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**Devi Rimpi**

Tutor of child health nursing  
Rpiit college karnal. Haryana  
132114, India.

**Kodi Malar**

Assistant Professor,  
M.M Institute of Nursing,  
Maharishi Markandeshwar  
University, Ambala, Haryana-  
133207, India.

**N Sembian**

Associate professor,  
M.M college of Nursing,  
Maharishi Markandeshwar  
University, Ambala, Haryana-  
133207, India.

## Effectiveness of planned teaching programme regarding infection control measures

**Devi Rimpi, Kodi Malar, N Sembian**

**Abstract**

Neonatal intensive care units are vulnerable to outbreaks and sporadic incidents infections are determined by the degree of immaturity of the neonatal immune system. Infection control is the discipline concerned with preventing nosocomial or healthcare-associated infection. Practices or technique that control or prevent risk of infection help to protect health care workers from disease. By practicing infection techniques, the nurse can avoid spreading microorganisms and can protect herself. The mean difference between the pre-test and post-test knowledge score was 5.85. It was statistically significant at the level of 0.05 level of significance. In post-test the highest mean knowledge score was in the area of disinfection and sterilization of equipment i.e. 7.92 with mean percentage 36.66%. The mean difference between the pre-test and post-test practice score was 12.61. In Post-test the highest mean practice score was in the area of personal protective measures was 64.28 indicating having good practice in this area and lowest mean percentage was in the area of 'bio medical waste management' i.e. 7.18. There was low positive correlation between knowledge and practice score i.e. 0.386\*. Planned teaching programme was effective to improve the knowledge and practice of nurses regarding infection control measures in NICU.

**Keywords:** Effectiveness Planned teaching program, knowledge, practice, infection control measures in NICU. Nurses, Neonatal Intensive Care Unit.

### 1. Introduction

Health can neither be demanded nor given, it can neither be brought, nor sold but the circumstances and services that are pre-requisite to health can certainly be demanded and received as a right. A productive environment in the hospital unit is very essential as a pre-requisite particularly, when considering the services provided in the Neonatal Intensive Care Unit provision for a safe and protective environment is a prior need <sup>[1]</sup>.

New born, who need to go to the unit are often admitted within the first 24 hours after birth. Babies may be sent to the NICU if they're born prematurely problems happen during their delivery they show signs of a health issue in the first few days of life Only very young babies or babies with a condition linked to being born prematurely are treated in the NICU they're usually infants who haven't gone home from the hospital yet after being born. How long they'll stay in the unit depends on the severity of their condition <sup>[2]</sup>. The worldwide neonatal mortality rate fell by 40 per cent between 1990 and 2013 - from 33 to 20 deaths per 1,000 live births. Over the same period, the number of newborn babies who died within the first 28 days of life declined from 4.7 million to 2.8 million <sup>[3]</sup>.

More than 309,000 infants in India died on the day of their birth in 2011, according to the Save the Children charity in an annual report entitled "State of the World's Mothers." As a result, India alone accounts for 29 percent of such global "first-day deaths" <sup>[4]</sup>.

The United Nation integrated children emergency fund estimates that an average of 353,000 babies are born each day around the world. The crude birth rate is 18.9 births per 1,000 population or 255 births globally per minute or 4.3 births every second (as of Dec. 2013 estimate) our current world population is approximately 7.2 billion and growing. It passed the 7 billion mark in 2011. It is expected to reach between 8 to 10 billion by 2050 <sup>[5]</sup>.

### 2. Material and Methods

Quantitative research approach with quasi experimental one group pre-test and posttest design design was used and 60 nurses were selected by non-probability Purposive sampling

**Correspondence:**

**Devi Rimpi**

Tutor of child health nursing  
Rpiit college karnal. Haryana  
132114, India.

technique from 6 hospitals. The content reliability of the structured knowledge questionnaire were established using Cronbach’s alpha which was found to be 0.72. Inter rated reliability for observation checklist was to be found 0.82. Structured knowledge questionnaire consists of 30 knowledge items regarding infection control measures 8 items related to the meaning and concept of infection, 15 items related to the disinfection and sterilization of equipment, 4 items related to the Personal protective measures, 5 items related to the Bio medical waste management. The observation checklist consisted of 115 items. This was related to the care of neonates. Disinfection and sterilization of equipment, personal protective measures and bio-medical waste management.

