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Effectiveness of Structured Teaching Program (STP) on Knowledge regarding Birth Asphyxia among Staff Nurses

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Abstract:
Background: *The birth of a healthy new-born is one of the finest gifts of nature. The birth process takes only few hours but it is the most hazardous period of life since it is associated with the largest number of deaths as compared to any other phase of life. So the researchers felt to create awareness as most of the neonatal deaths occur due to lack of knowledge and mismanagement among staff nurses regarding birth asphyxia.*
Materials and Methods: *A pre-experimental study was conducted to assess the effectiveness of structured teaching program on knowledge regarding birth asphyxia among staff nurses. The study was conducted in a tertiary hospital at Bangalore, Karnataka, India. Total 30 staff nurses who met the selection criteria were selected by non – probability purposive sampling technique. Pre-test was taken by using socio -demographic profile and structured knowledge questionnaire on birth asphyxia followed by which structured teaching programme on birth asphyxia was administered using audio visual aids for 1 hour by the researchers. Post- test was conducted after seven days of structured teaching programme using the same structured knowledge questionnaire.*
Results*: In the pre-test majority of staff nurses 21 (70%) had poor knowledge, 1 (3.3%) had good knowledge and 8 (26.7%) had average knowledge while in the post –test majority of staff nurses 14 (46.7%) had average knowledge , 9 (30%) had good knowledge and 7 (23.3%) had poor knowledge. The mean post- test knowledge score (26.03) was higher than the mean pre-test (17.8). The scores predicted the significant difference (8.23) at p<0.05 level. The calculated "t" value of (5.71) at p <0.05 level of significance indicated the significant difference in the level of knowledge before and after the implementation of structured teaching program.*
Conclusion: *The findings of the study concluded that structured teaching programme (STP) was effective to increase the knowledge of staff nurses regarding birth asphyxia. Among socio-demographic variables none had association with the knowledge of staff nurses.*
Keywords*: Structured Teaching Program, Knowledge, Birth Asphyxia, Staff Nurses*

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I. Introduction

The period of newborn is very essential in the human life. Approximately 10% of the newborn require some assistance to begin breathing at birth and less than 1% requires extensive resuscitation measures. This is because we as a nurse are here to save newborn's life as well as to help the newborn and infant mortality rate. Birth of healthy newborn baby is one of the finest gifts of nature. More than 100 million babies are born annually worldwide. They have to make transition from fluid filled environment in which the placenta serves as the gas exchange for the organ of the foetus and to an air filled environment in which baby's own cardiopulmonary system has to independently function within minutes of birth for survival.[3]

Globally, the neonatal mortality rate is 5.1 million annual neonatal deaths. Of these, five million annual neonatal deaths (98% of the world's total) occur in developing countries. In other words, of 136 million babies born annually, around 10 million require assistance to breathe. Each year 814,000 neonatal deaths result from intra-partum related events in term babies and 1.03 million from complications of prematurity.[3]

World Health Organization (WHO) defined birth asphyxia as "the failure to initiate and sustain breathing at birth. The birth of a healthy new-born is one of the finest gifts of nature. The birth process takes only few hours but it is the most hazardous period of life since it is associated with the largest number of deaths as compared to any other phase of life. If new-born is unable to breathe spontaneously at birth it results birth asphyxia and causes a damaging condition of impaired blood gas exchange and if it persists leading to progressive hypoxemia, hypercapnia with significant metabolic acidosis and tissue oxygen debt, which can

cause serious multi organ failure and poor prognosis and high mortality stillbirth or lifelong disability in the surviving infant commonly with a very high incidence of 25% irreversible neurologic damage and 1.15 million develop clinical encephalopathy such as cerebral palsy, mental retardation and epilepsy leading to detrimental long term consequences for both child and family . Cognitive and behavioural difficulties lead to memory and attention deficit hyperactivity disorder (ADHD), autism and schizophrenia. [2]

Globally birth asphyxia continues to present a major clinical problem and one of the common and leading causes of perinatal and neonatal mortality and morbidity especially in developing countries. Four million babies are born with asphyxia each year. According to statistics by WHO, in developing countries 3% of infants (3.6 million babies) suffer from moderate to severe asphyxia, of whom 23% (840,000) die which equates to nearly 1 million neonatal deaths per year and in a countries with high neonatal mortality rates the death rate is 8 times that of countries with low neonatal mortality rates (NMRs) and almost the same number suffer from the associated consequences .[2]

Birth asphyxia is the fifth largest cause of neonatal death. Birth asphyxia accounts for an estimated 0.92 million neonatal deaths annually and is associated with another 1.1 million intrapartum stillbirths, as well as an unknown burden of long- term neurological disability.[4]

