Effectiveness of PNI regarding 'warm chain' in terms of knowledge and practice among staff nurses working in obstetrical and neonatal units in Selected Hospitals at Meerut

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Abstract: *A newborn or neonate, is a child under 28 days of age. Hypothermia during the newborn period is widely regarded as a major contributory cause of significant morbidity in developing countries and, at its extreme, mortality[1]. Hypothermia during the newborn period is widely regarded as a major contributory cause of significant morbidity in developing countries and, at its extreme, mortality[2]. High prevalence of hypothermia has been reported from countries with the highest burden of neonatal mortality, where hypothermia is increasingly gaining attention and significance as a critical intervention for newborn survival. The World Health Organization (WHO) adopted thermal control among the essential components of newborn care[3]. With these background a quasi-experimental one group pre test and post test research design study was developed.The study was conducted at obstetrical unit and neonatal unit,CSSH, Meerut. The target population was 30 industrial women Staff Nurse with simple random sampling technique. The instrument for data collection was Demographic variables,30 structured knowledge questionnaire and 30structured observational checklist. The findings of the study revealed that the mean post test knowledge score is significantly higher than the mean pre test knowledge score 88.56 % (post test) , 52.33% (pre test) with 't' value 44.63 is significantly higher than the table value t (p=0.05, df=29) = 2.05.*

The mean post test practical score is significantly higher than the mean pre test practical score 92.77% (post test) , 34.67 % (pre test) with 't' value 40.23 is significantly higher than the table value t (p=0.05, df=29) = 2.05. In post test there was significant association between the findings of knowledge with working experience which is estimated by chi-square (χ^2) test. The study concluded that the PNI regarding 'warm chain' in terms of knowledge and practice is effective for the staff nurses working in obstetrical and neonatal units.

Key Words: *PNI (Planned Nursing Intervention), knowledge, practice, warm chain, staff nurse, obstetric unit, neonatal unit, WHO (World health organisation)*

1. INTRODUCTION:

Neonatal hypothermia is defined as an abnormal thermal state in which the newborn's body temperature drops below 36.5 °C (97.7 °F). Progressive reduction in body temperature leads to adverse clinical effects ranging from mild metabolic stress to death[4].

At birth, the newly born infant is suddenly exposed to a wet and cold environment and responds by increasing heat production and attempts to conserve heat by cutaneous vasoconstriction. These responses begin within a matter of minutes and can persist for many hours[5]. In the absence of thermal protection, the newborn may lose considerable heat, resulting in a drop of the infant's body temperature at a rate of 0.2 to 1.0 °C min^{-1}. Within the first minutes following birth, skin temperature of the baby typically falls by 3 to 4 °C[6, 7]

There are several approaches and devices for prevention and treatment of newborn hypothermia such as warming mattresses, plastic wraps, bags, and caps.[8,] Many neonatal deaths, particularly those related to severe infections and prematurity, are preventable with relatively easy interventions to keep babies warm[9]

WHO proposes a "warm chain", to minimize the risk of hypothermia in newborns, which includes warming the delivery place, immediate drying, skin-to-skin care, early and exclusive breast-feeding to promote close warming contact with the mother and provide energy to generate heat, postponing bathing, appropriate clothing and bedding, and placing mother and baby together[10]

2. STATEMENT OF PROBLEM:

A study to assess the effectiveness of planned nursing intervention regarding 'warm chain' in terms of knowledge and practice among staff nurses working in obstetrical and neonatal units in selected hospitals at Meerut.

3. OBJECTIVES OF THE STUDY:

- Develop and validate the Planned Nursing Intervention (PNI) on warm chain for the staff nurses.

- Assess and evaluate the knowledge of staff nurses on warm chain before and after the administration of Planned Nursing Intervention (PNI).
- Assess and evaluate the practice of staff nurses on warm chain before and after the administration of planned nursing intervention.
- To find out the relationship between post test knowledge and practice regarding warm chain among staff nurses in obstetrical and neonatal units.
- To determine the association between the post- test knowledge with selected demographic variable among staff nurses in obstetrical and neonatal units.

3. HYPOTHESES (0.05 level of significance)

H_1: The mean post-test knowledge and practice score of the staff nurses regarding warm chain will be significantly higher than their mean pre-test knowledge and practice score.

H_2: There will be significant association between the mean post-test knowledge and selected demographic variables.

NULL HYPOTHESIS:

H01: The mean post-test knowledge and practice score of the staff nurses regarding warm chain will not be significantly higher than their mean pre-test knowledge and practice score.

H02: There will not be significant association between the mean post-test knowledge and selected demographic variables.

4. RESEARCH METHODOLOGY:

Research approach: Quantitative and Evaluative approach
Design: Quasi-experimental one group pre test and post test research design
Setting: Obstetric unit and neonatal unit, CSSH, Meerut.
Sampling technique: Simple random sampling
Sample size: 30 Staff Nurse.
Development and description of the Tools:
Section I: Demographic variables
Section II: Structured knowledge questionnaire
Section III: Structure observational checklist.
Data analysis: The data has been analysed in terms of descriptive and inferential statistics . Paired t-test was used to find out the difference between pre test and post test knowledge score and practical score. Chi-square test was used to find out the association between Pre test and Post test knowledge score and practical score of Staff Nurse with selected demographic variables.

