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A Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge Regarding Prevention of Hypothermia in Newborn Babies among Staff Nurses Working at Umaid Hospital, Jodhpur

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Abstract

Background: Neonatal hypothermia is one of the leading causes of neonatal morbidity and mortality, particularly in developing countries. Maintenance of normal body temperature is an essential component of newborn care. Hypothermia causes multiple dysfunctions, including cardiac arrhythmias, renal insufficiency, and hemoconcentration. In late stages of hypothermia, brain function deteriorates and increases the risk for further exposure to excessive cold. The appropriate care of the newborn helps to prevent hypothermia from the moment of birth by using procedures that will prevent heat loss and maintain the body temperature within the normal range thus conserving the infant's energy for growth and development. Hypothermia of the newborn is mainly due to lack of knowledge. In many hospitals delivery rooms are not warm enough, the newborn is often left wet and uncovered after delivery and the newborn is weighed naked and washed soon after birth. The initiation of breast-feeding is frequently delayed for many hours, and the baby is kept in a nursery, apart from the mother. In many newborns these practices will result in hypothermia. Thermoregulation is one of the challenging aspects of neonatal care. Maintaining a normothermic state in a newborn is an essential basic need in the early days of life. The staff nurses are the first person to take care of newborn babies, so the knowledge of staff nurses regarding prevention of hypothermia in neonates plays an important role in their care.

Aim: To assess the effectiveness of structured teaching programme on knowledge regarding prevention of hypothermia in newborn babies among staff nurses working at Umaid Hospital, Jodhpur.

Methods: The research approach adopted for study was Quantitative research approach. The research design

selected for the study was Pr-experimental research design with one group pre-test and post-test design, in which pre-test is conducted followed by structured teaching programme on Prevention of newborn hypothermia and then conducting post-test for the same group of staff nurses working in Umaid Hospital Jodhpur. The purposive sampling technique was utilized for the selection of staff nurses. A sample of 30 staff nurses working in various departments of Umaid hospital, Jodhpur. Data was collected with the use of structured questionnaire before and after administration of structured Teaching Programme on newborn Hypothermia. Data obtained was analyzed by descriptive and inferential statistics. Paired 't' test was used to assess the knowledge of staff nurses regarding knowledge on prevention of hypothermia in newborn in pre and posttest. The association between the level of knowledge in pretest with selected demographic variables was determined by chi-square test.

Results: post-test mean score percentage regarding knowledge of nurses on prevention of neonatal hypothermia was 93.50% and the pre-test mean score percentage was 62.35% with gain of 31.15%. In the study, the improvement noted after intervention is compared by computing the mean score percentage out of the total anticipated scores in the different areas of knowledge assessed. It was also observed from the paired t Test analysis of pre and post test scores on knowledge (t cal=21.04, P<0.01) was significant. The findings of the study revealed that the post-test knowledge scores of staff nurses were significantly higher than pre-test knowledge scores regarding prevention of hypothermia in newborn babies. The structured teaching programme was found to be effective in improving knowledge among staff nurses.

Conclusion: This result evidently supports that the structured teaching programme is significantly effective in promoting the knowledge on prevention of hypothermia in newborn. This type of structured teaching programme will help to enhance the knowledge of nursing professionals working in the neonatal care areas.

Keywords: Neonatal Hypothermia, Staff Nurses, Structured Teaching Programme, Newborn Care, Knowledge, Prevention.

Introduction

"Today's children are tomorrow's citizens and leaders. The resources spent on the care and health of the young are an investment for the future." – Dr. A.P.J. Abdul Kalam. A newborn baby is a precious gift to a mother. The neonatal period extends from birth to the first 28 days of life and is considered the most vulnerable period for survival. One of the most critical factors affecting neonatal survival is maintenance of normal body temperature. At birth, the newborn undergoes transition from the warm intrauterine environment to a relatively cooler extrauterine environment. Failure to maintain thermal balance may result in neonatal hypothermia. Neonatal hypothermia is defined as a body temperature below 36.5°C. According to the World Health Organization (WHO), hypothermia is classified into cold stress (36.0°C–36.4°C), moderate hypothermia (32.0°C–35.9°C), and severe hypothermia (<32°C). Newborn babies are highly susceptible to hypothermia because of their large body surface area, thin skin, reduced subcutaneous fat, and immature thermoregulatory mechanisms. Heat loss occurs through evaporation, conduction, convection, and radiation. Hypothermia remains a major public health concern worldwide and contributes significantly to neonatal mortality and