Factors responsible for asphyxia in the new born may be due to maternal risk factors such as pre-eclampsia, eclampsia, premature rupture of membrane, anaemia, and maternal diabetes. During labour, risk factors include prolonged labour, breech or other abnormal presentations, precipitous labour and prolapsed cord. Also asphyxia in the new born may occur from severe cardiopulmonary abnormalities or prematurity.[6]

Birth asphyxia is important cause of preventable neonatal mortality and morbidly in developing countries. 26million births each year in India, 4-6% of neonates fail to establish spontaneous breathing at birth. These babies can be helped if, health care professional present at the time of birth are skilled in the art of neonatal resuscitation.[3]

Worldwide Midwives uses APGAR score for describing the wellbeing of new-borns at birth. Because it is a clinical indicator commonly used to describe the new-born's physical condition at birth. In many cases, the timing of asphyxia cannot be established with certainty that is why the severity of asphyxia is widely assessed by the Apgar score, at 1 and 5 min after birth. Commonly the first 1 min after birth which is the "golden minute" the baby should be breathing well. The American College of Obstetricians and Gynaecologists (ACOG) stated that a low APGAR score beyond 5 min is a suggestive criterion for an estimate of the severity of asphyxia.[2] Although APGAR score does not exactly predict the neurodevelopmental outcome it is still the most feasible and practical to perform.[5]

Simple approaches to improve recognition of maternal dangers signs (e.g., prolonged labor), combined with timely and appropriate referral will help save maternal and newborn lives. When a newborn has been asphyxiated, prompt recognition and simple intervention applied immediately can save the majority of the newborns who do not breathe at birth. Deaths due to birth asphyxia is a challenge in setting where birth takes place at home, without the assistance of a skilled birth attendant, even when birth takes place in healthy facility because there is lack of the essential skills or the simple equipment to provide basic but lifesaving interventions[1]

1.2 Need of the Study

New born babies may not breathe at birth due to many causes originating at different periods of the pregnancy. Birth asphyxia may primarily be due to complications occurring during the ante partum (50%) intrapartum (40%), and postpartum (10%) periods. Therefore to reduce the incidence of birth asphyxia, interventions must be directed towards addressing the conditions that occur during each period when birth asphyxia occurs.[4]

Birth asphyxia accounts for 0.92 million neonatal deaths annually and is associated with another 1.1 million intrapartum stillbirths, as well as an unknown burden of long- term neurological disability .[1]

In India mortality rate is still high compared to developed countries. In India, between 250,000 to 350,000 infants die each year due to birth asphyxia, mostly within the first three days of life. In addition, ante-partum and intra-partum asphyxia contributes to as many as 300,000 to 400,000 stillbirths. Birth asphyxia is the third largest cause of death after infections and preterm births. Even the birth asphyxia is one of the leading causes of neonatal mortality but many of the nurses are announce, or unskilled in resuscitation of the asphyxiated babies.[1]

Newborn infants normally start to breathe without assistance and usually cry after delivery. By one minute after birth most infants are breathing well. India contributes 30% of the global burden of neonatal deaths. Current neonatal mortality rate in India is 47/1000 live births accounting for almost two thirds of the infant deaths.[1]

The presence of a skilled provider during labor and childbirth significantly increases rates of infant survival in the developing world. Skilled providers can use simple techniques to monitor labor and evaluate the health of the woman and the newborn before, during and after the birth .[1]

The management of birth asphyxia consists of supportive care to maintain temperature, perfusion, ventilation and a normal metabolic state including glucose, calcium and acid-base balance. Early detection by clinical and biochemical monitoring and prompt management of complications must be done to prevent extension of cerebral injury.[4]

Neonatal resuscitation has the potential of altering the outcome of intra-partum and post-partum events. But, preventive strategies can be severely hampered by the lack of qualified health professionals. [3]

The researcher identifies that the staff nurses are the first who comes in the contacts of neonates and provide essential care according to neonate condition and need. Hence the staff nurses must have the knowledge to handle the cases in emergency. Researchers felt that there is a need to create awareness among staff nurses regarding management of birth asphyxia, so that more number of neonates can get the essential emergency care at the time of need and rate of death and disability can be decreased.

1.3 Statement of the problem

A study to assess the effectiveness of structured teaching program on knowledge regarding birth asphyxia among staff nurse in a selected hospital Bangalore.

