

Enhancing Nurse's Knowledge- A Programme on Prevention of Neonatal Hypothermia

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Abstract

Introduction: Newborns are less efficient in regulating their body temperature due to poor their heat-regulating mechanisms. Thermal stability of the neonate is crucial, and awareness of the significance of a warm environment has resulted in better care of the neonate. **Objective:** The study aimed to determine the efficacy of a structured teaching programme regarding the prevention of neonatal hypothermia among nurses. **Material and Methods:** A pre-experimental, (one-group pre-test and post-test) research design was conducted in the Government Multispeciality Hospital, Chandigarh, India. Sixty nurses were chosen through the non-probability purposive sampling technique. The instrument employed for the study includes demographic variables and a self-structured knowledge questionnaire. **Results:** The pre-test degree of knowledge regarding the prevention of neonatal hypothermia among 60 nurses shows that 58.3% had fair knowledge and 41.7% had good knowledge. The post-test knowledge scores showed that out % of 60 nurses, 75% possessed very good knowledge, while 25% had good knowledge. The comparison of both tests' knowledge scores using the Wilcoxon rank test resulted in a p-value = <0.001, which indicates that the result is highly significant. Furthermore, the chi-square test was applied to find out whether or not there was a statistical association between the knowledge scores and their demographic variables. It was determined that the p-value for both the knowledge scores was found to be greater than 0.05 which is insignificant. Hence, there is no association found between both sets of knowledge scores with their demographic variables. **Conclusion:** The structured teaching programme culminated in enhancing knowledge among nurses regarding preventing neonatal hypothermia.

Keywords: Knowledge, Neonatal hypothermia, Structured teaching programme, nurses.

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INTRODUCTION

Background

The baby's birth is acknowledged as a wonderful and heart-warming experience that happens in every woman's life [1]. The time interval from the birth of the baby to 28 days of life is considered a neonatal period and the newborn in that interval is termed a neonate [2]. The moment a newborn comes out from the mother's womb it has to make adjustments from intrauterine life to extrauterine life [3]. During intrauterine life, the placenta of the mother serves as a heat exchanger for the baby. Therefore, after birth, the neonate has to generate and sustain heat on his own [4].

The temperature of the delivery room is lower than the intrauterine environment and as a result drop in the body temperature occurs [5]. A neonate must adapt to and survive in a new environment throughout the perinatal period. The primary concern for the viability and protection of newborns is warmth [6]. Hence, it is essential to comfort a newborn to maintain temperature soon after birth. During the first minutes after birth, most cooling of the newborn occurs [4]. The neonate who is not thermally protected can lose sufficient heat in the first 10-20 minutes to drop the body temperature by 2-4°C, and even a substantial fall than this if proper care is not provided [5]. By regulating environmental conditions, healthcare workers play a crucial role in maintaining the

body temperature of the neonate. Researchers have discovered that one of the key responsibilities of the nurses working in the neonatal intensive care unit is to maintain ambient temperature for preterm and sick babies. To administer quality care to neonates, health personnel should have good knowledge, skills and attitudes towards neonatal thermoregulation [7].

Hypothermia is a significant factor in the morbidity and mortality of neonates. WHO mentions hypothermia as a “top killer disease” throughout the neonatal period and many a time underestimated as a cause of death [8]. After birth, the first month of life is the most sensitive time for a child’s survival, with approximately 2.4 million neonatal mortality in 2020 [9].

WHO Collaborating centres, illustrated that hypothermia in neonates was associated with inadequate knowledge of health professionals regarding the importance of prevention of hypothermia, which may contribute to newborn mortality. To prevent neonatal hypothermia, the WHO guided healthcare professionals to follow the steps of the warm chain. The idea of the warm chain was introduced to describe a series of interrelated steps performed at and after birth to minimize the potential for hypothermia in all neonates. Warm delivery room(temperature of the delivery room must be 25°C), Immediate drying(wrap the newborn in a warm towel and dry the baby thoroughly from head to toe thereafter change the wet towel and quickly dress the baby) , Skin to skin contact between newborn and the mother (Kangaroo method), can be initiated while delivering the placenta and at the time of suturing, Breastfeeding (should start within 30 minutes after delivery), postponing bathing and weighing (postpone bath to the next day and postpone weighing until the baby is warm), appropriate clothing and bedding (wrap the newborn in the warm blanket and ensure proper clothing including cap, mittens and socks), Mother and newborn nursed together (Rooming-in), if the mother and child are stable Rooming-in should be done after the half an hour of delivery as it aids to the physical and psychological development of the baby, Warm transportation (transport the sick baby in a warm incubator, silver swaddler, and if the baby is stable then transportation can be done by keeping the baby in skin to skin contact with mother), Warm resuscitation, Training/ awareness of medical personnel involved in care [6]. It has been demonstrated through various evidence that the level of empowerment of individuals in an organisation -correlates to the number of trainings offered to that organisation. Many healthcare researchers have admired the significance of thermal care in hospital practice. Therefore, nurses’ awareness and practices are indispensable [10].

