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EFFECTIVENESS OF PLANNED TEACHING PROGRAMME ON KNOWLEDGE REGARDING PREVENTION OF HYPOTHERMIA IN NEWBORNS AMONG STAFF NURSES

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Abstract : A Pre-experimental study to assess the effectiveness of a planned teaching programme on knowledge regarding the prevention of hypothermia in the newborn was conducted among staff nurses in R. C. Nursing Home, Kanpur (U.P). The objectives were to assess the existing knowledge of staff nurses regarding the prevention of hypothermia in the newborns, evaluate the effectiveness of a planned teaching programme on hypothermia in newborns and find out the association between knowledge scores with their selected demographic variables. The study was pre-experimental with a non-probability sampling technique and sample size of 50. A structured knowledge questionnaire was used as a tool for data collection. Findings revealed that 0% of respondents had an adequate knowledge score, 44% of respondents had a moderate and 56% had inadequate knowledge score. The mean was 11.32 and the standard deviation was 2.72. In post-test 92% of respondents had adequate knowledge score, 8% had a moderate score and 0% had inadequate knowledge score, the mean was 24.7 and the standard deviation was 2.45. The study proved that there was significant association between demographic variables. It can be concluded that in the study score was moderate regarding hypothermia in newborns. The knowledge of staff nurses in R. C. Nursing Home Kanpur (U.P.) was improved and the planned teaching programme was effective.

IndexTerms **- Newborn, hypothermia, Effectiveness.**

I. INTRODUCTION

Neonatal health is the key to child survival and wellbeing. The goal of newborn care is not only to reduce the neonatal mortality but also more importantly to ensure their intact survival. [1]

The period from birth to 28 days of life is called neonatal period and the infants in this period are termed as neonates or newborns. [2].

Hypothermia in newborns is defined as a skin temperature of less than35.5ºC or core temperature of less than 35ºC. The common causes of hypothermia are situations contributing to excessive heat loss, poor ability to conserve heat & poor metabolic heat production. [3]

As the term and preterm newborns may be incapable of thermoregulation, this presents a challenge to the carrier who is charged with the responsibility of ensuring the newborns temperature is maintained within a range conductive with life. [4]

One of the main problems faced by the newborns is thermoregulation or the need to keep the body warm, as they are very sensitive and usually suffer with hypothermia. Vasoconstriction is the main result of activation of peripheral skin receptors. Non-shivering thermogenesis is the main mechanism in newborns to produce heat through metabolic activity. The production of heat by metabolism of brown fat (deposited after 28 weeks gestation principally around the scapulae, kidneys, adrenals, neck and axilla) is a thermogenic organ unique in the newborn. Brown fat metabolism is inefficient in ELBW newborns due to extreme immaturity and may not produce heat. [5]

Having a newborn means special care for the mother too. Newborns are particularly susceptible to heat loss because of the following factors; they lose heat via evaporation after birth as the amniotic fluid, the water around the baby, evaporates from his skin. The other factors are radiation, conduction, and convection. Heat loss and newborns is an important factor that needs to be taken into account when caring for a newborn. [6]

Hypothermia occurs when the body temperature drops below 36.5°C (97.7°F). The newborn with a temperature of 36.0-36.4°C(96.8-97.5°F) is under cold stress (mild hypothermia). A newborn with a temperature of 32.0-35.4°C(89.6-96.6°F) has moderate hypothermia, while a temperature below 32°C(89.6°F) is considered to be severe hypothermia. Early clinical signs which should arouse suspicion of cold stress due to hypothermia are the feet are cold to the touch (they become cold before the body is cold), weak sucking ability, reduction in activity, lethargy and weak cry. In cases of mild hypothermia, the newborn can be rewarmed by skin-to-skin contact, in a warm room. In cases of moderate hypothermia, the clothed newborn may be re warmed by under a radiant heater, in an incubator, at 35-36°C (95-96.8°F), By using a heated water-filled mattress, in a warm room (32-34°C or 89.6-93.2°F), the rewarming process should be continued until the newborn's temperature reaches the normal range. In case of severe hypothermia, studies suggest that fast rewarming over a few hours is preferable to slow rewarming over several days. Rapid rewarming can be achieved by using a thermostatically controlled heated mattress set at 37-38°C (98.6-100.4°F) or an air-heated incubator [7]

