

Impact of Simulation Training on Knowledge of Nurses in Public Health Facilities

By

Nidhi Saraswat

*Dissertation submitted for the partial fulfillment of the
MBA Hospital and Health Management*

Academic year, 2016-2018



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TO WHOMSOEVER MAY CONCERN

This is to certify that Dr. Nidhi Saraswat student of MBA Hospital and Health Management from The IIHMR University, Jaipur has undergone dissertation at Hindustan Latex Family Planning Promotion Trust, Jaipur from 1-March-2018 to 24-May-2018.

The Candidate has successfully carried out the study designated to her during dissertation training and her approach to the study has been sincere, scientific and analytical.

The dissertation is in fulfillment of the course requirements.

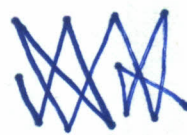
I wish her all success in all his future endeavors.



Dr (Col) Ashok Kaushik

Dean, Academics and Student Affairs

IIHMR University, Jaipur



May 26, 2018

Dr. Alok Mathur

Associate Professor

IIHMR University, Jaipur

Certificate of completion of Internship/dissertation

The certificate is awarded to

Name Dr. Nidhi Saraswat

In recognition of having successfully completed her
Internship in the department of

**Social Franchising,
Hindustan Latex Family Planning Promotion Trust**

and has successfully completed her Project on

**Evaluating the impact of simulation training on knowledge of nurses
in public health facilities**

for the 3 Months

She comes across as a committed, sincere & diligent person who has a strong drive
and zeal for learning

We wish her all the best for future endeavors.

Ad. Program Manager

Pankhuri Rai
Dr Pankhuri Rai

Team Leader -HR



CERTIFICATE BY SCHOLAR

This is to certify that the dissertation on “Evaluating impact of simulation training on knowledge of nurses in public health facilities”, submitted by Dr. Nidhi Saraswat under the supervision of Dr. Alok Mathur for award of MBA in Hospital and Health Management of the University carried out during the period from 1st March,2018 to 25th March,2018 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.


Signature

ACKNOWLEDGEMENT

First, I would extend my profound gratitude to the almighty, who helped me to accomplish all my tasks well on time. I would like to thank all the people who contributed their valuable time and support without which my study would not have been incomplete .

My special vote of thanks to **Dr. Abha Jain** (National head, Medical services) who gave me the opportunity to pursue my summer training in her project at Hindustan Latex Family Planning Promotion Trust (Jaipur). I consider myself fortunate to work under **Dr. Pankhuri Rai** (Additional Program Manager). She gave enormous encouragement and support for my research work. She also extended valuable guidance which helped me to gain newer insights for my study.

I would also like to mention here that this study would not have been possible without the support of my mentor **Dr. Alok Mathur**. Under his guidance and motivation, I was able to conduct my study. I am thankful for all the support provided.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ANC	Ante-natal Care
ANM	Auxiliary Nurse Midwife
ARI	Acute Respiratory Infection
BCG	Bacillus Calmette–Guérin vaccine
CBR	Crude Birth Rate
CDR	Crude Death Rate
DTP	Diphtheria, Tetanus, Pertussis (whooping cough)
EAG	Empowered Action Group
HIV	Human immunodeficiency virus
IFA	Iron and Folic Acid
IMR	Infant Mortality Rate
IUD	Intrauterine Device
JSY	Janani Suraksha Yojana
LHV	Lady Health Visitor
MCH	Maternal and Child Health
MHD	Maternal Health Deprivation
MMR	Maternal Mortality Ratio
MOHFW	Ministry of Health and Family Welfare
MPCE	Monthly Per-capita Consumption Expenditure
NMR	Neonatal Mortality Rate
NRHM	National Rural Health Mission
PNC	Post-natal Care
RCH	Reproductive and Child Health

INTRODUCTION

Internship is an integral part of two-year MBA programme. The duration of internship is of 3 months and is started after completing second year course. It is an important phase during which we are given a chance to work with an Organization and learn about the proceedings and processes of different departments.

I joined Hindustan Latex Family Planning Promotion Trust, Jaipur as an intern. I was asked to work as a nodal officer for Antara project which was a Simulation training programme for Doctors and Nurses to train them in providing mother and new born care.

About the Organization:

Hindustan Latex Family Planning Promotion Trust (HLFPPT) is a Not for Profit organization promoted by HLL Lifecare Limited (a Government of India Enterprise). It was established in 1992 and its core area of work is Reproductive and Child Health (adolescent and maternal health, family planning, newborn care and child health, HIV/AIDS), with focus on poor and marginalized rural and urban population. HLPPT works with a vision of increasing access to quality healthcare products and services.

VISION

Touching lives with quality care, compassion and emerge as a globally credible organization .

MISSION

Offer Innovative, Affordable and Sustainable Reproductive Health Solutions.

About Training Programme:

AIM:

To have empowered service providers at the delivery points to perform maternity and newborn care during antenatal care, labour, delivery and postpartum period with reduction of maternal and neonatal mortality in two districts of Rajasthan namely Jhalawar and Baran.

Key Objectives

- To facilitate acquisition/reinforcement of key standardized technical skills and knowledge by service providers for strengthening MNH services

- To ensure the availability of skilled personnel at health facilities
- To assess the impact of “Maternal Care and Essential Newborn Care” training on the trained HSPs and conduct refresher trainings.

ROLES AND RESPONSIBILITIES:

- Studying the Baseline report for Antara project.
- Preparing a list of training requirements and planning budget for it.
- Assisting in planning and conducting the training programme.
- Collecting data and preparing reports of completed trainings.
- Review of reports of completed trainings, Submission of completed reports.
- Analyzing the data recorded.
- Studying the list of hospitals in Sikar, Udaipur, Kota, Rajasmand and other districts and mapping the facilities interested in getting NABH accredited.
- Proof reading various reports and documents before final submission.
- Attending various meetings like Pre-bid meeting and preparing reports for the same.
- Assisting in Quality Assurance programme for NABH accreditation.
- Visiting various facilities and conducting Gap Analysis and various trainings for preparing the facilities for NABH assessment.
- Attending 5-day training programme for FOGSI-Manyata and NABH, Organized at IIHMR, Jaipur.

DISSERTATION THESIS

1.0 INTRODUCTION

With a population of 68.6 million, Rajasthan ranks 8th in terms of total population among states in India (Census, 2011). Rajasthan lags the rest of India in terms of social health indicators as well. With 35 percent of 20-24 years old women married before age 18 (NFHS-4). With a maternal mortality ratio of 318 per 100,000 births, the state records the third highest maternal mortality ratio (Census, 2011).

As per NFHS-4 findings, In Rajasthan 84% deliveries are institutional and 86% Births are assisted by Doctor/ Nurse/LHV/ANM/other health personnel. These findings clearly indicate the role of a trained staff in providing the essential care to the mother and the new born.

A study was conducted by HLPPT in Jhalawar and Baran districts of Rajasthan to understand the existing skills and knowledge of public health providers in terms of quality care provided to the newly born and pregnant women. The Study found that the practice of standard technical protocols and quality of services remains a challenge due to following barriers-

- ☐ Health care providers are less confident in applying skills.
- ☐ Limited focus on assessing the competencies acquired by the trainees during the training,
- ☐ Inadequate exposure/ opportunity to practice skills during training,
- ☐ Lack of post training follow up and supportive supervision for quality service delivery
- ☐ Weak infrastructure, poor technical capacity and inadequate teaching/learning capabilities.

Based on the study findings, HLPPT proposed to train District level master trainers on the enhancement of Antenatal, Intranatal, Postnatal maternal and Essential Newborn Care skills with a view to improve the quality of maternal and child health services. This project model would serve as a prototype for further expansion of similar model for healthcare providers with focus on competency-based training.

1.1 BACKGROUND

A five-day training was given in 4 training sessions. The five-day training was residential, using audio visual aids, group discussions, role plays, and simulation based participatory approach, case studies and a lot of emphasis was laid on behaviour change communication among the service providers. The trainers used different participatory training methods

based on the adult learning principles to make the sessions interesting and engaging. To build the competency of the district level trainers demonstrated the skills on anatomic models (humanistic approach).