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morbidity. Appropriate newborn care practices such as immediate drying, skin-to-skin contact, delayed bathing, breastfeeding, and maintaining warm chain are effective measures for prevention of hypothermia. Staff nurses are the first healthcare professionals responsible for immediate newborn care. Adequate knowledge regarding prevention of neonatal hypothermia is essential to ensure quality neonatal care and reduce neonatal complications.

Need of the Study

Neonates are prone to temperature maintenance problems due to physiological immaturity. At birth, the sudden transition from intrauterine to extrauterine environment exposes the newborn to rapid heat loss. If preventive measures are not taken immediately, neonatal body temperature may drop significantly within minutes after birth. The global neonatal mortality rate remains high, particularly in developing countries. Neonatal hypothermia is recognized as one of the major contributors to neonatal deaths and complications such as respiratory distress, hypoglycemia, metabolic acidosis, jaundice, and infections. Many studies have shown that the Newborn hypothermia remains one of the most important contributing factor for neonatal mortality and morbidity. Since staff nurses are directly involved in newborn care, so the investigator felt the need to assess the knowledge of staff nurses regarding prevention of hypothermia in neonates and felt that improving their knowledge through structured teaching programmes can enhance neonatal outcomes.

Review of Literature

Several studies highlighted that neonatal hypothermia remains a major contributor to neonatal morbidity and mortality. Research findings support interventions such as kangaroo mother care, skin-to-skin contact, immediate drying, delayed bathing, breastfeeding, and thermal protection practices.

Studies also indicated inadequate knowledge among healthcare workers regarding neonatal thermoregulation and emphasized the importance of educational interventions.

Geetha S. and Hemavathy V. (2015) conducted a pre-experimental study in Chennai to evaluate the effectiveness of a structured teaching programme on Kangaroo Mother Care among mothers of hospitalized newborns. The study showed a significant improvement in post-test knowledge scores after the teaching programme. The findings emphasized the importance of educating mothers regarding KMC to prevent neonatal hypothermia and improve newborn health.

Nahrel R., Kosam A., Thakur H., and Pandey S. (2015) conducted a study on the impact of training among community health workers regarding newborn care. The study included 180 Auxiliary Nurse Midwives (ANMs). Post-training assessments revealed significant improvement in knowledge related to neonatal care, danger signs, and feeding practices. The study concluded that continuous training is essential to improve neonatal outcomes.

A multicounty study conducted in Gujarat, Italy, Indonesia, Zimbabwe, Nepal, Brazil, and Mozambique assessed knowledge and practices regarding neonatal thermal control among 260 healthcare professionals. The study revealed inadequate thermal care practices and insufficient knowledge related to thermoregulation. The authors recommended strengthening awareness and training programs.

Dalal A., Bala DV., and Chauhan S. (2012) conducted a cross-sectional study among healthcare personnel in Ahmedabad district regarding knowledge of Kangaroo

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Mother Care. The study found poor knowledge among healthcare providers, although training significantly improved their understanding of KMC practices.

Josphiney H., Walsh E., Burton A., Murphy S., and O'Gorman F. (2009) evaluated nurses' knowledge regarding prevention of inadvertent perioperative hypothermia. The study identified significant variations in knowledge and emphasized the need for educational interventions and practice guidelines.

Choudhary SP., Bajaj RK., and Gupta RK. (2000) conducted a survey at SMS Medical College, Jaipur, to assess knowledge, attitudes, and practices regarding neonatal hypothermia among medical and nursing staff. The findings revealed inadequate knowledge regarding identification and management of neonatal hypothermia. The study recommended greater emphasis on neonatal thermal care during professional training programs.

