka State (7,52,245), Maharashtra (2,58,998) and also affected states were Andhra Pradesh, Madhya Pradesh, Tamil Nadu and Gujarat. Nearly 50% of all infant deaths occur during the neonatal period. Half of their deaths occur in the first seven days due to infections and prematurity which can be prevented by proper and timely care of the newborn. A study was conducted on post-natal and neonatal health problems and remedies used during puerperium in one urban community at Delhi. The sample was 100 neonates. The results revealed that 10% neonates had eye infections and 10% had GIT infection. A study was conducted on "Maternal and child health care in slums of Ludhiana City (*n* = 200) revealed that 96% of mother delivered at home and out of this 76% was without any medical assistance. Further analysis showed that the neonatal Infections were more prone to children who were born in unhygienic conditions.

Inadequate post-natal counseling to mothers on neonatal care including neonatal danger signs was observed. The potent risk factors for neonatal infection were the number of siblings and baby care during post-natal care. A recent study focused on the necessity of exclusive breast feeding which necessary for protection against infection during infancy. Separation of newborns from young siblings to prevent neonatal infection needs to be explained to mothers, and also regarding post-natal care, home remedies to decrease the incidence of neonatal infection. Standards of hygiene during post-natal period need to be established for the prevention of infections in neonates. Based on the review of literature and the personal experience of the investigator visits during in hospitals in urban areas, it was found that many neonates were affected with neonatal infections and there was less awareness and practice on prevention of neonatal infections among the post-natal mothers. Hence the investigator felt the need to assess the knowledge on prevention of neonatal infections among post-natal mothers of neonates, with a view to prepare structured teaching Program which will be useful for the mothers in prevention of neonatal infections.

Meterials and Methods

Study design: Quasi experimental design

Study area: OPD department Sisu Hospital, Salem Poly Clinic, Salem

Setting of the study: Salem poly clinic Salem Area

Sample size: The smple compraise 60

Sampling technique: Under non-prpbablity convinent Sampling

Sample: A total 60 Post-natal mothers in Sisu Hospital

Inclusion criteria:

- Mothers who are in early postnatal period.
- Mothers who are willing to participate in the study.
- Available during data collection period.
- Will be able to read and write Tamil and English.

Hypotheses:

H_1: There will be significant difference between pre-test and post-test knowledge scores of mothers regarding prevention of neonatal infection.

H_2: There will be significant association between pre-test and post-test knowledge scores of mothers regarding prevention of neonatal infection with their demographic variables.

Development of tool for data collection:

The final data collection instrument had two section which include, Section A: Demographic Variables, Section B: Structure knowledge questionnaire on prevention neonatal infection.

Reliability:

Reliability is concerned with how consistently an instrument measures the concept of interest reliability of the tool will be estimated by Karl Pearson's formula. The reliability value of the instrument 0.8 was found to be reliable.

Pilot study:

The pilot study was conducted on Sisu Hospital hospital, Salem district. After getting formal permission from the dean of the hospital. Six samples were taken for pilot study. The samples were selected by using non-probability purposive sampling method who fulfill the inclusion criteria. A structured knowledge questionnaire was used to collect the data from postnatal mothers of neonates during post study. The study was found to be feasible.

Results and Discussion

The study was conducted in Salem poly clinic and Sisu hospital at Salem district. A written permission was obtained from the chief medical officer. The researcher introduced herself to the postnatal mothers and developed good rapport with them. The purpose of the study was explained every samples. So as to get their full co-operation.

A Pre-test questionnaire on knowledge regarding prevention of neonatal infections was administered to the postnatal mothers of neonates and structured teaching Program was given to obtain knowledge regarding prevention of neonatal infections. Evaluation done by conducting post-test after the implementation of structered teaching Program (Tables 1–4 and Figs. 1–13).

