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A Study of effectiveness of hands-on training programme Association with pre-test knowledge score and selected demographic variable regarding basic neonatal resuscitation among Nurses

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Abstract - Every year, millions of infants throughout the globe are not breathing during birth and require infant resuscitation. Only if the medical personnel in the delivery room is well-versed in infant resuscitation can they guarantee the safety and health of the newborns. The purpose of this study was to assess nurses' knowledge in newborn resuscitation. A descriptive cross-sectional study was carried out to evaluate nurses' knowledge of newborn resuscitation procedures. The selection of participants was carried out in a random fashion, much like a census. The 86 nurses who worked in the maternity unit at the Parsa District NGO were questioned using a semi-structured interview schedule, and their performance was rated based on observations. The findings showed that 93% of respondents had inadequate knowledge (85% score) and 90.7% had inadequate skills (85% score) when it came to Newborn Resuscitation. Working experience, specifically in a maternity unit, and completion of infant resuscitation training both correlate with increased skill when it comes to resuscitating neonates (p=0.034, p=0.028, and p=0.001, respectively). Knowledge and ability scores on the same question concerning baby resuscitation were shown to have a strong correlation in this study (p0.0018). In this Study discuss effectiveness of hands-on training programme Association with pre-test knowledge score and selected demographic variable regarding basic neonatal resuscitation among Nurses.

Keywords -Nurses, Neonatal, Knowledge, Chhattisgarh, Demographic

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INTRODUCTION

One of life's most miraculous events is the arrival of a new baby. There haven't been many things like this in my life. Despite their incredible potential, newborn newborns are wholly reliant on their caregivers for survival needs such as food, warmth, and comfort. The placenta insulated the fetus from the mother's body temperature and provided nutrition while in the womb. These safeguards disappear after delivery, and it takes a newborn some time to adjust, particularly in the first 24 to 48 hours. They are exposed to colder air, must rely on the mother's breast for nutrition instead of the placenta, and are not shielded from environmental pathogens in the womb. Newborns typically require between one and four weeks to gain strength and adjust to life outside the womb.

Fetal life and postnatal life both need adequate oxygen levels. Fetal oxygen is delivered before birth by diffusing over the placental membrane from the mother's blood. There are three key shifts that take place after delivery. 1. Fetal alveolar fluid absorption 2. Umbilical vein occlusion 3. Lessen the resistance in the lungs. The majority of the change occurs in the first few minutes after birth, although it might take many hours to complete. Where exactly may things go wrong here? Pregnancy, childbirth, or the newborn period are all potential times of difficulties for the newborn. Inadequate blood supply to the placenta has been linked to complications during and during childbirth. When a newborn is having trouble breathing after delivery, it's typically because of an issue with their airway or lungs. Lungs not filling with air, failure to see the predicted rises in systemic blood pressure, and narrowed pulmonary

arteries are all potential disruptors to a smooth transition.

Right after delivery, breathing helps clear the air gaps in the lungs of fluid. When a newborn baby takes its first breaths, the air they inhale effectively replaces the fluid in their lungs, allowing the alveoli to expand. Babies with limited first respiratory effort, as seen in preterm and sedated newborns, or who are born apnoeic have trouble removing lung fluid.

When blood flows through the pulmonary vasculature, oxygen is carried to the alveoli. Blood vessels constrict during an intrauterine period. There is an increase in blood flow through the pulmonary circuit and a decrease in pulmonary vascular resistance due to vasodilation shortly after delivery.

The foetus experiences brief periods of hypoxia with each contraction of the uterus. However, chronic acidosis or organ malfunction are not the result until the condition is severe or lasts for an extended period of time. The placenta ceases to function as a gas exchange organ after the umbilical cord is clamped and severed. Babies begin breathing when chemoreceptors and neurological reflexes trigger the respiratory center. Inflation of the lung causes a dramatic drop in pulmonary vascular resistance; hence, the first few breaths should be strong enough to inflate the lung and remove the foetal lung fluid via the circulatory and lymphatic systems.

Lack of oxygen and/or perfusion during pregnancy or delivery is a leading cause of perinatal hypoxia, causing injury to the developing fetus or baby. Infant with asphyxia has low oxygen levels and high acid levels. Hypoxemia and acidosis both lead to a narrowing of the pulmonary arterioles and a widening of the ductus arteriosus. Even with adequate ventilation, an infant's tissues won't get the oxygen they need if pulmonary perfusion is low. Baby's oxygen and pH levels may be somewhat decreased after moderate asphyxia, but rapid restoration of breathing may help improve pulmonary perfusion.

