Original Research Article

Effect of Planned Teaching on Practices of Skilled Birth Attendants on 'Facility Based Newborn Care' at Health Care Facilities in Raigad District, Maharashtra

Samruddhi S Bhakare[1], Dr Nimain Mohanty[2], Dr Sripriya Gopalkrishnan[3]

[1]Ph D Scholar, MGM Institute of Health Sciences, Kamothe, Navi Mumbai. Assistant Prof, Sadhu Vaswani College of Nursing, Pune
[2]M.D.Peds, M.S, MGM Hospital, Kalamboli, MGMIHS, Navi Mumbai.
[3]PhDN, Principal, Sadhu Vaswani College of Nursing, Koregaon Park, Pune

Corresponding Author: Samruddhi S Bhakare

ABSTRACT

Child survival is a key determinant of any country's development which is indicated by the number of deaths that occur each year in terms of under five and infant mortality. In India, we are losing 1.35 million children annually and majority of these deaths occur during the newborn period. The challenge faced by India is enormous evident in the fact that India contributes to 17.5 % of the world's population, nearly 20 % of the total live births, yet accounts for 26% of global newborn deaths. Saturation of all delivery points with providers trained Skilled Birth Attendance including Essential Newborn Care and Neonatal resuscitation are the top most priority under national programme. This study aims to determine the level of Practices of the Skilled Birth Attendants regarding 'Facility Based Newborn Care' at the Health Care facilities in district of Raigad, Maharashtra.
Materials and Method: Pre- Experimental one group pre-tests, post-tests research design. Samples are 20 Skilled Birth Attendants. Sampling technique used stratified proportionate sampling for regions of Raigad and random sampling for SBAs. Tool consisted of 75 skills used in Immediate Newborn Care, Intensive Newborn Care and Newborn Resuscitation care rated by using checklist for observing the skills practiced by SBAs.
Result: Majority SBAs were age group ≤ 30 years, majority were with 0-5 years of work experience. Only 20% of the SBAs had received training on Newborn. The mean of practice scores is 18.1for Immediate Newborn Care, 6.5 for Intensive Newborn Care and 2.1for Newborn Resuscitation care, which indicates poor skill scores. Te post test score increased to 94% in skills of SBAs. There is a significant difference in the mean score of Practices pretest and post test with p value<0.05. Fisher's exact test was used for correlation of the demographic variables with the practices. There was significant association in the professional qualification, years of experience and training received in newborn care with practices. The SBAs can apply these improved skills in day to day practices of newborn care.
In order to further reduce newborn mortality and end preventable deaths, intensified actions, equitable and universal coverage of high impact interventions and improved coverage of known interventions are needed to ensure newborn survival, which is the right of every newborn to life, survival, health and development hence reducing neonatal mortality in India.
Keywords: Skilled Birth Attendants, Practices of SBAs, Facility Based Newborn Care, Neonatal Mortality, Neonatal outcome, Health care facilities.

INTRODUCTION

Neonatal mortality is a strong indicator of neonatal, perinatal and maternal health in any given country, region or population. It still remains a formidable challenge for health strategies and perinatal

health care planners. It has become increasingly evident that any further impact on Infant mortality will be hard to achieve until there is a drastic reduction in neonatal mortality**.** [1] In India, we are losing 1.35 million children annually and majority of these deaths occur during the newborn period. The challenge faced by India is enormous evident in the fact that India contributes to 17.5 % of the world's population, nearly 20 % of the total live births, yet accounts for 26% of global newborn deaths. [2] About 44% occur in the neonatal period i.e. in the first 28 days of life, [3] ¾th of neonatal deaths occur within 7 days, mostly during first 48 hours. Day 1 death rates 74.1%. Current neonatal mortality rate 29 / 1,000 live births accounts for 2/3rd of the IMR in India**.** [4] Aim to reduce NMR to < 10 looks a distant dream at present rate of decline [5] (Ministry of health and family welfare -2014). Health workers who attend to delivering mothers and handling the newborn at birth need to be knowledgeable in the care of mother and newborn efficiently. [6]

This study aims to determine the level of Practice of the Skilled Birth Attendants regarding 'Facility Based Newborn Care' at the health Care facilities in Raigad district, Maharashtra.

