Original Research Article

Effectiveness of Integrated Versus Fragmented Clinical Teaching Strategy on Assessment of Gestational Age of Neonate In Terms of Skills among Nursing Students

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ABSTRACT

Background: Every year over 130 million newborns are born in the world. Identification of newborn at risk is the accurate assessment of gestational age at birth is most important.
Objectives: The current study was undertaken with objectives to assess and compare skills of nursing students regarding assessment of gestational age of neonate in ICT and FCT group.
Method: An experimental approach post-test only design and conceptual framework based on Stufflebeam Model was adopted for the study. A total of 80 nursing students of M. M. College of Nursing were selected by simple random sampling technique and randomly assigned to ICT (n=40) and FCT (n=40) group. The tool used for the study was observational Checklist to assess skills of nursing students regarding assessment of gestational age of neonate. In ICT group the demonstration was given by using integrated method of clinical teaching (ICT) and in FCT group the demonstration was given by using Fragmented method of clinical teaching (FCT). Post test was taken after fifteen days of intervention.
Findings: SPSS version 16 was used for statistical analysis. The findings revealed that the mean post test skill score of nursing students regarding assessment of gestational age of neonate in ICT group was 48.55and in FCT group was 48.20 with mean difference of 0.35 which was found statistically non-significant ('t'=0.21, p= 0.84^{NS}) at 0.05 level of significance.
Conclusion: There was no significant difference of skills score of nursing students regarding assessment of gestational age of neonate between ICT and FCT group after administration of ICT and FCT.

Keywords: - clinical teaching strategy, New Ballard score, Skills of nursing student, Fragmented clinical teaching (FCT), integrated clinical teaching (ICT)

BACKGROUND

The incidence of at-risk neonates is still high in developing countries which are a leading cause of morbidity and mortality.

Preterm birth complexities are the main source of death among children less than five years of age. [1] Preterm and IUGR neonates need more skilled, comprehensive

care in comparison to term neonates. Intra uterine growth restrictions (IUGR) were observed in about 24% of neonates approximately 30 million neonates every year globally. [2] In India, 27 million neonates were born every year, out of 27 million, 3.5 million neonates born were premature and the prevalence of IUGR has been found in 54%. [3]

The low birth weight neonates are more prone to malnutrition, infection and neuro-developmental handicapped condition. High rate of LBW neonates in India is because of higher number of children with intrauterine development impediment as opposed to pre term babies. The newborn with a birth weight of less than 2000 gm is more vulnerable and need special care, about 10% of all LBW babies expect admission to the NICU. [1]

Precise estimation of gestational age and the assessment of the appropriateness of fetal development are essential in the care of newborns. A unified system has been developed which enables the physician and other health care professionals to rapidly and accurately classify all newborns and identify the high-risk neonate. [1]

In the newborn infant, it is essential to know the correct gestational age, so as to predict the risk of morbidity and mortality. A study done by Erman, et al. found new Ballard scores more accurate contrasted with Dubowitz score. Additionally, to analyze under 28 weeks, new Ballard Scores gives a more accurate estimate of gestational age. [3]

A Descriptive cross-sectional study done by K Prasanna, Sheelu John and Dr. Indira was adopted to assess the knowledge regarding assessment of high risk neonates among staff and nursing students in selected hospitals in Nellore. The study concluded that staff nurses have adequate knowledge regarding assessment of high risk neonates, but the student nurses have not adequate knowledge. Therefore, there was a lack of awareness and practicing of identification and assessment of high risk neonates among student nurses in selected hospitals in Nellore. There was a need to give instructional module on evaluation of high risk neonates among student nurses to improve their knowledge, attitude and practices related to care of high risk neonates. [1]

Often the most important tool in medicine is the skilled examiner. Over the course of gestation, babies develop a wide range of characteristics that can be measured through simple examination. [4]

In the clinical setting learning of psychomotor skills is an integral part of all basic nursing programs. Consequently, psychomotor skill acquisition and associated teaching strategies are of interest to nurse educators. Traditionally, psychomotor skills have been taught using a textbook reading assignment and demonstration with a return-demonstration of the skill in a practical laboratory and gain specific knowledge and skills. [7]

There are several teaching-learning methods used in education, such as lecture, demonstration, simulation, problem based learning, lecture cum video, fragmented teaching and integrated teaching (part and whole). Choosing an effective teaching strategy is an essential part of educational design. [5]

In addition, several researchers have noticed that the conventional atomistic, part-task approach is less appropriate for teaching complex cognitive skills that are characterized by highly integrated set of learning objectives that require a more holistic approach to instruction. [6]

With this background study was carried out to assess the effectiveness of integrated versus fragmented clinical teaching strategy on assessment of gestational age of neonate in terms of skills among nursing students.

