

Evaluation of Knowledge and Practices on Neonatal Resuscitation among Nurses in Kanyakumari District Hospitals

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Abstract

Introduction: Anticipation, adequate preparation, accurate evaluation, and prompt initiation of respiratory support are critical for successful neonatal resuscitation. At every delivery, there should be at least one person whose primary responsibility is the newly born care. This person must be capable of initiating resuscitation, including administration of positive-pressure ventilation and chest compressions.

Aim: The aim of the study is to study the knowledge and skills of labor room and neonatal intensive care unit (NICU) nurses about neonatal resuscitation.

Materials and Methods: The study was conducted on 93 nurses drawn from 4 government hospitals and 3 leading private hospitals of Kanyakumari district where maximum number of deliveries are conducted and NICU facilities are available. All the nurses were trained on neonatal resuscitation.

Results: When asked about all the steps of resuscitation 34% nurses got a score of 85% and above. Of that 22% of government nurses and 25% of the private nurses scored above 85%. There is not much difference in the score results between the nurses of government and private hospitals. Their performance in the step of chest compression was very poor.

Conclusion: The disappointing performance of the nurses in this essential skill and inconsistency in awareness of different steps of basic neonatal resuscitation underscores the urgent need for intensive training.

Key words: Knowledge, Neonatal resuscitation, Nurses, Skill

INTRODUCTION

Of the 25 million babies born every year in India, 3.5% babies experience asphyxia at birth.¹ Every 3rd newborn (NB) dying in the World is an Indian. 3 lakh Indian NBs die every year in India during their 1st h of life, most of them just because they did not get their first breath in time. Birth asphyxia is responsible for 19% of NB deaths in India.

In addition to its contribution to mortality, birth asphyxia can result mental retardation, seizure, and cerebral palsy.² About 10% of NBs require some form of assistance at birth. This makes NB resuscitation a frequently performed medical intervention. According to Neonatal Resuscitation Programme (NRP) of American Heart Association (AHA) and American Academy of Pediatrics (AAP), at least one trained person is to be present during delivery.³ This requires that the health-care personnel especially nurses involved need to be abreast with the latest recommendation and should follow them in clinical practice. The Indian Academy of Paediatrics and National Neonatology Forum of India currently follows NRP guidelines. For the successful NB resuscitation, the health-care personnel who practice the same in the labor room and NB units should have adequate knowledge on the different steps

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of resuscitation given in the updated NRP guidelines. The nurses in government hospitals and nurses in leading private hospitals were trained on NB resuscitation 5 years ago. The private nurses were trained by pediatricians of Indian Academy of Paediatrics in Kanyakumari District. The government hospital nurses were trained in Kanyakumari Government Medical College as directed by the National Rural Health Mission initiative. A survey on the knowledge of neonatal resuscitation among 192 health-care personnel of the entire Kenya showed inadequate knowledge and training.⁴ A questionnaire-based survey from Haryana, India, showed poor knowledge and practices of neonatal resuscitation among the health-care personnel attending deliveries.⁵ A survey conducted on delivery conducting nursing staff of Kalyani town in West Bengal showed, 79% nurses knew nothing about the steps of positive pressure ventilation and chest compression.⁶ A questionnaire-based survey and analysis regarding knowledge and practices of NB resuscitation among nurses in both government hospitals and private hospitals in Kanyakumari District in Tamil Nadu state was conducted.

Aim

The aim of the study was to study the knowledge and skills of labor room and neonatal intensive care unit (NICU) nurses about neonatal resuscitation.

MATERIALS AND METHODS

Study type was cross-sectional observational study. The study was conducted on 93 nurses drawn from 4 government hospitals and 3 leading private hospitals of Kanyakumari district where maximum number of deliveries are conducted and NICU facilities are available. All the nurses were trained on neonatal resuscitation. Data on their demographic information such as age, sex, year of nursing experience, qualification, work station, and previous training in neonatal resuscitation were collected and entered in a preformatted questionnaire. Data were collected by involving them to participate in a written test. The questions were selected from a standard text contained in AHA/AAP-Text book on neonatal resuscitation.² The questions were divided into three steps according to the stages of neonatal resuscitation which the nurses commonly practice: (i) Preparation of equipment and initial steps of resuscitation, (ii) bag and mask ventilation, and (iii) chest compression. Endotracheal intubation and medications were excluded as they do not come under basic neonatal care. The participants took the examination under supervision and were required to complete the 20 questions test in 40 min. The questions included multiple choice single response and true/false type questions. The scoring of the test was done as per the standard directions given

in text book of neonatal resuscitation. Those who scored above 85% were considered as successful.² Data were analyzed using Pearson Chi-square-test.

