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Effectiveness of structured teaching programme on knowledge regarding usage of embrace for prevention and management of hypothermia among female care givers of preterm and low birth weight infants admitted in selected hospitals at Vijayapur

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Abstract

Background: Neonatal hypothermia after birth is worldwide issue across all climate and prolong exposure can lead to harm and in severe cases, death. Lack of thermal protection is one of the major challenges faced by developing nations for newborn survival. In India, the prevalence of hypothermia varies widely but recent estimates normal newborn's in community setting are around 31% and about 32% in hospital settings, but these included mostly normal weight newborns. Almost 2.8 million neonatal deaths occurred in the year 2013 globally, of which 73% deaths occurred during first seven days of life. In areas where there fewer health care providers and even lesser recourses a simple technique to prevent and manage hypothermia is required. Embrace warmer is a non- profit organization providing low- cost incubators to prevent neonatal deaths in rural areas in developing countries.

Aims and objectives: The study aims at assessing the effect of STP on knowledge regarding usage of embrace for prevention and management of hypothermia among female care givers of preterm and low birth weight infants admitted in selected hospitals at Vijayapur

Materials and Methods: A pre experimental one group pre and post-test research design was used for the study. The knowledge level of the subjects were determined by using a self-structured knowledge questionnaire following which a Structured teaching programme was administered on the same day. A post test was conducted to determine the knowledge level of the subjects on the 7th day by using the same questionnaire. Purposive sampling technique was used to select the samples. Paired 't' test was used to find out the significant difference between pretest and post test.

Results: In this study demographic variables shows that 66% of respondents had the Secondary level of education, 60% of respondents belong to Urban Area, and 40% respondents were house wives, 50% respondents had relationship of caregiver to the baby is Mothers. The mean pre-test knowledge score of samples was 13.48 and standard deviation was 2.32 and mean post-test knowledge score of the respondents was 20.01 and SD was 1.47 and 't' test value 22.01 with 49 degree of freedom 1.678. This shows that knowledge of respondents regarding usage of embrace for prevention and management of hypothermia had increased after the administration of structured teaching programme.

Conclusion: The findings of the study support the effectiveness of structured teaching in increasing the knowledge regarding usage of Embrace for prevention and management of hypothermia among pre term and low birth weight infants.

Keywords: Knowledge, embrace, hypothermia, structured teaching programme, female caregivers, low birth weight, preterm infants

1. Introduction

Neonatal hypothermia after birth is a worldwide issue across all climates and prolong exposure can lead to harm and in severe cases leads to death [1]. Neonatal hypothermia is the leading cause of death in premature babies. Keeping a baby warm can avert this and help a premature baby gain weight (weight gain being an indicator of improving health in premature babies) [2].

Newborn losses heat by evaporation particularly soon after birth (due to evaporation of amniotic fluid from skin surface), conduction (by coming in contact with cold objects-cloth, tray etc.), convection (by air currents in which cold air replaces warm air around baby-open

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windows, fans) and radiation (to colder solid objects in vicinity-walls). The process of heat gain is by conduction, convection and radiation in addition to non-shivering thermogenesis [2].

Every year globally, 20million premature and low birth weight babies are born: Four million of them die and many of them survive and grow up to have low IQ, diabetes and heart diseases. 1.2 millions Of these deaths occur in India alone. Some of these health problems could be avoided by providing these babies with warmth. To reduce mortality, clinicians often supplement the infant's innate heat production with an external supply of heat such as an incubator, a radiant warmer, a hot water bottle or a warming blanket. By maintaining a stable thermal environment, the infant is given an optimal change of physical development, thus providing favorable chance of survival [1].

Lack of thermal protection is one of the major challenges faced by developing nations for newborn survival. In India, the prevalence of hypothermia varies widely but recent estimates normal newborns in community setting are around 31% and about 32% in hospital settings, but these included mostly normal weight newborns. Almost 2.8 million neonatal deaths occurred in the year 2013 globally, of which 73% deaths occurred during first seven days of life. In areas where there fewer health care providers and even lesser recourses a simple technique to prevent and manage hypothermia is required [3].

Embrace warmer is a non- profit organization providing low- cost incubators to prevent neonatal deaths in rural areas in developing countries [4].

Embrace aims to provide side-by-side education to individuals and to provide the life-saving technology of an Embrace warmer to low birth weight and premature infants worldwide. Embrace is also poised to launch a number of new partnerships, and to roll out new educational curricula and new iterations on the infant warmer device [5].

The embrace warmer is like a tiny sleeping bag with a removable warm pack that is heated before insertion it cost $200, less than 1% of the cost of a standard incubators. It replaces the use of hot water bottles that are difficult to regulate in temperature and can burn the babies. The rare incubator is much more expensive, consumes more power and requires constant electricity; the embrace warmer requires the electricity for 30min every four hours to reheat its warm pack [6].

