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Evaluate The Effectiveness of Developmental Care Training Programme on Knowledge and Attitude Among Nursing Students in Selected Colleges at Bilaspur District Chhattisgarh

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Abstract:

The aim of the present study was to evaluate the effectiveness of Developmental Care training programme on knowledge and attitude among the nursing students in selected colleges at Bilaspur district C.G.

Methods:

Quantitative approach with Pre experimental, one group Pre-test post-test research design was adopted. 300 Samples was selected through convenient Sampling Technique and the samples comprise the nursing students meeting the inclusion criteria. The tool used was demographic variables, structured questionnaires on knowledge regarding Developmental Care and 5 point Likert's scale on attitude.

Result:

The finding of the study shows that the pre test means scores and standard deviation of knowledge level was 11.7 ± 4.3 whereas the post test means score and standard deviation was 18.22 ± 4.080 respectively. The calculated '*t*' value was 4.17 with the *p* value 0.000 was less than 0.05 level of significant. Similarly in attitude, the pre test mean scores and standard deviation was 28.8 ± 6.52 where as the post test mean score and standard deviation was 37.54 ± 5.89 respectively. The calculated '*t*' value is 13.46 with the *p* value 0.000 is less than 0.05. The statistical analysis shows highly significant difference between mean pre test and post test knowledge and attitude level. Therefore it was inferred that the developmental care training programme was effective to improve the knowledge and attitude of nursing students.

Conclusion:

This study reveals that result of post test was comparatively more effective than the pretest in gaining the knowledge and having positive attitude among nursing students through Developmental Care training programme. Though the Nursing curriculum has kangaroo mother care, breast feeding, NICU organization, etc, Developmental Care training programme must be implemented as compulsory training programme for all NICU staff nurses and nursing students who posted in NICU and it should be continued in order to improve the quality of nursing care.

Keywords: Developmental care, neonatal intensive care unit (NICU), Knowledge, attitude

Introduction:

Transition from the intrauterine to extra uterine life is a critical event in life[1]. Newborn undergo profound physiologic changes at the moment as they are released from a warm, dark, liquid filled environment that has met all of their basic needs into a chilly, uncontrolled, brightly lit, gravity- based outside world[2].

A baby born with a gestational age of less than 37 completed weeks (or less than 259 days) is termed preterm baby[3]. These babies are also termed as immature, born early or premature. Based on gestational age the preterm babies are

Sub-categories into: extremely preterm (less than 28 weeks) very preterm (28 to 32 weeks) moderate to late preterm (32 to 37 weeks)[3, 4, 5]. Common causes of preterm birth include multiple pregnancies, infections, genetic influence and chronic conditions such as diabetes and high blood pressure; however, often no cause is identified[5].

After birth of preterm baby, their first home is Neonatal Intensive Care Unit (NICU). Preterm infants are vulnerable humans; the non natural, artificial and over stimulating world of bright lights, loud sounds, unpleasant and painful touch, noxious smell and taste, disorganizes these susceptible babies at a time which is critical for brain development, both in terms of its structure as well as its functional abilities[6]. When the preterm infant is stressed, behavior such as respiratory pauses, tachypnea, colour changes, tremors sighing, flaccidity, finger splaying and gaze averting occurs. Such behaviors are alert that the environment has become too stimulating and need to be modified[2].

Developmental care is an approach that uses a range of medical and nursing interventions that aim to decrease the stress of preterm neonates in NICU[7]. The light and sound is known adverse stimuli that add to already stressed premature infant[8]. By 26-28 weeks gestational age (GA), the preterm infant's auditory system is sufficiently mature for loud noise[9] to produce physiological changes in heart rate, blood pressure, respiration and oxygenation[10]. AAP (1997) recommended that the noise levels greater than 45 db should be avoided where possible[11]. The sound environment in NICU is louder than home and office[12] which comes from various sources, such as mechanical ventilators, radiant warmers, infusion pumps, and incubators; handling of incubators by the nursing team and medical team (opening and closing doors, for example); voices/talking and movement of people in the unit; alarms; medical and family visits[13, 14, 15] and these putting them at risk for hearing, language, and cognitive disabilities[9, 16].

The continuous bright light levels may have negative effects on the growth and development of preterm infants[17]. The retina of the immature infant has little protection from the nearly translucent eyelids, thus allowing light to almost continuously penetrate the retina unless it is artificially protected with dimming of light or isolette covers[2]. Premature babies exposed to cyclical lighting have beneficial effects on infant's fussing and crying behaviour also showed a trend

to improved daily weight gain, shortened the length of stay during neonatal care compared with the dim light[18].

