

A study to assess the knowledge regarding prevention of hypothermia in newborn among postnatal mothers in selected hospital, Jaipur with a view to develop KMC technique pamphlet.

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Abstract: New born baby come in an extra uterine environment from intrauterine environment which is most thunder and critical for survival in first few days of life because the immune system of new born baby is not fully developed so that they are more prone to hypothermia in first few days of life. The care of newborn baby is important to prevent hypothermia and morbidity & mortality. A descriptive study was conducted to assess the knowledge of postnatal mothers regarding prevention of hypothermia in newborn, in selected hospital, Jaipur. The objectives of the study were to assess the knowledge regarding prevention of hypothermia in new born among postnatal mothers, to find out association between knowledge and selected demographic variables and to develop a pamphlet on KMC technique.

Key Words: Postnatal mothers, hypothermia in new born, KMC.

1. INTRODUCTION:

Neonatal hypothermia has been recognized as a contributing cause of mortality and morbidity among normal-birth-weight babies. Newborns are more prone to become hypothermia because of their limited ability to generate and conserve heat, large surface area per unit of body weight, little subcutaneous fat, poorly developed autonomic thermoregulatory response; body surface area is more in relation to weight. (NAACOG- 2014) .

Low birth weight, preterm and sick newborn are at greater risk of developing hypothermia. Brown fat is the site of heat production. A low birth weight baby has decreased subcutaneous and brown fat.

Newborn babies are particularly susceptible to heat loss via evaporation, radiation, conduction, and convection. Heat loss in newborn is an important factor that needs to be taken into account when caring for a newborn baby. According to WHO 2014 hypothermia occurs when the newborn body temperature drops below 36.5°C (97.7°F). WHO has published guidelines on thermal care and has included thermal care of newborn as one of the elements of essential newborn care (ENC) that should be provided to all newborn regardless of setting.

Prevention of Hypothermia is an essential aspect of neonatal care especially in the immediate neonatal period. Heat production by shivering (or) muscle activity is minimal so great care is necessary both to clothe the baby properly and to maintain the surrounding temperature and humidity, which suits the individual infant.

A large proportion of babies are born at home and do not access the formal health system during the early neonatal period, and that these births contribute disproportionately to the global burden of neonatal death.

Care and nurturing of the newborn become the primary responsibility of the parents, especially the mothers. One of the most crucial needs often felt by me is the insufficient knowledge of newborn parents.

Baby parenting is the most rewarding and wonderful job of a mother. With the advice of experts and experienced personalities, she can perform the duty of baby parenting even more effectively and efficiently. The health and survival of the new born baby depends upon the health status of the mother and her awareness, education and skills.

In 1979, Dr. Martinez and Dr Rey of the child institute in Bogota, Columbia developed a simple method called **Kangaroo Mother Care (KMC)** to overcome the inadequacies of neonatal care in developing countries.

K M C is the method of holding an infant with skin to skin contact, prone and upright on the chest of the parents. This method was described as human incubator for low birth weight babies.

The most effective management strategy for hypothermia is its prevention. So, preventing hypothermia and maintaining a neutral thermal environment is important to prevent other complications. It can be done by mothers of the neonate and educating mother regarding measures of thermoregulation like kangaroo care, rooming in, mummifying and promoting breast feeding etc.

2. REVIEW OF LITERATURE:

➤ Studies related to hypothermia and causes of hypothermia

Geeta T, Chenoy R, Stevens D (2014) conducted a study on incidence and seasonality of hypothermia among newborns in Southern Nepal to quantify incidence, age distribution, and seasonality of neonatal hypothermia among a large population. The study concluded that Mild or moderate hypothermia was nearly universal, with substantially higher risk in the cold season.

A study conducted by **Nayeri F, Nili F at Iran in 2011** regarding hypothermia at birth and its associated complications in newborn. A sample of 940 neonates was included in the study. The study showed that hypothermia is one of the main causes of neonatal mortality in developing countries.

A study conducted by **Lundgren, Henriksson at Albania in 2010** to find out the effectiveness of thermoregulation and prevention of hypothermia in neonates. This study stated that low birth weight and very low birth weight infants were placed in polyethylene wrap from the neck down immediately after delivery to decrease heat loss in infants born at 23 to 27 weeks of gestation.

Morten Sodemann et al (2012) conducted a retrospective cohort study from Guinea-Bissau, Africa, hypothermia (34.5°C) measured within 12 hours after birth in a maternity ward was associated with almost 5 times higher mortality in the first week of life. They identified 2926 live births in the study area and 177 deaths before 6 months of age.

A study was conducted by **Pascale et al (2011)** on Mount Lebanon Hospital to describe knowledge, attitude and practices of midwives regarding neonatal care. The study included 7 hospitals of **Mount Lebanon**. The study revealed that the midwives in these hospitals had acceptable knowledge regarding neonatal care, but the application of this knowledge in practice measures was limited.

Dragovich Det al (2009) conducted a study on Thermal control of the newborn: knowledge and practice of health professional in seven countries. The findings of the evaluation were consistent across countries and showed that thermal control practices were frequently inadequate in different areas.

➤ Studies related to prevention of Hypothermia

Berqstrom A et al (2010) conducted a study on the impact of newborn bathing on the prevalence of neonatal hypothermia in **Uganda** randomized, controlled trial. This study concluded that bathing newborn babies shortly after birth increased the risk of hypothermia despite the use of warm water and skin-to-skin care for thermal protection of the newborn.

The study conducted by **Kristie Cramer et al (2015)** to identify and synthesize investigations of the effectiveness of occlusive skin wrap for reducing heat loss in pre mature infants born at less than 36 weeks gestations in **Canada**. The findings suggests that occlusive skin wrap prevents heat loss in pre mature infants.

A large cross-sectional community-based study conducted in **Southern Tanzania** by **Suzanne P, Zelee H, (2012)**. The result shows that health facility deliveries accounted for 41% of birth and skilled attendants assisted 40% of births. The findings suggest a need to promote and facilitate health facility deliveries, hygienic delivery practices for home birth, delayed bathing and immediate and Exclusive breastfeeding to improve newborn health.

A pre-experimental study conducted by **Tesline et al (2011)** in Manipal medical college of nursing, **Udupi, Karnataka**, to evaluate the effectiveness of planned teaching programme on prevention of hypothermia for mothers of neonates. The study concluded that planned teaching programme with appropriate AV aid was an effective strategy in imparting knowledge to postnatal mothers on prevention of hypothermia.