NEED OF THE STUDY: Improvement in neonatal-perinatal survival is a priority health agenda in India. Substantial gaps in the quality of care exist across the continuum for women's and children's health. Introducing high quality care with high impact, cost-effective interventions for mother and baby together -delivered in most cases, by the same health providers with midwifery skills at the same time is the key to improvement. [7]

The Draft National Health Policy Document (Jan, 2015) states – "If > 90 % health personnel attending institutional deliveries are trained on 41% of essential interventions, an estimated 15-30% reduction in NMR can be expected. Training components should include Facility based newborn care, newborn care corners and Special neonatal care units at health centers. Hence the Government of India introduced Facility Based Newborn Care in the maternal and child health programmes deploying Skilled Birth Attendants (SBA) consisting of Primary care doctors, nurses and mid-wives. [8] (National neonatal and perinatal database, ICMR)**.**The core competency, knowledge and attitude of these SBAs have to be optimal in order to achieve the desired result in a time bound manner. The World Health Organization defines a skilled attendant as: "A health professional – such as a midwife, doctor or nurse – who has been educated and trained to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns"

Facility Based Newborn Care (FBNC) includes essential care at birth and care of sick babies in different facilities as Neonatal Care corners at PHC level, Stabilization Newborn Care Unit at CHC, FRU level, Special Care Neonatal Unit at District level. [9]

To reduce mortality rate, state has improved Newborn Care Facilities by opening Sick Newborn Care Units (SNCUs), Newborn stabilization Unit (NBSUs) and Newborn Care Corners (NBCCs). SNCU has established in various District Hospitals, which provides intensive care to the babies who are sick and require resuscitation care, thermal control, hypothermia and ventilator support. [5] It is expected that these facilities will maintain the quality in training which will enable our health workers in acquiring the desired skills for quality obstetric and neonatal care. [10]

Facility based newborn care has a significant potential for improving newborn survival in India. It has been estimated that health - facility based interventions can reduce neonatal mortality by as much as 23-50% in different settings**.** [11]

The Every Newborn Action Plan (ENAP), which has been recently endorsed by the World Health Assembly, calls for an NMR of less than 10 per 1,000 live births by 2035 in all countries. There are 10 key recommendations given by ENAP, out of which no.3 and no.6 objective highlights that - Apply best practices of care at SNCUs on a nationwide level, create mentoring teams, and further increase such units to address the unmet needs and Strengthen techno-managerial capacity of the program teams, If all these key recommendations are put to practice, neonatal survival is sure to improve in our country. [12] Interventions focused on intrapartum and immediate care and care of the small and ill neonates would contribute the maximum toward further reduction in neonatal deaths. [7]

REVIEW OF LITERATURE

Kreyberg, Lise Mørkved Helsingen conducted an explorative study on Skilled birth attendants at Bansang Hospital, Gambia, University of Oslo,2010 and the study result stated that there is a difference between the preservice knowledge and skill, then when actually implementation was done to improve in their skill, then majority felt the need for additional training, for caring during perinatal period. Study concluded that - There is a need for further examinations to objectively measure the skills and abilities of the birth attendants in Gambia. Knowledge is needed on how to increase the quality and capacity of pre- and in-service training among birth. [13]

Graham et al in the study. "Can skilled attendance at delivery reduce maternal mortality in developing countries?" mentions that what qualifies a skilled birth attendant, and are all institutional birth attendants really skilled? The result of the study indicates, based on self reported level of confidence, that there is a lack of basic knowledge and skills among many of birth attendants. The study recommends that there is a clear need for further research to objectively measure the skills and abilities and wish for more

training to increase in the competency and that we cannot presuppose that all birth attendants are skilled in delivery and newborn care. [14]

Harvey et al. 2004**.** Qualifications on paper alone do not guarantee sufficient skills and competence, and one should not automatically assume that anyone with medical, nursing, or midwifery training meets the WHO criteria defining a skilled attendant. There is also a discrepancy between being trained and feeling comfortable about skills, abilities and theoretical knowledge. Even trained personnel have gaps in their competence. This may result in feeling of less confident in handling maternal and neonatal care. [15]

Makene et al in the study, "Improvements in newborn care and newborn resuscitation following a quality improvement program at scale: results from a before and after study in Tanzania" mentioned that over the course of two years of the study, the newborn care quality improvement program as successful in raising the quality of essential newborn care, some gaps in newborn care were persistent, notably practical skill in newborn resuscitation. Continued investment in newborn care practice and resuscitation may help in addressing the gaps and the improvements is priority for reduction of newborn mortality in Tanzania. [16]

Study done by Praveen K Agrawal, Sutapa Agrawal, Saifuddin Ahmed. Effect of Knowledge of community health workers on essential newborn health care: A study from rural India. This study explored the relationship between the knowledge of community health workers, Anganwadi workers and Auxiliary Nurse Midwives and their antenatal home visit coverage and effectiveness of the visits, in terms of essential newborn health care practices at the household level in rural India. Result of the study was that coverage of the visits and newborn practices were positively correlated with the knowledge level of the health workers. Study concluded that CHWs knowledge is one of the crucial aspects of

health systems to improve the coverage of community-based newborn health care programs as well as adherence to essential newborn care practices. The greater the knowledge level of these workers, it contributes to better improvement in newborn heath status. [17]