Materials and Methods

The quantitative research approach was used in this study and The research design selected for the present study was Pre-experimental with one group pre-test and post-test design, in which pre-test is conducted followed by structured teaching programme and then conducting post-test for the same group to assess the effectiveness of structured Teaching Programme on Prevention of Hypothermia in Newborn among staff Nurses working in Umaid Hospital, Jodhpur.

A sample size of 30 Staff Nurses was selected using a purposive sampling technique.

Tools used was Structured questionnaire

The questionnaire schedule comprised of TWO parts.

Part I: Consists of demographic characteristics of respondents seeking information such as age, professional qualification, Total year of working experience, Place of posting, In-service education regarding prevention of hypothermia in newborn.

Part II: Consists of 40 items pertaining to knowledge regarding prevention of hypothermia in newborn.

Content validity of the tool was established by obtaining the suggestions from the experts. The tool was validated by experts in the field of Nursing, Reliability of the tool was assessed by collecting data from 8 nurses from labour room and post natal wards and NICU of Mathura Das Mathur Hospital, Jodhpur other than the sample area. The reliability of the tool was calculated by using Karl Pearson's product moment correlation formula. The reliability of the tool was 0.86. It was statistically significant and thus reliable and Strucuted Teaching Progrmme was prepared regarding Hypothermia in Newborn. The main study was conducted between 27/9/2016 to 26/10/2016 at Umaid Hospital, Jodhpur. The structured questionnaire was administered to 30 samples and response were obtained from the respondents. Confidentiality was assured to all the subjects. Data obtained was analyzed by descriptive and inferential statistics. Paired 't' test was used to assess the knowledge of staff nurses regarding knowledge on prevention of hypothermia in newborn in pre and posttest. The association between the level of knowledge in pretest with selected demographic variables was determined by chi-square test.

Results:

It consists of following section:

Section - I

- Description of socio demographic data of staff Nurses of Umaid Hospital, Jodhpur.

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Section - II

- Analysis of effectiveness of Structured teaching programme in terms of description and comparison of pre and post test scores.
- Testing the research hypothesis.

Section - III

- Association of selected socio demographic variables (age, professional qualification, years of experience, place of posting and in service education) with pre-test knowledge score.

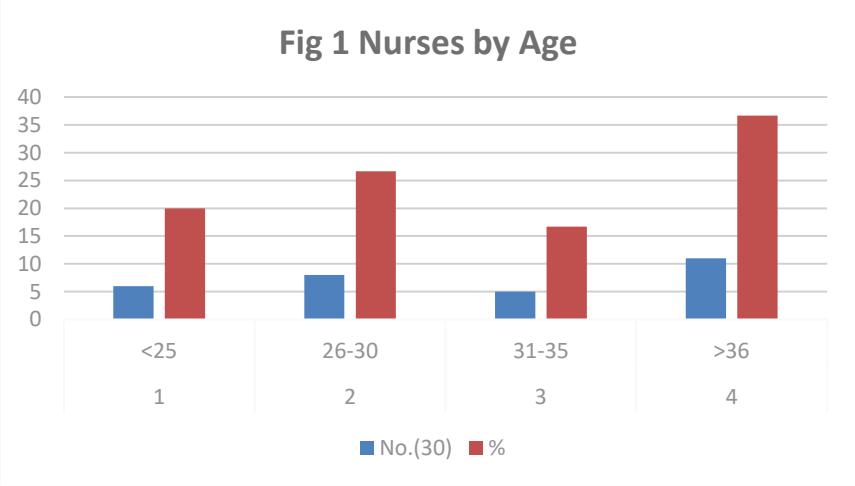
Section – I

Description of socio demographic characters of Nurses

Table 1: Distribution of the Nurses by age

S. No.	Age (years)	No. (30)	%
1	<25	6	20.00
2.	26-30	8	26.67
3.	31-35	5	16.67
4.	>36	11	36.67

Figure 1:



The above table and figure show that the large number 11(36.67%) of the subjects belong to > 35 years, 8 (26.67%) of subjects belong to 26-30 years and 6 (20%) belong to <25 years and least subjects 5 (16.66%) belongs to above 31-35 years.