5. RESULT:

Table 1: *Frequency and Percentage Distribution of Demographic Characteristics of the Subjects*

N= 30

Characteristics	Category	Respondents	
		Number	Percent
Age (years)	21-25	14	46.7
	26-30	10	33.3
	31-35	2	6.7
	>36	4	13.3
Qualification	S. SEC	14	46.7
	U.G	14	46.7
	P.G	2	6.7
Working experience	0-1	0	0
	1-3	10	33.33
	3-5	8	26.66

	>5	12	40.0
Attended any skilled training programme	YES	0	0
	NO	30	100
	Total	30	100.0

The data in table 1 depicts that majority of 46.7% of respondents were in the age group of 21-25 years. 46.7% of the respondents were belongs to S.SEC and 46.7% of the respondents were belongs to U.G. Majority of the respondents 96.7% had Diploma in General Nursing Midwifery and only 3.3% of them had Graduate in Nursing. Most of the respondents 30% of them belong to labour room, 16.7% of them belong to P. Natal ward and 16.7% of them belong to A. Natal ward, and 36.6% of them belong to Neonatal Unit. majority (40%) of the respondents were having more than 5yrs of working experience.

TABLE – 2: Over all Pre test and Post test Mean Knowledge on Warm Chain

N = 30

Aspects	Max. Score	Respondents Knowledge				Paired 't' Test	Table value	p-value
		Mean	SD	Mean (%)	SD (%)			
Pre test	30	15.70	5.05	52.33	16.83	44.63	2.05 *S	<0.05
Post test	30	26.57	1.555	88.56	5.18			
Enhancement	30	10.87	3.49	36.23	11.63		Df=29	

*S= Significant *Ns= Not Significant

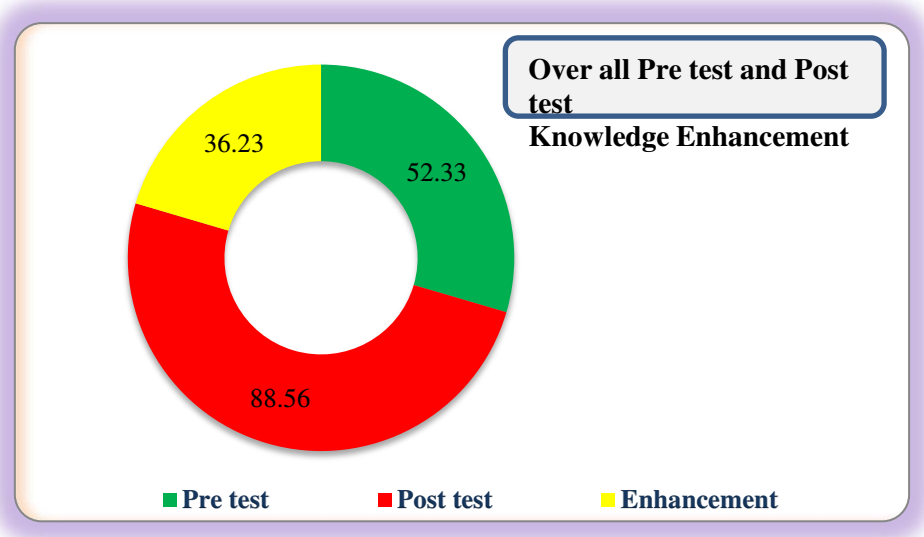

FIGURE 2: OVER ALL PRE TEST AND POST TEST MEAN KNOWLEDGE ON WARM CHAIN

The data presented in the fig-2 indicates the Pre test and Post test mean score Knowledge on Warm Chain. Mean Pre test and Post test knowledge score was 52.33% and 88.56% respectively. The enhancement in the respondents knowledge percentage mean was 36.23% with SD was 11.63%. The data subjected for the paired t-test was 44.63 indicating the impact of intervention programme on Warm Chain among staff nurses.

TABLE – 3: Over all Pre test and Post test Mean Practice on Warm Chain

N =30

Aspects	Max. Score	Respondents Practice				Paired 't' Test	Table value	p-value
		Mean	SD	Mean (%)	SD (%)			
Pre test	30	10.4	4.937	34.67	16.45	40.23 *S	2.05	< 0.05
Post test	30	27.83	2.596	92.77	8.65			
Enhancement	30	17.43	2.341	58.1	7.80			df= 29