Santosh K Bhargava 2004 in the study on challenges of neonatal mortality in India mentions about the neglect of newborn care from primary to tertiary level in health delivery system, in the curriculum of medical, nursing and even at the grass root level of midwives education and training continues. In the past two decades there is slow progress in newborn care, much more needs to be done. National programs related to neonatal care needs to well trained and practiced by the skilled birth attendants. [18]
Literature reviewed and researcher's experience identified the gap that:
o All medical personnel required in the field including Doctors, nurses, ANMs, are not formally trained on FBNC as the same is not given due weightage in their curriculum.
o FBNC is a newer concept, the components are needed to be understood and practiced by the SBAs.

Objectives of the Study:
a) To assess the Practices of Skilled Birth Attendants on 'Facility Based Newborn Care' at the selected Health Care facilities in Raigad.
b) To determine the effect of planned teaching on Practices of the said Skilled Birth Attendants.
c) To correlate the Practices of Skilled Birth Attendants with selected demographic variables.

MATERIALS AND METHODS
This study is adopted for assessing the Practices of Skilled Birth Attendants in 'Facility Based Newborn Care'. This is a pre-experimental study with one group pretest, post-test study. Sample Size is 230

Skilled Birth Attendants (SBAs) working in Health Care facilities of Raigad district of Maharashtra. Sampling technique used is Stratified Sampling for Regions selection, then random sampling for selection of SBAs. Tool validated by 20 field experts. Reliability by split half method; Kuder Richardson - KR20 formula. Reliability for Practice =0.84

DATA COLLECTION: Section I - Demographic variables = 5 items, Section IIa - Skills by Observation Checklist = total 75 skills, 44 on Immediate Newborn Care, IV b= 21 on Intensive Newborn Care and IV c =10, Neonatal Resuscitation and NR post care. Scoring was 0=skill not done, 1= skill done. Pilot study conducted on 20 samples from 23/12/15 to 02/01/16.
Ethical aspects: The study proposal has been sanctioned by the Ethical committee of the institute. Permission was obtained from the concerned authority –Directorate of Health Services, Taluka Health Officer and District Health Officer of the selected district. Informed, written, valid consent were taken from participants.

Pretest	Planned teaching	Post test
O	X	O1
Day1	Day2, 3	Day 6

Data collection in phases:
Phase I - Pretest, assessment of Practice by observation checklist - day1. On day 2- Actual practices in newborn care done, hands on training for SBAs on immediate, essential newborn care and day3 - Critical newborn care and newborn resuscitation and resuscitation care (24 X7), return demonstration of practices of SBAs, doing post test.
Wilcoxon test applied for comparison of pretest and post test scores of SBAs Practice. Fisher's Exact test, Mann-Whitney test applied to correlate the Practice of SBAs with selected demographic variables.

RESULT

Objective 1: To assess the Practices of Skilled Birth Attendants on 'Facility Based Newborn Care' at selected Health Care Institutes in of Raigad district.

Table 1: Demographic Details.   **(N=20)**

Parameter	Characteristics of SBAs	Frequency	Percentage
Age (Yrs)	≤30	9	45
	31 – 40	7	35
	41 – 50	4	20
Professional qualification	ANM	10	50
	GNM	10	50
Designation	S/N	6	30
	Senior S/N	7	35
	Junior S/N	7	35
Total years of experience	0 – 5	7	35
	6 – 10	3	15
	11 – 15	5	25
	>15	5	25
Delivery conducted per month	≤5	5	30
	>5	15	70
Receive any training in NB	Yes	4	20
	No	16	80
If Yes, Specify (n=4)	NSSK	4	20

Table 2: Practice score of SBAs on FBNC

|		Pre test		Inference
		Mean	SD	
1a	Immediate newborn care	18.15	3.856	Average Skill
b	Intensive/Critical newborn care	6.50	2.685	Poor Skill
c	Resuscitation care in newborn	2.15	0.875	Poor Skill

Practice score of **1a) Immediate Newborn Care,** 0-14=poor skill, 15-29=average skill, 30-44=good skill; **1b) Intensive Care,** 0-7= poor skill, 8-15= average skill, 16-21=good skill; **1c) Resuscitation care,** 0-4=poor skill, 5-7=average skill, 8-10=good skill.