Embrace provides culturally and linguistically appropriate, side-by-side training to mothers, families and health care workers at each of Embrace training program sites. Embrace team members focus on raising awareness of the devastating impact of hypothermia; providing hands-on training on the infant warmer as well as Kangaroo Mother Care; and addressing the root causes of low birth weight and other critical maternal and child health issues [4].

The embrace warmer is inexpensive less than 1% as compared to the cost of standard incubator.

- Durable can be re-used up to 50 times
- Portable can be used while the baby is held in the mother's arms or during transport
- Hygienic easily cleaned using soap and water.
- Safe simple and intuitive to use, validated through routine safety testing and extensive clinical trials.
- Effective incorporates an innovative phase change material to rapidly stabilise the temperature of an infant suffering from hypothermia [7].

Embrace team members believe the key challenge; Embrace should helpful to caregivers and staff members.
These include:
1. Intuitive and easy to use modified product.
2. Ensuring mothers and staff feel safe and successful in the practice.
3. Easy communication methods and tools that the staff can use to train mothers
4. Ways in which mothers can train other mothers in their hospital ward or village community [8].

Statement of problem: Effectiveness Of Structured Teaching Programme On Knowledge Regarding Usage Of Embrace For Prevention And Management Of Hypothermia Among Female Care Givers Of Preterm And Low Birth Weight Infants Admitted In Selected Hospitals At Vijayapur

Objectives of the study
1. To assess the pre-test knowledge regarding usage of embrace for prevention and management of hypothermia among female care givers of preterm and low birth weight infants admitted in selected hospitals at Vijayapur."
2. To evaluate the effectiveness of structured teaching programme on knowledge regarding usage of embrace for prevention and management of hypothermia among female care givers of preterm and low birth weight infants admitted in selected hospitals at Vijayapur".
3. To determine the association between pre-test knowledge score regarding usage of embrace for prevention and management of hypothermia among female care givers of preterm and low birth weight infants admitted in selected hospitals at Vijayapur with their selected demographical variables.

Hypotheses
The hypotheses will be tested at 0.05 level of significance.
H_1: There will be significant difference between post test knowledge scores and pretest knowledge scores regarding usage of embrace for prevention and management of hypothermia in preterm and low birth weight infants.
H_2: There will be significant association between pre-test knowledge score with their selected demographic variables

2. Material and methods
Source of data: In this study the data will be collected from female caregivers of preterm and low birth weight babies.

Research design: Pre experimental one group pre-test and post-test design was selected to carry out the present study.

Setting of the study: This study has been conducted at selected Hospitals of Vijayapur city Karnataka.

Population: Population includes female caregivers of preterm and low birth weight babies.

Sample: In this study, female caregivers of preterm and low birth weight infants who fulfilled the sampling criteria were selected as sample.

Sampling method: In this study purposive sampling technique was used

Sample size: The sample size of this study is 50 female caregivers of preterm and low birth weight infants at selected hospitals of Vijayapur.

Sampling Criteria
Inclusion criteria
- Care givers who are willing to participate in the study.
- Care givers who are present at the time of study.

Exclusion criteria
- Mothers of full term infants.

Method of Data Collection
- Structured knowledge questionnaire was used to assess the knowledge regarding Usage of Embrace for prevention and management of hypothermia.
- Demographic data was used to collect information of female care givers.
- Structured teaching programme was prepared to enhance the knowledge of female caregivers.

