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**Research Article** 

# Existing Practices and Factors Causing Malpractices on Management of Hypothermia, Infection Control Among Staff Nurses Working in NICU in Selected Hospital, West Bengal

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#### Abstract

**Introduction:** Newborn are the seeds of any human civilization. They are the backbone & need special care. According to analysis of 3.6 million new natal deaths from 192 countries in 2010, the main direct causes of new natal deaths include pre-term thermal protection, assisted breathing, and protection from infection. Hypothermia occurs 29%, birth asphyxia 23%, sepsis / pneumonia 25%. The common correlates of adverse new natal outcome include lack of recourses, poor infrastructure, shortage of manpower; poor accessibility & credibility of the facility-based health care service are leading causes of dismal situation of newborn health. The study of prevention of hypothermia, infection control is needed because sick newborn demands a sound infrastructure and well equipped & prompt sophisticated care.

**Objectives:** To find out the existing nursing care practices and factors causing malpractices in hypothermia, infection control among staff nurses working in NICU.

**Materials and Methods:** A descriptive survey design was adopted in this study. A non-probability purposive sampling technique was used to select 50 samples (Staff nurse) from Medical College and hospital, kol-73 as a study subject. A valid & reliable Structured Interview schedule and observation checklist were used to collect data from staff nurses working in NICU.

**Results:** The result revealed that practice level on management of hypothermia (61%) and malpractice (3%) and in injection control practice level (57%) and malpractice level (11%). Factor causing malpractice are mother not wearing proper garment, dressing present over abdomen, forgot to on warmer, not done here, temperature assess by touch, usually not done here, forgot to remove nail polish, wear nail polish only for puja, cut the nail short is necessary but not done, I am in hurry, not possible always, alcohol rub used, not possible in NICU room, not an usual practice, usually used unsterile cotton, insufficient. No supply of autoclave indicator strip. The findings of the study also revealed that there was a significant association found between NICU experience and malpractice in area of management of hypothermia and infection control ( $X^2$ =4.31) at df 1 at p<0.05 level.

**Conclusion:** The study concluded that concluded that continued training, extensive supervision, and proper work environment can improve the nursing care practice at NICU. By exploring the existing malpractices, we can strike off the practices by proper health awareness and by adequate health care and teaching.

Keywords: Factors and malpractice; hypothermia; neonatal infection; staff nurse

#### **Problem Statement**

Existing Practices and factors causing malpractices in management of hypothermia, infection control among staff nurses.

## Introduction

Newborns are the seeds of any human civilization. They are the backbone & need special care. However, every year 26 million babies which 20% of global birth are born in India and almost 0.76 million die during newborn period accounting for 30% of global death. Neonatal deaths account for two-thirds of all infant deaths and 56% of under-5 child deaths. Neonatal deaths account for two - thirds of all infant deaths and 56% of under-5 child deaths. Millennium developmental goal 4 reduction of under-five child death by two-third by the year 2015 is the significant sign of the problem. According to analysis of 3.6 million new natal deaths from 192 countries in 2010, the main direct causes of new natal deaths include pre-term thermal protection, assisted breathing, and protection from infection. Hypothermia occurs 29%, birth asphyxia 23%, sepsis / pneumonia 25%. The common correlates of adverse new natal outcome include lack of recourses, poor infrastructure, shortage of manpower; poor accessibility & credibility of the facilitybased health care service are leading causes of dismal situation of newborn health. Although under five total number of death decline from 12.7 million in 1990 to 5.9 million in 2015, Mortality rate declined 91 in 1990 to 43 in 2015. Relatively neonatal mortality rate declined 36 in 1990 to 19 in 2015 [1].

In particular, progress toward reducing neonatal deaths-that is deaths during the first 28 days of life-has been slow and neonatal deaths now account for a greater proportion of global child deaths than in 1990-2015. The study of prevention of hypothermia, infection control is needed because sick newborn demands a sound infrastructure and well equipped & prompt sophisticated care. In NICU care are given in organized, prompt, skillful manner. But sometimes there are tackling. India is the country responsible for maximum number of neonatal deaths from 1990-2009. Simple interventions such as improved hygiene, timely effective neonatal resuscitation, temperature maintenance, advice breast feeding and emergency obstetric care for surgical delivery in case of fetal distress can go a long way to reduce this rate [2]. A study conducted on prevention of neonatal hypothermia in the childbirth ward. At birth, the newborn infant emerges from the warm, heat regulated environment of the mother's womb into a comparatively harsh, extra uterine environment. The newborn infant's immature thermoregulatory mechanisms can permit hypothermia as core body temperature is allowed to fall. Such hypothermia among newborns is a serious condition contributing to neonatal mortality and morbidity. All efforts must therefore be made to prevent the onset of infected hypothermia in both the delivery ward and during transfer to a neonatology ward.