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 of normal newborns in community settings are around31% and about 32% in hospital settings, but these included mostly normal weight newborns. [8]

According to WHO reports most of the newborn deaths are due to hypothermia that is about 42% and 3.6 million develop moderate to severe hypothermia. Hypothermia is a major cause of morbidity and mortality in infants, underscoring the importance of maintaining normal body temperature in the delivery room. The World Health Organization (WHO) lists hypothermia as a "top killer" during the neonatal period. [9]

Reduced body temperature during the first week of life is one of the major causes of the morbidity and the mortality in the neonatal period. So preventing hypothermia and maintaining abnormal temperature in newborns is important to prevent the other complications. Preventive measures of hypothermia range from simple efforts of delaying the first baby bath, mummification, co-bedding and initiating kangaroo mother care in case of premature infants etc. For newborns who are ill or under close monitoring in the NICU, hypothermia is combated through use of radiant warmers, mummification, use of head caps, mittens and socks and also increasing the ambient room temperature. WHO recommends a warm chain to prevent hypothermia which includes; Warm delivery room (> 25°C), warm resuscitation (Warm towels), immediate drying, skin-to-skin contact between baby and the mother (Kangaroo Care), breastfeeding, bathing and weighing postponed, appropriate clothing and bedding to environment, mother and baby together, warm transportation – extra clothes outdoors and training/awareness of healthcare providers. [10]

Kangaroo mother care is the innovative method of taking care of low birth weight newborns. Birth weight is the single most important marker of adverse prenatal, neonatal and infantile outcomes. Over80% of all neonatal deaths, in both the developed and developing countries, occur among the low birth weight newborns. In 2013, nearly 22 million newborns an estimated 16 % of all newborn globally that year had low birth weight. Accurate monitoring is challenging, however, since nearly half of the world's newborns are not weighed at birth. (UNICEF). [11]

Hypothermia is common in newborns at hospitals (prevalence range, 32% to85%) and homes (prevalence range, 11% to 92%), even in tropical environments. The lack of thermal protection is still an underappreciated major challenge for newborn survival in developing countries. Although hypothermia is rarely a direct cause of death, it contributes to a substantial proportion of newborn mortality globally, mostly as a comorbidity of severe newborn infections, preterm birth and asphyxia. Hypothermia is associated with a number of adverse effects and complications. [12]

Basic techniques for keeping newborns warm include keeping them dry, wrapping them in blankets or mummifying, giving them woolen and cotton caps and clothing or increasing the ambient temperature. More advanced techniques include use of skin to skin "kangaroo mother care", "rooming in" etc. Indian mothers are not aware about newborn hypothermia and measures of thermoregulation due to various factors such as ignorance, lack of knowledge, low socioeconomic status, etc. [13]

II. NEED OF THE STUDY

After birth a newborn's body temperature can fall very quickly. The healthy term newborn will try to maintain his temperature within the normal range [14].

The important responsibility of the nurse is to stabilize and maintain the newborn's body temperature by achieving a balance between heat production and heat loss. The temperature of the newborn usually drops immediately after birth, especially in air-conditioned delivery rooms, because of the change in environmental temperature [15].

The experience of the researcher while working in the NICU has provoked the study problem. The researcher felt that as the staff nurses are the first persons to have contact with the newborn babies and are the responsible persons in taking care of them, the researcher administered a planned teaching programme on prevention of hypothermia in newborns among staff nurses in R. C. Nursing Home, Kanpur (U.P) Kanpur.