1.4 Objectives

- To assess the level of knowledge regarding birth asphyxia among staff nurses.
- To assess the effectiveness of structured teaching program on level of knowledge regarding birth asphyxia among staff nurses.
- To determine the association between pre-test knowledge score regarding birth asphyxia with selected sample characteristics

1.5 Hypotheses

- H_1:There will be a statistically significant difference in level of knowledge regarding birth asphyxia before and after administration of structured teaching program as measured by structured knowledge questionnaire at $p<0.05$ level.
- H_2: There will be a statically significant association between pre-test knowledge scores regarding birth asphyxia with selected sample characteristics at $p<0.05$ level.

II. Materials And Methods

2.1 Methods

The research design used for this study was pre-experimental one group pre- test – post- test design is adopted. The study was conducted at a tertiary hospital in Bangalore, Karnataka, India. The sample size selected for this study consists of 30 staff nurses who were working in paediatric wards, Neonatal intensive care unit (NICU), Paediatric intensive care unit (PICU) and labour room. Non – probability purposive sampling technique was used to select the samples. The tool used in this study was socio-demographic profile and structured knowledge questionnaire

2.2 Description of the tool

2.2.1 Socio-demographic variables consists of age of the staffs ,gender ,educational qualification ,years of work experience in paediatric ward, years of work experience in labour room and prior exposure to educational & training programmes.

2.2.2 Structured knowledge questionnaire consists of 40 multiple choice questions which helped to assess the knowledge on birth asphyxia. And the score interpretation was good knowledge ≥75% (30-40 marks), average knowledge 51-74% (21-29 marks) and poor knowledge ≤ 50% (≤ 20 marks)

2.3 Validity and reliability of the tool

The content validity of the tool was ensured by giving the tool to experts in the field of paediatrics, neonatology, obstetrics and gynaecological nursing and community health nursing. The reliability of structured knowledge questionnaire was established by using split-half method and Karl person's co-relation coefficient formula. The reliability of the tool was found to be $r = 0.98$.

2.4 Method of data collection

Written permission was obtained from authorities of hospital and college of nursing. Samples were selected based on the inclusion and exclusion criteria and written consent was obtained from the subjects after explaining the purpose of the study. The data was collected during the month of December 2018. Pre- test was conducted using socio-demographic profile and structured knowledge questionnaire followed by which structured teaching programme on birth asphyxia was administered using audio visual aids for 1 hour by the

researchers. Post test was conducted after seven days of structured teaching programme using the same structured knowledge questionnaire. Collected data was coded, tabulated and analysed by descriptive (frequency, percentage, range, mean and standard deviation) and inferential statistics (paired t-test and chi-square test).

III. Results And Findings

3.1 Related to socio- demographic variables of samples

Table No.1: Socio-demographic variables of the staff nurses

(n = 30)

Sample Characteristics	frequency (f)	percentage (%)
AGE IN YEARS		
21-26 YRS	21	70
27-32 YRS	5	16.70
33-38 YRS	1	3.3
≥39 YRS	3	10
GENDER		
Male	0	0
Female	30	100
EDUCATIONAL QUALIFIATION		
GNM	22	73.3
B.Sc. Nursing	5	16.70
Post Basic B.Sc. Nursing	3	10
YEARS OF WORK EXPERIENCE IN PEADIATRICS		
0-2YRS	21	70
3-5YRS	6	20
6-8YRS	2	6.70
≥9YRS	1	3.3
YEARS WORK EXPERIENCE IN LABOUR ROOM		
0-2YRS	28	93.4
3-5YRS	1	3.3
6-8YRS	0	0.00
≥9YRS	1	3.3
PRIOR EXPOSURE TO EDUCATIONAL AND TRAINING PROGRAMMES		
YES	11	36.70
NO	19	63.30

The data shown in table no.1 depicts the percentage and frequency characteristics which shows majority of staff nurses 21(70%) were in the age group of 21-26 years; 5(16.70%) were in the age group of 27-32 years; 1(3.3%) were in the age group of 33-38 years and only 3(10%) were in the age group of ≥39 years. With regard to gender, all 30(100%) samples were females. Regarding educational qualification, 22(73.3%) staff nurses were GNM, 5 (16.70%) completed B.Sc. nursing and 3(10%) completed Post basic B.Sc. Nursing. With regard to years of work experience in paediatrics, 21(70%) samples had experience of 0-2 years; 6(20%) had experience of 3-5 years; 2(6.70%) had experience of 6-8 years and only 1(3.3%) had experience of ≥9 years. With regard to years of work experience in labour room, 28(93.4%) samples had experience of 0-2 years;

1(3.3%) had experience of 3-5 years and 1(3.3%) more too had experience of≥9 years. Majority 19(63.33%) of samples had no prior exposure to educational and training programmes while 11(36.70%) samples had prior exposure.