The mean score of practice in immediate newborn care is 18.1 for immediate newborn care, 6.5 for intensive care and 2.1 for resuscitation care which indicates poor skill score.

Objective 2: To determine the effect of planned teaching on Practices of the said Skilled Birth Attendants

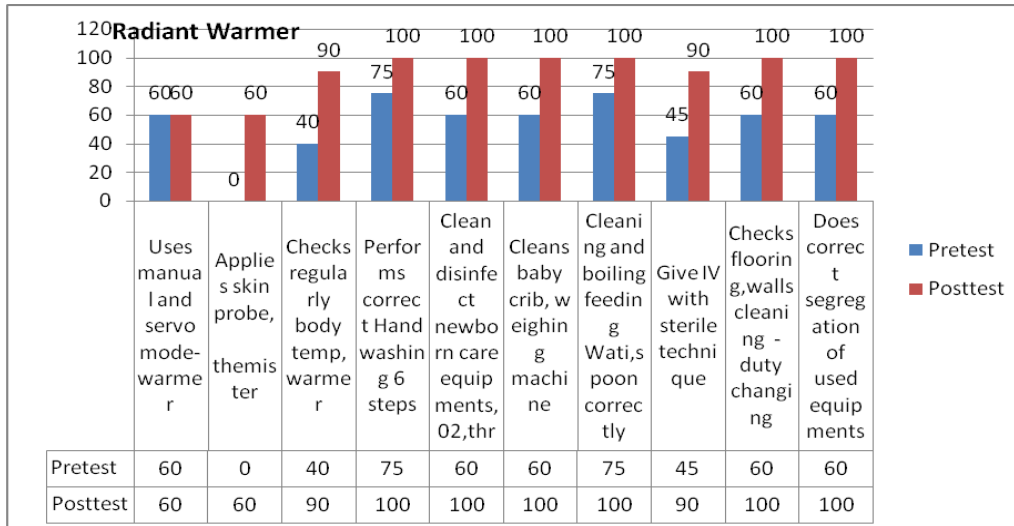**Table 3: Comparison of pre and post test Practice score of Skilled Birth Attendants in study.**