Approximately 3-5% of India's 25 million newborns are born with complications such as hypoxia, hypercapnia, hypoperfusion, and acidosis. This may cause problems in a number of different organs. Acute infant's first response to an oxygen deprivation is fast breathing. When a newborn is asphyxiated, they stop breathing, their heart rate drops, their neuromuscular tone weakens, and they go into a state called apnoea. Tactile stimulation and oxygen exposure at this time usually result in breathing. If the apnea lasts too long, the baby will start breathing deeply in gasps, their body temperature will drop even more, their blood pressure will drop, and they will become almost limp. Unless resuscitation with aided ventilation and oxygen is started quickly, the newborn will not respond to stimulation and will not restart breathing on its own.

Why IMR continues to be high in India?

Slow progress in reducing the infant death rate is a crucial factor in this predicament. Neonatal causes account for 37% of all fatalities in children under the age of five worldwide (within the first 4 weeks of life). As reported by the third wave of the National Family Health Survey, newborn mortality accounted for half of all fatalities among children under the age of five, making neonatal causes the leading cause of death in this age group by a significant margin. (Information gathered from PFC 2007 and SRS). More concentrated efforts are needed to address this issue. Worldwide, almost 4 million infants don't make it beyond the first month of life. It's believed that one million people in India fall under this category. (Information gathered from PFC 2007 and SRS). India has the greatest rate of newborn mortality, with 1.1 million infants dying before their fourth week of life every year. A shockingly high 36 baby deaths for every 1000 live births is the current neonatal mortality rate in India (SRS 2008). Diverse states have vastly different NMR statistics, with the lowest seen in Kerala and the highest in Chhattisgarh, Jharkhand, UP, and Madhya Pradesh. The first week of life is considered the most critical in neonatology. Eighty percent of newborn fatalities occurred in the first week of life. Among reality, the rate of mortality in newborns has risen from 26 per 1,000 to 29 per 1,000 births (SRS 2004 & 2007). Perinatal asphyxia accounts for 23% of all newborn mortality; severe infections account for 36%; premature births account for 25%; neonatal tetanus accounts for 4%; and congenital deformities account for 4%.

Health Goals for India: 12th Five-Year Plan

The Infant Death Rate has dropped to 25. The goal was to achieve an MMR of 100, which means that the rate of maternal mortality has been eliminated. The government has made strategic investments to boost MCH indicators throughout the nation, with a particular emphasis on states with a high fertility rate in order to reduce maternal and child mortality, which is central to the National Rural Health Mission (NRHM).

There are a total of 5161 sub-health facilities and 783 primary care clinics in addition to the 27 district hospitals, 15 civil hospitals, and 29 city civil hospitals run by the State government. The State also has a polytechnic, as well as ten municipal family welfare centers and a facility for people with leprosy.

Several obstacles stand in the way of Chhattisgarh's progress toward its goal of boosting the health and nutrition of its people. The rising prevalence of noncommunicable chronic illnesses is one of the newest epidemiological concerns facing public health. A demographic shift is occurring as a result of the growing number of people in the senior population. Disease patterns may be affected by several things, including environmental variables and climatic shifts. The health care system is already stretched thin dealing with issues including maternal

and infant mortality, infectious illnesses, and the HIV/AIDS epidemic. More has to be done to help. According to a study conducted in 2014, the infant mortality rate in this state was 48 per 1,000 live births, which is much higher than the national average. There is a neonatal death rate of 35 per 1,000 live births (37 in rural areas and 29 in urban areas), and a mortality rate of 61 per 1,000 for children less than 5. Although Chhattisgarh has made significant strides in the right direction over the last several years, it still has a long way to go before it can claim success in meeting the MDGs.

REVIEW OF LITERATURE

Dr. Malarvizhi.G et al (2017) performed research at PSG IMSR in Coimbatore to see how well clinical simulation helps B.Sc. Nursing students learn how to do neonatal resuscitation. Eighty-five third-year B.Sc. Nursing students were enrolled using a nonrandom, selective selection method for this quasi-experimental study. The pre-test findings showed that 44 (52% of the sample) nursing students had poor knowledge on newborn resuscitation, whereas 41 (48%) had somewhat good understanding. The mean knowledge score before the posttest was 8.832.80, and after the posttest, it was 21.72.68. We obtained a statistically significant increase in posttest knowledge score of 12.893.92 (t=30.31, p0.0001, p0.05) when comparing pre and posttest scores on the NRP. The post-test results showed that nursing students had significantly improved their abilities in a variety of areas, including Basic Life Support, dealing with a baby who is not breathing, using positive pressure ventilation and chest compression, and administering drugs. The mean score on the post-test for competence was 21.524.21.