Purpose: The study aimed to determine the efficacy of a structured teaching programme regarding the prevention of neonatal hypothermia among nurses. It was hypothesised that there would be a significant difference between the pre-test and post-test knowledge scores of

nurses at a level of 0.05. Also, there will be an association between the pre-test and post-test knowledge scores with their socio-demographic variables.

MATERIAL AND METHODS

The pre-experimental research was carried out with one group pre-test, and post-test design. The setting of this study was Government Multispeciality Hospital, Chandigarh, India. Sixty Nursing officers who work in the labour room, postnatal, and neonatal wards. Samples were selected by using a purposive sampling technique.

Imogine King’s goal attainment model served as the incentive for the selection of the conceptual framework that was used for this research. The above model concentrates on the interpersonal relationship between the client and the nurse, and this is influenced by the perception of both the client and the nurses. This further leads to mutual goal setting that is to be subjected by the participants. In the present study, the researcher and the nurses interact. Data were collected in two stages, on day 1 researcher took a pre-test from the participants followed by an intervention i.e. providing them with teaching regarding neonatal hypothermia and on day 7 again post-tests were given to the participants to check the efficacy of the intervention given to them. After the data were acquired, the analysis and interpretation of the data were carried out with the aims serving as the foundation. Nurses working in the labour room and neonatal ICU were chosen to be part of the study. The inclusion criteria were the nurses who were willing to participate as well as those who were available at the time of the study. Exclusion criteria involve the nurses who were not interested and not present at the time of the study. In the study, the demographic variables and knowledge scores of the nurses were investigated using the questionnaire. To measure the awareness of the nurses regarding the prevention of neonatal hypothermia, a researcher made a self-structured knowledge questionnaire (multiple choice questions). This included questions related to the neonatal period, the meaning and types of hypothermia, the value of temperature, the mechanism of heat loss and heat production in neonates, warm chain steps and measures in the prevention of neonatal hypothermia, and the causes and consequences of hypothermia. Each correct question is given a score of one and the wrong one is considered a score of zero. The content validity of the instrument was determined by presenting it to seven professionals, and experts in the field of paediatric nursing and paediatric medicine. Based on the recommendations made by the experts, amendments have done and reorganizations of the tool were done. All of the specialists agreed that the developed tool was suitable in terms of the information it contained and hence, gave their approval for the usage in the study. By Utilising the objectives and hypotheses of the research, the data were analyzed with the assistance of both descriptive and inferential statistics. IBM SPSS Version 20 was used for data analysis and interpretation. A thorough evaluation and analysis of the

study subjects were done. The Socio-demographic factors of nurses were analysed using six variables i.e. age, gender, marital status, number of children, educational qualification, and years of experience in clinical as well as neonatal settings. Assessment of the pre-test and post-test knowledge scores of the samples was done. The efficacy of the structured teaching programme on knowledge regarding the prevention of neonatal hypothermia was assessed by comparing the scores using the Wilcoxon signed rank test. A comparison of each item of knowledge assessment related to neonatal hypothermia among nurses was carried out using the Mc Nemar test. A Chi-square test was applied to find the association between the pre-test and post-test knowledge scores with their socio-demographic variables.

RESULTS

Findings related to the assessment of sociodemographic variables of nurses are shown in (Table 1). It depicts that According to their ages, 50% of the 60 samples fall between the age of 30-34 years. In terms of sexual orientation, out of 60 nurses, the majority (95%) were females. According to marital status, 83.3% of nurses were married. When looking at the number of children possessed by the nurses, 46.7% have single children. According to the degree of education attained by them, 70% of nurses had a diploma in nursing. According to the total work experience in clinical settings among nurses, 50% have 6-10 years of experience. In terms of work experience in neonatal settings, 53.3% of nurses have 0-5 years of experience.