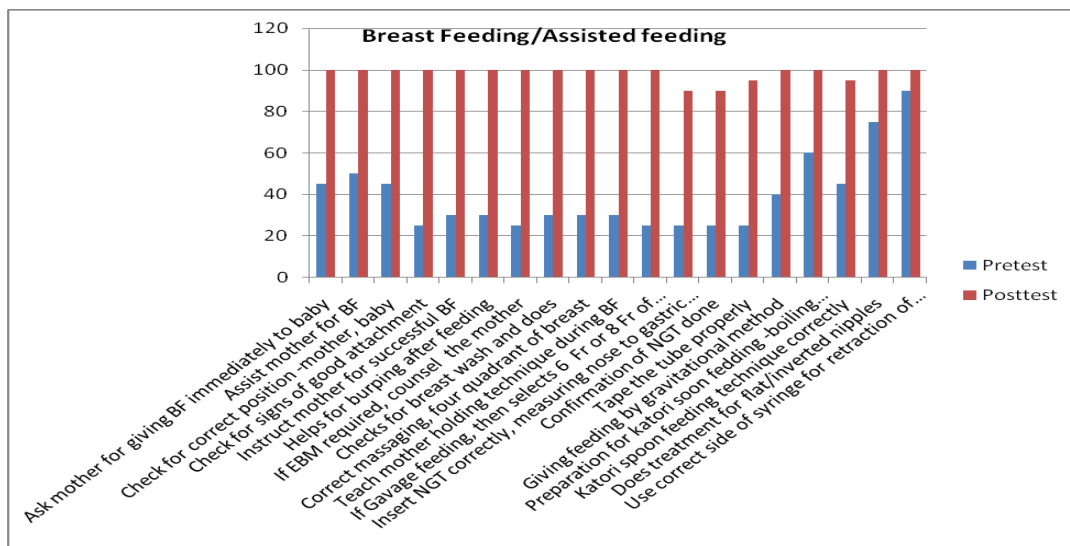|	Practices on Immediate newborn care	Practices on Intensive Newborn care	Practices on Neonatal resuscitation
Pretest	40.30%	30.90%	23.80%
Post test	94.70%	90.20%	96.10%
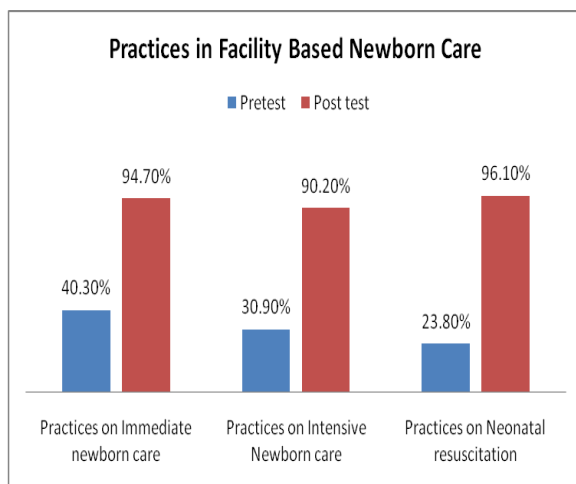
GraphNo.1: showing effect of planned teaching on Practices of SBAs. Increase in skills from 30% in pretest to average 94% in post test.
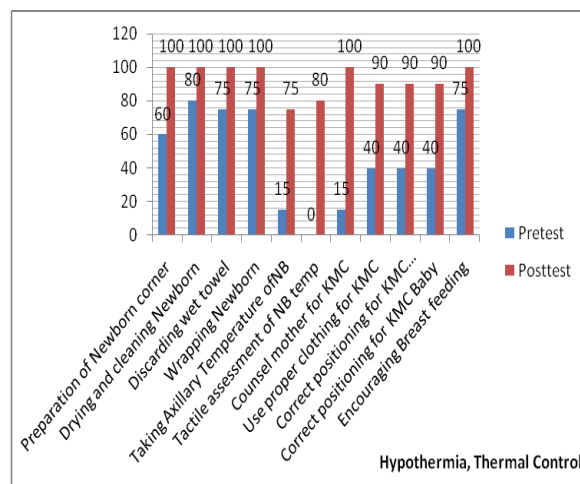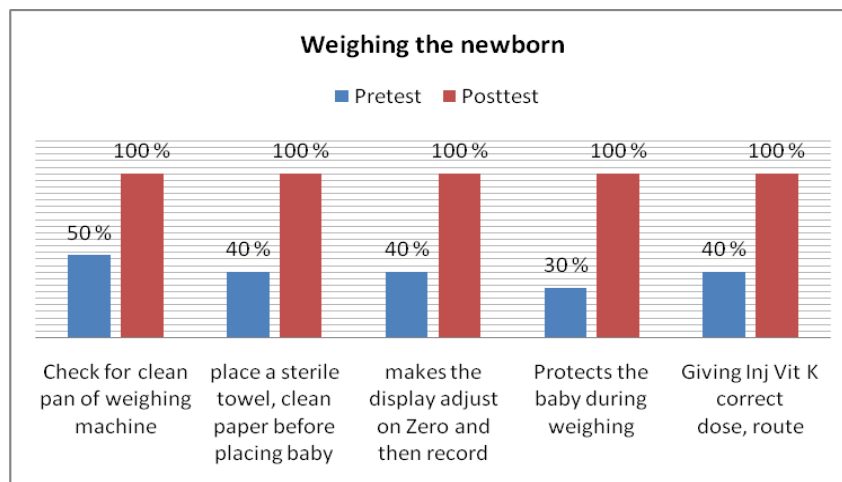

Graph No.2: showing increase in post test of SBAs on Hypothermia and Thermal control in immediate newborn care Practices. (Scores is in percentage)

Radiant Warmer

	Uses manual and servo mode-warmer	Applies skin probe, themister	Checks regularly body temp, warmer	Performs correct Hand washing 6 steps	Clean and disinfect newborn care equipments, O2, thr	Cleans baby crib, weighing machine	Cleaning and boiling feeding Wati, spoon correctly	Give IV with sterile technique	Checks flooring, walls cleaning - duty changing	Does correct segregation of used equipments
Pretest	60	0	40	75	60	60	75	45	60	60
Posttest	60	60	90	100	100	100	100	90	100	100