Table 1: Frequency and percentage of description of postnatal mothers of neonates according to the selected demographic variables

Demographic Variables		Frequency	%
Age in years	18–22 years	22	36.67
	23–26 years	18	30.00
	27–31 years	16	26.67
	32 and above	04	6.67
Number of children	1	18	30.00
	2	28	46.67
	3 and above	14	23.33
Educational status of the mother	Non-formal education	16	26.67
	Primary education	32	53.33
	Higher secondary education	12	20.00
	Graduate and above	0	0.00

| Demographic Variables		Frequency	%
Type of family	Nuclear family	31	51.67
	Joint family	20	33.33
	Extended family	9	15.00
Religion	Hindu	43	71.67
	Muslim	13	21.67
	Christianity	4	6.67
	Others	0	0.00
Occupation of the mother	Coolie	26	43.33
	House wife	34	56.67
	Government employee	0	0.00
	Private employee	0	0.00
Family monthly income	₹3000–₹5000	21	35.00
	₹5001–₹6000	24	45.00
	₹6001–₹7000	11	18.33
	₹7001 and above	04	6.67
Source of health information	Health professionals	21	35.00
	Electronic media	24	45.00
	Print media	5	8.33
	Family members and friends	10	16.67
Birth order of the child	First	23	38.33
	Second	28	46.67
	Third	8	13.33
	Others	1	1.67
Type of delivery	Vaginal	60	100.00
	Cesarean section	0	0.00
Place of delivery	Government hospital	54	90.00
	Private hospital	6	10.00
	House delivery	0	0.00
Type of feed to baby	Breast feed	39	65.00
	Bottle feed	20	33.35
	Others	1	1.67
Birth weight of the new born (grams)	1500 grams	15	25.00
	2000 grams	18	30.00
	2500 grams	17	28.33
	2500 grams and above	10	16.67
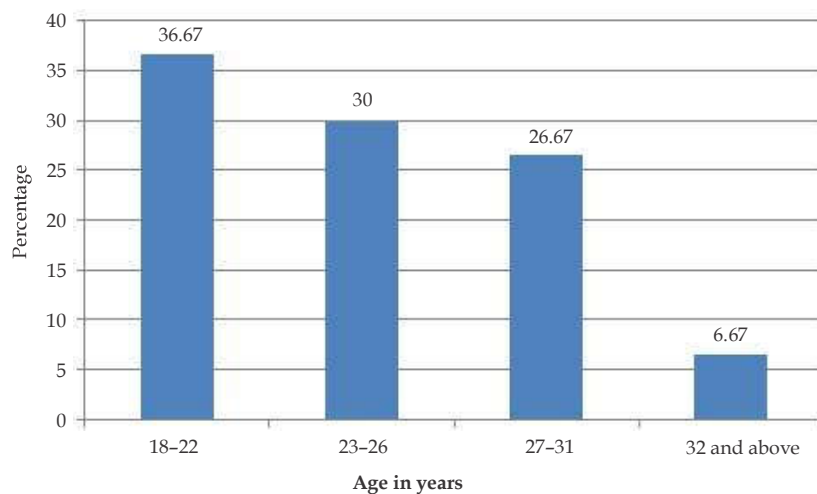
Fig. 1: Bar diagram showing percentage wise distribution of postnatal mothers of neonates according to the age.
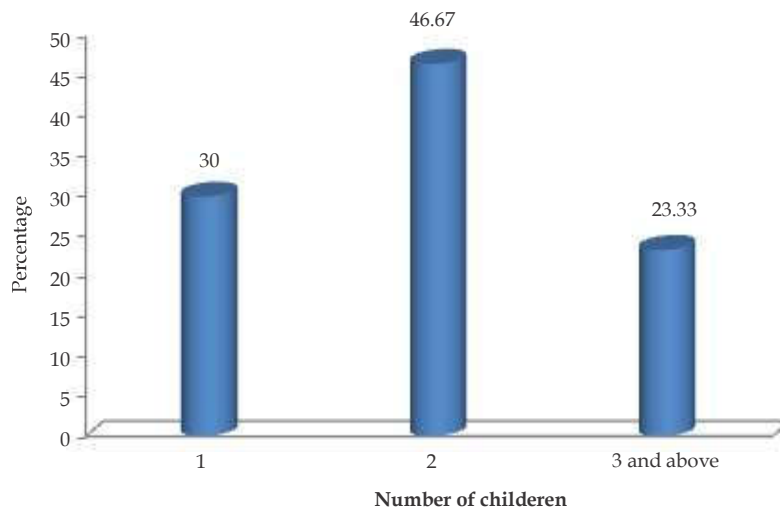
Fig. 2: Bar diagram showing percentage wise distribution of postnatal mother of neonates according to the number of children.
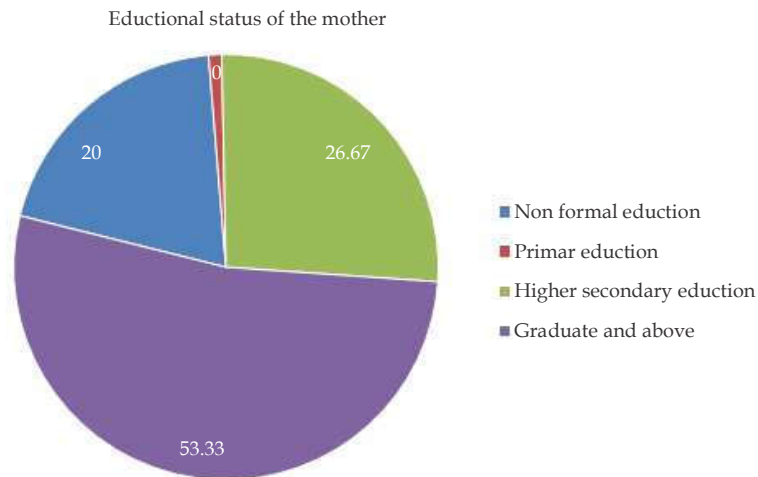

