



## NURSES KNOWLEDGE AND PRACTICE REGARDING DEVELOPMENTAL SUPPORTIVE CARE

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**ABSTRACT** The progresses of science and technology in neonatal intensive care units (NICUs) have contributed to the increased survival of preterm and low birth weight neonates. Quantitative, non-experimental descriptive research design to assess the knowledge and practices regarding Developmental Supportive Care (DSC) of 40 clinical nurses aged between 20 – 60 years old and posted in SNICU, MNICU and PICU of IGIMS, Patna, was conducted w.e.f 31.01.2022 to 08.03.2022 through Non Probability Purposive Sampling Technique. The Neonatal Integrative Developmental Care Model (IDC) was used as conceptual framework. Data was collected through a self structured self reported questionnaire for knowledge assessment and a self structured researcher reported observation checklist for the assessment of practice. Reliability for Knowledge questionnaire was determined by Cronbach's alpha test which was 0.7, found to be acceptable and KR20 formula was used to calculate the reliability of Observation Checklist which was 0.7 with moderate reliability. **Results:** The major findings of the study indicated that the average mean knowledge scores ( $15.6 \pm 5.40$ ) of the nurses were lower than the average mean scores of practice ( $31.1 \pm 8.40$ ). There was a strong positive relationship between the knowledge and practice scores of the nurses calculated through Spearman Rank correlation coefficient ( $R = 0.56$ ). Null hypothesis rejected. 70% Nurses had average Knowledge while only 15% nurses each had poor and good knowledge. On the other hand, 82.5% nurses had satisfactory practice skills followed by 10% having unsatisfactory skills and 7.5% having good skills. The overall distribution of knowledge scores as per work area indicated that MNICU nurses had better knowledge ( $17.85 \pm 6.10$ ) than PICU ( $17.18 \pm 3.13$ ) and SNICU nurses ( $10 \pm 2.97$ ); while the practices of PICU nurses ( $36.12 \pm 9.36$ ) were much better than the MNICU ( $28.46 \pm 7.80$ ) and SNICU nurses ( $26 \pm 7.01$ ). There was no association between the practice scores of the nurses with the demographic variables, while highly significant association was found between knowledge scores and professional qualification at  $p < 0.05$ . The study concluded that to improve the level of NICU nurses' knowledge and performance of DSC, educational programs necessary to train and prepare the nurses in DSC for structural and functional facilities, should be developed with their effectiveness verified.

**KEYWORDS :** Developmental Supportive Care, Knowledge, Nurses, Practice

### Introduction:

The progresses of science and technology in neonatal intensive care units (NICUs) have contributed to the increased survival of preterm and low birth weight neonates. However, factors such as the increase in the amount of equipment and number of invasive procedures, the constant need for light, the presence of ambient noise and the required excessive manipulation during care have resulted in a number of adverse effects. Subsequently, these effects trigger changes in the development of neonates, especially in preterm neonates.<sup>1</sup>

Developmental care is widely practiced in NICUs in developed nations to help minimize risks to infant development. Also, used to minimize infant's stress in the NICU through control of external stimuli like light and sound, clustering of daily care (feeding, diaper changes etc.), positioning or swaddling, and calming techniques. The goal of developmental care is to provide a structured care environment which supports, encourages and guides the developmental organization of the premature and/or critically ill infant. It recognizes the physical, psychological and emotional vulnerabilities of premature and/or critically ill infants and their families and is focused on minimizing potential short and long-term complications associated with the hospital experience.<sup>2</sup>

### Background of the study:

Many neonates are admitted to NICUs every day for different reasons, with premature birth being the main reason. Nutrition, body temperature control, and many internal regulatory systems help set up a foetal biological rhythm inside the uterus. In preterm and low birth weight neonates, this support system is replaced with completely different environmental stimuli in the NICU. They are exposed to an excess of stimuli from noise, light, activity, painful procedures, and separation from the mother which may have long term effects on the infant. NICU acts as a harsh sensory stimulant that is unsuitable for the demands of the developing nervous system and thus exposes the preterm infant to a wide range of morbidities. Therefore, there is a need to change neonatal care practices in NICU to support the neurodevelopmental processes in extra uterine environment.<sup>1</sup>