3. Results
Section 1: Analysis of the Demographic Variables of the Respondents

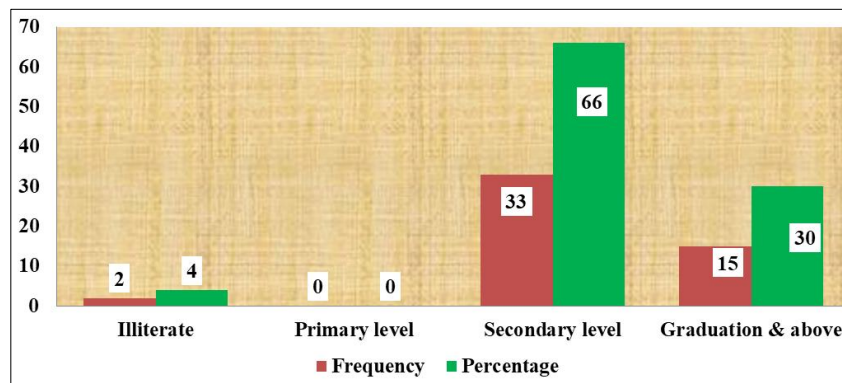**Fig 1:** Column Bar Diagram Shows Distribution of Female Caregivers According Education status
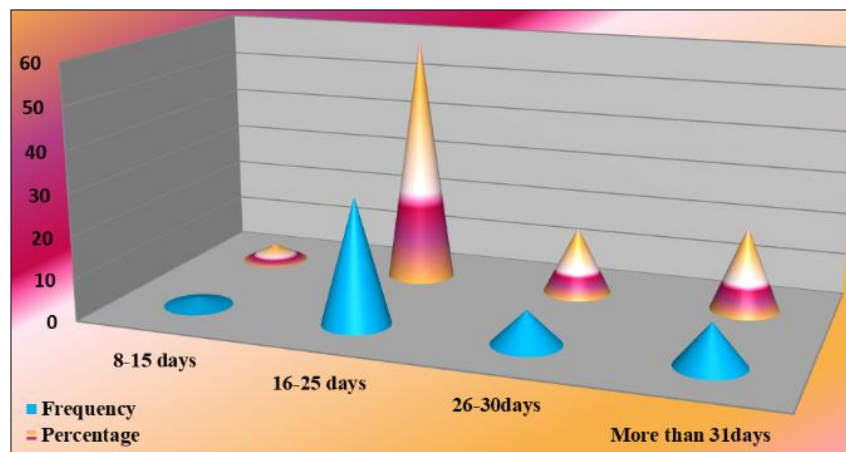

Fig 2: Cone bar diagram shows distribution of female caregivers according to number of days staying in hospital
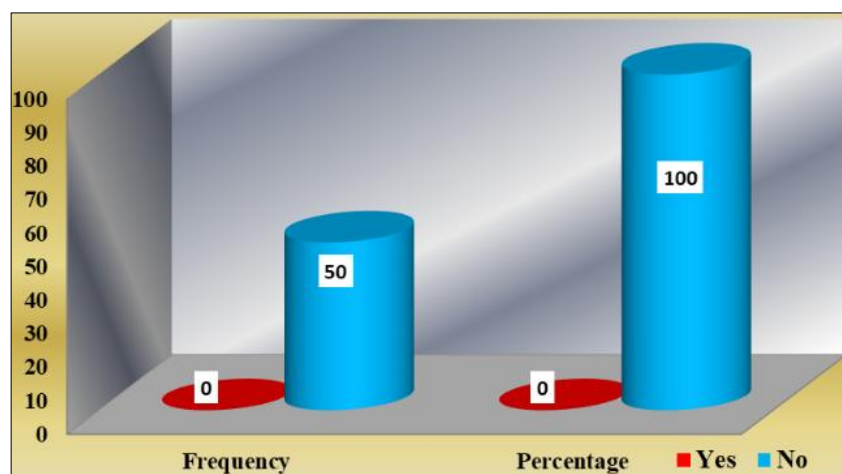

Fig 3: Cylindrical Bar Diagram Shows Distribution Of Female Caregivers According To Information Regarding Embrace.

Section 2: Analysis of Female Caregivers Existing Pre-Test Knowledge Regarding Usage of Embrace

Table 1: Pre-test level of knowledge of respondents, N= 50

S. No	Level of knowledge	Scores	f	%
1	Poor	0-8	3	6
2	Average	9-16	39	78
3	Good	17-24	8	16
4	Excellent	25-32	0	0
		Total	50	100

Table 2: Represents the mean, standard deviation and mean% of pre-test area wise scores of the respondents.

S. No	Area wise	No. of items	Mean	SD	Mean %
1	Introduction	2	0.7	0.183	35
2	Meaning of preterm, low birth weight infant, hyperthermia, hypothermia	4	1.96	0.288	49
3	Definition of Embrace infant warmer.	1	0.62	0.0529	62
4	Relationship between hypothermia and low birth weight babies	3	0.84	0.304	28
5	Sources, causes and risk factors of hypothermia	2	0.62	0.194	31
6	Management of hypothermia and disadvantages of warming devices	4	1.98	0.285	48.5
7	How can heat loss be prevented and component features of Embrace	3	1.4	0.226	46.66
8	How it works?	7	3	0.282	42.85
9	Purposes, advantages and disadvantages	6	2.36	0.511	39.33
	Total	32	13.48	2.32	42.12

Ta above table shows that the overall mean value is 13.48 with standard deviation of 2.32 suggesting the sample distribution around mean. Total mean percentage of knowledge score is found to be 42.12 percent. Mean percentage of pre-test area wise are found to be definition 62%, meaning 49%, management 48.5%, How can heat loss be prevented and component features of Embrace 46.6%, How it works 42.85%, management 45.4%, Purposes, Advantages and disadvantages 39.33%, Introduction 35%, Sources, causes and risk factors of hypothermia 31% and Relationship between hypothermia and low birth weight babies 28%, respectively.