2.0 LITERATURE REVIEWS

The launching of the Millennium Development Goals (MDG's) in 2000 targeted maternal mortality as an important health issue by dedicating the fifth MDG to maternal health. Key areas in this work include strengthening health systems, promoting strategies that work, making best use of scarce resources and emphasizing maternal health as a human rights and equity issue. (1)

An analysis of causes of maternal mortality over a thirty-year period in Bangladesh states that investing in midwives and obstetric care have been important factors in reducing the death rate. (2)

The institutional deliveries have gone up significantly yet the association between the rising proportion of institutional births and reduction of MMR has not been detected (MATIND Study). (3) This study compared JSY and Chiranjeevi Yojana in two states in Gujarat and Madhya Pradesh. The study evaluated the impact of demand side financing in reducing barriers for mothers to receive EmOC. The study also suggested that Private health facilities play an important role in low income settings. The report suggested there has been decline in quality of care due to increased load of institutional deliveries under JSY and other programs. The study also pointed out that there are limited efforts to improve supply side capacity. Reduction in MMR will be noticed only when their quality of care improves.

According to this study, out of 86% facilities where institutional deliveries were occurring, 66% facilities provided less than the basic EmOC.

Observations revealed that care given during the labor and delivery under the JSY program did not meet standards for skilled birth attendance (SBA): practices were poor, care was not always respectful, and the work environment was not conducive for SBA. Deficiencies in training of nurse midwives, clinical supervision, and poor practice environment were possible reasons for poor staff performance

Kirkpatrick & Kirkpatrick (2006) proposed evaluating training programs consisted of four fundamental elements of effective evaluation: reaction, learning, behavior, and results. (4)

Research on training program was shown to lead to positive changes in the nurses' attitudes, knowledge and clinical practice. (Ballangrud, 2013(8); Pesiridis et al., 2015(9); Redhead et al., 2011(10)).

According to a meta-analysis by (Kalinowski et al., 2013) from 65 studies (N = 8465) revealed sizable effects on affective based, cognitive-based, and skill-based outcomes (6).

And the meta-analysis from 67 studies suggests that training was positively related to human resource outcomes and organizational performance (Tharenou et al., 2007). (7)

Evidences have further suggested that improving knowledge and skill gaps of providers is linked directly to the quality of service delivery. It would then be possible to prevent maternal deaths and reduce morbidity. The up-gradation of the skills of the staff at the delivery points would capacitate them to respond to obstetric emergencies at any stage of pregnancy, delivery or during post-partum period, reducing the associated maternal mortality and morbidities. ***Thus, special categorized skill-based training in Obstetric care is required for the health care providers in order to make them proficient in technical skills and knowledge entailed for key intervention to ensure the desired outcome.***

Simulation based trainings offer effective learning. Nursing education has been using various methodologies to teach principles and nursing care skills. Models of Anatomic parts, whole body mannequins and various computer-based programs are used to enhance learning. Human patient simulation is a relatively new technique that allows learners to develop, refine and apply knowledge and skills in a realistic clinical situation. These techniques allow for critical thinking, decision making and delegation.

2.1 DEFINITION:

Simulation is a generic term that refers to an artificial representation of a real-world process to achieve educational goals through experiential learning. Simulation based medical education is defined as any educational activity that utilizes simulation aides to replicate clinical scenarios. [14]

2.2 ADVANTAGES OF SIMULATION TRAINING:

- i.** It helps in improving trainees' skills and helps them in learning from errors.
- ii.** Simulation allows trainees to undertake high risk activities or procedural tasks in a safe environment without dangerous implications.
- iii.** Trainees can learn the consequences of their actions and can reduce errors.
- iv.** Simulation allows trainee participation and gives them hands on experience.
- v.** Learners addresses hands on as well as thinking skills, including knowledge –in-action, procedures, decision making and effective communication.
- vi.** Feedback can be given to trainees' and this can help them to understand what went wrong and how they can improve.
- vii.** Learners feel more confident to handle real life situations at workplace.

2.3 DISADVANTAGES:

- i.** Simulation may not always completely re-create real-life situations.
- ii.** Not all situations can be included and studied.
- iii.** Trainings are usually expensive and require constant updates.

3.0 PROBLEM STATEMENT

The ten facilities identified in two districts have high delivery load.

- Nurses were unaware of either new developments or procedural approaches in the institution in which they are working.
- Newly appointed staff, who has been out of the field of clinical practice for some time, was lacking in skills and expertise and possess an inadequate knowledge base regarding new policies.
- Due to high workload, there was a gap in knowledge and practicing the regimes and protocols.

4.0 RESEARCH QUESTIONS

- Was the training useful in gaining new skills in providing mother and child care.
- Is there any change in the knowledge levels of health service providers undergoing training.
- Will they implement gained knowledge in practice at their facility.
- Is the training significant in changing their attitude towards patient care.

5.0 OBJECTIVES

To measure the impact of simulation-based training approach for maternity and newborn care during antenatal care, labour, delivery and postpartum period on service providers at the delivery points.

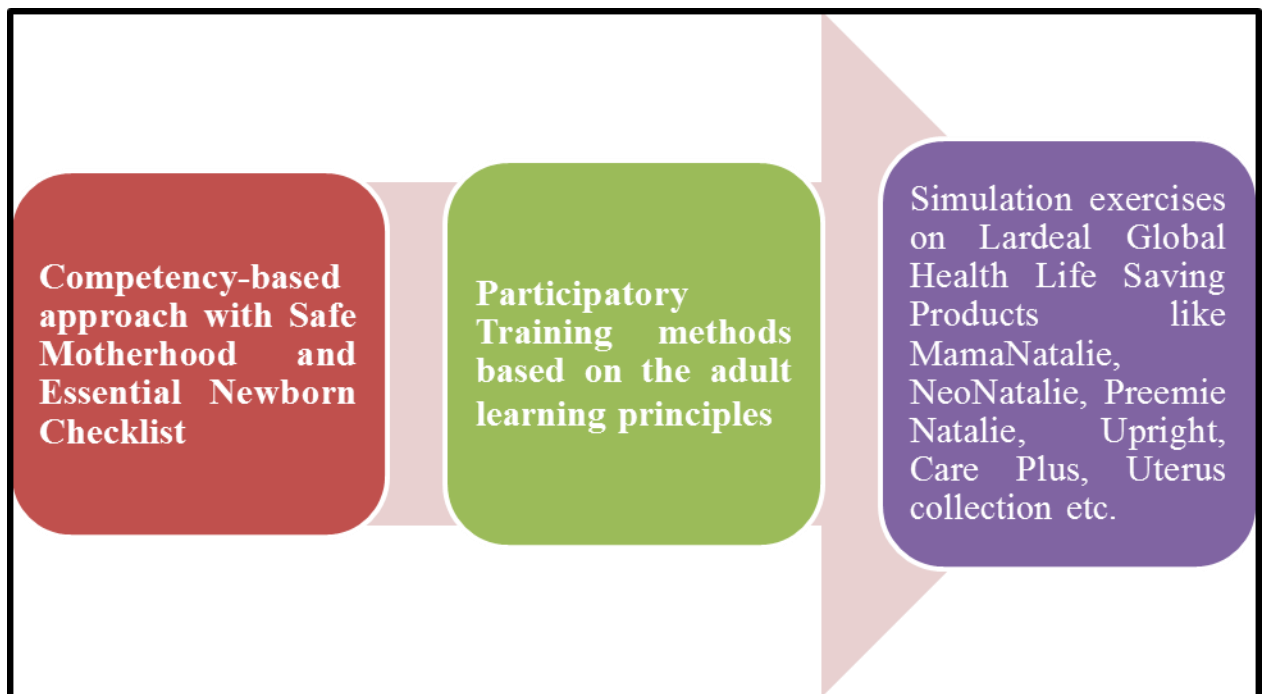
5.1 Specific Objectives:

- To assess the knowledge level of trainees through pre-training and post training assessments.
- To evaluate the impact of simulation-based training methodology on the attitude of the trainees.
- To measure the effectiveness of training program.

6.0 TRAINING APPROACH

The five-day training was residential, using audio visual aids, group discussions, role plays and simulation based participatory approach, case studies. A lot of emphasis was laid on behavior change communication among the service providers. LDH simulation products were used for training sessions.