Manoja Kumar Das et al, (2018) undertook research to determine how well birth workers in Uttar Pradesh retained their infant care and resuscitation knowledge and skills after one year of clinical practice. There were 168 different types of birth workers included in the study (54 doctors and 114 nurses). There was a significant increase in both knowledge (doctors: 42%-85%, nurses: 35%-86%) and skill (doctors: 15%-89%, nurses: 15%-90%) ratings after training, as measured by three observations taken before, during, and after the training period. Both knowledge and competence were retained at high levels after one year (58% for physicians and 52% for nurses), although the knowledge-skill disparity was still noticeable. The research found that birth attendants showed hopeful signs of competence growth and information retention. Depending on the teaching approach and availability of skill refreshment via skill labs, students may retain varied amounts of information and skills.

OBJECTIVE OF THE STUDY

- To assess the effectiveness of hands-on training programmes regarding basic neonatal resuscitation among Nurses.
- To find the association with pre-test knowledge score and selected socio demographic variables regarding basic neonatal resuscitation among Nurses.

METHODOLOGY

According to Nancy Buns and Susan K research design is a blue print for conducting a study, maximizes control over factors that could interfere with the validity of the findings, guides the planning and implementation of a study in a way that is most likely to achieve the intended goal.

The research design adopted for this study is pre-experimental, one group pre-test post-test research design.

O1 X O2: - The knowledge before and after the intervention of hands-on training programme

X: The intervention – hands on training programme.

The schematic design for the study

Group	Before	Treatment	After
Experimental group	O1	X	O2

KEYS: -

O1: - Pre-test Group

X: - Intervention

O2: - Post-test Group

Variable

Qualities, properties or characteristics of persons, things, or situations that change or vary and are manipulated or measured in research.

Dependent Variable: "It is the outcome or the response that the researcher wants to predict or explain". (Nancy Burns & Susana K)

In the present study knowledge and skill on basic neonatal resuscitation are the dependent variables.

Independent variable: "It is a stimulus or activity that is manipulated or varied by the researcher to create an effect on the dependent variable". (Nancy Burns & Susana K)

In the present study hands on training programme on basic Neonatal resuscitation with demonstration and videos is the independent variable.

Population

Population represents the entire group of the study population that is all elements (individual, objects, and subjects) that meet criteria for inclusion in the study

Socio demographic data of Nurses

There are 8 questions in total and includes demographic variable like age, marital status, working set up, working place, years of work experience, number of deliveries conducted per month, any in-service education or training received regarding neonatal resuscitation, IMR rate.

Questionnaire regarding basic neonatal resuscitation.

The tool contains 25 questions regarding preparation, initial steps, positive pressure ventilation regarding basic neonatal resuscitation.

RESULT AND DISCUSSION

Evaluation of the effectiveness of hands-on training programme regarding basic neonatal resuscitation.

Mean, median, standard deviation and T value of pre and post-test, pre- skill score and post skill score

Variables	Mean	Median	SD	P value	T value
Pre- test	16.64	17 (15 - 19)	± 3	<0.001**W	127.5
Post test	21.29	21 (20 - 23)	± 2.09		
Pre- skill score	48.66	45 (40 - 58)	± 10.89	<0.001**W	0
Post skill score	87.49	89 (83 - 93)	± 8.49		

1W: Wilcoxon Test

2P Values less than 0.05 are significant

For assessing the effectiveness of the training program, Wilcoxon signed rank test for paired observations was used. The test scores showed an increase in mean value from 16.643 to 21.29 A similar increase is observed for the median scores. Skill scores showed significant improvement after the training (P value <0.001 for both tests). The mean score increased from 48.66 to 87.49 for course score. A similar increase is observed for the median scores. Hence, we conclude that the training program was effective.

Association with pre-test knowledge score and selected demographic variable regarding basic neonatal resuscitation among Nurses.