Table 1: Socio-demographic variables of nursing officers N=60

Sr. No.	Variables	F (%)
1.	Age (years)	
	24-29	9(15%)
	30-34	30(50%)
	35-39	20(33.3%)
2.	Gender	
	Male	3(5%)
	Female	57(95%)
3.	Marital status	
	Single	10(16.7%)
	Married	50(83.3%)
4.	Number of children	
	None	18(30%)
	One	28(46.7%)
	Two	14(23.3%)
5.	Educational Qualification	
	Diploma in Nursing	42(70%)
	Degree in Nursing	15(25%)
	Post-graduation in Nursing	3(5%)
6.	Years of experience	
	In clinical	
	0-5	16(26.7%)
	6-10	30(50%)
	11-15	13(21.7%)
	16-20	1(1.7%)
	In neonatal settings	
	0-5	32(53.3%)
	6-10	22(36.7%)
11-15	6(10%)	

Mean age=32

In the pre-test, all the nursing officers had an acceptable level of knowledge related to the prevention of neonatal hypothermia. There were 60 nurses, and 58.3% of them had fair knowledge, while the remaining 41.7% had good knowledge. The score of 20 was the median, and the standard deviation was 3.48, as shown in Fig 1. The knowledge score of the post-test in nurses after the intervention shows that 75% of the nurses possessed Very good knowledge, while 25% of them had

good knowledge related to the prevention of neonatal hypothermia. The score of 32 was chosen to represent the median score and the SD was 1.4, shown in Fig 2. The %age, median, and SD of the pre-test and post-test knowledge scores are shown in (Table 2). The comparison of scores of knowledge regarding the prevention of neonatal hypothermia using the Wilcoxon signed rank test is shown in Table 3. The test is used to assess whether or not there was a statistically significant

difference between the scores obtained on the pre-test with the scores achieved on the post-test. This reveals that the z-value equals -6.745 and the p-value equals <0.001, both of which imply the result is highly significant at the level of 0.05. As a direct consequence

of this, the alternative hypothesis has been validated. According to the result of the study, participating in a structured teaching programme is an efficient method for enhancing nurse’s knowledge of the prevention of neonatal hypothermia.

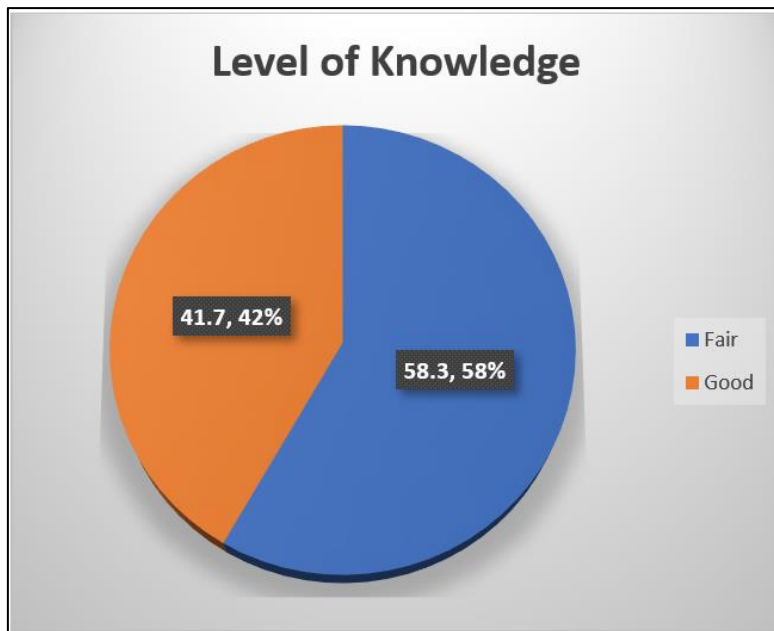


Figure-1: Pre-test level of knowledge among Nurses

Table 2: The %age, median, and SD of the pre-test and post-test knowledge scores (N=60)

Score range	Level of knowledge	Pre-test F (%)	Post-test F (%)
0-10	Poor	-	-
11-20	Fair	35(58.3%)	-
21-30	Good	25(41.7%)	15(25%)
>30	Very good	-	45(75%)
Median score & SD		20± 3.48	32 ± 1.43