Figure 6.1 Training Approach



The sessions were planned as

- 2 days on Ante Natal Care, Intrapartum and postpartum care,
- 1 day on EmOC (Emergency Obstetrics Care) and New born Resuscitation ,
- 1 day for immediate New born care and
- Last day for evaluation and clearing doubts.

Complete detailed training schedule with topics covered is present in Annexure- 1.

7.0 METHODOLOGY

7.1 Research Design

Pretest-intervention-posttest designs are uniquely appropriate for investigating the effects of educational innovations [11] and are commonly used in educational research [12]

A single group Pretest Posttest design is used to study any changes in knowledge levels and attitudes of Nurses/ANM/GNM/LHV prior to training and post training.

7.2 Settings

The study is conducted in 2018 based on trainings held from September 2017 to May 2018 in Jhalawar and Baran districts of Rajasthan.

7.3 Sampling

A total number of 51 health providers from 10 centres (CHC/PHC/SC) participated in the study.

All the participants completed the five-day training and participated in pre and post training test and completed the feedback form and questionnaires.

It was a purposive sampling to include staff providing Obstetric and new born care.

7.4 Data Collection

Primary data is collected using questionnaires and feedback form.

7.5 Instruments used

Pre and post Questionnaires were prepared to evaluate cognitive knowledge by conducting pre-training and post training test sessions. These questionnaires included 15 questions relating to topics covered during training. Questionnaires were designed in Hindi and English both. All the questions were multiple types.

Feedback form was also designed and was filled at the end of sessions. Likert scale (Excellent, Good, Average, Poor) was used to rate various sections of the form.

7.6 Data Analysis

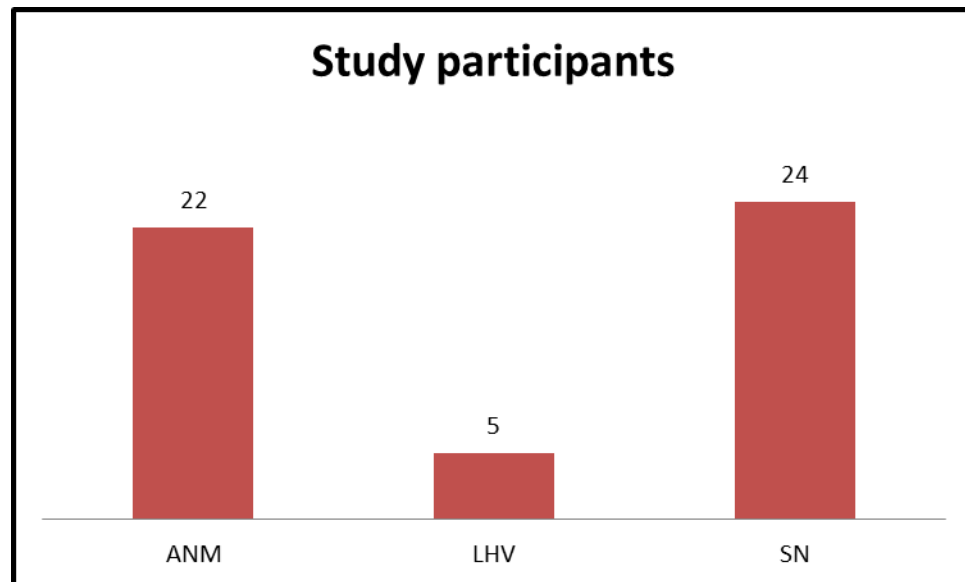
Data was captured and analyzed using MS-Excel. Data analysis was performed on Pre-training and post training scores obtained. Descriptive statistics was used to obtain total score possible, maximum score, minimum score, median, mean, variance, and standard

deviation were calculated for both the pretest and posttest scores. A Paired t-test was done on the pre and post training data.

7.6.1 STUDY PARTICIPANTS

Out of total 51 participants, 24 were working as Staff Nurse, ANM were 22 and 5 were working as LHV.

Fig 7.1:



7.6.2 DESCRIPTIVE STATISTICS FINDINGS

The responses of each participant were entered in excel for Pre-training and Post training test. A Descriptive statistic was run on the responses of all 51 participant responses to analyze and compare the mean score, Standard deviation, skewness and maximum and minimum scores. The mean score was higher for Post training responses (13.5) compared to Pre-training (10). The minimum score pre-training was 1 while it was 8 post training. The responses in pre-training evaluation were more distributed while they were more skewed to the right i.e. towards higher score in post training evaluation. Table below describes the responses.

Table 7.1: Summary of Descriptive statistics

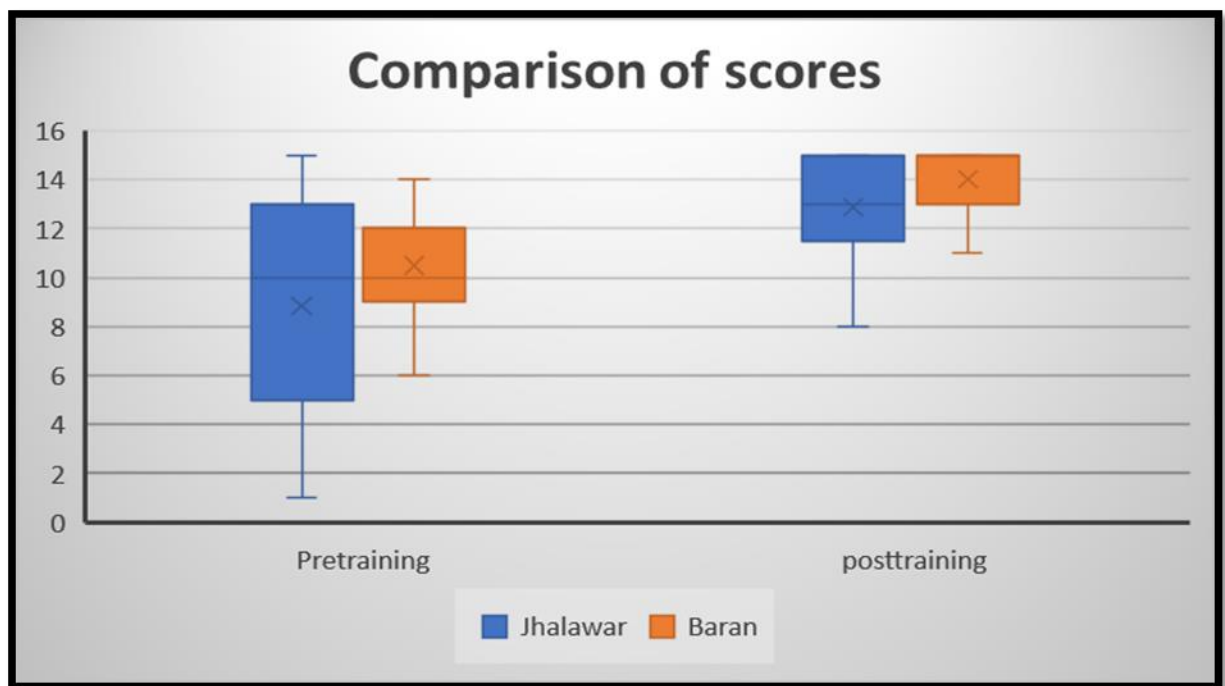
<i>Pre-training</i>		<i>Post training</i>	
Mean	9.55	Mean	13.45

Standard Error	0.51	Standard Error	0.25
Median	10	Median	14
Mode	10	Mode	15
Standard Deviation	3.61	Standard Deviation	1.79
Sample Variance	13.01	Sample Variance	3.21
Skewness	-0.72	Skewness	-1.33
Minimum	1	Minimum	8
Maximum	15	Maximum	15

(a) Comparison of scores

A Box plot was constructed to analyze and compare distribution of scores in both districts in the two sessions (Pre-training & Post training). The following graph shows that the data for Jhalawar district are more widely distributed compared to Baran in Pre-training test. The graphs on the right-side show responses for post training test. The scores are higher compared to pre-training and lesser distributed. Boxes on the right-side show coinciding mean and median for the scores while in pretraining mean and median do not coincide.

Fig 7.2: Box plot Distribution of scores.



7.6.3 HYPOTHESIS EVALUATION FINDINGS

A paired t-test was used to test if because of training program there is no significant difference in the cognitive knowledge of nurses when measured with test instrument.