To prevent the development of neonatal hypothermia upon delivery, the temperature in the delivery ward must be raised to 280C prior to delivery. The room should not be air-conditioned, windows and doors closed to eliminate air currents, and the reanimation table and materials with which to clean and dry the infant preheated [3]. To achieve a substantial reduction in early neonatal deaths some essential step will be required. The first steps in improving early neonatal survival are to document the number and rate of deaths, and identify their common causes these are neonatal hypothermia, infection, improper or no resuscitation in an emergency basis in health care setting also e.g., NICU. During the clinical experience, the investigator found that there were some existing practices factors causing malpractices among staff nurse regarding the management of hypothermia and neonatal infection. This experience triggered investigators to take this topic as a study. So, the investigator felt a need to conduct the study. This study gives emphasis on finding out the existing practices and factors causing malpractices regarding newborn care.

#### **Material and Methods**

A survey approach and descriptive research design was adopted for conducting the study. By adopting nonprobability purposive sampling technique, the study subject was selected. The staff nurses working in NICU at Medical College & Hospital were selected. The total sample size was 50. Staff nurses working for less than 6 months in NICU were excluded from the study. A reliable structured interview schedule was adopted for assessing the demographic data of sample a reliable observation checklist (r-0.96) was adopted for assessing the existing practices, factors causing malpractices of the study subject. The structured interview schedule contained 7 items and observation checklist contained 27 items regarding hypothermia prevention and 46 items regarding neonatal infection control. The data was collected from the study subject after getting permission from ethical committee, all concerned authority and consent was taken from the study subject. The purpose of the study was described before administering the tool and by maintaining confidentiality.

## Results

# Section I: Findings related to demographic profile of the study subjects

The study result showed that Majority (70%) belonged to the age group of 21-30 years. Most 72% have higher secondary qualification and 92% have diploma in professional qualification. The majority of staff, 64% have 1-3 years NICU experience whereas 19% have <5 years of total service experience. Most study subject 90% have not received any in service training in their service.

# Section II: Existing malpractice in sub area f management of hypothermia & infection control

- Prevention of Hypothermia (Figure 1).
- Thermal Protection (Figure 2).
- Kangaroo Mother Care (Figure 3).
- Related To Buffer Zone (Figure 4).
- Hand Hygiene (Figure 5).

Disinfection & Use of Sterile Articles (Procedures & Logistic) (Figure 6).

Disinfection & Use of Sterile Articles (Procedures & Logistic) (Figure 7).

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Disinfection & Use of Sterile Articles (Procedures & Logistic) (Figure 8).

Management of Hypothermia (Figure 10). Infection Control (Figure 11).









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Bio Waste (Figure 9).



**Figure 3:** Bar diagram depicting the percentage distribution of staff nurses in terms of practicing, not practicing and malpractice on management of hypothermia (KMC).



**Figure 4:** Pyramid diagram depicting the percentage distribution of staff nurses in terms of practicing, not practicing and malpractice on infection control (Related to buffer zone).



**Figure 5:** Pyramid diagram depicting the percentage distribution of staff nurses in terms of practicing, not practicing and malpractice on infection control (Hand Hygiene).

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Data present in Figure 10 shows that existing malpractice only 3% in four sub area not using proper garments by mother during KMC, not fix thermistor over baby's upper abdomen, put on warmer after keeping the baby, high/low temperature of NICU not regulation. No use of thermometer for checking baby temperature is 10% & received the baby in non-warm sheet is highest that is 78%. Data present in Figure 11 show that existing malpractice only 2-5% in two sub area only hand rub used for hand hygiene, not perform hand wash before giving injection. 6-10% malpractice observed in four sub area does not follow all 8 steps during hand



wash, not perform hand wash after procedure, prepared injection without using laminar, not disinfect injection vial. Above 10-16% malpractice observed in five sub area nail polish & ling nail present, breaks ampoule without sterile cotton, not used sterile gloves during I/V injection, sterile knife dish not used to carry injection, checked sterile drum for proper autoclaving.