Fig. 3: Pie diagram showing percentage wise distribution of postnatal mothers of neonates according to the educational status.
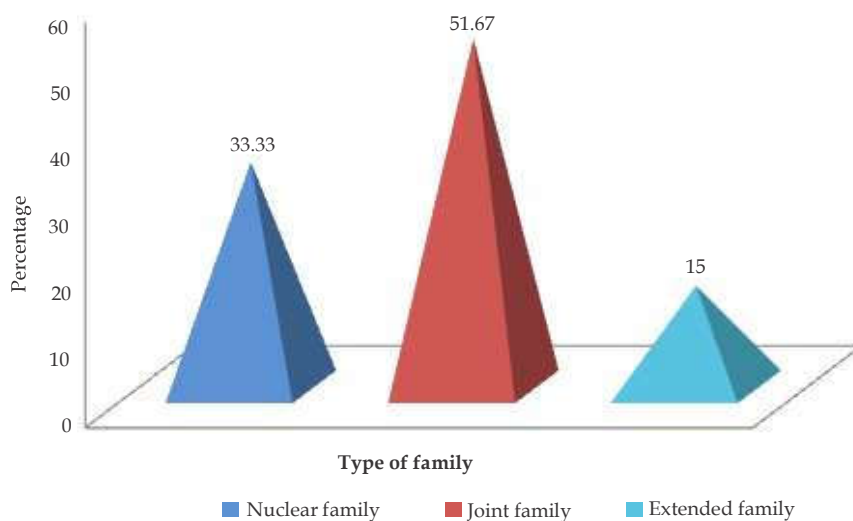