Table 2 summarizes the results of the t-test analysis performed on the pre-training and post training data. The mean score for Pre-training 51 responses is 9.5 with a variance of 13.

The mean score for 51Post training responses is 13.5 with a variance of 3.2.

The calculated t value is $9.5 > \text{critical } t \text{ (two tail) } 2.08$.

p- Value is $0.7 \times 10^{-12} < 0.05$.

Hence, we reject the null hypothesis that there would be no significant difference in the cognitive knowledge of nurses post training. The following table shows the test findings:

Table 7.2:

t-Test: Paired Two Sample for Means		
	<i>Pre-training</i>	<i>Post training</i>
Mean	9.549019608	13.45098039
Variance	13.01254902	3.21254902
Observations	51	51
Pearson Correlation	0.21768435	
Hypothesized Mean Difference	1	
df	50	
t Stat	9.5	
P(T<=t) two-tail	7.16E-13	
t Critical two-tail	2.008	

There is significant difference in the scores of individuals after attending the training program. These findings suggest that awareness and knowledge of Health providers increases after attending the training session. This implies such sessions are important for updating the clinical skills of trainees.

7.6.4 QUESTION WISE ANALYSIS

Further the change was observed for each individual question and the percentage change and p-value was calculated using paired t-test to find the significance of training.

1. Maternal and new born care

Knowledge about assessment of pregnant woman and reckoner of Emergency management was measured by this question.

Statistics show respondents were aware about this. Small increase is noticed post training.

Table 7.3:

District	Pre-training	Post training	% change
Jhalawar	22	25	11.5%
Baran	21	24	12.0%

2. PIH Management

It measured the awareness of nurses about Pregnancy induced Hypertension, its symptoms and its management.

Following table shows an increase of 30% in post training scores for Jhalawar. While no change was there for Baran district.

Table 7.4:

District	Pre-training	Post training	% change
Jhalawar	15	23	30.8%
Baran	24	24	0.0%

3. Partograph Plotting

Partograph plotting is important is important for decision making during labour. These are usually filled by Nurse or GNM assisting in labour. The data shows that nurses were aware about the usage and interpretation. Jhalawar showed an increase of 12% while Baran showed 8% increase post training.

Table 7.5:

District	Pre-training	Post training	% change
Jhalawar	20	23	11.5%
Baran	19	21	8.0%

4. Rational antibiotic use

Administration of antibiotics to the pregnant women before they enter second stage of labour is indicated. Only 15 nurses were able to answer correctly in pre-training test in Jhalawar while 23 answered correctly post training. An increase of 30% is noticed.

Table 7.6:

District	Pre-training	Post training	% change
Jhalawar	15	23	30.8%
Baran	23	25	8.0%

5. Preterm Labour Management

Pregnant women who are between 24-34 weeks can be administered Corticosteroids to avoid any complications before they enter labour.

An increase of 30% in correct responses is noticed for Jhalawar after training session. Baran showed an increase of 12%.

Table 7.7:

District	Pre-training	Post training	% change
Jhalawar	15	23	30.8%
Baran	22	25	12.0%

6. Oxytocin Administration

Oxytocin is administered to the mother within 1 minute after delivery. This is done to reduce excessive bleeding after delivery.

Data revealed a significant increase in the response of respondents after attending the training session. Jhalawar showed an increase of 50% and Baran showed an increase of 20% in the responses post training.

Table 7.8:

District	Pre-training	Post training	% change
Jhalawar	13	26	50.0%
Baran	20	25	20.0%

7. Immediate New Born Care

Inorder to prevent new born from hypothermia, the newborn is cleaned using a warm towel. Data revealed nurses are not aware about the steps involved in new born care. An increase of 50% for Jhalawar and 40% for Baran district in scores is suggestive of increased awareness.

Table 7.9:

District	Pre-training	Post training	% change
Jhalawar	12	25	50.0%
Baran	14	24	40.0%

8. Neonatal Resuscitation

Assisted ventilation is indicated if the newborn does not respond to stimulation within 30 seconds after birth. This is an important part of neonatal resuscitation.

The following table shows that nurses are well aware of the importance of neo natal resuscitation. An increase of around 8% is noticed in both the districts.

Table 7.10:

District	Pre-training	Post training	% change
Jhalawar	21	23	7.7%
Baran	21	23	8.0%

9. 2nd Stage of Labour

In cases of Prima Gravida, during second stage of labour, proper perineum support should be provided. This is done to reduce perineal tear.

Following table shows nurses are not aware about managing the second stage of labour before entering the training program. However, after training most of the nurses shows increased knowledge about this. An increase of 54% for Jhalawar and 64% for Baran was noticed.

Table 7.11:

District	Pre training	Post training	% change
Jhalawar	7	21	53.8%
Baran	5	21	64.0%

10. Vitamin K Administration

Vitamin K is administered to all newborn after birth. This is done to prevent babies from developing early Vitamin K deficiency symptoms which can be fatal. So, it is administered prophylactically to all newborn.

Following data shows most of the nurses are aware about the dosage and administration of vitamin K to new born.

Table 7.12:

Vit. K Administration	Pre-training	Post training	% change
-----------------------	--------------	---------------	----------

Jhalawar	25	26	3.8%
Baran	24	25	4.0%

11. Magnesium Sulphate Regimen

Magnesium Sulphate supplementation is important to prevent seizures in pregnant woman with pre- eclampsia, eclampsia or toxemia of pregnancy. It is an important step in reducing risk to the pregnant woman.

The table below shows that nurses are not aware about magnesium Sulphate administration and its importance in pregnant woman. An increase of around 76% is noticed in the knowledge levels of service providers.

Table: 7.13

District	Pre-training	Post training	% change
Jhalawar	13	24	42.3%
Baran	5	24	76.0%

12. LBW Baby Management

Pre-term babies are generally of lower weights and are prone to various risks. Nursing staff are usually not well trained in taking care of such babies. So, the training program included a session on Low birth weight baby management.

The following data shows around 48% increase in awareness about managing a Low Birth Weight baby.

Table 7.14:

District	Pre-training	Post training	% change
Jhalawar	11	22	42.3%
Baran	10	22	48.0%

13. Breast Feeding technique

Generally, the nurses in Obstetrics department are overloaded with work especially in high delivery points. It has been noted that nurses do not train mothers in breast feeding technique.

The following table shows less awareness about the correct breast-feeding technique among the service providers. An increase of about 50% is noticed in awareness of nurses.

Table 7.15:

District	Pre-training	Post training	% change
Jhalawar	10	23	50.0%
Baran	11	23	48.0%

14. Infection Prevention

During the training, the nurses were informed about the importance of sterilization and disinfection. Usage of PPE was also demonstrated. Stress was laid on using aseptic approach. Information about the various sterilizing techniques was given. The data recorded an increase of 20% in the correct responses of nurses when pre and post training scores are compared.

Table 7.16:

District	Pre-training	Post training	% change
Jhalawar	20	23	11.5%
Baran	18	23	20.0%

15. BMW Management

Information about the Bio medical Waste and methods to discard were discussed in the training sessions. Color coding of containers was also discussed in detail in the sessions. Data shows that nurses were less informed about the methods of BMW disposal before training.

After training, most nurses showed awareness about the BMW Management.