The developmental care is a broad category based on modification of the nursery environment and care practices which support the ongoing development of the preterm neonates. It includes a group of interventions designed to minimize stress of the NICU environment and to support the behavioural organization of each individual infant. In addition, it enhances physiological stability, protects sleep rhythms, and promotes growth and maturation. A variety of approaches are used

in developmental care: control of external stimuli (auditory, visual, tactile) by noise and light reduction as well as minimal handling, integration of parents, specific supportive behavioural techniques such as non-nutritive sucking, opportunities for grasping, swaddling, general motor containment, kangaroo care, neonate positioning, and pain management. Although a growing body of evidence for developmental care practices, implementation has varied among institutions and widespread adoption has not been achieved yet. There have been few previously reported studies evaluating individualized developmental supportive care in NICU context. Learning the principles of developmental supportive care and understanding the meaning of preterm behavioural cues make it possible for NICU caregivers. So, developmental supportive care program could improve nurses' performance as well as decrease the preterm neonates' stress in NICU.<sup>1</sup>

### Need of the study:

The environment of the developing foetus is characterised by a supported flexed posture; containment, limited light and noise exposure, protected sleep cycles and an unrestricted access to the mother. This positive sensory environment is crucial for normal brain development. In contrast to this, a preterm or unwell neonates are exposed to completely different environmental stimuli with painful procedures, excessive light, noise and handling, lack of containment and reduced ability to move, interrupted sleep and separation from his mother.<sup>3</sup>

Due to the staff oriented nature of the program, the nurse is the executor having a major key role in the success of developmental care, which, in turn necessitates improving the NICU nurses' awareness and knowledge in order for them to exhibit better performance in nursing the developmental care of infants. Due to their full time presence beside the infants' cribs and their close relationship with families, nurses as executors of developmental care must be featured with high levels of competency and awareness. Therefore, enhancing their capability and promoting their nursing care quality for achieving a desirable performance requires scientific as well as practical awareness and knowledge since promoted awareness would lead to improved performance and services. In fact, the major obstacle on the path of developmental care implementation is insufficient knowledge and awareness. Furthermore, if the nurses' perceptions are known, the negative ones could be changed and directed toward the right path; thereby, an effective step could be taken toward providing appropriate and desirable nursing care and performance.<sup>4</sup>

The significance of the study covers the main area of the Preterm and low birth weight infants in NICUs who are exposed to numerous stressors, including painful stimuli, disruption of sleep, excessive noise and light levels, frequent handling associated with medical or nursing procedures and maternal separation and disrupted parenting. In an effort to improve developmental outcomes, management has shifted toward neuro protective strategies and early developmental supportive care.<sup>2</sup>

**Objectives:**

- i. Assess the nurses' knowledge and practices regarding developmental supportive care (DSC) for preterm, low birth weight and sick infants
- ii. Compare the relationship between the Nurse's knowledge and practices regarding DSC.
- iii. Analyse the relationship between the Nurses' knowledge and practice regarding developmental supportive care with their demographic characteristics.

**Hypothesis: H<sub>0</sub>**

- 1: There will be no significant difference in the knowledge and practices regarding DSC in the nurses.
- 2: There will be no significant association between the knowledge and practices of nurses regarding DSC with the selected demographic variables.

**Variables:** Research variables: Knowledge and Practices

**Inclusion Criteria:**

- 1. Nursing Staffs who are between 20 – 60 years old.
- 2. Nursing Staffs irrespective of gender and working status
- 3. Nursing Staffs irrespective of their cadre and experience.
- 4. Stable Neonates of 0 - 28 days of life

**Exclusion Criteria:**

- i. Nursing Staffs who are sick and suffering from mental illness.
- ii. Neonates who are critically ill and on ventilator

**Brief Research Methodology:**

Ethical clearance was taken from the Institutional Ethics Committee, prior to the conduction of the study.