Fig. 4: Cone diagram showing percentage wise distribution of postnatal mothers of neonates according to the educational status.
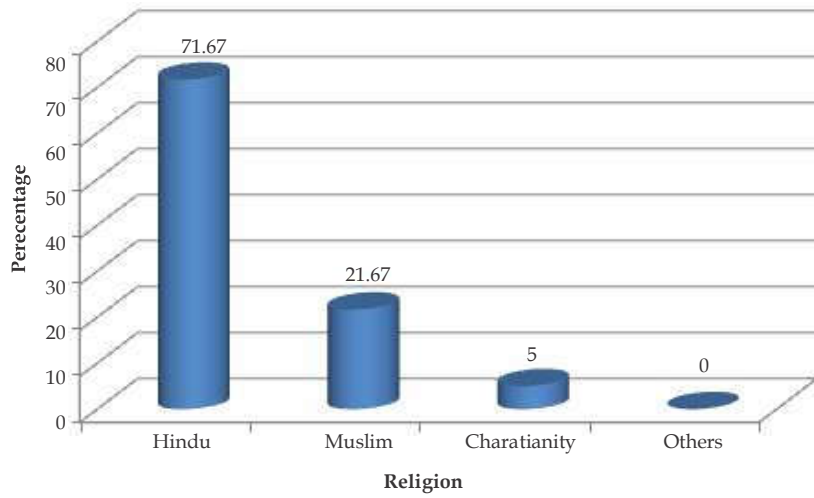
Fig. 5: Bar diagram showing percentage wise distribution of postnatal mothers of neonates according to the religion.
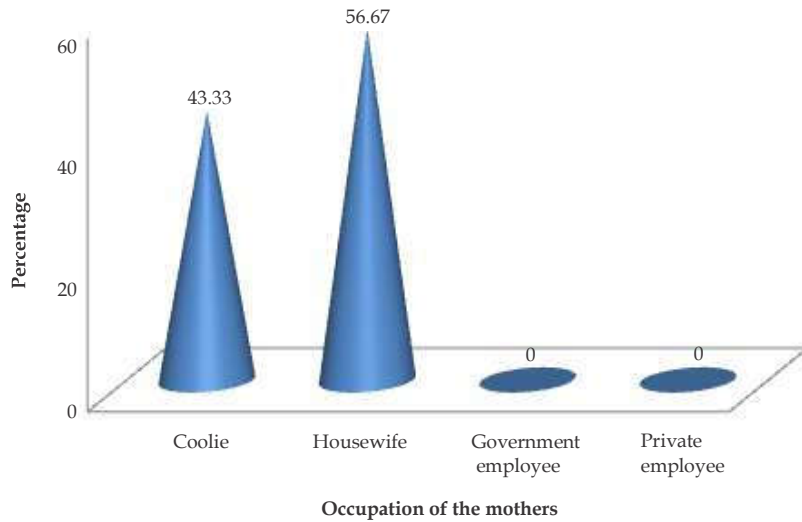

Fig. 6: Cone diagram percentage wise distribution of postnatal mothers of neonates according to the occupation of the mother.
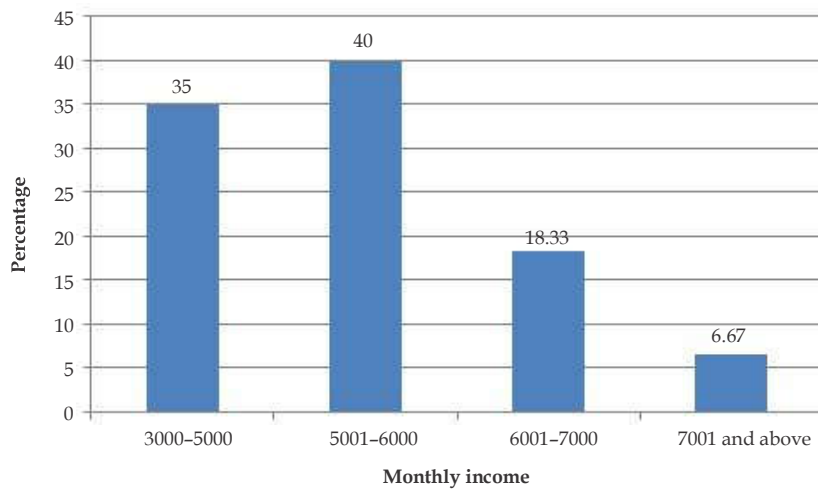