Table 2: Distribution of the Nurses by Professional Qualification

Sn.	Professional Qualification	No. (30)	%
1	GNM	27	90%
2.	B.Sc. (Nsg)	0	0 %

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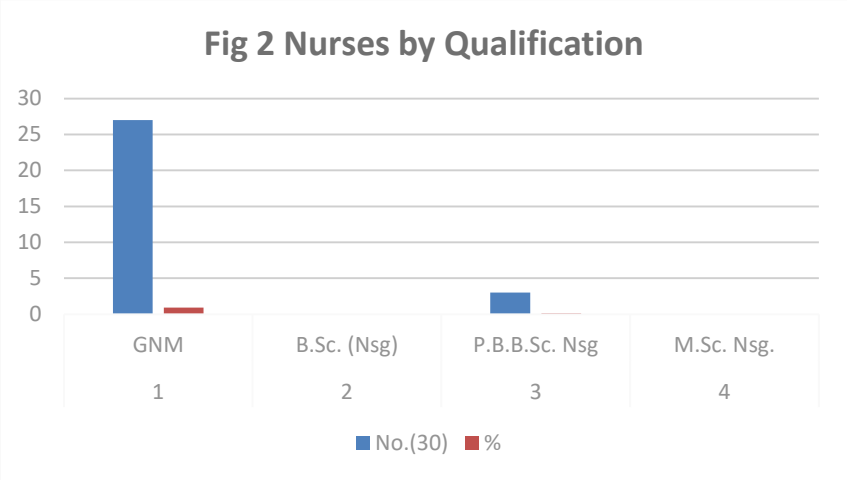
3.	P.B.B.Sc. Nsg	3	10%
4.	M.Sc. Nsg.	0	0

Figure 2:



The above table and figure show that the large number 27(90%) of the subjects had General Nursing & Midwifery Nursing, and 3 (10%) of subjects had Post Basic B.Sc. Nursing as a professional qualification and there is no subject with qualification of B.Sc. (Nsg) and M.Sc. Nursing qualification.

Table 3: Distribution of Nurses by years of experiences

S. No.	Years of Experience	No.360)	%
1	< 5	12	40
2.	6 – 10	8	26.67
3.	11 – 15	0	0
4.	> 15	10	33.33

The above table and figure show that the large number 12 (40%) of the subjects had Experience <5 years, 10 (33.33%) of subjects had >15 years, 8 (26.67%) of subjects had 6 to 10 years of experience and no subject with 11 to 15 years of experience.

Figure 3:

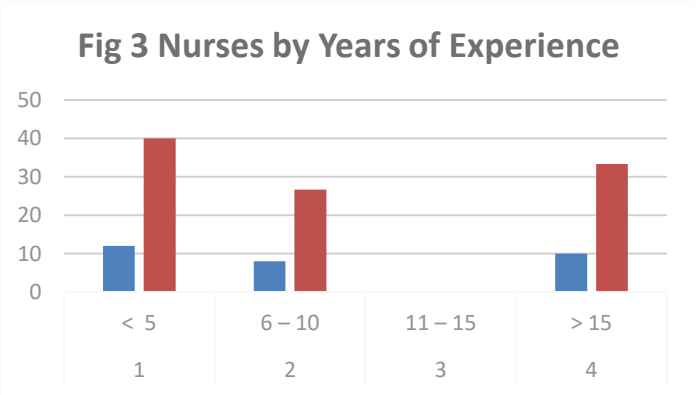


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Table 4: Distribution of Nurses by place of posting.

S. No.	Place of Posting	No. (30)	%
1	Labor Room	6	20
2.	Post Natal Ward	7	22.33
3.	Neonatal Care Unit	13	43.33
4.	Pediatric Emergency	4	13.33

The above table show that the large number 13(43.33%) of the subjects were from neonatal care unit, and the least 4(13.33%) of the subjects were from pediatric emergency rest 7 (22.33%) were from post natal ward and 6 (20%) were from labor room.

Table 5: Distribution of the Nurses by training attended

S. No.	Training attended	No. (30)	%
1	Yes	14	46.67
2.	No	16	53.33

The above table show that 16 (53.33%) of the subjects not had any training and 14 (46.67%) of the subjects had attended training.