# Section II: Area wise distributions of factor causing malpractices on management of hypothermia and infection control

Management of hypothermia (Table 1). Infection Control (Table 2).

Table 1: Depicting the Area, Factor causing mal practices & percentage distribution of Staff nurses on management of hypothermia.

S/L no	Area	Factors	Remarks	
1	Not using proper garments by mother during KMC	Mother not wearing proper garments	3% malpractice observed & the factor's causing malpractice is same.	
2	Not fix thermistor over baby's upper abdomen	Dressing present over abdomen	3% malpractice observed & the factor's causing malpractice is same.	
3	Put on warmer after keeping the baby	Forgot to on warmer	3% malpractice observed & the factor's causing malpractice is same	
5	No use of thermometer for check- ing body temperature	Temperature assesses by touch	10% malpractice observed & the factor's causing malpractice is same.	
6	Received the baby in non-warm sheet	Usually not done here	78% malpractice observed & the factor's causing malpractice is same	

Table 2: Depicting the area, Factor causing mal practices & percentage distribution of Staff Nurses on infection control.

S/L no	Area	Factors	Remarks
1	Nail Polish & long nail present	Forgot to remove nail polish, Wear nail polish only for puja, Cut the nail short is necessary but not done.	11.5% malpractice observed & the factors causing malprac- tice are three.
2	Not following * steps during	I am in hurry Not possible always	9% malpractice observed & the factors causing malpractice are two.
3	Only hand rub used for hand hygiene	Not possible, Not done but neces- sary.	3.02% malpractice observed & the factors causing malprac- tice are two.
4	Not perform hand wash after procedure	Alcohol rub used, not possible.	9.61% malpractice observed & the factors causing malprac- tice are two.
5	Not perform hand wash before giving injection	In hurry, alcohol rub used.	2.56% malpractice observed & the factors causing malprac- tice are two.
6	Prepared inj without using laminar	Not done but necessary, Not present in NICU room.	9.29% malpractice observed & the factors causing malprac- tice are two.
7	Not disinfect inj vial	Not a usual practice.	6.41% malpractice observed & the factor's causing malprac- tice is same.
8	Breaks ampule without sterile cotton	Usually used unsterile cotton.	12.50% malpractice observed & the factor's causing mal- practice is same.
9	Not used sterile gloves during I/V inj	Not possible, Insufficient.	10.04% malpractice observed &the factors causing malprac- tice are two.
10	Sterile knife dish not used to carry inj	Usually not done, Insufficient.	10.57% malpractice observed & the factors causing malprac- tice are two.
11	Checked sterile drum for proper autoclaving	Not possible, Not supply of auto- clave indicator strip	15.60% malpractice observed & the factors causing malprac- tice are two.

The above data in Table 1 presents the factors causing malpractices of the Staff Nurses in six sub area of management of hypothermia. Factors causing malpractices are Mother not wearing proper garments (3%), Dressing present over abdomen (3%), Forgot to on warmer (3%), Not done here (3%), temperature assess by touch (10%), Usually not done here (78%). The above data in Table 2 presents the factors causing malpractices of the Staff Nurses in six sub area of infection control. These are Forgot to remove nail polish, Wear nail polish only for puja, Cut the nail short is necessary but not

done, I am in hurry, not possible always, Not done but necessary, Alcohol rub used, not present in NICU room, not a usual practice, usually used unsterile cotton, insufficient & No supply. The findings presented in Table 3 show that the computed Chi2 value (8.7065) for service experience of staff nurses and malpractice score. It is observed that there are significant association malpractices with the selected demographic variables (service experience) as the chi square value (8.7065) is greater than table value (7.81) at 5% level of significance (9-value<0.05).



**Table 3:** Chi<sup>2</sup> value showing association between service experience and malpractice level of staff Nurses on management of hypothermia.