Fig. 7: Bar diagram showing percentage wise distribution of postnatal mothers of neonates according to the monthly income.
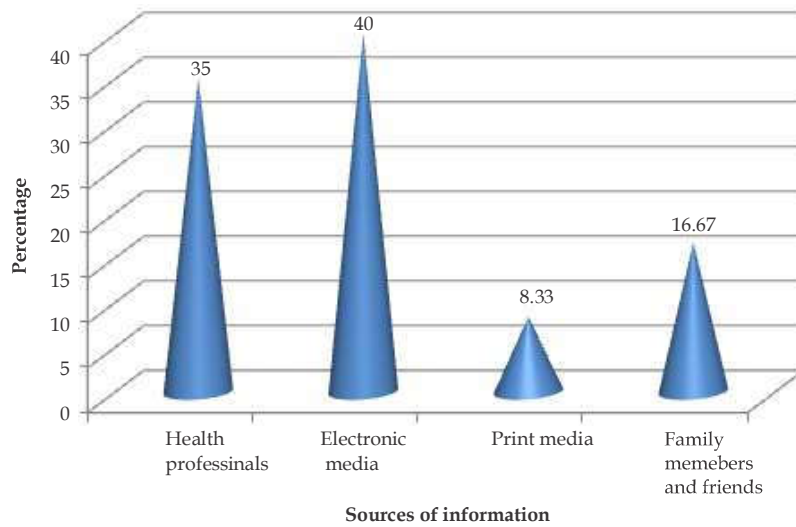
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Fig. 8: Cone diagram showing percentage wise distribution of postnatal mothers of neonates according to the source of information.
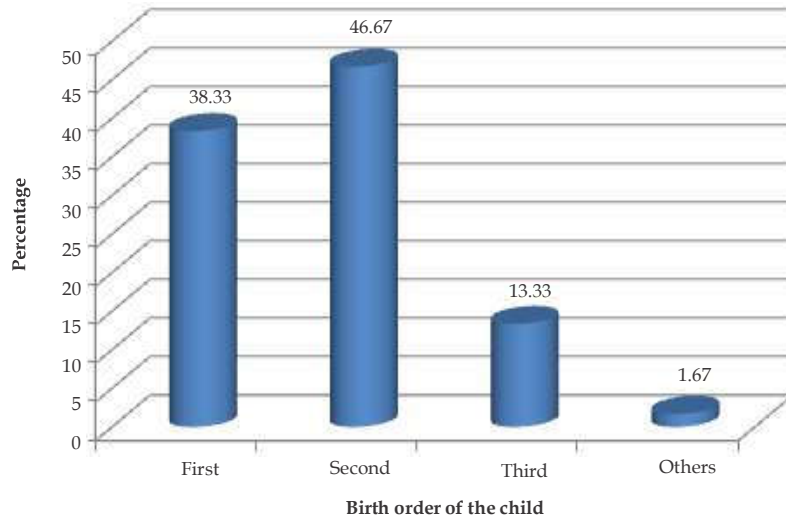

Fig. 9: Bar diagram showing percentage wise distribution of postnatal mothers of neonates according to the birth order.

Fig. 10: Bar diagram showing percentage wise distribution of postnatal mothers of neonates according to the type of delivery.