Table 7.17:

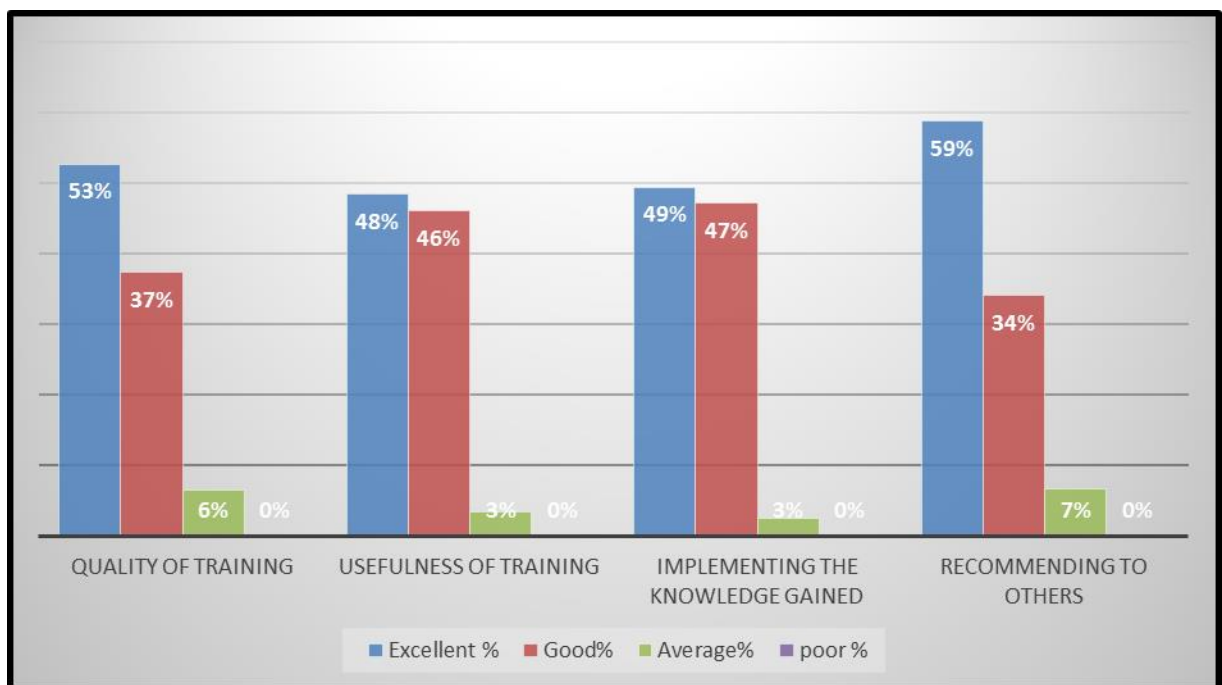
District	Pre-training	Post training	% change
Jhalawar	16	26	38.5%
Baran	12	25	52.0%

7.6.5 FEEDBACK ANALYSIS

A feedback form was filled by the respondents which included questions on 4 aspects in order to know the attitude of nurses towards the training program. Findings from such analysis help in understanding the expectation of trainees and in further designing such interventions to improve quality of care.

Questionnaire consists of 10 questions regarding quality of training, Usefulness of training, implementing the knowledge gained and Recommending the training to others.

Figure 7.3:



The above graph depicts 53% respondents find that the quality of program was excellent. While only 6% find it to be of 6%.

Approximately 94% trainees find that the program was useful in updating their knowledge about various protocols involved in ANC, Intrapartum, and Postpartum care.

Around 96% respondents said that they will implement the lessons learned during the training program. These included Management of third stage of labour, EmOC and care of new born baby and Management of Low Birth weight babies and neonatal resuscitation.

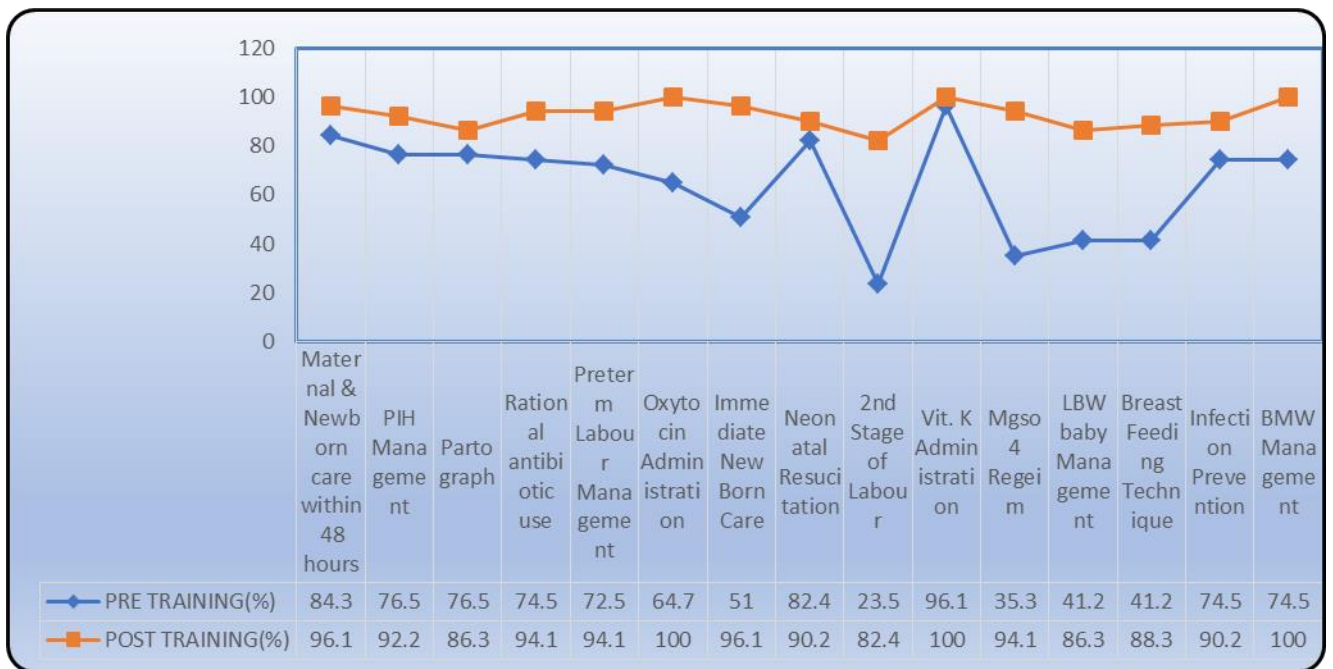
93% trainees gave a positive feedback for the training program and agreed to recommend the training program to others.

8.0 RESULTS

A Question wise analysis was done to measure the knowledge of participants in both the sessions. Same Questionnaire was filled in both the sessions by same participants. A significant change is seen in the responses of participants after attending the training sessions.

The following graph shows the responses of participants in the form of trend line in response to the questions asked. The blue line indicates the correct Percentage of responses obtained for each question in pre-training session. While the red line depicts the percentage of correct responses for post training session.

Fig 8.1: Trend line showing % of correct responses to questions.



The highest change (58%) was noticed for Second stage of Labour and MgSo4 Regimen.

The lowest change was recorded for Vitamin K supplementation suggesting that most participants were aware about the regimen.

i. FINDINGS

Data for each question is collected and analyzed in MS- Excel using Data analysis tool. A paired t-test was run for each question including the pre-training and post training response. P-value for each was recorded along with the percentage change in the responses. The purpose was to evaluate which topics were new for the nurses and will thus show a significant change.

Findings from the above analysis show a change in the responses of respondents. In all cases this change is in the increasing trend. But is this change for each question is significant or not cannot be demonstrated.

Inorder to show if the change is significant or not a paired t-test is done for each question. P-value was recorded for each analysis. In questions where p-value is <0.05 shows a significant change due to training program and in others where the p- value is >0.05 shows no significant change.

The following table shows Pre-training and post training correct responses in percentages along with percentage change and the respective p- value.

Table 7.18: Percentage change for correct response to each question and t-test significance.

Questions	Pre-training (%)	Post training (%)	% change	p-value	significant(y/n)
Maternal & Newborn care within 48 hours	84.3	96.1	11.8	0.108	No
PIH Management	76.5	92.2	15.7	0.221	No
Partograph	76.5	86.3	9.8	0.126	No
Rational antibiotic use	74.5	94.1	19.6	0.228	No
Preterm Labour Management	72.5	94.1	21.6	0.110	No
Oxytocin Administration	64.7	100	35.3	0.104	No
Immediate New Born Care	51	96.1	45.1	0.050	Yes
Neonatal Resuscitation	82.4	90.2	7.8	0.046	Yes
2nd Stage of Labour	23.5	82.4	58.9	0.005	Yes
Vit. K Administration	96.1	100	3.9	0.359	No

Mgso4 Regime	35.3	94.1	58.8	0.008	Yes
LBW baby Management	41.2	86.3	45.1	0.048	Yes
Breast Feeding Technique	41.2	88.3	47.1	0.036	Yes
Infection Prevention	74.5	90.2	15.7	0.081	No
BMW Management	74.5	100	25.5	0.072	No

ii. Interpretation:

The above table clearly shows that although there is increase in the correct responses of respondents, but the increase may not be significant in all the topics covered during training.