**2.1 Data Collection Procedure**

Nurses were working in NICU selected by non-Probability Purposive Sampling technique in different hospital. On 1<sup>st</sup> day pretest of knowledge and practice of nurses was assessed by knowledge questionnaire and observation checklist regarding infection control measures. Day 2<sup>nd</sup> planned teaching program was given. Day 7<sup>th</sup> Post test of knowledge and practice of nurses regarding infection control measures used in NICU.

**3. Result and Discussion**

The result of current study showed that nurses having less knowledge regarding infection control measures before the administration of planned teaching programme, and it was increased after the administration of planned teaching program. Similarly the findings of current study was consistent with the study conducted by Wilawan Pichansathian, Alan Pearson and Prakin Suchaxaya in 2008 on The effectiveness of a promotion programme on hand hygiene compliance and nosocomial infections in a neonatal intensive care unit. They had found that. After implementing a hand hygiene promotion programme, compliance with hand hygiene among nursing personnel improved significantly from 6.3% before the programme to 81.2% 7 months after the programme. Another study is consistent with the findings of current study conducted by Sabah Mohamed El sayed1, Yomn Y. Sabry, Hamed M. sharkawy, Ebtisam M. elsayed and Thanaa Ali1 conducted by in 2013 on Establishing Basic Standards of Nursing care protocol at

Neonatal Intensive care unit. It was observed that, the total scores of nurses' knowledge were poor with percentage 63%, whereas, immediately and after three months of the standard application, the total score of knowledge improved as the majority of them (89%) and (81%) obtained good scores respectively. As regards the total score of practice, 80% of nurses' performances were poor before the standard, while after application of the standard either immediately or after three months, the nurses' performance improved and 45%, 43% obtained good scores respectively with statistical significant difference ( $p < 0.001$ ).

The result of current study shows that there was low positive correlation (0.386) between the knowledge and practice score of nurses working in NICU. Similar a study conducted by Jaswinder pal kaur (2010) shows that the positive correlation between the post-test knowledge scores and practice scores 0.30 is significant at 0.05 level of significance.

**3.1 Table and Figures**

Out of 60 nurses majority of the nurses were in the age group (25-29 years). Most of the nurses were married (53.3%). Majority of the nurses was professionally qualified as GNM (86.7%) and (6.7%) was Bsc. Nsg and P.B. Bsc respectively. Most of the subjects were having clinical experience less than 1 yr (50%). Majority of the nurses (41.7%) were received the information regarding infection control measures in NICU through the continuing education programme.

**Table 1:** Range of Score Mean, Median and Standard Deviation of Pre-test and Post-test Knowledge Score of Nurses Regarding Infection Control Measures in NICU.

N=60				
Knowledge	Range	Mean	Median	S.D.
Pre-test	12-23	17.72	18	3.09
Post-test	15-28	23.57	24	2.98

Maximum score=30

Minimum score=0

The data presented in Table 1 indicates that range of scores in pre-test lies between (12-23), and post-test the range of scores were (15-28). Further the mean post knowledge score (23.57) was significantly higher than mean pre-test knowledge score (17.72).

**Table 2:** Area Wise, Pre-Test and Post-Test Mean, Mean Difference, Standard Deviation of Nurses Difference and Standard Error of Mean Difference and ‘T’-Value of Knowledge Score Regarding Infection Control Measures.

N=60							
S.no	Area	Pre-test Mean	Post-test Mean	Mean <sub>D</sub>	SD <sub>D</sub>	SE <sub>MD</sub>	t value
1.	Meaning and concept.	5.00	6.38	1.38	0.235	0.03	9.07*
2.	Disinfection and sterilization of equipment.	5.68	7.92	2.24	0.067	0.013	7.07*
3.	Personal protective measures.	3.69	5.28	1.59	0.059	0.054	7.55*
4.	Bio-medical waste management.	3.43	4.17	0.74	0.326	0.043	4.36*

Maximum score=30

Minimum score=0

‘t’ (59)= 2.00 at 0.05 Level of significance

The data presented in this table 5 shows that the obtained ‘t’ values in each areas were significant at 0.05 level. Because the calculated value for each area is more than their table value it indicates that the difference between the mean score before teaching and after teaching program was the true difference and not by chance. Hence, it showed that the planned teaching program enables nurses to gain knowledge regarding infection control measures in NICU.