3.2 Comparing the knowledge staff nurses according to grading at pre And post– test level

Table No.2: Comparison between pre-test and post-test knowledge level of staff nurses

(n=30)

Knowledge level	Category	Respondents			
		Pre- test		Post- test	
		frequency	percentage	frequency	percentage
GOOD	≥75%	1	3.3%	9	30%
AVERAGE	51-74	8	26.7%	14	46.7%
POOR	≤50%	21	70%	7	23.3%
TOTAL		30	100%	30	100%

The data presented in table no.2 depicts the grading of knowledge score at pre-test and post-test level. In the pre-test majority of staff nurses 21 (70%) had poor knowledge, 1 (3.3%) had good knowledge and 8 (26.7%) had average while in the post –test majority of staff nurses 14 (46.7%) had average knowledge , 9 (30%) had good knowledge and 7 (23.3%) staff nurses had poor knowledge.

3.3 Effectiveness of structured teaching programme regarding birth asphyxia on the knowledge of staff nurses

Table No. 3: Pre-test and post- test knowledge score of staff nurses regarding birth asphyxia

(n=30)

Knowledge	No. of items	Maximum scores	Range	Mean	Standard deviation	mean difference	Paired – ' t' test
Pre-test	40	40	23	17.8	5.60	8.23	5.71
Post-test	40	40	17	26.03	5.58		

't '$_{29}$ 2.05 at the level of p< 0.05 * significant

The data presented in Table no. 3 shows that the mean post- test knowledge (26.03) score was higher than the mean pre-test (17.8).The scores predicted the significant difference (8.23) at p<0.05 level. The calculated "t" value was (5.71) at p <0.05 level of significance, which indicated the significant difference in the level of knowledge before and after the implementation of structured teaching program. Hence it was concluded that there was a significant increase in knowledge of staff nurses regarding birth asphyxia after the administration of structured teaching programme

3.4 Association between socio-demographic variables with knowledge of the staff nurses at pre-test level

Chi square value was calculated to find out the association between the knowledge scores of the staff nurses with socio - demographic variables. The findings revealed that there was no significant association between the knowledge scores (pre-test) of staff nurses regarding birth asphyxia with selected socio-demographic variables i.e. age - $\chi 2$ value of 0.418 (df- 1, chi square value-3.84 , p>0.05) , educational qualification- $\chi 2$ value of 2.037 (df- 1, chi square value- 3.84, p>0.05) and years of work experience in paediatrics - $\chi 2$ value of 0.4 (df- 1, chi square value- 3.84, p>0.05) , years of work experience in labour room - $\chi 2$ value of 2.225 (df- 1, chi square value- 3.84, p>0.05) and prior exposure to educational and training programmes - $\chi 2$ value of 1.419 (df- 1, chi square value- 3.84, p>0.05) . With regard to gender, as all the 30 samples were females, so association was not calculated. Hence, it was concluded that among socio-demographic variables none had association with the knowledge of staff nurses.

IV. Nursing Implications

The nursing implications are discussed under nursing practice, nursing education, nursing administration and nursing research.

Nursing practice

This study creates awareness and motivates staff nurses to update their knowledge which will reflect automatically on their attitudes, skills and practices while providing care to the newborns to prevent complications and also to save lives. Periodic training programmes must be conducted to keep them updated with the recent concepts, hands on skills and practices regarding birth asphyxia.

Nursing education

Even though birth asphyxia content is already included in the present curriculum, nursing faculty can create various opportunities and exposures for students to be competent to handle this condition effectively at the clinical area.

Nursing administration

- The nurse administrators should take active steps in organizing various educational programmes periodically in hospitals and health care centres to train the staff nurses regarding birth asphyxia.
- The nurse administrator needs to take interest in providing information on birth asphyxia. The nurse, as an administrator, should plan and organize CNE (Continuing Nursing Education) and in service education programmes for the nursing personnel which will make them confident and competent to work. Planning and organization of such programmes requires efficient team work, planning for man power, money, material, method and time to conduct successful instructional teaching programmes.

Nursing research

Findings of the present study suggest that nurses in hospital and those working in the community need to be well-versed, sensible, expertise fiercely and motivated while providing care to newborns especially diagnosed with birth asphyxia. An experimental research can be conducted among staff nurses to assess the knowledge, attitude and practice on birth asphyxia.

V. Conclusion

From the findings of the study, it can be concluded that the administered structured teaching programme was effective as a method to improve the knowledge of the staff nurses by saying that cognitive change can be brought about by teaching programme. Selected variables such as age, educational qualification, years of work experience and prior exposure to educational and training programmes had statistically no significant association with the knowledge of staff nurses.

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