Babies are born not only with a strong sense of smell but also with a preference for sweet tastes. Fetal smell and taste receptors are exposed to the components of amniotic fluid for many weeks before birth and at comparable gestations to preterm infants[19]. Feed intolerance in the newborn period is a major problem in the extremely low preterm baby and even moderate-late preterm birth carries increased risk of impaired metabolic health in later life.

Preterm neonates are more sensitive to pain/stress than infants born at full term and receive a large number of painful procedures during their stay in NICU. Current practice requires the nursing staff to make a global pain assessment of neonates or apply validated pain scoring methods before taking appropriate actions to ameliorate newborn pain or discomfort[2]. Non pharmacologic interventions should be consistently utilized prior to mild to moderately painful procedures[20] like positioning, nesting, swaddling, non-nutritive sucking, kangaroo care, music and maternal touch[21, 22, 23].

Due to immaturity, Preterm often lack adequate muscle tone and have to work against gravity. Improper positioning could affect upper and lower extremities movement's results in hip abduction and external rotation, ankle eversion, retracted and abducted shoulders and neck hyperextension. Nesting, as a component of developmental care, improves neonates' sleep quality, maintains flexed posture through preservation of neonates' curved limb position and reduction of sudden movements as well as immobility of the arms and legs. Swaddling was an almost universal child-care practice before the 18th century. It is still tradition in certain parts of the Middle East and is gaining popularity in the United Kingdom, the United States, and The Netherlands to curb excessive crying[24, 25, 26].

Sucking is the basic reflex in infant and forms the basis for nutrition[27]. Non-nutritive suck, or NNS, is a suck pattern characterized by the absence of nutrient delivery[28]. Sucking a pacifier has been reported to lower the infant's heart rate, blood pressure and stress level[27]. Infant NNS is sensitive and adaptable and is therefore often used as a therapeutic target to enhance early clinical outcomes, such as growth, weight gain, maturation, state control and gastric motility[28].

Preterm infants are susceptible to temperature instability as a result of numerous factors[29] like poorly developed heat regulating center, large body surface area in relation to body weight, poor insulating subcutaneous fats and less brown adipose tissue[4]. Kangaroo Care is skin-to-skin contact, when an infant is placed against the parent's chest. It helps to release maternal (parental) affection, bonding, relaxation and a milk releasing hormonal cascade[26]. Kangaroo Mother Care (KMC) has often been used as a treatment for premature or preterm babies[30].

Giving birth to a premature or sick infant is a stressful event for parents[31] and it is different from term and normal parent's experience[8]. Family centered care is an approach to the planning, delivery, and evaluation of healthcare based on partnerships between health professionals, patients, and families[32]. A lot of the time, the touching can be stressful, uncomfortable and distressing for preterm infant. They desire tender human touch.

Developmental care training is essential for all the nurses working in NICU. Training is available to professionals but the cost is very expensive and time consuming that's why there are no adequate certified persons are available to train the nurses in study setting to the knowledge of the investigator. Hence the investigator with enormous review of literature from text books, journals and net search took initiative to provide informal education (developmental care training programme through video) to the nursing students for the benefit of preterm babies and their family and also no prior studies were done on student nurse to evaluate the effectiveness of developmental care training programme on knowledge and attitudes. So the goal of the study was to impart knowledge and promote positive attitude of developmental care among the nursing students.

Statement of the Problem:

Evaluate the effectiveness of developmental care training programme on knowledge and attitude among nursing students in selected colleges at Bilaspur district C.G.

Objectives:

1. To assess the existing knowledge and attitude regarding developmental care among the nursing students.

2. To evaluate the effectiveness of developmental care training programme on knowledge and attitude among the nursing students.
3. To correlate between Knowledge and Attitude regarding developmental care among the nursing students.
4. To associate the post test level of knowledge and attitude with their selected demographic variables.

Assumptions:

- Nursing students may have some knowledge and poor attitude of developmental care.
- Developmental care training programme support the nursing students to provide well organized care during their clinical posting.

Hypotheses:

H_1: The mean post-test level of knowledge and attitude regarding developmental care among nursing students is significantly higher than the mean pre-test level of knowledge and attitude.

H_2: There is a correlation between Knowledge and Attitude regarding developmental care among the nursing students.

H_3: There is a significant association between post test level of knowledge and attitude with their selected demographic variables.

Methodology:

The present study was aimed to evaluate the effectiveness of Developmental Care training programme on knowledge and attitude among the nursing students. In order to achieve the study objectives, a quantitative research approach with Pre experimental, one group Pre-test post-test research design was adopted. Non Probability convenient Sampling Technique was used to select total of 300 samples in selected colleges at Bilaspur district C.G. The sample for the study comprises of all nursing student (B.Sc (N), P.B.B.Sc (N) and GNM) who had and have Child Health Nursing and Obstetric and Gynecological Nursing subjects in their curriculum. The

tool was divided into three parts. **Part I:** Demographic variables include sex, education, course & year of study, previous information and sources of information of Developmental Care. **Part II:** Structured Questionnaires on Knowledge. **Part III:** 5 point Likert's scale for attitude.