III. OBJECTIVES

1. To assess the existing knowledge of staff nurses regarding prevention of hypothermia in newborns.
2. To evaluate the effectiveness of a planned teaching programme on hypothermia in newborns.
3. To find out the association between knowledge scores with their selected demographic variables.

HYPOTHESIS

H1: -There will be significant difference between pre-test and post- test knowledge score of staff nurses regarding prevention of hypothermia.

IV. REVIEW OF LITERATURE

The investigator carried out an extensive review of literature on the researcher's topic in order to gain deeper insight into the problem as well as to collect the maximum amount of relevant information for building up the present study.

The literature of the study is organized under the following headings: -

- Incidence, causes, and complications of hypothermia.
- Knowledge on prevention of hypothermia.
- Effectiveness of a planned teaching programme (PTP) of hypothermia.

REVIEW OF LITERATURE RELATED TO INCIDENCE, CAUSES AND COMPLICATIONS OF HYPOTHERMIA IN NEWBORNS

Gebresilases Gendisha Ukke [(16)] 2019. The study was conducted on "Prevalence and factors associated with neonatal hypothermia on admission to neonatal intensive care units in southwest Ethiopia". The aim of study was to reduce neonatal mortality and morbidity in newborns due to neonatal hypothermia which is conducted at South Ethiopia, the sample size was 80 newborns admitted to the two neonatal intensive care units and non-probability sample technique was used. The structured knowledge questionnaire was used to assess the knowledge of staff nurses. Multi –variable logistic regression was used to analyze the relationship between the dependent and independent variables using odds ratio with a confidence interval of 95% and p value of 0.05. The result of the study was the prevalence of neonatal hypothermia on admission to the neonatal intensive care units in this study area was 50.3%. Admission weight below 2500-gram, delay in initiation of breastfeeding, early bathing, admission during cold seasons and presence of obstetrical complication during pregnancy/labor were factors significantly associated with hypothermia on admission to the neonatal intensive care units. The conclusion was that the prevalence of neonatal hypothermia on admission to the intensive care units was high.

REVIEW OF LITERATURE RELATED TO KNOWLEDGE ON PREVENTION OF HYPOTHERMIAIN NEWBORNS

Mr. Krishna Nand Mittal (2020) [(17)] was conducted "to assess the effect of health teaching on knowledge regarding prevention of hypothermia in newborns among mothers of newborns admitted in selected hospitals, in Pune city. Material $ methods: Quasi experimental one group pretest and post-test research design was used. Sample comprises 60 mothers of newborns. Non-probability Convenience sampling techniques were used. The structured interview schedule was used in this study. Result: The scores obtained by the sample in the pre-test phase was a mean knowledge score of 13.63 and in the post phase was increased to 17.28. Conclusion: the health teaching on knowledge of prevention of hypothermia found to be effective in increasing the knowledge of mothers. The samples had a highly significant gain in knowledge after the health teaching program.

REVIEW OF LITERATURE RELATED TO EFFECTIVENESS OF PLANNED TEACHING PROGRAM ON HYPOTHERMIA IN NEWBORNS

Sarika Yadav (2020) [(18)] was conducted to evaluate "effectiveness of a planned teaching program on knowledge regarding prevention of Neonatal hypothermia among postnatal mothers. Method: the pre-experimental (pretest-posttest group) design was adopted. Convenient sample technique was used to select the 30 postnatal mothers as a sample. Pretest was conducted using a questionnaire; after that pretest a planned teaching program was conducted for the post test. Result: The findings of the study revealed that majority (90%) had low knowledge,10% had average knowledge regarding prevention of neonatal hypothermia in pretest, the post test scores depicted that majority (80%) had good knowledge,20%had average knowledge and none of them had low knowledge regarding prevention of hypothermia. Most demographic variables were not significantly associated with the level of pre-knowledge of postnatal mothers regarding prevention of neonatal hypothermia. Only the mother's education status ($x2=8.585$ in the pretest and $df=2$ and $p=0.014$) were found to be statistically significant at the 0.05 level of significance. Conclusion: this study showed that the postnatal mothers knowledge regarding prevention of neonatal hypothermia was low and planned teaching programs are effective to improve their knowledge.