Section - II

Analysis of effectiveness of structured teaching programme (STP)

This section of the report deals with analysis and interpretation of the data collected to evaluate the effectiveness of the structured teaching programme (STP) on knowledge regarding prevention of hypothermia in newborn.

This is organized under the following two sub headings

- Description and comparison of pre and posttest sores
- Testing the research hypothesis

Description and comparison of pre and post test scores

The knowledge regarding various aspects of hypothermia in newborn such as knowledge on meaning, factors, stages, clinical features, complications, prevention and management of neonatal hypothermia, process of thermoregulation and temperature assessment in newborn were gathered and analyzed by scoring technique. The important aspect of knowledge includes.

1. Meaning of Neonatal Hypothermia
2. Factors and Stages of Neonatal Hypothermia
3. Process of Thermoregulation in Neonates
4. Clinical Features and Complications of Neonatal Hypothermia
5. Temperature Assessment in Neonates.
6. Prevention and management of Neonatal Hypothermia

Table 6: Mean and Mean score percentage of pre and posttest knowledge regarding hypothermia in newborn

Knowledge related to	Maximum Possible	Pretest		Post test		Gain in mean score percentage
		Mean	Mean score%	Mean	Mean score %	
Meaning	2	1.6	80	2	100	20

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factor &stage	5	3.47	69.4	3.93	78.6	9.2
thermoregu.	6	2.57	42.83	5.47	91.16	48.33
Clinical	3	1.8	60	2.5	83.33	23.33
temp.	4	2.03	50.75	4	100	49.25
prevention	20	13.47	67.35	19.5	97.5	30.15
Overall	40	24.94	62.35	37.4	93.5	31.15

The table 6 reveals that the mean score percentage of posttest knowledge on meaning neonatal hypothermia in newborn is greater than the pretest knowledge 80% with gain in mean score of 20%. The factors and stages of neonatal hypothermia at posttest the mean score percentage is 78.6% which is comparatively more than the pre score 69.40% with the gain of 9.20%. The posttest means score percentage in clinical features and complications of neonatal hypothermia is 88.33% and the pretest level (60%) with the gain of 23.33%. The posttest means score percentage in prevention and management of neonatal hypothermia is 97.50% and the pretest level (67.35%) with the gain of 30.15%. The posttest means score percentage in process of thermoregulation in neonates is 91.16% and the pretest level (42.83%) with the gain of 48.33%. and the posttest means score percentage in temperature assessment in neonates is 100% and the pretest level (50.75%) with the gain of 49.25%. With over all posttest mean score percentage regarding knowledge of nurses on prevention of neonatal hypothermia is 93.50% and the pretest level (62.35%) with gain of 31.15%. So, in this study the improvement noted after intervention is compared by computing the mean score percentage out of the total anticipated scores in the different areas of knowledge assessed

Table 7: Mean and SD of knowledge scores before and after structured teaching programme and statistical significance

Note: All through the table the test is significant at 5% level (i.e. P<0.05).

Sn.	Assessment	Pretest		Post test		paired 't' value	P- Value
		Mean	Mean	Mean	SD		
1.	Meaning	1.6	0.49	2	0	3.34	P<0.05
2.	factor &stage	3.47	0.43	3.93	0.81	3.5	P<0.05
3.	thermoregu.	2.57	1.05	5.47	0.56	15.44	P<0.05
4.	Clinical	1.8	0.98	2.5	0.62	4.83	P<0.05
5.	temp.	2.03	0.91	4	0	11.61	P<0.05
6	Prevention	13.47	2.4	19.5	0.81	14.88	P<0.05
7.	Total	24.94	4.38	37.4	1.78	21.04	P<0.05

*- Significant at 5% level (i.e. P<0.05)

From table no.7 it is observed that there is a comparative improvement in the knowledge level after the administration of teaching programme in all the assessment variables. In case of knowledge regarding knowledge on meaning neonatal hypothermia in