Integrated clinical teaching strategy (ICT): It refers to demonstration of assessment of gestational age of neonate using new Ballard score in one session followed by repeated return demonstration till at least one correct return demonstration of each student. Firstly the demonstration

was given on one term neonate after that demonstration on two preterm neonates and then demonstration on one post term neonate.

Fragmented clinical teaching strategy (FCT): It refers to demonstration of assessment of gestational age of neonate using new Ballard score in four fragments; two fragment of neuromuscular maturity and two fragments of physical maturity, each fragment contains three criteria, all the three criteria of each fragment were demonstrated followed by repeated return demonstration of each fragment till at least one correct return demonstration.

Hypothesis

The following hypotheses were tested at 0.05 level of significance.

H$_1$: There will be significant difference in mean post test skills score of nursing students regarding assessment of gestational age of neonate in ICT group and FCT group.

RESEARCH METHODOLOGY

Research approach- Quantitative approach
Research design- True experimental post test only

Independent variable: Fragmented clinical teaching and integrated clinical teaching regarding assessment of gestational age of neonate.

Dependent variable: Skills of nursing student regarding assessment of gestational age of neonate.

Subject and setting

This was a true experimental study conducted in post natal ward of Maharishi Markandeshwar Institute of Medical Science & Research Hospital and Maharishi Markandeshwar College of Nursing Mullana, Ambala from October 2017 to November 2017.

Ethical consideration- This study was approved by the institutional ethical committee of Maharishi Markandeshwar (Deemed to be University) Mullana, Ambala, Haryana Markandeshwar (Deemed

to be University) Mullana, Ambala, Haryana.

Inclusion criteria- Inclusion criteria consist of nursing students study includes nursing students who were studying in B.Sc. nursing 3rd year and Post basic B.Sc. nursing 1st year and who were available at the time of data collection.

Sample size: Total 103 students were studying in B.SC nursing 3rdyr and 30 students in post basic B.Sc. nursing 1styr at M.M.C.O.N Mullana, Ambala, Haryana. For the present study sample size calculation was done with the formula of power analysis, 78 sample size was determined for the study. Final sample size considered was 80 B.Sc. nursing 3rd year and Post Basic B .Sc. nursing 1st year students of M.M. College of Nursing were selected by simple random sampling technique and randomly assigned to ICT (n=40) and FCT (n=40) group.

Instrument and data collection:

The observational checklist was prepared to assess the student's skills regarding assessment of gestational age of neonates by extensive review of literature of both research and non research literature, taking opinion of experts into consideration**.** It consists of following main areas- criteria of physical and neuromuscular maturity.

Observational checklist consisted of total 58 steps (under main items sub items were included). Each correct practice was awarded as a score of one and every wrong practice was awarded as a score of zero. One score is for overall maturity rating. Thus, the total score on observational checklist ranged from 0-59. Maximum possible score was 59 and minimum score was zero.

The content validity index of the observational checklist was 0.9. Inter rater reliability was computed by the Karl Pearson Coefficient of correlation method. The value obtained was 0.89 which indicate moderate correlation observed between two observers. The tool was found to be valid,

reliable and feasible for the purpose of study.

Data collection technique:

After formal administrative approval from Principal M.M. College of Nursing and Medical superintendent of MMIMS&R Hospital, Mullana-Ambala. Data was collected in the month of October and November, 2017. Self introduction was given to the students to establish the rapport and informed consent was obtained. Total 80 students (40 in FCT group, 40 in ICT group) were selected by using simple random sampling technique. Students were divided into 10 groups, each group comprised of four students in ICT and FCT group. Plan of the study was given to students primarily to ensure their presence during data collection.

In ICT and FCT group, each day researcher identified two neonates between 38-44 weeks of gestational age and two neonates between 30-37 weeks of gestational age in postnatal ward of MMIMS&R Hospital for demonstration and return demonstration of nursing students for each group. Self introduction was given to mothers of neonate and the study was explained and informed consent was taken. Both interventions were scheduled on alternate days, started with the ICT group first. In ICT group demonstration on assessment of gestational age was given by researcher to the four students of first group on four babies (two preterm neonates, one term neonate and one post term neonate) one by one by using integrated method of clinical teaching. Return demonstration was taken from each student of the group separately on four babies separately and it was ensured that each student do each step of return demonstration correctly. On alternate day same process of demonstration and return demonstration was followed in ICT group.