V. RESEARCH METHODOLOGY

A quantitative research approach with pre-experimental design, one group pretest post- test design without control group was selected as the research design for the study.

The setting of study was at R. C. Nursing Home, Kanpur (U.P), the population comprises (50) staff nurses of the pediatric ward NICU in R. C. Nursing Home and Non- probability (purposive sampling technique) was used in the study.

DEVELOPMENT OF TOOL

A structured questionnaire was prepared with the help of review of literature i.e., book journals, internet expert opinion, personal experiences and discussion with experts.

DESCRIPTION OF TOOL

The tools are divided in two sections:

Section 1: Demographic Data

This section of the tool consists of items pertaining to demographic variables of staff nurses like age, gender, professional qualification, year of experience, source of information.

Section 2: Knowledge Questionnaire Regarding Prevention of Hypothermia in Newborns.

This section consists of a knowledge questionnaire to assess the pre-test and post-test knowledge regarding prevention of hypothermia in newborns among staff nurses in R. C. Nursing Home, total number of questionnaires is 30 related to hypothermia in newborns.

VI. SCORING PROCEDURE

For convenience, the level of knowledge of the staff nurses of the pediatric ward and NICU in R. C. Nursing Home, Kanpur (U.P) was divided into adequate, moderate, and inadequate.

ANALYSIS AND INTERPRETATION OF DATA

The data has been organized and presented in 3 sections;

Section 1: description of demographic variables of staff nurses.

Section 2: Assessment of knowledge regarding prevention of hypothermia in newborns.

2.1: Assessment of knowledge before and after a given structured teaching programme.

Section 3: Association of pre-test knowledge which selected demographic variables.

Section A: DEMOGRAPHIC VARIABLES

Table 1: Frequency and percentage distribution of subjects by their selected variables (Age, Gender, Professional Education, Year of experience, Source of information) N=50

Level of knowledge	**score**	**Pre-test knowledge score**		**Post-test knowledge score**	
		N	%	N	%
Adequate	21-30	0	0%	46	92%
Moderate	11-20	22	44%	4	8%
Inadequate	1-10	28	56%	0	0%

SECTION B: ASSESSMENT OF KNOWLEDGE REGARDING PREVENTION OF HYPOTHERMIA IN NEWBORNS

Table 2: Mean and standard deviation of pre-test and post-test knowledge regarding prevention of hypothermia in newborns.

Level of knowledge	Mean	Standard deviation	Df	Calculated value(t)	Table value	Level of significant
Pre-test	11.32	2.72	49	0.98	2.02	Not significant
Post-test	24.7	2.45				

Table 2, shows that the mean pre-test knowledge score was 11.32 and mean post-test knowledge score was 24.7. The difference between pre-test and post-test knowledge score was statistically not significant.

Hence it was inferred that there was an increase in the level of knowledge after planned teaching programme regarding prevention of hypothermia in newborns among staff nurses. So the research hypothesis was rejected.

Assessment of knowledge before and after given planned teaching Programme

Table 3: Effectiveness of planned teaching programme by comparing pretest and post-test level of knowledge regarding prevention of hypothermia in newborns among staff nurses in R. C. Nursing Home, Kanpur (U.P) Kanpur (U.P).

CHARACTERISTICS	CATEGORY	RESPONDENTS	
		NUMBER	PERCENT
Age	a) 20-25	31	a) 62%
	b) 26-30	13	b) 26%
	c) 31-35	6	c) 12%
	d) 36 or above	0	d) 0%
Gender	a) Male	16	a) 32%
	b) Female	34	b) 68%
Professional education	a) A.N.M	6	a) 12%
	b) G.N.M	33	b) 66%
	c) B.Sc. Nursing	11	c) 22%
	d) Others	0	d) 0%
Year of experience	**a)** 0-3	24	a) 48%
	b) 3-6	22	b) 44%
	c) 6-9	4	c) 8%
	d) 9 or above	0	d) 0
Source of information	**a)** Books and journals	5	a) 10%
	b) Mass media	7	b) 14%
	c) Study center	6	c) 12%
	d) Health team member	32	d) 64%

Table 3, shows the frequency and percentage distribution of respondents according to level of pre-test and post-test knowledge score related to prevention of hypothermia in newborns among staff nurses.