Belsches et al (2014) conducted a parallel-group RCT at a teaching hospital in Zambia to test the use of plastic bags to prevent heat loss in infants ≥ 37 weeks gestational age and $\geq 2,500$ g within 10 minutes of birth. This is an extremely important finding, in that hypothermia is an even more widespread problem in low-resource countries and this intervention is an easy, low-cost one.

➤ Studies related to Kangaroo care

Galligan M (2009) conducted a study on proposed guidelines for skin to skin treatment of neonatal Hypothermia in **Beth Israel deaconess medical center, USA**. The author concluded that the research supports the use of Skin-to skin contact care as an alternative to traditional rewarming.

Susan M Ludington (2009) Conducted a study on Randomized controlled trail of Kangaroo care cardio respiratory and thermal effects on healthy term infants. Results include cardio respiratory and temperature outcomes remained within clinically acceptable ranges during kangaroo care. Regular breathing increased for infants receiving KMC compared to infants receiving standard NICU care.

Kadam S Binoy (2010) conducted study on feasibility of kangaroo mother in **Mumbai**. A randomized controlled trail was performed over one year period in which 89 neonates were randomized into 2 groups Kangaroo Mother Care (KMC) and Conventional Mother Care (CMC). There was significant reduction in KMC v/s CMC group of hypothermia, higher oxygen saturation and decrease in respiratory rates.

In Denmark, **Maastrup et al (2010)** evaluated skin-to-skin care in 22 stable premature infants with a mean gestational age of 25 weeks and a mean birth weight of 702 g, and found evidence of an increase in body temperature with skin-to-skin care compared with body temperature in infants prior to skin-to-skin care.

➤ **Study related to knowledge of mothers on new born care**

Agrawal PK, Agrawal S (2010), found that coverage of antenatal home visit and newborn care practices were positively correlated with the knowledge level of antenatal mothers. Community Health Workers knowledge is one of the crucial aspects of health systems to improvement coverage of community based newborn health care programmes.

Padiyath M A, Bhat V B (2011) study reveals that, knowledge of mothers was inadequate in areas of umbilical cord care (35%), thermal care (76%) and vaccine preventable diseases. 19% of them still practice oil instillation into nostrils of newborn and 61% of them administer gripe water to their babies.

Shilpa GS (2011) concluded that, 47% of the samples of mothers had good knowledge and 53% of the samples had excellent knowledge regarding newborn care. 13% of the subjects had average practices scores, 87% of mothers had good practices scores regarding newborn care.

An experimental study was conducted by **Choudari K C et al (2011)** to evaluate the knowledge, attitude, and practice about neonatal hypothermia among medical and paramedical staff dealing with newborn care at **SMS Medical college Jaipur**. Study concluded that to reduce the neonatal morbidity and mortality due to neonatal hypothermia, greater emphasis should be laid on this problem while designing curriculum for training of undergraduate and postgraduate doctors, paramedical staff and traditional birth attendants.

➤ **Studies related to Complications of hypothermia**

M A Delavar et al (2010) conducted a follow up study on hypothermia at birth and its associated Complications in newborns. Logistic regression showed that regardless of weight and gestational age, hypothermia at birth alone could increase the risk of neonatal death, Respiratory distress, metabolic acidosis and Jaundice.

3. MATERIALS AND METHODS:

In order to achieve the objectives of the study, descriptive survey research approach was adopted for the study. 100 subjects those fulfilling inclusion and exclusion criteria were selected by the non-probability convenience sampling technique from selected hospital Jaipur. The Subjects were assessed by using socio demographic data and structured questionnaire prepared by the investigator. Information pamphlet was prepared on the basis of review of literature and expert opinion. The information pamphlet was titled as “**Caring for you and your baby, Information Pamphlet on Kangaroo Mother Care (skin to skin contact)**”

The findings of the study are discussed following 3 main categories:

- ❑ Sample characteristics
- ❑ Knowledge scores of participants on prevention of hypothermia in newborn.
- ❑ Association of knowledge with selected demographic variables.

4. DISCUSSION:

The findings of the study are discussed following 3 main categories:

➤ **Sample characteristics:**

- Findings revealed that the highest percentage 68% were in the age group of 23-28 years, 18% were in 29-34 years, remaining both age groups up to 20 years and 35 years or above have 11% and 3%.
- Distribution of the postnatal mothers according to their religion reveals that 70% of postnatal mothers were Hindu, 18% were Muslims, 10% were Christian and 2% were belongs to Sikh.
- Distribution of the postnatal mothers according to their educational status reveals that 44% of the postnatal mothers were in the category of up to secondary education, 35% had senior secondary education, 19% were graduates, and 2% were postgraduates.
- Distribution of the postnatal mothers according to their occupation reveals that 72% were housewife, 15% were private employees, and 13% were govt. employees.
- Distribution of postnatal mothers according to their number of children reveals that 46% have 2 children, 24% have 1 child, 21% have 3 children and 4% have 4 or more children.
- Distribution of the postnatal mothers according to type of family reveals that 68% were belongs to joint family, 32% were belongs to nuclear family.
- Percentage distribution of the postnatal mothers according to their family income per month revealed that 45% belonged to Rs 5001-10,000 income group, 30% of them belonged to Rs, up to 5000 income group, 20% of them belong to Rs, 10001-15000 income group and only 5% of them have income above Rs. 15000 per month.
- The analysed data regarding previous knowledge regarding prevention of hypothermia in newborn, of the postnatal mothers reveals that 13% had got information from health personnel and 87% had no information regarding prevention of hypothermia in newborn.
- The analysed data regarding utilization of antenatal services reveals that highest percentage 70% of postnatal mothers were utilizes services of government agencies, 19% utilize services of private nursing homes, 6% utilizes health services from clinics and 5% from voluntary health agencies.

➤ **Knowledge scores of participants on prevention of hypothermia in newborn:**

- Level of knowledge of postnatal mothers showed that 4% of the postnatal mothers had poor knowledge, 49% had average knowledge, 42% of the postnatal mothers had good knowledge and 4% had excellent knowledge regarding prevention of hypothermia in newborn.
- Overall knowledge of postnatal mothers was 60.03% with mean knowledge score was 18.01 and median was 19 with standard deviation was 4.70 and the knowledge score were in the range of 23-10. It showed that postnatal had good knowledge regarding prevention of hypothermia in newborn.
- Area wise analysis of knowledge score of postnatal mothers indicated that maximum knowledge score was 74.67% in the area of prevention and management of hypothermia in newborn, 45.75% in the area of causes and risk factors, 38.75% in the area of meaning and definition, 31.5% in the area of signs and symptoms of hypothermia and 28% in the area of complications of hypothermia in newborn.