The increase in scores is found to be significant in questions related to Immediate New Born Care, Neonatal Resuscitation, second stage of Labour, Magnesium Sulphate administration, Low Birth Weight Baby Management, Breast feeding technique. This suggests that there is increase in cognitive knowledge levels in some areas of their work practices while change in others is insignificant.

There is increase in scores noticed in topics related to Pre-term Labour Management, Oxytocin Administration and BMW Management. But the significance cannot be recorded.

In some questions the increase is not significant. This suggests that the nurses were aware of these aspects of Mother and Child care practices.

Also, the correct responses in post training test are in the range of 85% to 100% suggesting that the training session was successful in updating the knowledge levels of nurses.

The present study is conducted to evaluate the effects of training on the knowledge of nurses about Mother and New born care. The results show that training has a positive impact on knowledge and attitudes. This finding is consistent with the results of studies by McAuliffe (2009) [13]

9.0 DISCUSSION:

Research on the outcomes of educational improvement interventions can be utilized to strengthen the theoretical basis for required regulatory training as well as to validate interventions. The Mother and Child care (MCH) training intervention resulted in a statistically significant increase in the cognitive test scores.

The present study is conducted to evaluate the effects of training on the knowledge of nurses with regard to Mother and New born care. The results show that training has a positive impact on knowledge and attitudes. This finding is consistent with the results of studies by McAuliffe (2009) [13].

Continuous Medical education in the form of Training programs (on site/ off site), various workshops are important to enhance productivity and performance. These are further translated into healthcare outcomes. Various studies have shown that training programs helps in learning new concepts. Strengthening the health care provider with technical skills and updating their knowledge timely has shown significant change in the outcomes.

In this Training programme, we are introducing a new concept of Simulation based training with the aim to provide a complete outlook on various stages of Mother and new born care. Simulation based training have various advantages compared to theory-based training programs.

Mellish and Brink (1990:377) state that one of the purposes of in-service training is to assure independent, thinking, competent, knowledgeable nurses who are capable of exercising educated judgement in the delivery of patient care.

The training programme also included Group discussions, Case study and experience sharing among the participants and Trainers and Video presentations to enhance better learning experience for the participants. Various simulation products are used to bring a real-life experience and provide hands on experience for the participants. Inorder to evaluate the current knowledge levels of participants a pre-training test was conducted. A post training test was conducted after the completion of training. Data was analyzed for the participants who were present in the pre-training as well as post training test.

The training program involved all the components of following framework:

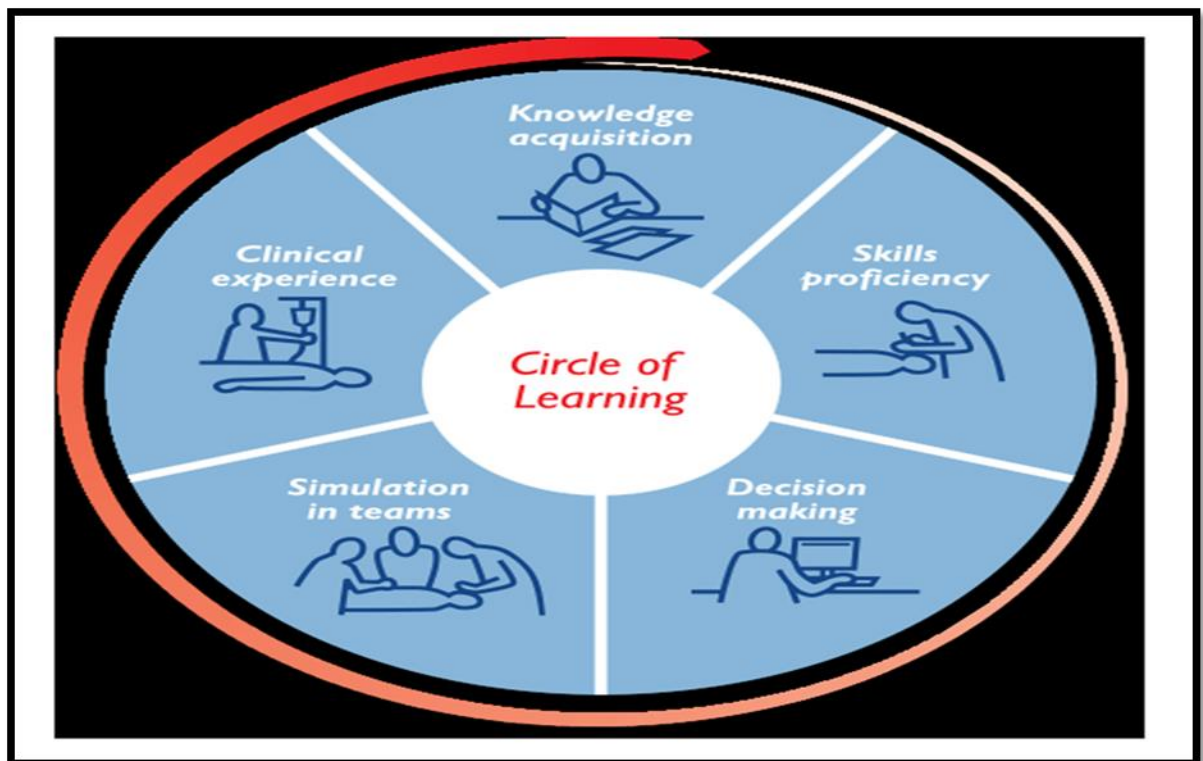
Circle of Learning: A framework that identifies five modes of learning. It illustrates an ongoing process of achieving competence. These are equally applicable to medical professionals. Following are the 5 modes:

Knowledge Acquisition: the process of acquiring knowledge through resources such as textbooks, charts, anatomical models.

Skills Proficiency: to develop psychomotor skills through repetitive practice with trainers and manikins to master practical procedures.

Computer Simulation: is the use of computer programs that provide intelligent feedback over a range of difficulty to develop decision-making and critical-thinking skills that increase educational efficiency.

Figure 9.1: Circle of learning framework.



Simulation in Teams: is group practice of realistic scenarios to improve teamwork, leadership and communication. Using simulation a wide variety of clinical conditions can be simulated in controlled environments to produce standardized experiences.

Clinical Experience: is learning through reflecting on the treatment of real patients, along with exchange of knowledge with colleagues.

Suggestions:

Based on the above study and its findings, following suggestions can be made to the training program.

- The training programme was more focused on enhancing learning and evaluating the knowledge levels of Health providers. While there was no provision to measure the attitudes towards patient care.
- Also, the training programme does not evaluate the clinical practices done by nurses and other health providers.
- According to Kirk-Patrick model of training evaluation, there are four levels of training outcomes namely: Reaction, Learning, Behavior and Outcomes. The training program does not evaluate of behavior and evidence-based outcomes.
- The behavior can be measured by Direct Observations, Structured Interviews with the providers or by any other physical evidence. The outcomes can be measured by the hospital records or feedback by the patient or visitor.
- Based on the above Observations, following model/intervention/measures are proposed:

a) Hand holding and mentoring by skilled staff:

The Trainer will spend time with the learners to guide and support them during the practice of skills. This will involve demonstrating skills (using the skills checklists) to the learners and then supervising the learners to perform these skills.

The trainer will further assess their competency with the help of the relevant checklists. If direct observation is not possible structured interviews could be used to assess patients.