In the pre-test 0% of respondents had an adequate score (21-30),44% of respondents had a moderate knowledge score (11-20) and 56% had an inadequate knowledge score (1-10). In post-test 92% of respondents had an adequate knowledge score (21-30),8% of the respondents had a moderate knowledge score (11-20),0% of the respondents had inadequate knowledge score (1-10).

Hence it referred that the majority of respondents had an inadequate knowledge in pre-test knowledge scores. After structured teaching programmes there was an increase in knowledge of the respondents who were exposed to planned teaching programme.

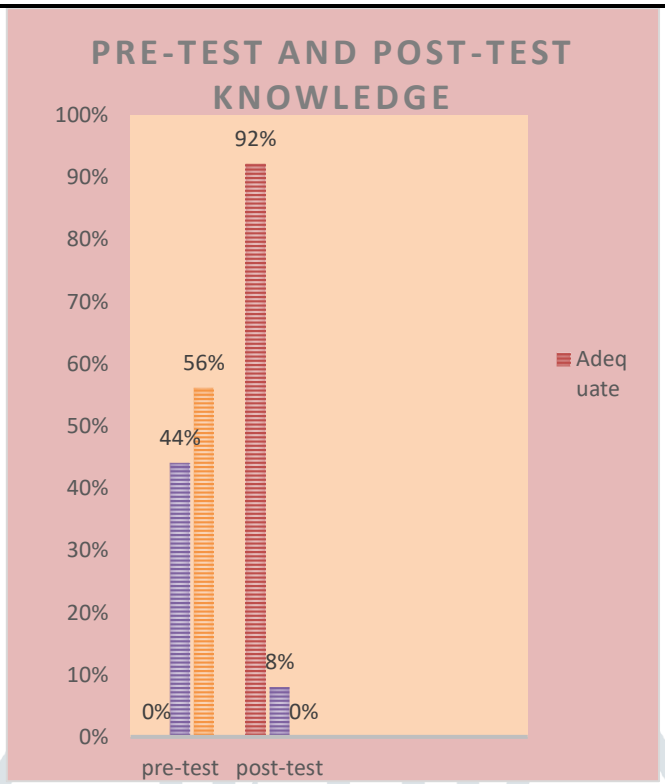

Figure 1: Percentage distribution of sample according to their pre-test and post-test knowledge score.

VII. CONCLUSION

On the basis of the findings of the study obtained, the following conclusions were drawn.

The level of knowledge was less when assessed after conducting pre-test whereas the score had increased in post-test after the implementation of a planned teaching programme on staff nurses in R C Nursing Home Kanpur (U.P).

From the finding of the study, it is concluded that highest percentage (62%) was in staff with age status (20-25), maximum samples (68%) were in gender (female), highest percentage of the professional education is (G.N.M) with (66%) maximum samples from year of experience belong to (3-6) with (44%) and the last maximum sample from source of information from (health team member) with (64%).

During the post-test level of knowledge was improved. After a pre and post-test assessment of level of knowledge regarding prevention of hypothermia in newborns shows significant difference between the pre and post -test score was demonstrated by "t" test and it was found that the planned teaching programme was effective tool.

Study proved that there is no association between pre-test knowledge score and demographical variables (age, gender, professional education, year of experience, source of information).

Thus, the investigator concluded that the planned teaching programme was helpful in increasing the knowledge regarding prevention of hypothermia in newborns among staff nurses in R. C. Nursing Home, Kanpur (U.P).

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