The data showed that majority of postnatal mothers had poor knowledge regarding, signs and symptoms and complications of hypothermia in newborn.

➤ **Association of knowledge scores and selected demographic variables:**

- There is a significant association between the knowledge score of postnatal mothers and selected demographic variables like age of the participants $\chi^2 = 16.92$ ($P < 0.05$), educational status $\chi^2 = 18.12$ ($P < 0.05$), type of family $\chi^2 = 9.08$ ($P < 0.05$), number of children $\chi^2 = 17.92$ ($P < 0.05$) and previous knowledge regarding prevention of hypothermia $\chi^2 = 9.29$ ($P < 0.05$). Hence the research hypothesis is accepted at the 0.05 level of significance.
- There is no significant association between the knowledge level of postnatal mothers and selected demographic variables like family income $\chi^2 = 15.8$ ($P > 0.05$), occupation $\chi^2 = 2.62$ ($P > 0.05$), religion $\chi^2 = 9.6$ ($P > 0.05$) and utilization of antenatal services $\chi^2 = 6.33$ ($P > 0.05$). Hence the research hypothesis is rejected at the 0.05 level of significance.

5. ANALYSIS AND INTERPRETATION :

A descriptive study approach was adopted to assess the knowledge of postnatal mothers regarding prevention of hypothermia in newborn. Data collected from 100 subjects were processed and analysed on the basis of the objectives and hypothesis formulated for the present study.

The results were computed by using descriptive and inferential statistics based on the following objectives of the study.

6. ORGANIZATION OF FINDINGS:

The data obtained was analysed and presented in 3 different sections:

SECTION I: Description of demographic variables of postnatal mothers.

SECTION II: Analysis of existing knowledge score of postnatal mothers.

SECTION III: Association between knowledge regarding prevention of hypothermia in newborn and selected demographic variables.

SECTION I:

Description of demographic characteristics of samples:

This section deals with distribution of participants according to the demographic characteristics.

Distribution of postnatal mothers according to the demographic variables

N = 100

S. N.	Variables	Frequency	Percentage %
1	Age in years: a. Up to 22 years b. 23-28 years c. 29-34 years d. 35 years and above	11 68 18 3	11 68 18 3
2	Religion: a. Hindu b. Muslim c. Christian d. Others	70 18 10 2	70 18 10 2
3	Type of family a. Nuclear family b. Joint family	32 68	32 68
4	Number of children a. 1	24	24

	b. 2 c. 3 d. 4 or above	46 21 9	46 21 9
5	Educational status: a. Up to secondary b. Senior secondary c. Graduate d. Post graduate	44 35 19 2	44 35 19 2
6	Family income a. Up to 5000 b. 5001-10000 c. 10001-15000 d. Above 15000	30 45 20 5	30 45 20 5
7	Occupational status: a. House wife b. Private employee c. Government employee	72 15 13	72 15 13
8	Previous knowledge about prevention of hypothermia in newborn: a. yes b. no	13 87	13 87
8.1	Source of information: a. health personnel	13	100
9	Utilization of antenatal services: a. Govt. health agency b. Private nursing home c. Voluntary health agency d. Clinic	70 19 5 6	70 19 5 6

Table-4.1: Shows the frequency and percentage distribution of demographic variables among the Postnatal Mothers.

➤ **FREQUENCY DISTRIBUTION OF AGE IN YEARS:**

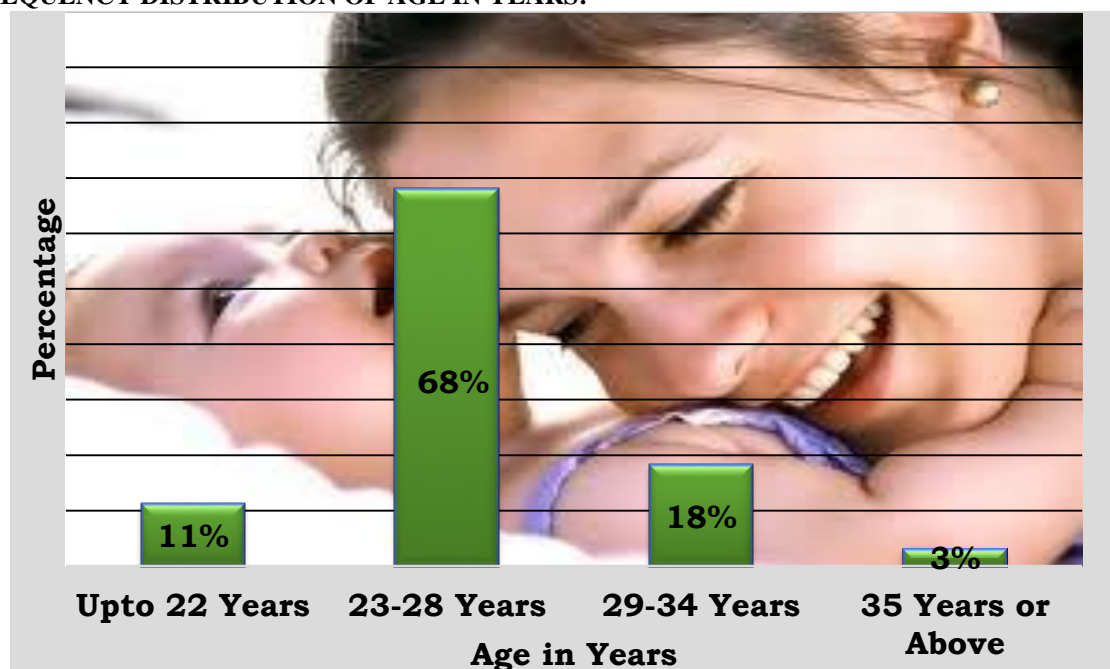


Fig-4.1: Distribution of Postnatal Mothers According to their Age

➤ FREQUENCY DISTRIBUTION OF RELIGION:

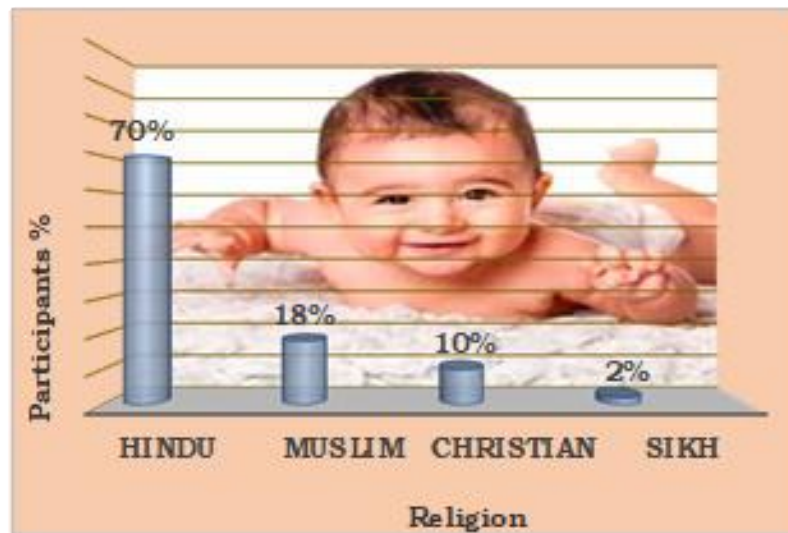


Fig-4.2: Distribution of Postnatal Mothers According to their Religion

➤ FREQUENCY DISTRIBUTION OF TYPE OF FAMILY:

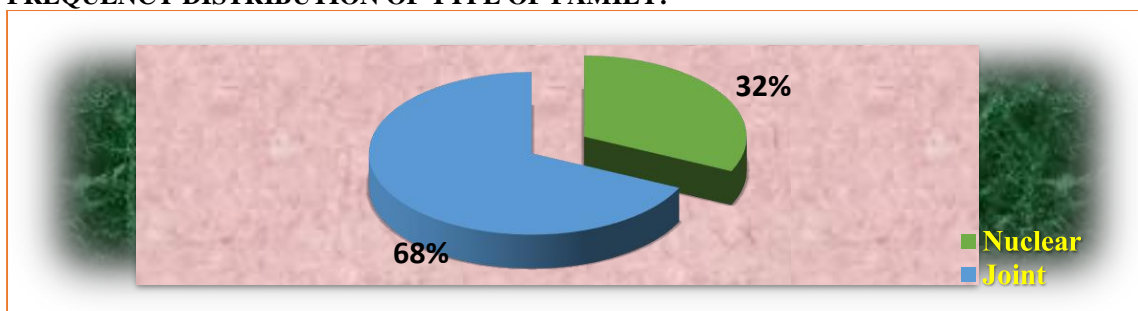


Fig-4.3: Distribution of Postnatal Mothers According to Type of Family

➤ FREQUENCY DISTRIBUTION OF NUMBER OF CHILDREN:

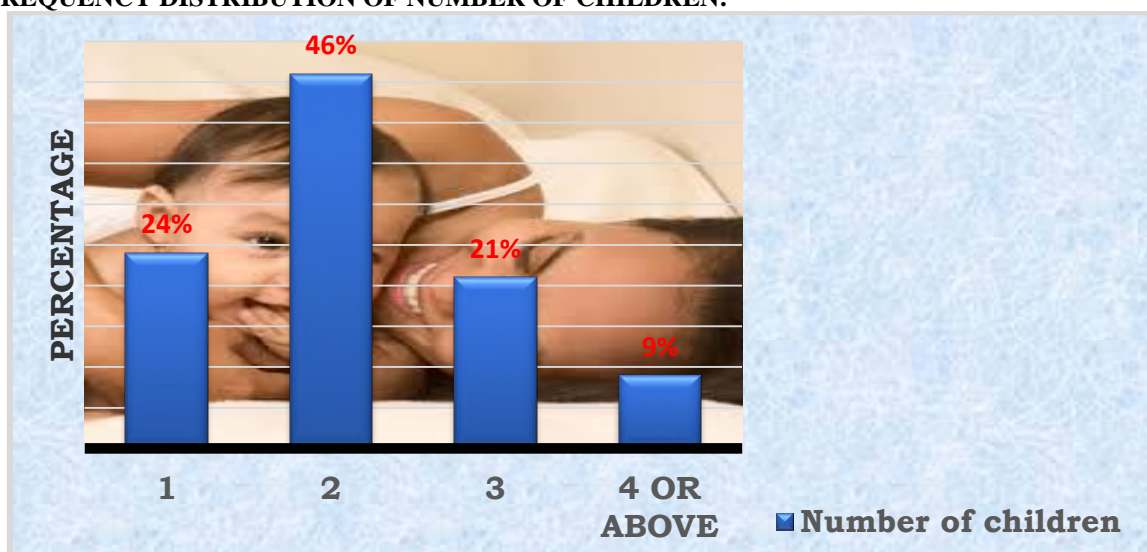


Fig-4.4: Distribution of Postnatal Mothers According to the Number of Children

➤ FREQUENCY DISTRIBUTION OF EDUCATIONAL STATUS

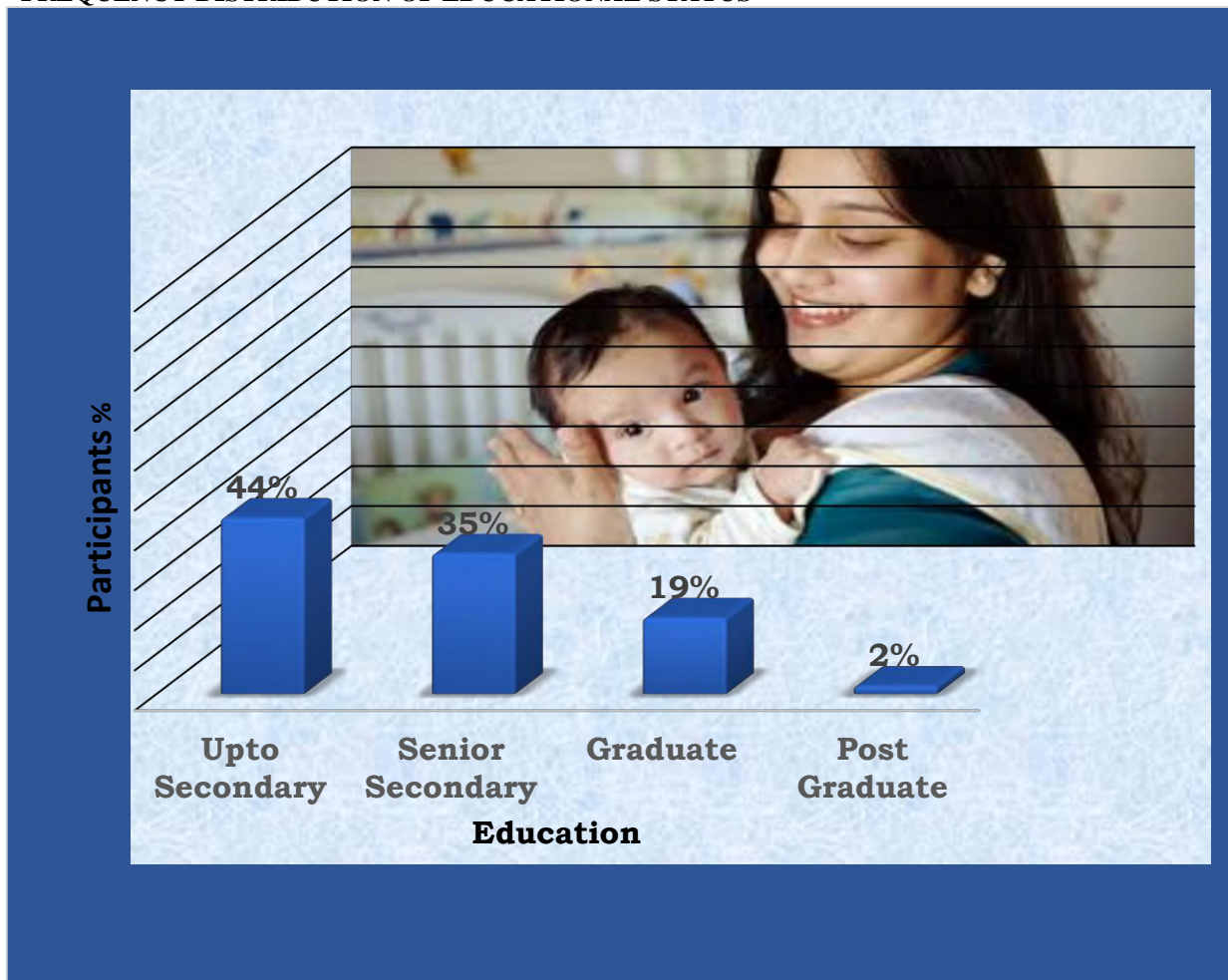


Fig-4.5: Distribution of Postnatal Mothers According to their Educational Status

➤ FREQUENCY DISTRIBUTION OF INCOME

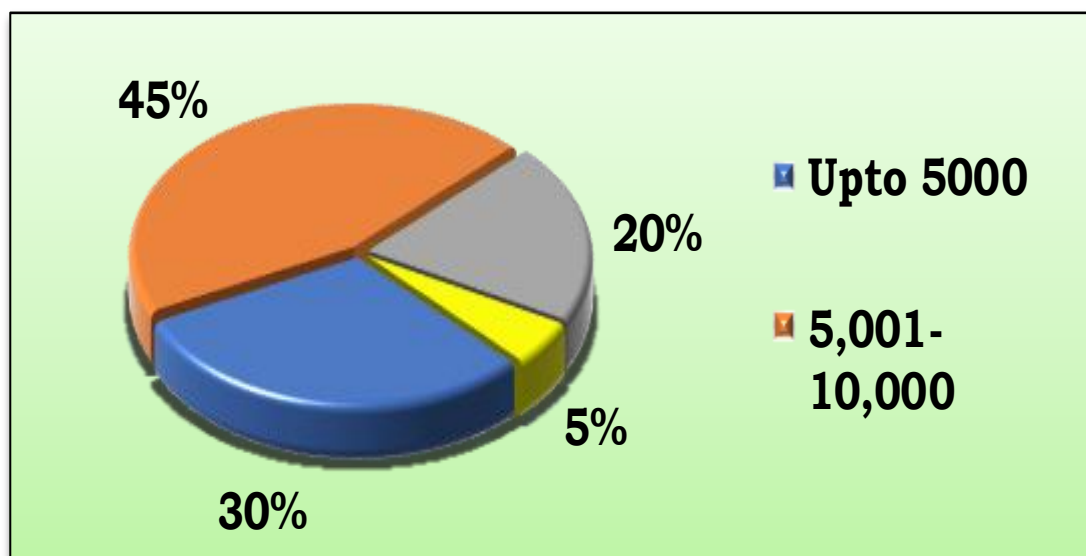


Fig-4.6: Distribution of Postnatal Mothers According to their Monthly Family Income

➤ FREQUENCY DISTRIBUTION OF OCCUPATION:

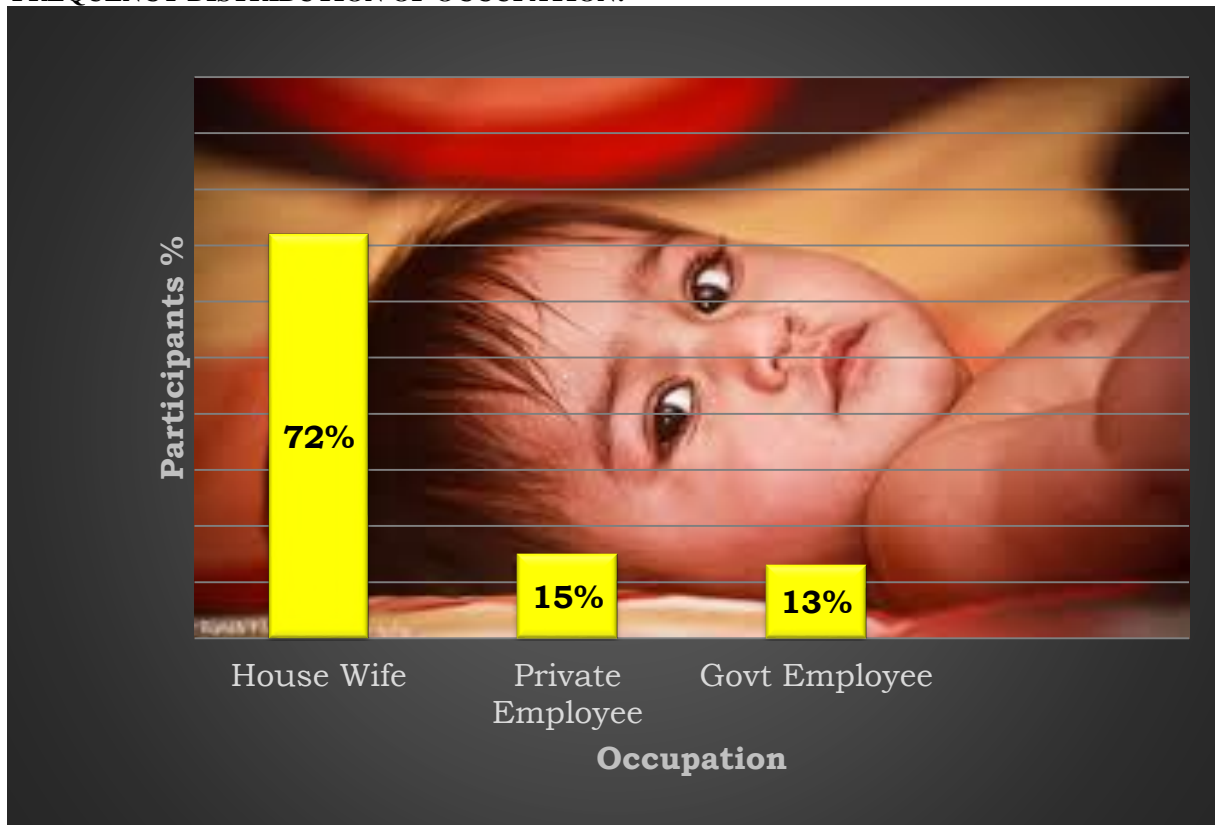


Fig - 4.7: Distribution of Postnatal Mothers According to their Occupation

➤ FREQUENCY DISTRIBUTION OF PREVIOUS KNOWLEDGE REGARDING PREVENTION OF HYPOTHERMIA IN NEWBORN:

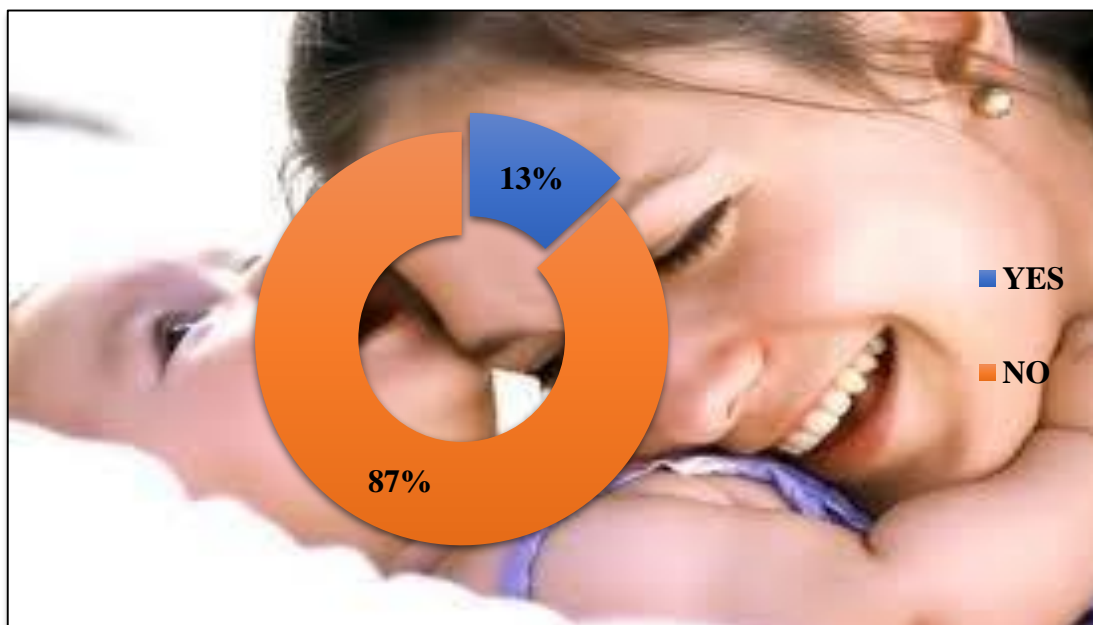


Fig-4.8: Distribution of Postnatal Mothers According to their Previous Knowledge Regarding Prevention of Hypothermia in Newborn

➤ FREQUENCY DISTRIBUTION OF UTILIZATION OF ANTENATAL SERVICES:

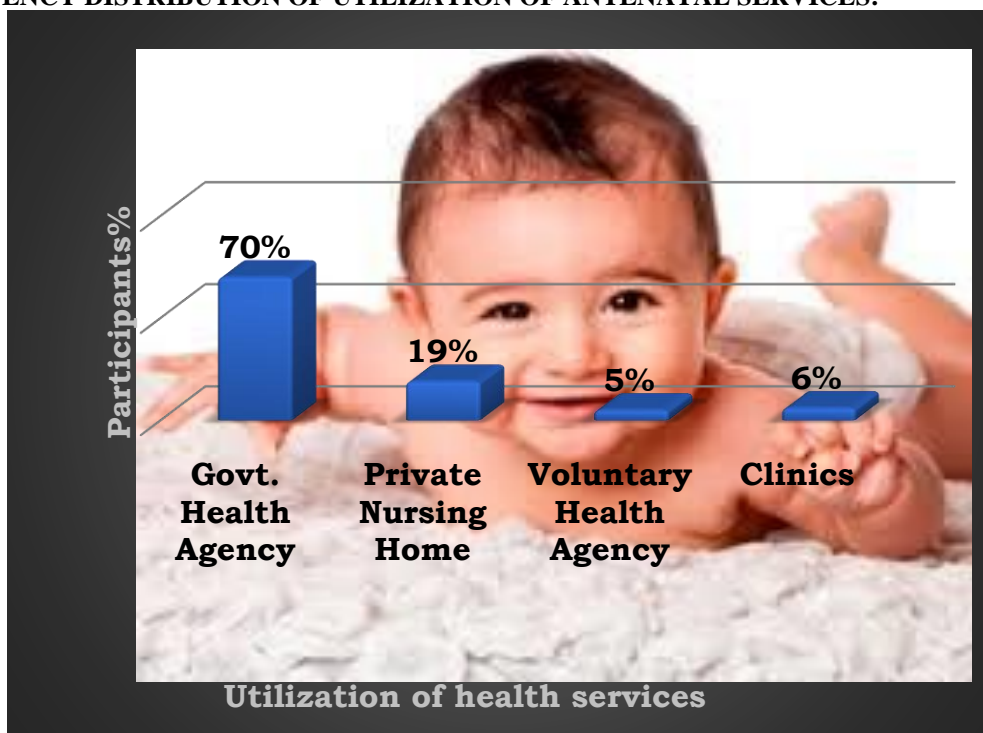


Fig-4.9: Distribution of Postnatal Mothers According to Utilization of Antenatal Services