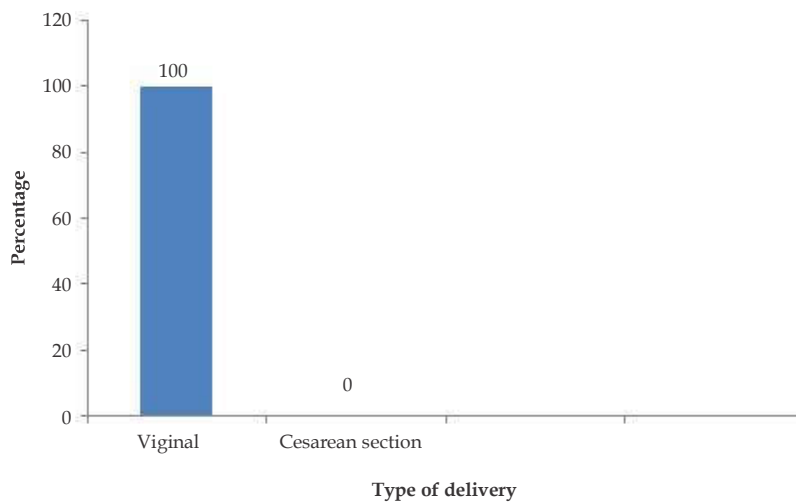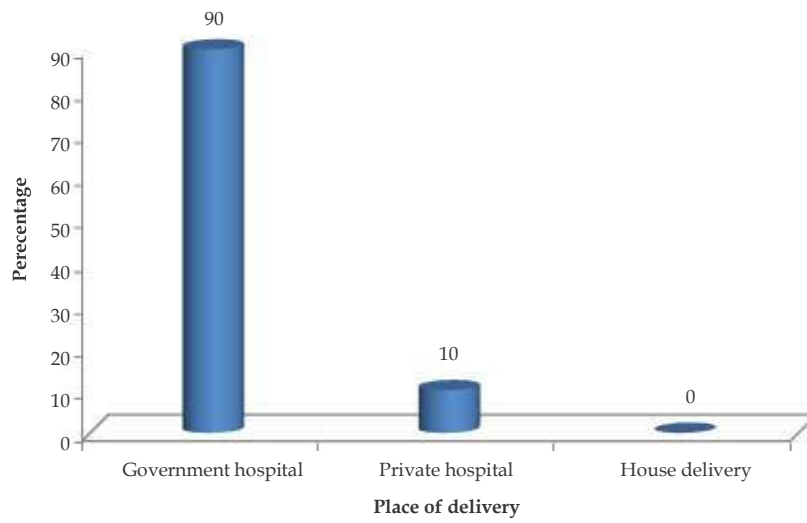**Fig. 11:** Bar diagram showing percentage wise distribution of postnatal mothers of neonates according to the place of delivery.
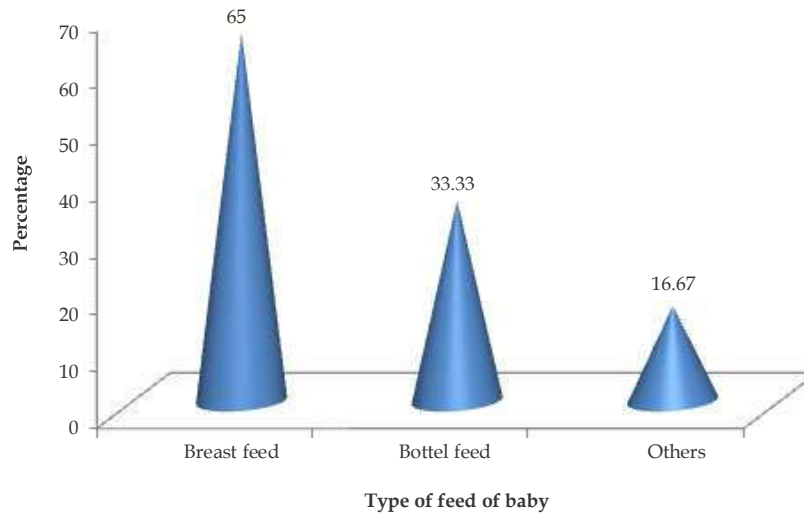

Fig. 12: Cone diagram showing percentage wise distribution of postnatal mothers of neonates according to the type of feed to baby.
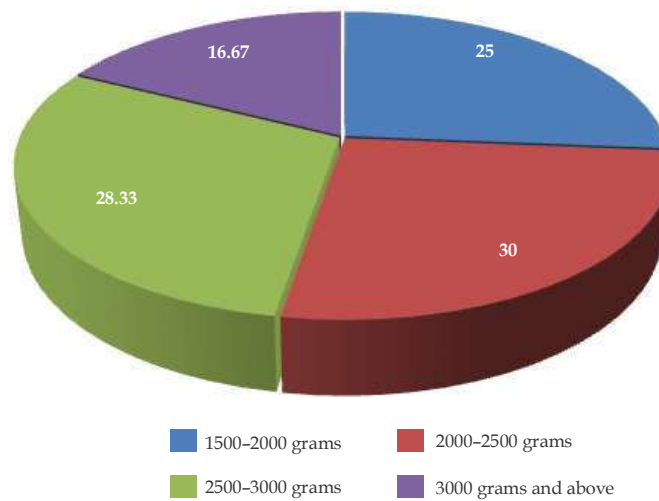

Fig. 13: Pie diagram showing percentage wise distribution of postnatal mothers of neonates according to the Birth weight of newborn.