**Research approach:** Quantitative

**Research approach & Research Design:** Quantitative, non-experimental descriptive research design

**Setting:** SNICU, MNICU, PICU (New and Old), IGIMS

**Population:** Nursing officers of IGIMS irrespective of gender

**Sample:** Nurses working in SNICU, MNICU, PICU (Old and New) of IGIMS.

**Sample Size:** 40

**Sampling Technique:** Non Probability Purposive sampling

Validity of the tool: The validation of the content and the tool was done by 04 experts out of whom 01 was from Pediatric Nursing, 01 from Pediatric Surgery and 02 from Paediatric Medicine.

**Method of data collection:**

- Data collection technique and tool: Self structured and self reported Knowledge questionnaire; Self structured Observation Checklist
- Description of the tool:

**TOOL I:** Self structured self administered Knowledge Questionnaire consisting of the following parts scored and interpreted as: Poor (0 - 11), Average (12 - 21), Good (22 - 32)

- Section A: 22 items on Demographic Profile of the nurses.
- Section B: This part consisted of 32 MCQs on the theoretical Nurses' knowledge and practices regarding:

- i. General information about DSC
- ii. Developmental supportive care.
- iii. DSC Practices

**TOOL II:** Self structured Observation Checklist: It was developed by the researcher after reviewing relevant literatures and was used to assess the actual developmental supportive care provided by the nurses in NICU. It consisted of 64 items related to practices, scored and

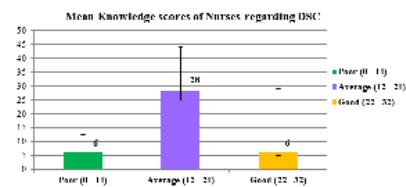
interpreted as: Unsatisfactory (0 – 21), Satisfactory (22 – 42), Good (43 - 64)

**Results:**

Demographic Characteristics: Majority 77.5% nurses were in the age group between 20 – 30yrs, 100% were females and Nursing Officers, 90% were RNRM, 85% were DGNM and Hindu, 42.5% were posted in PICU, 90% had professional experience of less than five years, 60% had less than one yr experience of working in NICU/PICU. 72.5% were on contract with 57.5% working for 8hrs, 65% worked in morning shifts, 100% worked with more than one nursing officer, 50% belonged to nuclear and joint family each, 67.5% were married, 72.5% had a monthly income of Rs 15,000/- – 35,000/-, 75% resided in Urban district, 77.5% had heard about DSC, 32.5% heard and read from books, 87.5% did not have any formal training of DSC and 57.5% reported positively as the unit attempting to create a DSC environment for the neonates.

**Table 1: Knowledge scores of the nurses regarding DSC. N = 40**

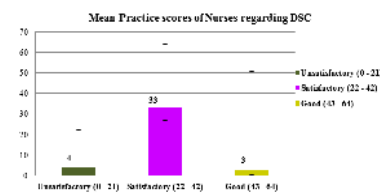
Knowledge scores	n (%)	Mean ± SD	SEM
Poor (0 - 11)	06 (15%)	6.33 ± 1.80	0.73
Average (12 - 21)	28 (70%)	15.85 ± 3.16	0.60
Good (22 - 32)	06 (15%)	22.83 ± 0.90	0.37



**Fig 1: Bar diagram showing the mean Knowledge scores of Nurses regarding DSC**

**Table 2: Practice scores of the nurses regarding DSC. N = 40**

Practice scores	n (%)	Mean ± SD	SEM
Unsatisfactory (0 – 21)	04 (10%)	18.25 ± 1.79	0.89
Satisfactory (22 – 42)	33 (82.5%)	31.15 ± 6.00	1.05
Good (43 – 64)	03 (7.5%)	47.67 ± 2.05	1.19



**Fig 2: Bar diagram showing the mean Practice scores of Nurses regarding DSC**

**Table 3: Relation between Knowledge and Practices of the Nurses regarding DSC. N = 40**

Characteristics	Mean ± SD	SEM	Spearman ρ	Significance
Knowledge	15.6 ± 5.40	0.85	0.56	Strong relationship
Practice	31.1 ± 8.40	1.33		