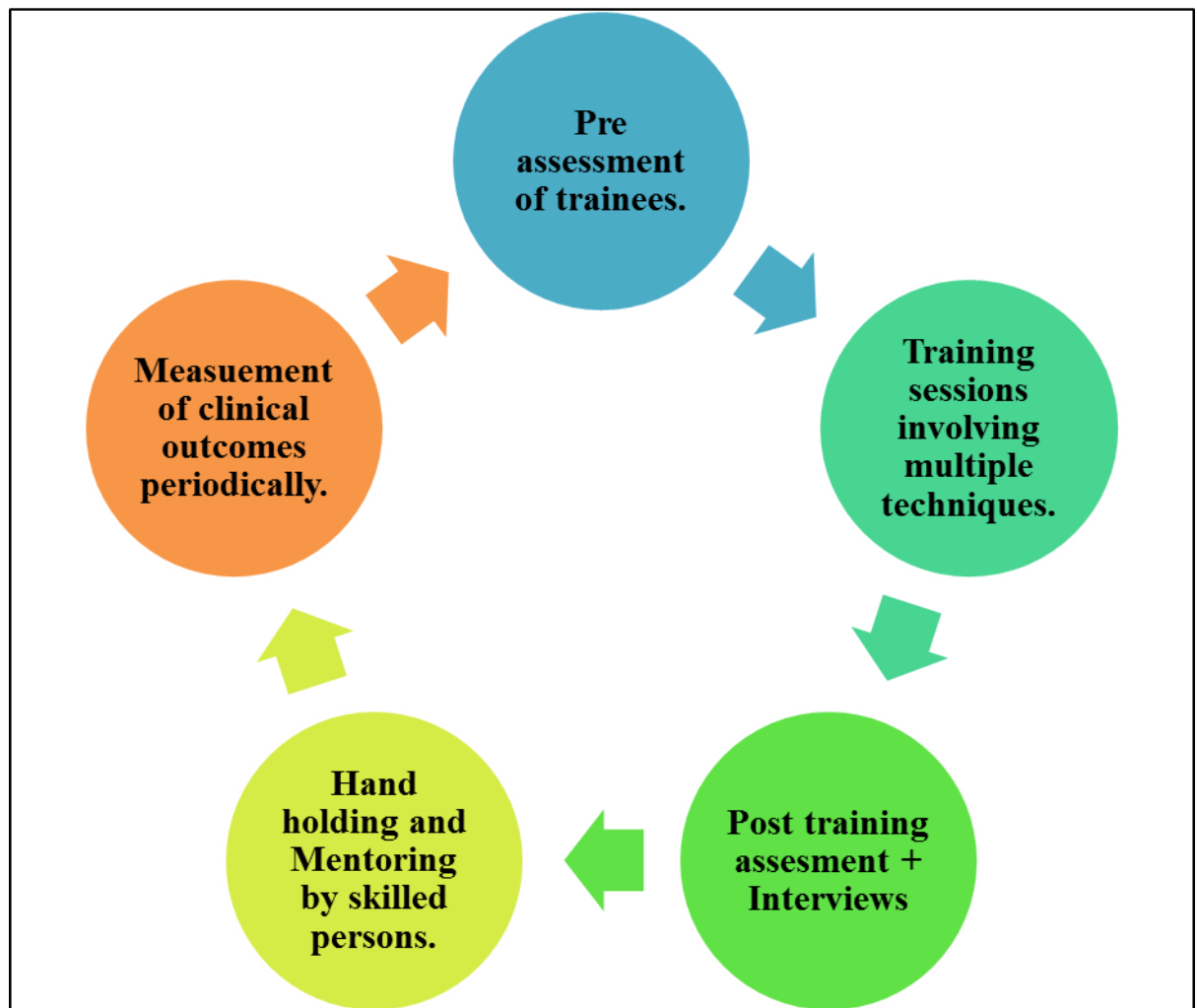
This will help in evaluating if the nurses are implementing the gained skill set into practice.

b) Measuring the outcomes:

Clinical outcomes are foremost measure of clinical performance. Outcomes clearly indicate improvement in terms of Patient Satisfaction or whether the system is achieving its purpose. Clinical outcomes like maternal mortality rate, Infant mortality rate, Average Length of stay (ALOS) of patient etc.

Based on these findings, few interventions are proposed with a view to develop a complete module for training of nurses.

Figure 9.2: Proposed Training pedagogy.



10.0 CONCLUSION

The change in percent correct for each individual cognitive question from pretest to posttest (see Table 18) demonstrated that nurses scored better on all the fifteen questions. But the changes were statistically significant for six of these questions. Although the performance on the remaining nine questions did not change significantly, but in almost all cases, greater than 75% of the nurses chose the correct answer on the pretest. This suggests that about 3 out of 4 nurses possessed a fundamental knowledge of these seven question areas prior to the intervention.

The mean score for Jhalawar Pre training is 7 while it increased to 13 when assessed after training.

The mean score for Baran district also increased from 10 to 14. This shows that there is increase in fundamental knowledge of various Obstetrics interventions.

Therefore, it can be concluded that the elements of the training intervention successfully increased the knowledge of EmOC and intrapartum care for mothers. It can also be concluded that while nursing knowledge levels increased for more than half of the knowledge areas covered by the cognitive test, the measured knowledge levels did not significantly increase in all areas.

APPENDICE-1

FEED BACK FORM

Q.1 How was the training and training approach?

Excellent

Good

Average

Poor

Q.2 How empowered would you feel to practice essential care for every baby at your facility?

Excellent

Good

Average

Poor

Q.3 How empowered would you feel to practice essential care for small baby at your facility?

Excellent

Good

Average

Poor

Q.4 How empowered would you feel to practice helping babies breathe at your facility?

Excellent

Good

Average

Poor

Q.5 How empowered would you feel to practice helping mothers survive at your facility?

Excellent

Good

Average

Poor

Q.6 How empowered would you feel to practice management of bleeding after delivery at your facility?

Excellent

Good

Average

Poor

Q.7 How empowered would you feel to provide trainings?

Excellent

Good

Average

Poor

Q.8 How would you rate the sitting Arrangements, venue, food and refreshment?

Excellent

Good

Average

Poor

Q.9 Now you are a trainer. How do you feel? Is the training useful to you?

Excellent

Good

Average

Poor

Q.10 Would you like to recommend such trainings to others?

Excellent

Good

Average

Poor

Q.11 Any comments.

APPENDICE -2

PRE/POST TRAINING QUESTIONNAIRE

NAME.....

POST.....

CENTRE.....

DISTRICT.....

DATE.....

CHOOSE THE CORRECT ANSWER

DURATION: 15 MINS.

Q.1. Which is the most critical period for new born and mother?

- a) Before delivery
- b) During delivery till 48 hours after delivery
- c) Postpartum 48 hours till 42 days
- d) Postpartum from 42 days to 1 year

Q.2 Sunita is 8 months pregnant. She reports to your center with a headache. What will be your response?

- a) keep her under observation and assess after 30 mins.
- b) Immediate initial assessment and provide adequate treatment at your center.
- c) will wait for the arrival of Doctor
- d) Referral to higher facility.

Q.3. Partograph is the process of:

- a) Monitoring the progression of labour.
- b) To treat complications arising during labour.
- c) To monitor Eclampsia symptoms.
- d) For record keeping.

Q.4. Antibiotic administration is contraindicated in following case.

- a) All pregnant women before labour is induced.

b) Patients with Urinary tract infection.

c) Patient showing symptoms of septicemia irrespective of stage of labour.

d) In case the placenta is manually removed.

Q.5. Corticosteroid administration is indicated in following case

a) During antenatal visit.

b) Patient with history of Asthma.

c) Patient undergoing fetal distress.

d) Completed 24-35 week of gestation and entered labour.

Q.6. Oxytocin administration is indicated in

a) Patient with slow rate of labour

b) Patient with post-partum hemorrhage

c) In all females within 1 min post-delivery.

d) IV infusion before delivery.

Q.7. After delivery, a new born should be given

a) Suction to clear airway

b) Kept in baby warmer

c) Dried with warm towel.

d) Clamping the cord

Q.8. Assisted ventilation with mask and Ambubag in newborn is indicated if

a) Newborn does not respond to stimulation within 30 secs after birth.

b) Newborn does not respond to stimulation within 1 minute after birth.

c) Newborn does not respond to stimulation within 2 minutes after birth.

d) Immediately after birth.

Q.9. What is indicated to reduce perineal tear in Prima gravida.

a) Epiostomy.

b) Urinary tract Catheterization.

c) Adequate perineal support.

d) Enema.

Q.10. Vitamin K administration in newborn is indicated in

a) Low birth weight baby

b) Preterm baby.

c) All newborn babies.

d) Thalassemic babies.

Q.11. What is Mag Sulphate Loading dose?

a) 20 gm

b) 5 gm

c) 14 gm

d) 10 gm

Q.12. LBW baby management include all except

a) Special care under observation.

b) Normal care with immediate discharge

c) Thermal protection

d) Referral to higher facility.