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newborn the average was 1.6 and after teaching programme was 2. In regards to the factors and stages of neonatal hypothermia the mean score before teaching programme is only 3.47 and it was increase to 3.93 at post-test level. The posttest mean score in clinical features and complications of neonatal hypothermia was increased up to 2.5 from 1.8 of pretest level. The average score for prevention and management of neonatal hypothermia was increased from 13.47 of pretest level to 19.5 after STP. The means score for process of thermoregulation in neonates there was increase from 5.47 to 2.57and the posttest means score for temperature assessment in neonates was 2.03 and increased to 4 with STP. There was increase in overall average from 24.94 to 37.4

The paired 't' test was worked out to the statistical significance among the pre and post test scores for all the assessment variables. Invariably in all cases the test is significant at (i.e. P<0.05), and null hypothesis is rejected and research hypothesis is accepted. It evidently supports the statistical significance of STP is promoting knowledge regarding prevention of hypothermia in newborn at various dimensions.

In other words, it is inferred that the interventional programme is very much effective in increasing the knowledge of staff nurses for prevention of hypothermia in newborn.

Section -III

Association Between Socio Demographic Variables with Pretest Knowledge

In order to explore the association between the knowledge of patients regarding hypothermia in newborn, and their base line variables such as age, professional qualification, years of experience, place of posting and in service education. Chi - square value were computed and median was used to categorize the knowledge of staff Nurses with prevention of hypothermia in newborn. Knowledge score was divided in three levels, namely poor scoring <50%, average with scoring 51% to 74% and good with score of >75%.

Table 8: Association between pretest knowledge and demographic variables.

Socio demographic Characteristics	Knowledge			Total		D.F.	χ^2 value	P-Value
	Poor (<50%)	Average (51-74%)	Good (>75%)					
	No.	No.	No.	No.	%			
Age								
<25 years	2	4	0	6	20		NS	
26-30 years	1	7	0	8	26.66	6	7.75	P>0.05
31-35 years	0	4	1	5	16.66		12.59	
>36 years	0	9	2	11	36.66			
Qualification								
GNM	3	23	1	27	90		*	
B.Sc.(Nsg)	0	0	0	0	0	2	11.94	P<0.05
P.B.B.Sc.Nsg	0	1	2	3	10		5.99	
M.Sc. Nsg	0	0	0	0	0			

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Years of experience < 5 6 to 10 11 to 15 > 15	 3 0 0 2	 9 7 0 8	 0 1 0 0	 12 8 0 10	 40 26.67 0 33.33	4	NS 4.74 9.49	P>0.05
Place of posting L.R. P.N.W N.C.U P.E.	 1 2 0 0	 5 4 13 4	 0 1 0 0	 6 7 13 4	 20 22.33 43.33 13.33	6	NS 8.73	P>0.05
In service education Yes No	 0 3	 11 13	 3 0	 14 16	 46.67 53.33	2	* 6.06	P<0.05

The above table presents the statistical outcomes of association between socio demographic characters of staff Nurses with their pre-test knowledge. In order to examine the association between these variables the chi-square test was worked out. Among these variables accounted for association, the variables professional qualification (χ^2 =11.94, df=2) In service education (χ^2 =6.06, df=2) were found to be statistically significant with pre-test knowledge on prevention of hypothermia in newborn at 5% level i.e., P<0.05. The remaining characters were not found to be statistically significant i.e., P>0.05. It is evidenced that the knowledge on prevention of hypothermia in newborn was influenced by professional qualification and in-service education.

Note: There were no sample found having professional qualification of B.Sc. (Nsg) and M.Sc. Nsg, so the degree of freedom is taken as 2 and result is inferred accordingly.

Conclusion

The findings of the study revealed that staff nurses had inadequate knowledge regarding prevention of hypothermia in newborn babies during pre-test assessment. After administration of structured teaching programme, post-test knowledge scores significantly improved.

The study findings were consistent with previous studies that emphasized effectiveness of educational interventions and training programmes in improving neonatal care practices among healthcare professionals.

The discussion is delineated and formulated in accordance with outlined objectives of the research under the following headings.