Section 4: Analysis of Female Caregivers Post-Test Knowledge on Usage of Embrace

The above table Shows that Majority of respondents 78% had average knowledge on usage of Embrace, where as 16% had good knowledge and % had excellent knowledge on usage of Embrace respectively.

Section 3: Analysis of the Area Wise Pre Test Knowledge on Usage of Embrace among Female Caregivers.

Table 3: post-test level of knowledge of respondents

S. No	Level of knowledge	scores	f	%
1	Poor	0-8	1	2
2	Average	9-16	4	8
3	Good	17-24	29	58
4	Excellent	25-32	16	32
		Total	50	100

N=50

The above table shows that Majority of respondents 58% had post-test good knowledge on usage of Embrace, 32% had excellent knowledge and 8% had average knowledge and 2% had poor knowledge respectively.

Section 5: Analysis of the Area Wise Post Test Knowledge Regarding Usage of Embrace among Female Caregivers.

Table 4: Post-test area wise knowledge score of respondents

S. No	Area wise	No. of items	Mean	SD	Mean %
1	Introduction	2	1.38	0.087	69
2	Meaning of preterm, low birth weight infant, hyperthermia, hypothermia	4	2.74	0.178	68.5
3	Definition of Embrace infant warmer.	1	0.76	0.033	76
4	Relationship between hypothermia and low birth weight babies	3	1.98	0.456	66
5	Sources, causes and risk factors of hypothermia	2	1.14	0.121	57
6	Management of hypothermia and disadvantages of warming devices	4	2.68	0.186	67
7	How can heat loss be prevented and component features of Embrace	3	2.06	0.132	68.66
	How it works	7	4.98	0.285	71.14
9	Purposes, Advantages and disadvantages	6	4.3	0.240	71.66
	Total	32	22.02	1.47	68.81

The above table depicts that represents the mean, standard deviation and mean % of post-test area wise scores of the respondents.
The overall mean value is 13.48 with standard deviation of 2.32 suggesting the sample distribution around mean. Total mean percentage of knowledge score is found to be 42.12 percent. Mean percentage of pre-test area wise are found to be definition76%, Purposes, Advantages and disadvantages 71.66%, How it works 71.14%, Introduction 69%, How can heat loss be prevented and component features of Embrace 68.66%, meaning 68.5%, management 67% Relationship between hypothermia and low birth weight babies 66%, Sources, causes and risk factors of hypothermia 57% and respectively.

Section 6: Analysis of Effectiveness of Structured Teaching Programme on Knowledge Regarding Usage of Embrace among Female Caregivers.

Table 5: Effectiveness of Structured teaching programme on knowledge regarding Usage of Embrace among female caregivers, N=50

Overall knowledge	Mean	SD	SE	Enhancement	Enhancement %	t-value	Inference
Pre-test	13.48	2.32	0.388	8.54	26.69	22.01	S
Post-test	22.02	1.47					

The obtained paired t value with 49 degree of freedom is 1.678. S= significant

Table 5: reveals that post-test mean knowledge score 22.02 is significantly higher than the pre-test mean score 13.48 with enhancement of 8.54. The statistical paired 't' test for overall knowledge is found to be 22.01 which implies that the difference in pre-test and post-test knowledge score is found statistically significant at 0.05 level.

Section 7: Association between the Pre-test Knowledge Score Of Female Caregivers With Selected Demographic Variables.

Table 6: Showing association between the pre-test knowledge score and sample characteristics.

S. No	Sample characteristics	Chi-square at 0.05 level	Df	Inferences
1	Educational status	1.474	3	NS
2	Area of living	4.392	1	NS
	Occupation	0.673	3	NS
4	Family Income/month (in Rs):	3.46	3	NS
5	Number of days staying in hospital	0.915	3	NS
6	Have you got any information regarding Embrace?	0	1	NS
7	Relationship of caregiver to the baby	0.033	3	NS

DF 1= 3.84, 3=7.815 and NS= Non Significant

Table 6 indicates that there is no significant association between the pre-test the knowledge scores with selected demographic variables at 0.05 level of significance,

4. Recommendations
Based on the study findings, the following recommendations were made for further study.
- A similar study can be undertaken on large samples so that results can be generalized.
- A similar study can be conducted by using other teaching strategies.
- A study can be replicated among the GNM students, B.Sc. nursing students, PBBSc nursing students and also can be replicate for staff nurses also.
- Comparative study may be conducted to assess the knowledge of nursing students and staff nurses.
- An experimental study can be conducted with by using Embrace.
- Comparative study can be conducted with Kangaroo mother care (KMC) and Embrace for preterm and low birth weight babies.

5. Conclusion
The present study shows that majority of female care givers have poor knowledge about usage of Embrace infant warmer.

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