*S= Significant *Ns= Not Significant

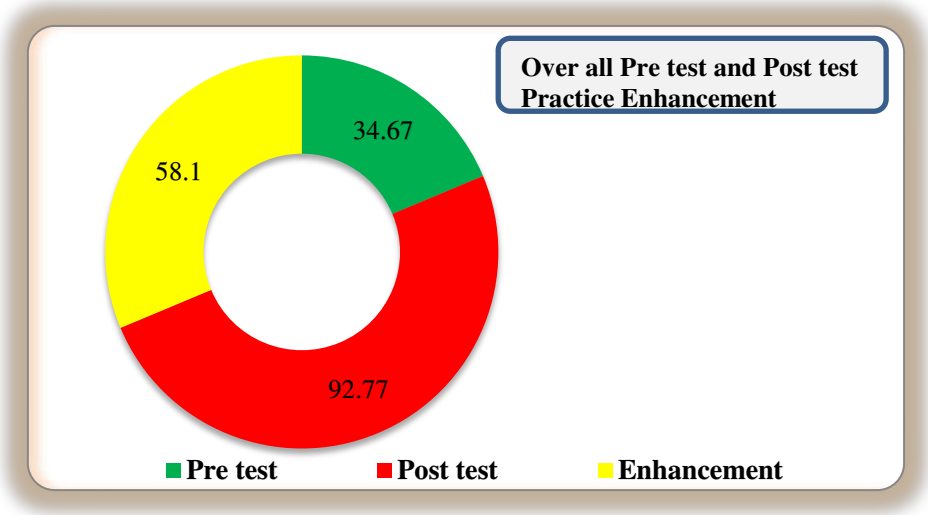

FIGURE 3: OVER ALL PRE TEST AND POST TEST MEAN PRACTICE ON WARM CHAIN

The data presented in the fig- 3 indicates the Pre test and Post test mean score Practice on Warm Chain. Mean Pre test and Post test Practice score was 34.67% and 92.77% respectively. The enhancement in the respondents Practice score was 58.1% with SD value of 7.80%. The data subjected for the paired t-test was 40.23 indicating the impact of intervention programme on Warm Chain among staff nurses.

TABLE- 4: Association between post test knowledge level and post test practice level on warm chain.

	Post Test Practice
Post Test Knowledge	r = 0.465 and df = 29 Good / acceptable correlation between Post Test Knowledge and Post Test Practice score

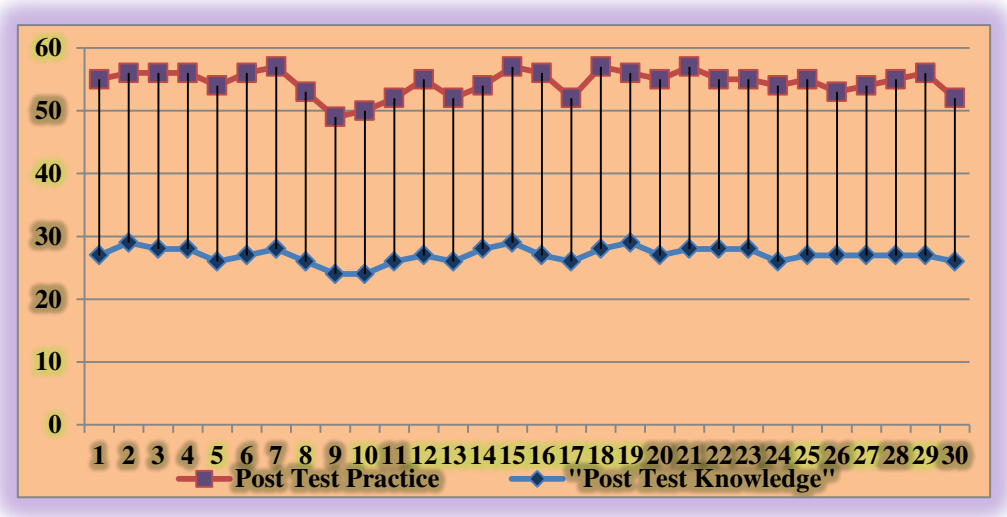

FIGURE 4: ASSOCIATION BETWEEN POST TEST KNOWLEDGE AND POST TEST PRACTICE

The data in the table represent the correlation in Post Test Knowledge Level and Post Test Practice Level among Staff Nurses, which is represented 'r' value. The calculated value is 0.465 which shows positive correlation between Post Test Knowledge and Post Test Practice Score. Which denotes by the investigator that the Above Average knowledge will shows effective practice skills among the Staff Nurses after Planned Nursing Intervention on Warm Chain.

5. DISCUSSION:

The study shows that majority of the samples 54% had below Average knowledge regarding Warm Chain before the administration of PNI. 46% of them had Average knowledge and none of them had Above Average knowledge. The result showed that the mean post-test knowledge scores (88.56%) was found to be significantly higher

than their mean pre-test knowledge score (52.33%) as evident from 't' value. The result showed that the post-test practice scores (27.83%) was found to be significantly higher than their mean pre-test practice score (10.4%) as evident from 't' value.

With the PNI, 13.33% of staff nurses were found to have Average knowledge and remaining 86.67% were found Above Average knowledge. 100% of staff nurses were found to have Average practice and none of the staff nurses had below Average practice regarding warm chain. This gives an inference that the post test knowledge have positive significance on post test practice score. The study is supported through a study conducted by Usha M Bhandari, *et al.* to assess the effectiveness of planned teaching program on knowledge of mother on prevention of hypothermia among newborns. the finding of the study shows effective result with the value of post test knowledge score ie 29.7, which is higher than the pretest score ie 17.9 [11]

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