Variables	*Pre-Level of Knowledge*				*χ^2(df)*	*P value*
	Below Average (%)	*Average (%)*	*Good (%)*	*V Good (%)*		
Age in years						
20-25	2(3.8)	8(15.4)	37(71.2)	5(9.6)		
26-30	8(4.3)	38(20.2)	127(67.6)	15(8)		
31-35	4(3.6)	30(27.3)	71(64.5)	5(4.50	2.671 (3)	.445
36 and above	4(2.7)	56(37.3)	84(56.0)	6(4)		
Marital status						
Married	202(60.7)	13(3.9)	118(35.4)			
Single	87(52.1)	5(3)	75(44.9)		4.254 (2)	.119
Working set up						
CHC	50(58.1)	0(0)	36(41.9)			
PHC	63(52.5)	2.5(7)	45(49)			
Wellness centers	84(57.5)	8(5.5)	54(37)		9.26 (6)	.158
Sub health center	92(62.2)	7(4.7)	49(33.1)			
Working set up						
Working place						
Surguja	289(57.8)	18(3.6)	193(38.6)			
Balrampur	96(64)	8(5.3)	46(30.7)			
Surajpur	68(68)	3(3)	29(29)		126.524263	.000
Jashpur	79(52.7)	3(2)	68(45.3)		(3)	
Years of work experience						
1- 5 yrs.	164(53.8)	12(3.9)	129(42.3)			
6-10 yrs.	64(64)	1(1)	35(35)			
11-15yrs	10(52.6)	1(5.3)	8(42.1)		9.294(6)	.158
above 16yrs	51(67.1)	4(5.3)	21(27.6)			
No. of deliveries conducted						
1-5	182(57.6)	13(4.1)	121(38.3)		6.177(4)	.186
6-10	59(67)	2(2.3)	27(30.7)			
More than 10	48(50)	3(3.1)	45(46.9)			
Attended training on neonatal resuscitation						
Yes	106(52.2)	9(4.4)	88(43.3)			
No	183(61.6)	9(3)	105(35.4)		4.500(2)	.105
IMR						
1-10	267(59.3)	16(3.6)	167(37.1)			
Above 10	22(44)	2(4)	26(52)		4.439(2)	.109

Table shows that there is significant (p<0.05) association with the pretest knowledge and the selected demographic variables like age, working setup, working place, number of deliveries

conducted and attended training on basic neonatal resuscitation

Association with pretest skill score and selected demographic variable regarding basic neonatal resuscitation among Nurses.

Variables	*Pre-Level of Skill*		χ^2*(df)*	*P value*
	Average (%)	*Below Average (%)*		
Age in years				
20-25	27(46.6)	31(53.4)		
26-30	86(43.4)	112(56.6)		
31-35	35(35)	65(65)	2.671 (3)	.445
36 and above	59(41)	85(59)		
Marital status				
Married	145(43.5)	188(56.5)		
Single	62(37.1)	105(62.9)	1.900 (1)	.168
Working set up				
CHC	21(7.9)	44(16.5)		
PHC	27(10.2)	49(18.4)		
Wellness centers	33(12.4)	38(14.3)	3.347 (3)	.341
Sub health center	22(8.3)	32(12)		
Working place				
Surguja	50(50)	50(50)		
Balrampur	98(65.3)	52(34.7)		
Surajpur	52(52)	48(48)	126.524263	.000
Jashpur	7(4.7)	143(95.3)	(3)	
Years of work experience				
1- 5 yrs.	127(41.6)	178(58.4)		
6-10 yrs.	31(31)	69(69)		
11-15yrs	7(36.8)	12(63.2)	10.649(3)	.014
above 16yrs	42(56.3)	34(44.7)		
No. of deliveries conducted				
1-5	134(42.4)	182(57.6)	.358(2)	.836
6-10	35(39.8)	53(60.2)		
More than 10	38(39.6)	58(60.4)		
Attended training on neonatal resuscitation			.536(1)	.464
Yes	119(40.1)	178(59.9)		
No	22(44)	18(4.0)		
IMR				
1-10	185(41.1)	265(58.9)	4.500(2)	.105
Above 10	22(44)	28(56)		

Table shows that there is significant ($p<0.05$) association with the pre skill scores and the selected demographic variables like working setup, working place, years of experience and number of deliveries conducted

CONCLUSION

The present study has revealed that the Nurses who are trained during their student period consider themselves self-sufficient. On the long run they fail to update themselves with the current development. The study has revealed that though they have some amount of knowledge their skill is very poor. And so they need to be updated with this type of training time to time in order to reduce the neonatal morbidity and mortality rate.

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