Graph No. 3: showing increase in post test of SBAs on Radiant Warmer skills in Immediate newborn care Practices. (scores is in percentage)
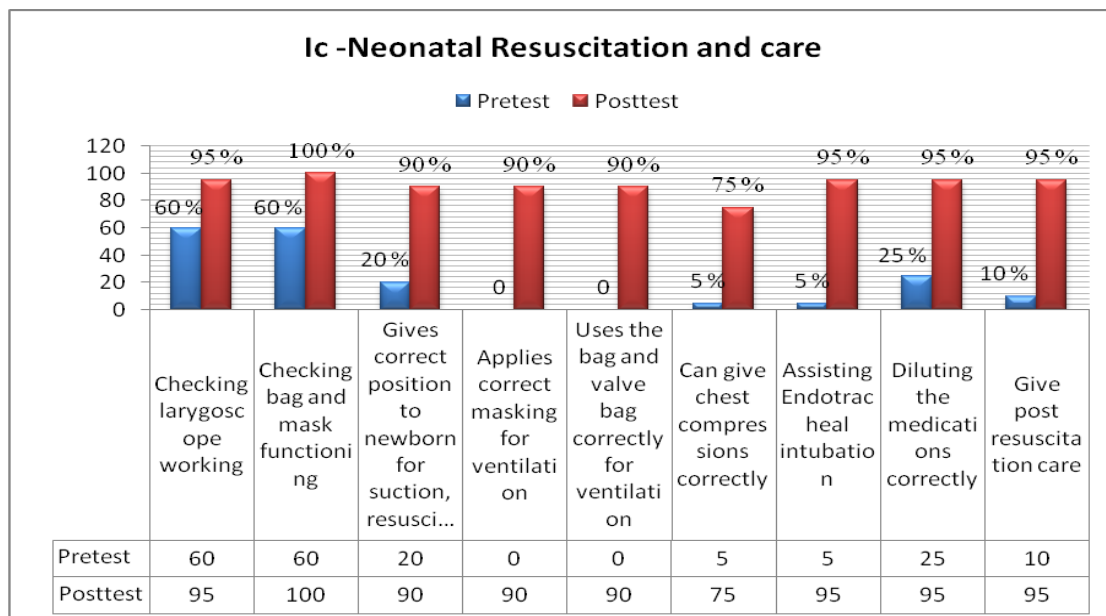

Graph No. 4: showing increase in post test of SBAs on Breast Feeding and assisted feeding skills in Immediate newborn care Practices. (Scores is in percentage)

Graph No. 5: showing increase in post test of SBAs on weighing newborn skills in Immediate newborn care Practices. (Scores is in percentage)
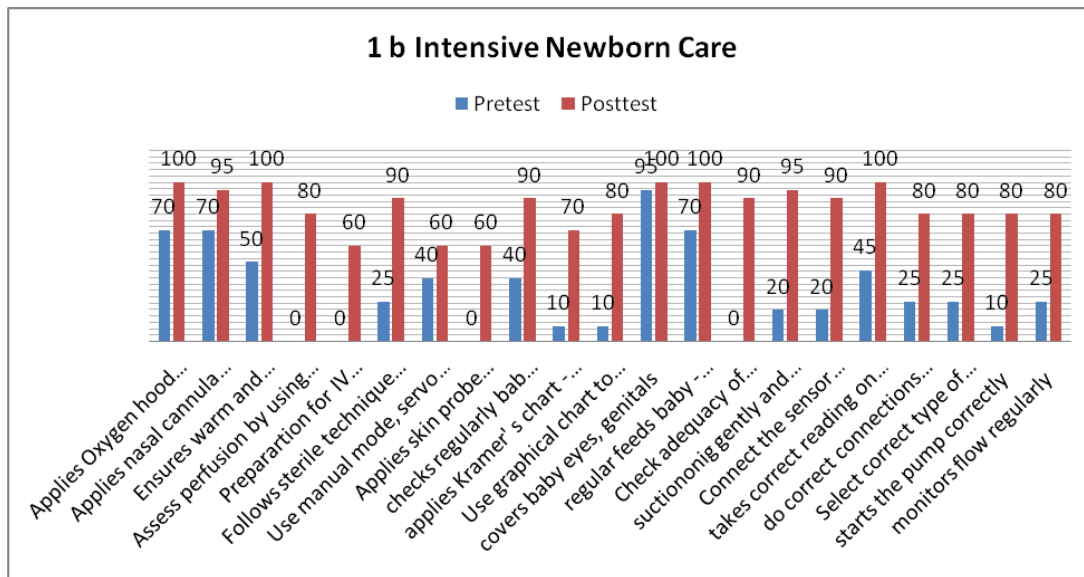
Graph No. 6: showing increase in post test of SBAs on Intensive care of newborn skills . (Scores is in percentage)

Graph No. 7: showing increase in post test of SBAs on Neonatal Resuscitation Care skills . (Scores is in percentage)

Table 4: Effectiveness of pre and post test Practice score of Skilled Birth Attendants in study group

	Practice-Immediate Newborn Care		Practice-Intensive Newborn Care		Practice- Newborn Resuscitation Care	
	Pre test	Post test	Pre test	Post test	Pre test	Post test
Mean	18.15	42.90	6.50	18.95	2.15	8.65
SD	3.856	2.269	2.685	2.188	0.875	0.489
Wilcoxon Z Value	3.93		3.92		3.98	
df	19					
P value	<0.05		<0.05		<0.05	

Table 4 showed significant difference in the mean score of practice pretest and post test at p value <0.05
With above table calculated value for Practices is greater than table value at 0.05

level of significance so Reject the H0 and accept H1
Wilcoxon test shows significant increased in the Practices after planned teaching.