Q.13. All are correct technique of breast feeding a new born except

a) Chin of newborn supported by breast.

b) Upper border of areola is less visible.

c) Lower lip of newborn is folded outwards.

d) Baby is tightly held by mother.

Q.14. which of the following is correct about disinfection?

a) Washing with tap water and placing in 0.5% chlorine solution,

b) Placing in Savlon solution.

c) Placing used instruments in 0.5% Chlorine solution.

d) Sterilized instruments need not to be disinfected.

Q.15. Match the following

a) Yellow bag

b) Red bag

c) Puncture proof

d) Black bag

1) General waste

2) Biological waste

3) Reusable infected plastic

4) sharps

APPENDICE- 3

Training Agenda

Session	Topic	Methodology
<i>Day 1</i>		
<i>Helping Mothers Survive</i>		
	Introduction	Group Discussion
	Objectives of the training session and expectation sharing	Group Discussion
	Simulation-The difference in care approach; a brief introduction to Laerdal simulation products	Demonstration, Participation with Group Discussion
	Ante natal care-ANC Examination, Provider establishes gestational age, appropriate history taking, records FHS, performs PV examination (right technique at 4 th ANC visit), Lab and Diagnostics	Power point presentation, Group discussion
	Role of communication-Provider treats mother and her companion cordially and respectfully ensuring privacy and confidentiality	Briefing and Group work
	Preparations for clean and safe delivery- Hand washing steps and its importance asepsis, sterilization of instruments and equipment's (correct autoclaving techniques), Infection Prevention Use of Personal Protective Equipment's (PPE) , Bio medical waste segregation	Briefing, Group work(at different work stations), Simulation and demonstration, power point presentation, role play, videos
	Lessons learnt and Recap	Group Discussion

Session	Topic	Methodology
<i>Day 2</i>		
<i>Helping Mothers Survive</i>		
	Use of PPE and bio medical waste segregation,,Bleeding after Birth-Active management of third stage of labour, Ready Recokner for Emergency Management (Supplies), PPH and its management	Simulation and Group Exercise, Group Discussion
	Causes of Bleeding after Birth- Poor uterine tone, Tears, Retained placenta and Manual removal of placenta,	Simulation and Group Exercise
	Actively make decisions for mother and baby-Plotting and interpretation of partograph, Danger Signs, Management of Hypothermia	Simulation and Group Exercise (Role play)
	Delivery of Placenta and membranes(AMSTL) -Controlled cord traction, Administration of Oxytocin or Misoprostol	Simulation and Group Exercise (Role play)
	Case scenarios to demonstrate bleeding after birth and making active decisions for mother and baby (at least six cases)	Practice in small groups with one facilitator per group using simulation, briefing and debriefing
	Lessons learnt and Recap	Group discussion

Session	Topic	Methodology
<i>Day 3</i>		
<i>Helping Mothers Survive</i> and essential newborn care		
	Routine Care for mother and baby during delivery-3 steps of Active management of third stage of Labour, Golden minute, Ideal time for cord clamping and cutting, CCT, check placenta for completeness	Simulation and Group Exercise, Group Discussion
	Routine Care for mother and baby after delivery-Keeping mother and baby together-Kangaroo Mother Care, Initiation of early breast feeding, Assessing fundal tone and bleeding	Simulation and Group Exercise, Group Discussion
	Complications and management-Pre-eclampsia, Eclampsia, PPH, Anemia, MgSO4 dosage and administration	Power point presentation, Simulation and Group Exercise (Role play)
	Emergency Care and Transport-Management of tears, Atonic Uterus, Repeat Medication (Oxytocin/Misoprostol), Compress Uterus, Transportation plan and back up, Referral link ups	Simulation and Group Exercise, Role play
	Case scenarios to demonstrate Routine care of mother and baby, complications and transport to a least six cases)	Practice in small groups with one facilitator per group using simulation , briefing and debriefing
	Lessons learnt and Recap	Group discussion

Session	Topic	Methodology
<i>Day 4</i>		
<i>Helping Babies Survive</i>		
	Introduction	Group Discussion
	Objectives of the training session and expectation sharing	Group Discussion
	Simulation-The difference in care approach, a brief introduction to Laerdal simulation products	Group Discussion and participation demonstration
	<i>The Golden Minute</i> -Ready Reckoner for Emergency Management (Supplies),Management of Meconium Aspiration(advantage and disadvantage of suction), Drying of Baby, Thermal Management, Assessment of cry, BLS, ALS Continued ventilation with normal or slow heart rate-Bag mask Ventilation , Positioning of Baby, Decision making, Monitoring and Oxygen Administration	Power point presentation, Group discussion, Simulation and demonstration
	Continue ventilation and seek advanced care-Endo Tracheal Intubation, Chest Compression, Supplemental Oxygen and Transportation	Group work, Simulation and demonstration
	Reassess the baby and breast feeding before considering discharge, Parental guidance for home care, Breast feeding problems-Engorgement, Cracked Nipples, Mastitis, Exclusive breast feeding for six months	Group discussion, Group work at different work stations, Simulation and demonstration, power point presentation, role play, videos
	Essential care for a small baby with an abnormal temperature or feeding problem, Danger signs and Advanced care-KMC, Hyperthermia , Breast milk extraction technique and storage with dose calculation/Naso gastric intubation and feeding , Management of convulsions, pneumonia, sepsis, Feeding dose calculation for pre mature baby, Administration of Antibiotics, Management of Jaundice	Group work, Simulation and demonstration
	Recap and lessons learnt	Group discussion
Session	Topic	Methodology
<i>Day 5</i>		
<i>Helping Babies Breathe</i>		

	Performance of participants as a trainer on allotted topics	Group work, Simulation and demonstration
	Post assessment	
	Feedback of the participants	

APPENDICE-4

List of Facility

Jhalawar District

Jhalawar Medical College

CHC Aklera

CHC Manoharthana

CHC Bhawanimandi

CHC Khanpur

Baran District Facilities

CHC Anta

District Hospital Baran

CHC Chabra

CHC Kishanganj

CHC Kelwara

APPENDICE-5

District wise data analysis of doctor and nurses.

Sr. No	Indicators	Baran		Jhalawar	
	Doctors/Nurse	Doctor	Nurse	Doctor	Nurse
1	Prepare for safe care during delivery	78.00	48.00	77.00	54.00
2	Assess at admission	75.00	75.00	68.00	69.00
3	Conduct of PV examination – special note	44.00	51.00	45.00	61.00
4	Supervise and monitor progress of labour	50.00	46.00	18.00	16.00
5	Provider assists the woman to have a safe and clean birth	62.00	82.00	66.00	76.00
6	Provider conducts a rapid initial assessment and performs immediate newborn care (if baby cried immediately)	64.00	66.00	66.00	72.00
7	Provider performs Active Management of Third Stage of Labour (AMTSL)	33.00	76.00	64.00	79.00
8	Provider identifies and manages Shock	56.00	36.00	60.00	49.00
9	Provider identifies and manages Post Partum Hemorrhage	69.00	70.00	64.00	81.00
10	Provider identifies and manages severe Pre-eclampsia/Eclampsia (PE/E)	50.00	65.00	58.00	69.00
11	A Provider performs newborn resuscitation if baby does not cry immediately after birth	50.00	61.00	60.00	75.00
12	The facility adheres to universal infection prevention protocols	58.00	86.00	60.00	76.00
13	Provider ensures exclusive and on demand breastfeeding And on care for herself and baby	100.00	86.00	90.00	100.00
14	Care in hospital	93.00	89.00	76.00	86.00
15	Provider conducts routine physical examination of the woman and baby	78.00	73.00	63.00	86.00
16	Provider identifies and manages maternal sepsis and Neonatal sepsis	89.00	93.00	83.00	93.00
17	Provider identifies and manages postpartum depression	-	-	-	-
18	Provider ensures adequate postpartum care package is offered to the mother and baby – at discharge	87.00	64.00	66.00	74.00
19	Consent is taken from patient before doing any procedure- verbal and written, consent form is duly filled	-	14.00	37.00	50.00

20	Average length of stay in normal delivery and LSCS	67.00	100.00	70.00	88.00
Mean		60.00	64.00	60.00	68.00

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