Table 3: Comparison of scores related to the prevention of neonatal hypothermia N=60

Pre-test & Post-test Knowledge Scores	Ranks/Ties	N	Mean Ranks	Z value (Wilcoxon signed rank test value)	P value
Post-test score -Pre-test scores	Negative rank Positive rank Ties	0 ^a 60 ^b 0 ^c	.00 30.50	-6.745	<0.001

- a. Pretest score < Post-test score
- b. Post-test score > Pre-test score
- c. Post-test score = Pre-test score

Additionally, the McNemar test was applied to conclude whether or not there was a statistically significant improvement between the two responses. A statistically significant improvement was seen in most of the knowledge scores with a p-value (<0.05). However, in some of the questions such as the meaning of hypothermia (p-value=.250), causes of hypothermia in neonates (p-value=.375), clinical signs of hypothermia (p-value=.061), methods not used to check the temperature in neonates (p-value=.096), the score did not show statistically improvement. Furthermore, in some questions like warm chain means a measure to prevent (p-value=.157), not included in the warm chain for

preventing heat loss at the time of birth (p-value=.226), rooming in helps the baby for (p-value=.117), newborns are at greater risk of heat loss due to (p-value=.136), the p-value was found to be > 0.05 which depicts that there was no statistically significant relation between the scores.

The chi-square test was applied to determine whether or not there was a statistically significant correlation between the pre-test knowledge scores of nurses regarding the prevention of neonatal hypothermia and their sociodemographic variables. As the results show, age (p=.352), Gender (p=.764), marital status

($p=.128$), number of children ($p=.468$), educational qualification ($p=.938$), years of experience in clinical ($p=.130$), in neonatal settings ($p=.212$) are found to be statistically insignificant which shows that there is no relation between the two variables. Also, the same test was applied to determine whether or not there was a statistically significant correlation between the post-test knowledge scores of nursing officers and their socio-demographic variables. The results show age ($p=.607$), Gender ($p=.732$), marital status ($p=.689$), number of children ($p=.621$), educational qualification ($p=.590$), years of experience in clinical ($p=.865$), neonatal settings ($p=.637$) are found to be statistically insignificant which shows that there is no relation between the two variables.

DISCUSSION

WHO has commented on hypothermia in a practical guide named “Thermal Protection of the Newborn” that “Hypothermia in the newborn is more due to a lack of knowledge than to lack of equipment”. The current study evaluated the efficacy of a structured training programme on knowledge regarding the prevention of hypothermia in neonates among nurses in a chosen hospital in the city of Chandigarh. ² In developed countries, awareness of the relevance of a warm environmental condition immediately after birth brings out improved care of the newborn, especially in pre-term and low birth weight neonates. Besides this, in developing countries, there is little understanding of the thermal needs of the neonates observed in the significance of hypothermia in neonates. Therefore, education is a blueprint to enhance the understanding of nurses regarding the prevention of neonatal hypothermia. Annu Panchal (2020) conducted the same study regarding the ‘warm chain’ among staff nurses working in obstetrical and neonatal units in selected hospitals at Dehradun. The study's finding revealed the enhancement in the knowledge scores of the post-test compared to the pre-test after the teaching programme had been provided regarding the warm chain [11]. Verma, V Laxmi [2021] also did the same research study on the among staff nurses in R.C. Nursing Home, Kanpur (U.P). According to the study's findings, the mean pre-test knowledge score was 11.2 and the standard deviation was 2.72. In the post-test, the mean was 24.7 and the standard deviation was 2.45. During the post-test, the level of knowledge was improved. If healthcare professionals are adequately informed about the likely complications of a disease and encouraged to imply necessary precautions and care promptly, a large number of complications could be prevented with little or no medical intervention. The present research performed a systematic educational teaching programme as a means of assistance in the prevention of hypothermia in neonates as well as to enhance the knowledge of the nurses. Furthermore, this will allow the nurses to facilitate knowledge among mothers about the significance of providing warmth post-birth to protect the neonate from the harmful effects of hypothermia.

CONCLUSION

Nurses who have attended the structured teaching programme have substantially more awareness about preventing neonatal hypothermia. Therefore, it is well-considered that systematic teaching or training programmes should be employed to convey information about the prevention of neonatal hypothermia among nurses posted in the neonatal and postnatal wards.

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