SECTION II:

Analysis of existing knowledge level of the postnatal mothers regarding prevention of hypothermia in newborn
 PART A: Level of knowledge of postnatal mothers regarding prevention of hypothermia in newborn

N = 100

S. N.	Level of knowledge	% score	No. of mothers	% of mothers
1.	Poor	0 –33	5	5
2.	Average	34-59	49	49
3.	Good	60 – 74	42	42
4.	Excellent	75- 100	4	4

Table: 4.2 : Assessment of Knowledge of the Postnatal Mothers regarding Prevention of Hypothermia in Newborn

PERCENTAGE DISTRIBUTION OF LEVEL OF KNOWLEDGE:

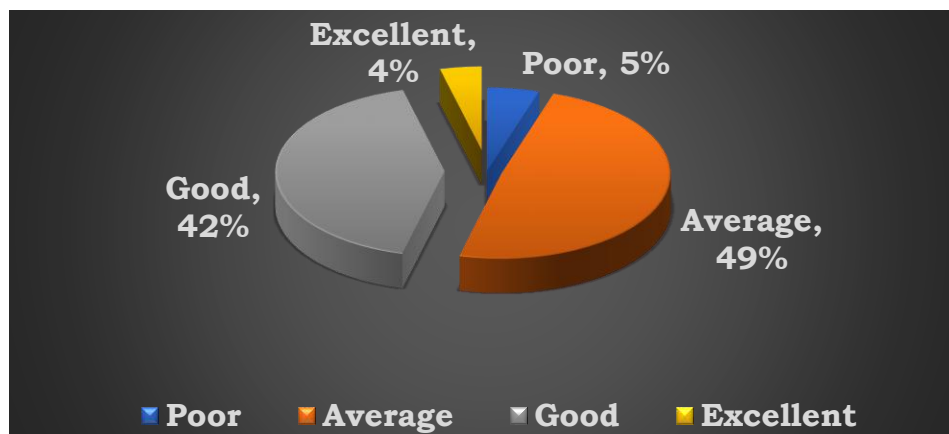
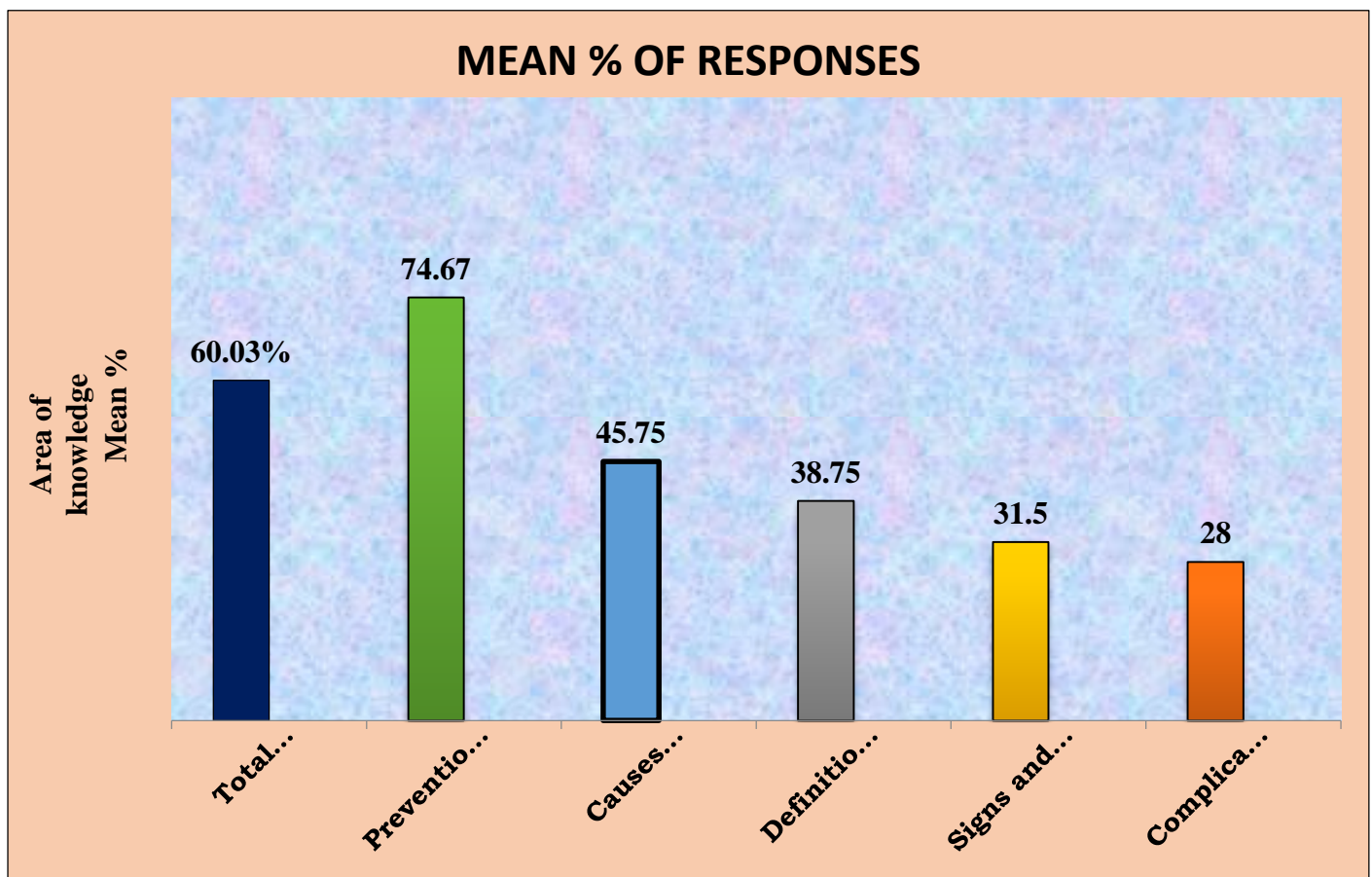