RESULTS

All the 93 participants were female nurses and all were aged above 26 years, average age was 35 years. The average duration of work experience was 6 years (1-28 years range). All the participants have an experience with NB resuscitation. In our study, 40 nurses are working in labor room and 53 nurses in NICU. 31 nurses are qualified registered nursing and registered midwifery, 22 nurses are general nursing and midwifery (GNM) qualified. When asked about all the steps of resuscitation 34% nurses got a score of 85% and above. Of that 22% of government nurses and 25% of the private nurses scored above 85%. There is not much difference in the score results between the nurses of government and private hospitals. 34% of nurses scored more than 85% (Tables 1 and 2).

Of the total 93 nurses 53 nurses are working in NICU and 40 nurses in labor room. Only 18% of NICU nurses scored above 85% in all the steps of resuscitation compared to 30% of labor room nurses (Table 3).

Among the three different steps of neonatal resuscitation only 67% nurses scored above 85% in the preparation/initial steps compared to 81% nurses in the bag and mask ventilation step. Their performance in the step of chest compression was very poor, only 15% nurses scored above 85% (Table 4).

Table 1: Distribution of overall knowledge score

Knowledge score	Number of participants (%)
<85%	71 (76)
>85%	22 (34)

Table 2: Distribution of knowledge score in terms of working sector

Working sector	<85%	>85%	P value
Government	48	14	0.731
Private	23	8	
Total	71	22	

Table 3: Distribution of knowledge score in terms of working unit

Working unit	<85%	>85%	P value
NICU	43	10	0.211
Labor room	28	12	
Total	71	22	

NICU: Neonatal intensive care unit

In equating the awareness of resuscitation with their nursing qualification the GNM nurses who constitute 1/3rd of the participants scored well along with the few MSc nurses. However, BSc nurses and GNRN nurses scored poorly (Table 5).

DISCUSSION

The results of this study reflects the neonatal resuscitation practices followed in major government and private hospitals of Kanyakumari district where most of the deliveries take place and where NICU facilities are also available. The questionnaire of this study was based on the NRP guidelines of 2010. Even though all the respondents of the evaluation survey have an average work experience of 6 years, only 34% of them scored above 85% in all the steps of basic neonatal resuscitation. All of them have an experience of neonatal resuscitation. In the Kenyan study also a similar poor performance was reported where only 35.4% scored above 85%.⁴ Even though the nurses working in the labor room scored better than those of the NICU, the difference was not statistically significant. Both were poor in the resuscitation knowledge. A survey conducted on delivery conducting nursing staff of Kalyani town in West Bengal showed, 79% nurses knew nothing about the steps of positive pressure ventilation and chest compression.⁶ But in our study, 81% nurses scored above 85% in the bag and mask ventilation step and 67% scored above 85% in the preparation step. In the chest compression step, the performance was dismal; only 15% of nurses scored above 85%. In this study, the two advanced steps of resuscitation such as endotracheal

intubation and medications were omitted because they were not included in the basic neonatal resuscitation. There is a need to follow-up the procedures of knowledge and practice skills gained by the nurses into successful resuscitation practice by periodical refresher courses and evaluation. This would lead to improvement in competence of the nurses by commitment to recommended resuscitation guidelines and thereby improve the quality of care provided to NBs after birth. The participants of this study were aware of the basic resuscitation practices, but there were certain gray areas where knowledge needs to be reimposed by further training. Only a single NRP training was conducted to the nurses in 2011. As there is no statutory requirement by the regulatory authorities to check the resuscitation practice knowledge before attending deliveries, it is expected that the knowledge gap will continue. Studies conducted on neonatal resuscitation in various states of India and abroad have found out similar gaps. Even in advanced countries like Canada a clear gap in guidelines and practice was observed.⁷

CONCLUSION

The disappointing performance of the nurses in this essential skill and inconsistency in awareness of different steps of basic neonatal resuscitation underscores the urgent need for intensified training. There is a need to follow-up the procedures of knowledge and practice skills gained by the nurses into successful resuscitation practice by periodical NRP refresher courses and evaluation. Teaching on the basic neonatal care including the neonatal resuscitation should be stressed during the nursing education itself to ensure acceptable neonatal outcome.

Table 4: Distribution of knowledge score in terms resuscitation steps

Resuscitation steps	<85%	>85%
Preparation	30	63
Bag and mask	17	76
Chest compression	79	14

Table 5: Distribution of knowledge score in terms of qualification

Qualification	<85%	>85%	P value
RNRN	18	4	0.841
GNM	22	9	
Diploma in Nursing	10	3	
BSc	17	4	
MSc	4	2	
Total	71	22	

RNRN: Registered nurse registered midwifery, GNM: General nursing and midwifery

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