**Table 3:** Range of Score, Mean, Median and Standard Deviation in Pre-Test and Post-Test Practice Score of Nurses Regarding Infection Control Measures in NICU.

N=60				
Practice	Range	Mean	Median	S.D.
Pre test	50-99	75.92	77	11.59
Post test	62-106	88.53	91	9.58

Maximum score=115

Minimum score=0

The data presented in this table 3 indicates that the range scores in pre-test (50-99) and in post test the range score

were (62-106) Further the mean post test score (88.53) was significantly higher than the mean pre-test score (75.92).

**Table 4:** Area wise Pre-test and Post-test Mean, Mean<sub>D</sub>, SD<sub>D</sub>, SE<sub>MD</sub> and t value of Practice score pre-test and post-test of nurses working in NICU regarding infection control measures.

S.no	Area	Max. Score	Pre-test Mean	Post-test Mean	Mean <sub>D</sub>	SD <sub>D</sub>	SE <sub>MD</sub>	t value
1.	Disinfection and sterilization of Equipment	20	14.87	17.07	2.21	2.68	0.347	6.38*
2.	Personal protective measures	87	54.88	64.28	9.40	11.92	1.539	6.10*
3.	Bio-medical waste management	8	6.18	7.18	1	1.221	0.158	6.34*

N=60

Maximum score=115

Minimum score=0

t (59) =2.00 at 0.05 level of significance

The data presented in this table 4 showed that the obtained ‘t’ values in each areas were significant at 0.05 level. Because the calculated value is more than their table value it indicated that the difference between mean score pre-test and post-test was the true difference and not by chance. Hence it showed that the planned teaching program enables nurses working in NICU to gain practice regarding infection control measures.

practice irrespective of the sample characteristics i.e. age, marital status, professional qualification, clinical experience in NICU, information regarding infection control measures. Thus a planned teaching program was effective in enhancing knowledge and practice of nurses working in NICU regarding infection control measures.

**Table 5:** Correlation between Knowledge score and practice scores of nurses working in NICU regarding infection control measures.

Test	Knowledge Scores Mean±SD	Practice Scores Mean±SD	r
Pre-test	17.72±3.09	75.92±11.59	0.017 <sup>NS</sup>
Post-test	23.57±2.98	88.53±9.58	0.386*

N=60

Pearson correlation coefficient table value at 0.05 level of significance df=0.254

Coefficient correlation between post-test knowledge score and practice score is 0.386.suggesting that positive correlation between post-test knowledge score and practice score at 0.05 levels. the computed anova value between the knowledge score of infection control measures used by the nurses with the age (f value=1.424,p value 0.249),Marital status (f value=1.430<sup>1</sup>,p value 0.113),qualification (f value=0.691,p value=0.221), clinical experience in NICU in year(f value=1.051,p value0.377), information regarding infection control measures (f value=0.986,p value=0.379) were to be found statistically not significant at 0.05 level of significance. This revealed that there was no significant association between knowledge score and above selected variables.

**5. Recommendations**

Study can be replicated on a large sample. A true experimental study can be done by using random sampling. A study can be conducted to assess the student nurse knowledge and practice regarding infection control measures. A study to be carried out to assess the effectiveness of video assisted teaching programme on knowledge and practice regarding infection control measures. Study can be done on simulated lab settings.

The computed ANOVA value between the practice score of nurses regarding infection control measures with the age (f value=1.872,p value 0.145),Marital status (f value=1.702<sup>1</sup>,p value 2.046),qualification (f value=0.915,p value=0.406),clinical experience in NICU in year(f value=1.236,p value0.305), information regarding infection control measures (f value=0.545,p value=0.583) were to be found statistically not significant at 0.05 level of significance.

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**4. Conclusion**

Planned teaching program was effective in enhancing the knowledge of nurses working in NICU regarding infection control measures. The planned teaching program was effective in improvement of knowledge and practice of nurses regarding infection control measures in all the content area. Coefficient of correlation between post-test knowledge scores and practice scores was significant regarding infection control measures. The planned teaching program was effective in enhancing knowledge and improvement in the