Table 2: Area wise distribution of mean, SD, and mean percentage of pre-test knowledge scores on neonatal infections among postnatal mothers

Area	Max score	Mean	SD	Mean %
General information regarding neonatal infections	5	1.58	1.01	31.67
Eye infection of neonate	6	2. 18	0.83	36.39
Umbilical cord infection of neonate	6	2.27	0.63	37.78
Skin infection of neonate	6	2.38	0.88	39.72
Oral thrush of neonate	7	2.97	0.74	42.38

Table 3: Area wise distribution of mean, SD, and mean percentage of post-test knowledge scores on neonatal infections among postnatal mothers

Area	Max score	Mean	SD	Mean %
General information regarding neonatal infections	5	3.97	0.94	79.33
Eye infection of neonate	6	4.88	0.69	81.39
Umbilical cord infection of neonate	6	4.70	0.62	78.33
Skin infection of neonate	6	5.00	0.64	83.33
Oral thrush of neonate	7	5. 17	0.81	73.81

Table 4: Level of knowledge in pre-test and post-test regarding neonatal infections among postnatal mothers

Level of knowledge	Pre-test		Post-test	
	F	%	F	%
Adequate (>76%)	0	0.00	52	86.67
Moderate (51–75%)	3	5	6	10
Inadequate (<50%)	57	95	2	3.33

Table 5: Comparison of mean, SD, and mean percentage of pre-test and post-test knowledge scores on neonatal infections among postnatal mothers of neonates

Area	Max score	Pre-test scores			Post-test score			Effectiveness (%)	t-value
		Mean	SD	Mean %	Mean	SD	Mean %		
General information regarding neonatal infections	5	1.58	1.01	31.67	3.97	0.94	79.33	47.66	15.86
Eye infection of neonate	6	2. 18	0.83	36.39	4.88	0.69	81.39	45.00	16.87
Umbilical cord infection of neonate	6	2.27	0.63	37.78	4.70	0.62	78.33	40.55	22.09
Skin infection of neonate	6	2.38	0.88	39.72	5.00	0.64	83.33	43.6	20.15
Oral thrush of neonate	7	2.97	0.74	42.38	5. 17	0.81	73.81	31.43	15.17

The table 5 shows that pre-test knowledge score of General information regarding neonatal infections is 1.58 and standard deviation is 1.01 and in post-test the mean score is 3.97 and standard deviation is 0.94 with the effectiveness of 47.66% and paired t-value = 15.86 and it was statistically significant. The knowledge on eye infection was 2.18 and standard deviation is 0.83 in pretest and in post-test the mean was 4.70 and standard deviation is 0.62 with the effectiveness of 45% and paired t-value = 16.87 and it was statistically significant. The knowledge on Umbilical cord infection was 2.27and standard deviation is 0.62 in pre-test and in post-test the mean was 4.88 and standard deviation is 0.69 with the effectiveness of 40.55% and paired t-value = 22.09 and it was statistically significant. The knowledge on skin infection the mean was 2.38 and standard deviation is 0.88 in pre-test and in post-test the mean was 5.00 and standard deviation is 0.64 with the effectiveness of 43.6% and paired t-value = 20. 15 and it was statistically significant. The knowledge on oral thrush, the mean was 2.97 and standard deviation is 0.74 in pre-test and in post-test the mean was 5.17 and standard deviation is 0.81 with the effectiveness of 31.43% and paired t-value = 15.17 and it was statistically significant.

Table 6: Comparison overall of mean scores between pre-test and post-test knowledge on neonatal infections among the postnatal mothwers of neonates

Components	Observation	Mean	SD	Mean difference	t-value	Significance
Prevention of Neonatal Infection	Pre-test	11.38	1.44	12.34	45.018	$p < 0.05$ Highly significant
	Post-test	23.72	2.06			

The Table 6 illustrate that post-test knowledge mean score was 23.72. Thus the difference in level of knowledge was confirmed by obtaining by period t-value = 45.018 which was significant ($p < 0.05$).