- Socio demographic variables.
- Assess the knowledge of the staff Nurses of Umaid Hospital, Jodhpur regarding prevention of hypothermia in newborn
- Prepare and administration of structured teaching programme on prevention of hypothermia in newborn.
- Analysis of the effectiveness of structured programme.
- Association between socio demographic variables and pre-test knowledge score.

Socio demographic variables

The largest number 11(36.67%) of the subjects belong to > 35 years, 8 (26.67%) of subjects belong to 26-30 years and 6 (20%) belong to <25 years and least subjects 5 (16.66%) belongs to above 31-35 years.

The large number 27(90%) of the subjects had General Nursing & Midwifery Nursing, and 3 (10%) of subjects had Post Basic B.Sc. Nursing as a professional qualification and there are no subject with qualification of B.Sc. (Nsg) and M.Sc. Nursing qualification.

The large number 12 (40%) of the subjects had Experience <5 years, 10 (33.33%) of subjects had >15 years, 8 (26.67%) of subjects had 6 to 10 years of experience and no subject with 11 to 15 years of experience.

The large number 13(43.33%) of the subjects were from neonatal care unit, and the least 4(13.33%) of the subjects were from pediatric emergency rest 7 (22.33%) were from post natal ward and 6 (20%) were from labor room.

The 16 (53.33%) of the subjects had not had any training and 14 (46.67%) of the subjects had attended training.

Assess the knowledge of the staff Nurses of Umaid Hospital, Jodhpur regarding prevention of hypothermia in newborn

The pretest finding of the study revealed that the overall score in pretest was near 37.4, mean score percentage was 62.35 this shows that the knowledge of staff nurses regarding prevention of hypothermia in newborn was not adequate for staff nurse caring newborn.

Prepare and administration of structured teaching programme on prevention of hypothermia in newborn among staff Nurses.

Analysis of effectiveness of structured teaching programme

The mean score percentage of posttest knowledge on meaning neonatal hypothermia in newborn 100%, factors and stages of neonatal hypothermia 78.6% clinical features and complications of neonatal hypothermia 88.33%, prevention and management of neonatal hypothermia 97.50%, thermoregulation in neonates 91.16% and temperature assessment in neonates 100% were comparatively more than their pretest knowledge scores of 80%, 69.40%,60%,67.35%,42.83%,50.75% only. It confirms that there was a up gradation of knowledge through administration of STP.

The staff nurses were found to be lacking in knowledge of the area of thermoregulation in neonates and temperature assessment in neonates than the other areas.

It was also observed from the paired t Test analysis of pre and post test scores on knowledge (t cal=21.04, P<0.01) was significant. This result evidently supports that the structured teaching programme is significantly effective in promoting the knowledge on prevention of hypothermia in newborn. So the mean posttest knowledge score of staff Nurses undergoing structured teaching programme will be significantly higher than their mean pre-test knowledge scores. Hence hypothesis is accepted.

Prepare and administration of structured teaching programme on prevention of hypothermia in newborn among staff Nurses.

Relationship between pretest knowledge with demographic characteristics

Among these variables accounted for association, the variables professional qualification (χ^2 =11.94, df=2) In service education (χ^2 =6.06, df=2) were found to be statistically significant with pre-test knowledge on prevention of hypothermia in newborn at 5% level i.e.,

P<0.05. The remaining characters were not found to be statistically significant i.e., P>0.05. It is evidenced that the knowledge on prevention of hypothermia in newborn was influenced by professional qualification and in-service education.

Conclusion

The study concluded that structured teaching programme was effective in improving knowledge of staff nurses regarding prevention of hypothermia in newborn babies. Continuous nursing education and periodic training programmes are recommended to improve neonatal care and reduce complications related to hypothermia.

There were no sample found having professional qualification of B.Sc. (Nsg) and M.Sc. Nsg, and with experience of 11 to 15 years so no result can be inferred for these group by this study.

Recommendations

1. Similar studies can be conducted with larger sample size.

2. Comparative studies can be conducted in different healthcare settings.

3. Periodic in-service education programmes should be organized for staff nurses.

4. Educational modules and guidelines regarding neonatal thermal care should be made available in hospitals.

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