Official approval obtained from the institutional authority to conduct the study and written consent was taken from all the nursing students before initiating the study. The investigator explained the procedure to the students to get cooperation. The data was collected on 3 phases: **Phase I:** Pre test was done by administering structured questionnaires on knowledge and 5 point Likert's scale on attitude regarding Developmental Care. **Phase II:** Developmental Care training programme was administered through a video on the same day. **Phase III:** After 1 week of pre test, post test was done by administering same tool.

The effectiveness was analyzed using descriptive statistics (frequency, mean, & standard deviation) and inferential statistics ('*t*' test and chi square test).

Result and Findings:

Discussion of demographic variables among nursing students:

In the present study, the majority 271(90.3%) of subjects were female and only 29(9.7%) of subjects were male. 182(60.6 %), 60(20%) and 58(19.3%) of subjects were studying in B.Sc (N), P.B.B.Sc(N) and GNM respectively. 81(27%) and 101(33.6%) of subjects were studying B.Sc (N) 3rd and 4th year respectively. 100% of subjects are having posting in government hospital. The majority 262(87.3%) of subjects were not receive information regarding developmental care and only 38(12.6%) of subjects were received information either through text book, during clinical posting and had informal training regarding developmental care.

The first objective of the study was to assess the existing knowledge and attitude regarding developmental care among the nursing students:

Table No. 1: Frequency & Percent Age Distribution of Pre Test Level of Knowledge of Nursing Students regarding Developmental Care

***n* = 300**

Knowledge Level	Score	Percentage Score	Pre-Test	
			Frequency(*f*)	Percentage(%)
Poor	1-10	3.33- 33.3%	134	44.66%
Average	11-20	36.6 - 66.6%	160	53.33%
Good	21-30	70-100%	6	2%
Total	30	100%	300	100%

Table No. 1 depicts that in pre test, 134(44.66%) subjects were having poor knowledge, 160(53.33%) subjects were having average knowledge and only 6(2%) subjects were having good knowledge.

Table No. 2 : Frequency & Percentage Distribution of Pre Test Level of Attitude of Nursing Students regarding Development Care

***n* = 300**

Attitude level	Score	Pre-test	
		Frequency (*f*)	Percentage (%)
Favourable	0-30	126	42%
Unfavourable	31-60	174	58%

Table No. 2 shows that, in pre test 174(58%) subject had unfavorable attitude towards developmental care and 126(42%) subjects had favorable attitude.

The second objective of the study was to evaluate the effectiveness of developmental care training programme on knowledge and attitude among the nursing students.

Table No. 3: Comparison of the Pre & Post Test Level of Knowledge of Nursing Students regarding Development Care

***n* = 300**

Knowledge level	Mean	SD	*t* value	*p* value
Pre test	11.7	4.3	4.17	0.000 < .05 Highly Significant
Post test	18.22	4.080		

**0.05 level of significance*

Table No. 3 exhibits the comparison of the pre & post test level of knowledge of nursing students regarding Developmental Care. The pre test mean scores and standard deviation of knowledge level was 11.7 ± 4.3 whereas the post test mean score and standard deviation was 18.22 ± 4.080 respectively. The calculated '*t*' value is 4.17 with the *p* value 0.000 is less than 0.05. The statistical analysis shows highly significant difference between mean pre test and post test. Therefore it was inferred that the Developmental Care training programme was effective to improve the knowledge of nursing students.

Table No. 4 : Comparison of the Pre- & Post- Test Level of Attitude of Nursing Students regarding Development Care

***n* = 300**

Attitude	Mean	SD	Paired *t*- value	Effectiveness by *p* value
Pre test	28.8	6.52	13.46	0.000 < .05 Highly Significant
Post test	37.54	5.89		

** 0.05 level of significance*

Table No. 4 shows that the pre test means scores and standard deviation of attitude level was 28.8 ± 6.52 whereas the post test means score and standard deviation was 37.54 ± 5.89 respectively. The calculated '*t*' value is 13.46 with the *p* value 0.000 is less than 0.05. The statistical analysis shows highly significant difference between mean pre test and post test attitude level. **Hence H_1 hypothesis is accepted.** Therefore it was inferred that the developmental care training programme was effective to improve the knowledge and attitude of nursing students.

Finding of the study supported by **IH Milette et al. (2005)** was carried a quasi experimental pre test and post test study "to evaluate the impact of a Developmental Care training programme on nurses' behaviours and cognitive attributes with regard to the prevention of over stimulation of premature infants". The training programme used a quasi-experimental one group pre-test/post-test design in this study. Staff nurse in a neonatal intensive care unit were the samples. Tools used to collect the data were self-administered questionnaires. Significantly higher post-test scores were obtained for knowledge; hence results of this study illustrate that the training programmes is help nurses to implement Developmental Care.