Objective 3:

Table 5: To correlate the Practices of Skilled Birth Attendants with selected demographic variables

| Age (Yrs) | Practice score (Immediate newborn Care) | | | | | | |
| | Pre test | | | | | | |
	n	Mean	SD	F Value	MW test Z Value	p Value	Significant/ Not Significant
≤30	9	20.00	4.031	3.64	-	0.048	Significant <0.05
31 – 40	7	17.86	3.132				
41 – 50	4	14.50	1.732				
Professional qualification							
ANM	10	16.20	2.044	-	1.64	0.10	Significant <0.05
GNM	10	20.10	4.332				
Designation							
S/N	6	17.00	1.673	15.59	-	<0.0001	Significant <0.05
Senior S/N	7	15.14	1.574				
Junior S/N	7	22.14	3.436				
Years of experience (Yrs)							
0 – 5	7	19.86	3.848	1.77	-	0.20	Significant <0.05
6 – 10	3	19.33	4.933				
>10	10	16.60	3.273				
Receive any training in NB							
Yes	4	15.75	3.304		1.48	0.63	Significant <0.05
No	16	18.75	3.838				
Age (Yrs)	Practice score (Intensive/ Critical newborn Care)						
	Pre test						
	n	Mean	SD	F Value	MW test Z Value	p Value	Significant/ Not Significant
≤30	9	7.44	3.167	1.13	-	0.35	Significant <0.05
31 – 40	7	6.00	1.732				
41 – 50	4	5.25	2.754				
Professional qualification							
ANM	10	5.20	2.201		2.03	0.043	Significant <0.05
GNM	10	7.80	2.573				
Designation							
S/N	6	8.43	2.066	3.57	-	0.051	Significant <0.05
Senior S/N	7	5.29	2.360				
Junior S/N	7	5.67	2.637				
Years of experience (Yrs)							
0 – 5	7	7.29	3.200	1.54	-	0.24	Significant <0.05
6 – 10	3	8.00	3.000				
>10	10	5.50	2.014				
Receive any training in NB							
Yes	4	6.25	2.872		0.05	0.96	Not Significant
No	16	6.56	2.732				
Age (Yrs)	Practice score (Resuscitation Care)						
	Pre test						
	n	Mean	SD	F Value	MW test Z Value	p Value	Significant/ Not Significant
≤30	9	2.22	1.093	0.14	-	0.87	Not Significant
31 – 40	7	2	0				
41 – 50	4	2.25	1.258				
Professional qualification							
ANM	10	2.20	1.033		0	1	Not Significant
GNM	10	2.10	.738				
Designation							
S/N	6	2	1.366	0.22	-	0.81	Not Significant
Senior S/N	7	2.14	0.90				
Junior S/N	7	2.33	0.62				
Years of experience (Yrs)							
0 – 5	7	2.00	1.000	0.62	-	0.55	Significant <0.05
6 – 10	3	2.67	1.155				
>10	10	2.10	.738				
Receive any training in NB							
Yes	4	2.75	1.500	-	0.99	0.32	Significant <0.05
No	16	2.00	.632				

Table 5 result shows correlation of Practices of Skilled Birth Attendants with selected demographic variables.

i) There was significant association between pretest levels of practice-Immediate newborn care with selected demographic variables, i.e age in years with calculated

value $F_{19} =3.64 >$ table value = 0.048 at 0.05 level of significance. Professional qualification with calculated value MW =1.64 > table value = 0.10 at 0.05 level of significance, designation with calculated value $F_{19} =15.59 >$ table value = <0.0001, years of experience with calculated value $F_{19} =1.77 >$ table value = 0.20, received training in newborn care calculated value MW=1.48 > table value = 0.63. Thus it can be inferred that the planned teaching programme on skills was effective.

ii) There was significant association between pretest levels of practice -Intensive newborn care with selected demographic variables, i.e. age in years with calculated value $F_{19} =1.13 >$ table value = 0.28 at 0.05 level of significance, professional qualification with calculated value MW =2.03 > table value = 0.0.043 at 0.05 level of significance, designation with calculated value $F_{19} =3.57 >$ table value = 0.051, years of experience with calculated value F_{19} =1.54 > table value = 0.24, received training in newborn care calculated value MW=0.05 < table value = 0.39.

iii) There was significant association between pretest levels of practice -Newborn Resuscitation care with selected demographic variables, i.e. years of experience with calculated value $F_{19} =0.62 >$ table value = 0.55 at 0.05 level of significance, and received training in newborn care with calculated value MW =0.99 > table value = 0.32 at 0.05 level of significance. Hence null hypothesis is rejected and research hypothesis is accepted. Thus, it can be inferred that the planned teaching programme on skills was effective.