Fig-4.10: Distribution of postnatal mothers according to their level of knowledge regarding prevention of hypothermia in newborn

PART B: Analysis of area wise knowledge score of postnatal mothers regarding prevention of hypothermia in newborn.
 N = 100

S N	Area	No of items	Max score	Range of score	Mean	Median	S.D.	Mean%
1	Meaning and definition of hypothermia	4	4	2-0	1.55	2	0.61	38.75
2	Risk factors and causes of hypothermia	4	4	3-0	1.83	2	0.93	45.75
3	Signs and symptoms of hypothermia	2	2	1-0	0.63	1	0.48	31.5
4	Prevention and management of hypothermia	18	18	17-7	13.44	15	3.41	74.67
5	Complications of hypothermia	2	2	1-0	0.56	1	0.50	28

Table: 4.3 Description of area wise Range of score, Mean, Median, SD, Mean percentage of knowledge scores of Postnatal Mothers regarding Prevention of Hypothermia in Newborn.



PART C: Analysis of overall knowledge score of postnatal mothers regarding prevention of hypothermia in newborn.

Bar diagram representation of mean%

N = 100

No of items	Maximum score	Range of score	Mean score	Median score	S.D.	Mean %
30	30	23-10	18.01	19	4.70	60.03

Table: 4.4 Description of overall knowledge score, Mean, Median, SD and Mean Percentage of Postnatal Mothers regarding Newborn Care.

4.11: Distribution of Knowledge of Postnatal Mothers by Area Wise and Total Mean Percentage

Analysis shows that area wise mean percentage of knowledge score of postnatal mothers was more (74.67%) in the area of prevention and management of hypothermia in newborn with mean and SD of 13.44 ± 3.41 , in the area of causes and risk factors, the mean percentage was 45.75% with mean and SD of 1.83 ± 0.93 , in the area of meaning and definition of hypothermia in newborn mean percentage was 38.75% with mean and SD of 1.55 ± 0.61 , in the area of signs and symptoms of hypothermia mean percentage was 31.5% with mean and SD of 0.63 ± 0.48 and mean percentage 28% in the area of complications of hypothermia with mean and SD of 0.56 ± 0.50 . Total mean percentage of knowledge score of postnatal mothers was more 60.03% with total mean and SD of 18.01 ± 4.7 .

SECTION III:

This section deals with association between knowledge score and selected demographic variables of postnatal mothers by using inferential statistics.

N = 100

	Variables	Participants knowledge score		Degree of freedom	Level of significance
		Calculated value	Tabulated value		
1.	Age in Years a. up to 22 years b. 23-28 years c. 29-34 years d. 34 or above	19.25	16.92	9	0.05 S
2.	Religion a. Hindu b. Muslim c. Christian d. Others	9.6	16.92	9	0.05 NS
3.	Type of Family a. Nuclear b. Joint	9.08	7.82	3	0.05 S
4.	Number of Children b. 1 c. 2 d. 3 e. 4 or above	17.92	16.92	9	0.05 S
5.	Educational Status a. Up to secondary b. Senior secondary c. Graduate d. Post graduate	18.12	16.92	9	0.05 S
2.	Income a. Up to Rs 5000 b. Rs. 5001-10,000 c. Rs. 10.001-15,000 d. Above Rs.15001	15.8	16.92	9	0.05 NS
7.	Occupation a. Housewife b. Private employee c. Govt. employee	2.62	12.59	6	0.05 NS

8.	Previous Knowledge Regarding Prevention of Hypothermia a. yes b. no	9.29	7.82	3	0.05 S
9.	Utilization of Antenatal Services a. Govt. health agency b. Private nursing home c. Voluntary health agency d. clinics	6.33	16.92	9	0.05 NS

Table: 4.5 Association between Demographic Variables and Knowledge score of Postnatal Mothers

7. FINDINGS:

The obtained values are greater than the table values at the 0.05 level of significance, the null hypothesis rejected and there is significant association between the age, educational status, number of children, family type and previous knowledge regarding prevention of hypothermia and knowledge scores of participants.

The obtained values are less than the table values at the 0.05 level of significance, the null hypothesis accepted and there is no significant association between the occupation, religion, family income and utilization of antenatal services and knowledge scores of participants.

The results indicate that the postnatal mother's demographic variables such as age, family type, number of children, educational status and previous knowledge regarding prevention of hypothermia have significant effect on the knowledge level of postnatal mothers regarding prevention of hypothermia in newborn.

8. RESULTS:

The result shows that postnatal mothers having more knowledge (mean percentage 74.67%) in the area of prevention and management of hypothermia, 45.75% in the area of causes of hypothermia, 38.75% in the area of definition and meaning, 31.5% in the area of sign and symptoms and less knowledge (28%) in the area of complications of hypothermia. The overall knowledge mean percentage was 60.03%.

The results showed that there is significant association between knowledge of postnatal mothers regarding new born care and demographic variables- age, type of family, number of children, educational status and previous knowledge regarding prevention of hypothermia.

9. RECOMMENDATIONS:

Based upon the findings of the study, following recommendations were made for further study:

- Similar studies can be conducted in community settings.
- A similar study can be conducted on a large sample.
- A comparative study can be done between primipara and multipara mothers.
- An experimental study can be conducted using control and experimental group.
- Follow-up study can be conducted to evaluate the effectiveness of planned teaching programme.
- The same study can be conducted in different government hospital and private hospital settings.

10. CONCLUSION:

Mothers have special needs for knowledge regarding prevention of hypothermia in newborn to better health of a baby.

This study is focused on better support for postnatal mothers that more resources are given to prevention of hypothermia in newborn. So the public has to be made aware of importance of education on prevention of hypothermia in newborn. Hence the nurses coming in contact with postnatal mothers should take the initiative to provide necessary information to the postnatal mothers regarding prevention of hypothermia in newborn, so as to improve the quality of newborn care services amongst postnatal mothers.

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