In FCT group, intervention was divided in four fragments, first fragment include three criteria of physical maturity i.e. skin, lanugo and plantar surface, in second fragment next three criteria of physical maturity i.e. breast, eye/ear, genital (male/female), third fragment included three criteria of neuromuscular maturity i.e. posture, square window (wrist) and arm recoil and fourth segment included next three criteria of neuromuscular maturity i.e. popliteal angle, Scarf sign and heel to ear. Investigator demonstrated the first fragment of intervention on four different babies (two preterm neonates, one term neonate and one post term neonate) to a group of four students by using fragmented method of clinical teaching and return demonstration of first fragment was taken from each student separately and it was ensured that each student do each step of return demonstration correctly. Once first fragment is over, demonstration and return demonstration of other three fragments was done in same manner on same day. The post test was taken from both groups (ICT and FCT) after 15 days of intervention.

RESULTS

SPSS version 16.0 was used to analyze the data. Level of significance for the present study was taken as p≤0.05.

K-S TEST: Kolmogorov-Smirnov test was applied to check normality of data between two samples. The calculated K-S value for post test skills of both groups (ICT and FCT) were distributed normally as p value was ≥0.05. Hence, parametric tests were applied.

Comparison of skills of nursing students regarding assessment of gestational age of neonate after administration of integrated and fragmented clinical teaching strategy among nursing students in ICT and FCT group.

TABLE 1: Range, Mean, Median and Standard Deviation of post-test skills of nursing students in ICT and FCT group

Group	Range of score	Mean ±SD	Median
ICT group (n=40)	32-59	48.55±7.56	50.50
FCT group (n=40)	31-59	48.20±7.46	49.00

Minimum score=00 Maximum score=59

The data presented in Table 1 shows that in ICT group the mean post test score of skills of nursing students was 48.55±7.56, ranging

from 32-59 and median was 50.50 whereas in FCT group, the mean post test score of skills of nursing students was 48.20±7.46, ranging from 31-59and median was 49.

TABLE- 2: Mean, Mean Difference, Standard Error of Mean Difference and 't' Value of Mean Post-test skills of Nursing Students in ICT and FCT group.   N=80

Group	Mean	M_D	SE_{MD}	't' value	Df	P value
ICT group (n=40)	48.55	0.35	1.68	0.21	78	0.84[NS]
FCT group (n=40)	48.20					

*Significant (P≤0.05) t (78) = 1.99 [NS] Non significant (p>0.05)

Table 2 shows a comparison of skills of nursing student in ICT and FCT group using independent 't' test.

In ICT group mean post test skills score was 48.55and in FCT group mean post test skills score was 48.20 with mean difference of 0.35 which was found statistically non-significant ('t'=0.21, p= 0.84[NS]) at 0.05 level of significance.

Thus, it indicates that it was not a true difference. Therefore, the null hypothesis H_0 was accepted and research hypothesis H_1 was rejected. Hence, it can be stated that ICT and FCT are equally effective in enhancing the skills of nursing students regarding assessment of gestational age of neonate.

DISCUSSION

The findings revealed that the fragmented clinical teaching and integrated clinical teaching strategy were equally effective. The mean of post test skill score of ICT group was slightly (48.55) higher than the mean of post test skill score of FCT Group(48.20) but the difference was not significantly different between groups as shown by computed 't' (0.87). These finding of the study are consistent with the study of Lim J [7] where both instructional approaches were equally effective. The result of the study shows that the mean score in part task condition (31.3±1.95) was higher than the mean score of whole task condition (30.9±3.14), and MANOVA shows that there is no significant difference among two instructional approaches. Whereas these results are inconsistent with

the study conducted by Ross C. (2014). A meta analysis approach was conducted to compare the part task and whole task training and context dependent presentation. The study was conducted by Armed formed of united state of America. For part- whole task training, the influences of early research were assessed on the selection of training methods and relationships between training methods and task characteristics and trainees, individual differences and different method of part task training were discussed. The result of study shows that whole task training was effective if the task is simple.

Limitations

The limitations of the study were:
The study was confined to nursing students from one nursing college only, thus restricting generalization of the study findings.
The study was limited to selected method of clinical teaching.

CONCLUSION

Both ICT and FCT were found to be equally effective in acquiring the skills of nursing students regarding assessment of gestational age of neonate.

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