The present study supported with the study conducted by **Brown, L.D., & Heerman, J.A. (1997)** using a retrospective comparative design, the investigators evaluated the effects of training 10% of a nursing staff in the Neonatal Individualized Developmental Care and Assessment Program (NIDCAP) on preterm infant effect. The study result suggests that benefits of Developmental Care are attainable with only a part of the staff being NIDCAP trained[15].

The third objective of the study was to correlate between Knowledge and Attitude regarding developmental care among the nursing students.

Table No. 5 : Correlations between Level of Knowledge and Attitude of Nursing Students regarding Development Care

Pearson correlation co-efficient is denoted by "*r*" always lies between -1 to +1

0.0 - 0.2 = Poor correlation

0.2 - 0.4 = Fair correlation

0.4 - 0.6 = Moderate correlation

0.6 - 0.8 = Good correlation

***n* = 300**

Correlation between	Karl Pearson correlation coefficient	Interpretation
Knowledge Attitude	0.551	There is positive correlations exist.

Table No. 5 Pearson correlation revealed a positive correlation between the subjects knowledge with their attitude regarding developmental care.

The forth objective of the study was to associate the post test level of knowledge and attitude with their selected demographic variables.

- ***Association between post-test levels of knowledge with demographic variables:***

There was an association between demographic variable (sex and level of education) of nursing student with post test knowledge level. The statistically

significant difference has found because *p* value = 0.04 which is less than 0.05 regarding knowledge level in between male and female. Similarly statistically highly significant difference has found because *p* value = .001 which is less than 0.05 regarding knowledge level at different level of educations.

- ***Association between post-test level of attitude with demographic variables:***

There was an association between demographic variable (sex and level of education) of nursing student with post test attitude level. The statistically significant difference has found because *p* value 0.03 which is less than 0.05 regarding attitude levels in between male and female. Similarly statistically highly significant difference has found because *p* value = .000 which is less than .05 regarding attitude levels in among at different level of educations.

Conclusion:

The study findings showed that there was a significant improvement in knowledge and good attitude regarding developmental care compare to pre test. The study result will be evidence for the effectiveness of developmental care training programme on knowledge and attitude among the nursing students. NICU staff nurse and student nurse during their clinical posting can help the preterm baby's and their family to decrease the stress, pain and over stimulation and also promote intimate relationship between them by implementing developmental care. The beneficiaries of the developmental care are not only the preterm babies admitted in NICU, their parents, family and community. Developmental care training programme must be implemented as compulsory training programme for all NICU staff nurses and student nurse who posted in NICU and it should be continued in order to improve the quality of nursing care.

Implications:

The findings of the study had implication, guidelines and suggestions for different branches of Nursing Profession (i.e.) Nursing Education, Nursing Practice, Nursing Administration, Nursing Research.

Nursing Education:

- The nursing students and staff nurses must be encouraged to utilize the knowledge and have positive attitude towards developmental care of preterm to maximize neurological development and reduce long term cognitive behavioral problem.
- Finding of the study can provide insight and baseline data for educating nursing students reinforce staff nurse regarding developmental care.

Nursing Research:

- The findings of the study provide empirical evidence for the nursing professional and student to conduct further studies. Studies on developmental care are very few among staff nurse and student nurse so more studies can be taken up in this area.
- The present study creates awareness among the NICU staff nurse and students nurse regarding developmental care and stimulate them to undergo its training programme to provide quality care for preterm admitted in NICU.
- Research related to developmental care should be disseminated to create awareness.

Nursing Services:

- Nurse should have observation skill and provide care as per behavior cues of the preterm.
- Nurses must accept the responsibility of helping mothers to gain knowledge and skills essential for care of preterm to reduce stress among them.

Nursing Administration :

- Administrations can conduct CNE (Continuous Nursing Education) or CME (Continuous Medical Education) programme to create awareness among the Staff Nurses and student nurse to help the preterm babies who are admitted in NICU by reducing stress and hospital stay.

- Nursing administrators can also organize workshop, conference, seminars, etc. related to developmental care periodically. Regular reinforcement helps the nurse to update her knowledge and skill.
- Nursing administrators should ascertain that all NICU nurses have undergone training related to developmental care.

Limitation:

- Time consuming.

Recommendation:

- Replication of the study may be done with further large samples in different setting to validate and generalize the findings.
- The study could be conducted in the hospital among NICU nurses.
- The study could be conducted in the hospital among Mother of preterm.
- All NICU nurse and student nurse (before clinical posting to NICU) should attend Developmental Care training.

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