Comico ornanianco in veceno	Malpractio	Total	Chi <sup>2</sup> undure	
Service experience in years	Below the median	At and above the median	Total	Chi <sup>2</sup> value
<5 years	14	5	19	8.7065*
<10 years	10	5	15	
<15 years	5	7	12	
≤20 years	4	0	4	

#### X<sup>2</sup> df (3) 7.81; p<0.05\* Significant

The findings presented in Table 4 show that the computed Chi2 value (8.3106) for NICU experience of staff nurses and malpractice score. It is observed that there is significant association between malpractice with the selected demographic variables (NICU experience) as the chi square value (8.3106, df=3) is greater than table value (7.81) at 5% level of significance (p-value<0.05). The findings presented in Table 5 show that the computed Chi2 value (8.1692) for service experience of staff nurses and malpractice score. It is observed that there is significant association between Table 4: Chi2 value showing association between NICL experience

malpractices with the selected demographic variables (service experience) as the chi square value 8.1692) is greater than table value (7.41) at 5% level of significance (p-value>0.05). The findings presented in Table 6 show the computed Chi2 value (8.0727) or NICU experience of staff nurses and malpractice score. It is observed that there is significant association between malpractices with the sleeted demographic variables (NICU experience) as the chi square value (8.0727, df=3) is greater than table value (7.81) at 5% level of significance (p-value<0.05).

**Table 4:** Chi2 value showing association between NICU experience and malpractice level of staff nurses on management of hypothermia.

	Malpractice level		T 1	Chi <sup>2</sup> and he a
NICU experience in years	Below the median	At and above the median	Iotai	Chi <sup>2</sup> value
<1 years	0	3	3	8.3106*
1-3 years	13	19	32	
4-5 years	7	5	12	
> 5 years	4	0	4	

X<sup>2</sup> df (3) 7.81; p<0.05\* Significant

Table 5: Chi<sup>2</sup> value showing association between service experience and malpractice level of Nurses on infection control.

Comico omenica co in Vera	Malpractice level		Total	Chil? and have
Service experience in years	Below the median	At and above the median	Iotai	Chi <sup>2</sup> value
<5 years	9	10	19	8.1692*
<10 years	13	2	15	
<15 years	7	5	12	
20 years	4	0	4	

#### X<sup>2</sup> df (3) 7.41; p<0.05\* Significant

Table 6: Chi<sup>2</sup> value showing association between NICU experience and malpractice level of staff Nurses on infection control.

	Malpractice level		T-4-1	<b>01</b> 12 1
NICU experience in years	Below the median	At and above the median	Iotai	Chi <sup>2</sup> value
<1 years	0	3	3	8.0727*
1-3 years	14	18	32	
4-5 years	7	5	12	
<5 years	4	0	4	

#### X<sup>2</sup> df (3) 7.81; p<0.05\* Significant

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#### Discussion

The staff Nurse are the usual and importance personnel who work in NICU round the clock are responsible to take care of Sick neonate who are easily prone to infection and lost their body heat quickly. Hence the practice regarding management of hypothermia and infection control are foremost important and those practices are influenced by various factors e.g., experience, availability of resources, workload, in-service education. Even if the knowledge is adequate, they do not practice properly. On the basis of the findings of the present study and objectives of the study a discussion is held as follows:

# Discussion related to staff nurses practice is management of hypothermia and infection control

Findings of the present study indicate existing Nursing care practices of staff nurses in NICU on management of hypothermia is 61% and on other hand infection control shows practice level 57%. It is consistent with a cross sectional study by Malhotra et al in secondary level care center in tow state Madhya Pradesh and Rajasthan at one district hospital and two community health centres from each district the result showed that staff nurses practice level 53% in both state [4].

# Discussion related to staff nurses malpractice in management of hypothermia and infection control

Findings of the present study indicate existing mal practices score in management of hypothermia and infection control are 3% and 11% respectively. It is congruent with a descriptive study was conducted to assess the knowledge on infection control among 30 staff nurses in I.C.U by V. Hemopathy et al with questionnaire and observation checklist. The findings indicated that incorrect practices (6.7%) in infection control and no observation done on hypothermia management [5]. So, from the above discussion it is shown that the previous study findings are not congruent with my study.

## Conclusion

The study was confined to a small number (50) staff nurses participating in the study owing to time constraints, this limits the generalization of findings to the study sample only. Observation is the most common & effective method to find out the any gap between Nursing education & Nursing Practice. So repeated supervision can bridge the gap.

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