DISCUSSION

Graph 2 – **i.** SBAs had 60% skill in pretest in newborn care corner preparation in and improved to 100% in post test. **ii.**40% skill in KMC technique, increased to 90 % in post test. **iii.** only 15% skill, poor skill in taking axillary temperature correctly, increased to 80% post test. **iv.** Absolutely 0 skill in Tactile assessment of Newborn temperature, after skill teaching increased to 80%, indicating good increase in skill of SBAs.

Graph 3 – **i.** SBAs had 0 skill in pretest in applying probe, thermister to newborn after skill training it improved to 60% in post test. **ii.**45% skill in using sterile technique while giving IV to newborn, after skill teaching increased to 90 % in post test indicating improved skills of SBAs.

Graph 4 – **i.** SBAs had 20% skill in pretest in Breast feeding and Expressed Breast Milk practice, after skill training increased to 100% in post test indicating improved skills of SBAs in assisting mother for Breast feeding and assisted feeding to her newborn..

Graph 5 – **i.** SBAs had average 40% skill in newborn weighing skill in pretse, after skill training, increased to 100% in post test, indicating improved skills of SBAs in weighing newborn skills.

Graph 6 – **i.** SBAs had average 20% skill in preparation for IV in emergency, suctioning techniques, using Infusion pump skill in pretest, after skill training, increased to 90% in post test, indicating improved skills of SBAs in giving Intensive care to newborn.

Graph 7 – **i.** SBAs had average 20% skill in giving correct position during resuscitation, diluting medications to be used for resuscitation, after skill training increased to 95% in post test. ii. Absolutely 0% in applying bag and mask technique, after training improved to 90% in post test, indicating improved skills of SBAs in Neonatal resuscitation care.

Supportive study: An explorative study was conducted on Skilled birth attendants at Bansang Hospital, Gambia,2010 and the study result stated that there is a difference between the preservice knowledge and skill, then when actually implementation was done to improve in their skill, then majority felt the need for additional training, for caring during perinatal period. Study concluded that - There is a need for further examinations to objectively measure the skills and abilities of the birth attendants. Knowledge is needed on how to increase the

quality and capacity of pre- and in-service training among birth. [13]

Graham et al in their study mentions that what qualifies a skilled birth attendant, and are all institutional birth attendants really skilled? The result of the study indicates, based on self reported level of confidence, that there is a lack of basic knowledge and skills among many of birth attendants. The study recommends that there is a clear need for further research to objectively measure the skills and abilities and wish for more training to increase in the competency and that we cannot presuppose that all birth attendants are skilled in delivery and newborn care. [14]

Praveen K Agrawal, Sutapa Agrawal, Saifuddin Ahmed, 2011 study findings shows in the increase in the post test (82.36%)Knowledge than pretest (32%) in the Community health workers (CHWs) on Essential newborn care and concluded that regular education and field-based refresher training programs for CHWs are crucial to update their knowledge level to serve the community better. The greater the knowledge level of CHWs, the better is the skill practiced and adherence to essential newborn care practices. Improving newborn health status in rural settings is possible by improving the knowledge level and skills of CHWs.

CONCLUSION

The study concluded that the planned teaching program was effective in increasing the practices of Skilled Birth Attendants in Facility Based Newborn Care. Thus importance should be given to FBNC with identification of risk factors or complications of newborns.

The present study findings shows increase in the post test (87.40%) Knowledge score than pretest (29%) in the Skilled Birth Attendants, after planned intervention on 'Facility Based Newborn Care'

In order to further reduce newborn mortality and end preventable deaths, intensified actions and improved coverage of known interventions are needed to ensure newborn survival. Equitable and universal coverage of high impact interventions are needed to ensure newborn survival, which is the right of every newborn to life, survival, health and development and reducing neonatal mortality in India. [1]

Recommendations: Based on the findings of the study, the investigator would recommend the following:

   i.   The study may be replicated using another district, larger population.
  ii.   Study may be done in different settings.
 iii.   A comparative study can be done in government and private sectors.
  iv.   Retrospective study may be done.
   v.   Comparative study between Medical doctors and nurses can be done.

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