Table 7: Association between post-test knowledge scores regarding prevention of neonatal infections with their selected demographic variables

Demographic Variables		Chi-square value	D.f	Table value	Level of significnce
Age in years	18–22	14.973	6	2.447	S
	23–26				
	27–31				
	32 and above				
Number of children	1				
	2	5.098	4	2.776	NS
	3 and above				
Educational status of the mother	Non-formal education				
	Primary education	12.644	6	2.447	NS
	Higher secondary education				
	Graduate and above				
Type of family	Nuclear family				
	Joint family	6.159	4	2.776	NS
	Extended family				
Religion	Hindu				
	Muslim	2.545	6	2.447	NS
	Christianity				
	Others				
Occupation of the mother	Coolie				
	House wife	2.909	6	2.447	NS
	Government employee				
	Private employee				
Family monthly income	₹3000–₹5000				
	₹5001–₹6000	1.0380	6	2.447	NS
	₹6001–₹7000				
	₹7001 and above				
Source of health information	Health professionals				
	Electronic media	13.897	6	2.447	NS
	Print media				
	Family and friends				
Birth order of the child	First				
	Second	13.897	6	2.447	NS
	Third				
	Others				
Type of delivery	Vaginal				
	Cesarean section	0.318	2	4.303	NS
Place of delivery	Government hospital				
	Private hospital	0.527	4	2.776	NS
	House delivery				
Type of feed to baby	Breast feed				
	Bottle feed	10.725	4	2.776	NS
	Others				
Birth weight of the new born (grams)	1500 grams				
	2000 grams	3.181	6	2.477	NS
	2500 grams				
	2500 grams and above				

The data presented in Table 7 indicated that there is a significant association between post-test knowledge scores of mothers of neonates on prevention of neonatal infections with selected demographic variables like mothers age, educational status of the mother, source of health information the type of feed to the baby at ($p > 0.05$). Hence the null hypothesis is rejected. Where as there is no significant association between posttest knowledge scores of mothers of neonates, with over variables like number of children, type of family, religion, occupatin of the mothers, family income per month, birth order of the child, type of delivery, place of delivery, birth weight of the new-born. Hence the null hypothesis is accepted.

During post-test knowledge mean score was 23.72 and in pre-test the mean was 11.38 and the mean difference was 12.34 and the obtained t-test value = 45.018 which was significant ($p < 0.05$).

Hypothesis (H$_1$)

The difference between the overall pre-test and post-test mean revealed that there was significant increase in knowledge regarding prevention of neonatal infections after structured teaching Program. First hypothesis was accepted.

The third objective was "to find the association between post-test knowledge level regarding prevention of neonatal infection among the postnatal mothers of neonates with their selected demographic variables." There was a significant association between the post-test knowledge of post-natal mothers of neonates with the demographic variables like age, family monthly income and type of feed to baby. Hence second hypothesis was accepted.

Summary

In pre-test the mean score of General information regarding neonatal infections is 1.58, Eye infection was 2.18 Umbilical cord infection was 2.27, skin infection was 2.38 and oral thrush was 2.97.

During the pre-test 95% of the samples had inadequate knowledge, 5% of samples had moderate knowledge and 0% of the samples had adequate knowledge. And during post-test 10% of postnatal mothers of neonates had moderately adequate knowledge and 86.67% of post-natal mothers of neonates had adequate knowledge and 3.33% of post-natal mothers of neonates had inadequate knowledge.

During post-test knowledge mean score was 23.72 and in pre-test the mean was 11.38 and the mean difference was 12.34 and the obtained t-test value = 45.018 which was significant ($p < 0.05$).

There was a significant association between the post-test knowledge of postnatal mothers of neonates with the demographic variables like age, family monthly income and type of feed to baby. Hence second hypothesis was accepted.

Conclusion

The study supports the need of pediatric nurse to conduct awareness regarding prevention of neonatal infections. The study has proved that the postnatal mothers of neonates had remarkable increase in knowledge regarding prevention of neonatal infections after the administration of structured teaching Program.

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