**Discussion:**

The present study was carried out to assess the nurses' knowledge and practice regarding developmental supportive care. The findings of present study generally indicated average level of nurses' knowledge and satisfactory level of practices of developmental supportive care during daily nursing care procedures which might be due to the knowledge they have attained during their years of education in diploma/ bachelor of nursing. 70% Nurses had average Knowledge while only 15% nurses each had poor and good knowledge. On the other hand, 82.5% nurses had satisfactory practice skills followed by 10% having unsatisfactory skills and 7.5% having good skills. There was a strong positive relationship between the knowledge and practice scores of the nurses calculated through Spearman Rank correlation coefficient (R = 0.56) hence Null hypothesis was rejected. This result was supported by the study undertaken by Abeer Shaban Abd El Motaleb Mousa et al. (2021) whereby the authors concluded that 64.4% nurses had satisfactory level of knowledge regarding DSC and 56.7% had inadequate practice level.<sup>2</sup> whereby the study by Kim Min

–Jung, Kim Tae-Im (2018) indicated that 24.7% (out of 33%) and 3.2% (out of 4%) of the NICU nurses' had average knowledge and performance scores with a statistically significant positive correlation observed between knowledge and performance.<sup>5</sup> Hence, null hypothesis was rejected. The overall distribution of knowledge scores as per work area indicated that MNICU nurses had better knowledge (17.85 ± 6.10) than PICU (17.18 ± 3.13) and SNICU nurses (10 ± 2.97); while the practices of PICU nurses (36.12 ± 9.36) were much better than the MNICU (28.46 ± 7.80) and SNICU nurses (26 ± 7.01).

More than half of the nurses (85%) who had average knowledge and satisfactory practices regarding DSC were diploma holders which might be because developmental supportive care is a new concept, the training of which maximum nurses (87.5%) did not receive. According to findings of the present study, a very high percentage of nurses lacked in the knowledge and practices about postural support and proper positioning, methods to reduce noise, lights and vision, noxious smells; containment, massage, NNS, handling, pain management, healing environment and thermoregulation of the admitted neonates during daily nursing care procedures supported by Abeer Shaban Abd El Motaleb Mousa et al. (2021) study.<sup>3</sup> It might be due to lack of training programs regarding developmental supportive care and lack of equipment to apply proper positioning.

In studying the relation between the nurse's knowledge and demographic variables the finding of the current study viewed that, there was statistical significant relation between the nurse's knowledge scores and professional qualification at  $p < 0.05$ . The present study finding was in same line with Asadi-Noghabi (2014)<sup>6</sup> findings where the results indicated significant relation between nurses' knowledge score and level of education i.e. nurses with more education had more knowledge. There was no association of practice scores of the nurses with the demographic variables.

On the basis of the results the researcher concluded that there were knowledge gap and lack of practices performance related to some statements existing among nurses in the areas concerning developmental supportive care neonates and its management.

Limitations:-Limited sample size with observations done for a small time period due to time boundaries of the study.

#### Conclusion:

Continuous advances in neonatology have increased the chances of survival of preterm and critically ill neonates. Although NICU provides highly specialized medical care, it does not necessarily offer an ideal environment for the development of neonates. Developmental Supportive Care (DSC) is a professional practice, education and research opportunity which nurses needs to explore, evaluate and refine continuously within the rapidly changing technological environment of the NICU. Developmental supportive care is a broad category of interventions that is designed to minimize the stressors in the NICU environment.<sup>3</sup> The current study findings concluded that, there was no statistically significant differences between the nurses' knowledge and practice level.

#### Implications:

The findings of the study have valuable implications towards Nursing education, Nursing practice, Nursing administration and Nursing research with the aim to translate the evidence of this study into guidance and training of the Nurses and other healthcare workers for reducing the neonatal mortality rate thus supporting a healthy growth and development of the neonates admitted in NICU.

#### Recommendations:

1. Setting training and educational programs for nurses to improve their knowledge and Practice regarding Developmental Supportive Care
2. Workshops should be developed by the hospital administration and the HOD's for neonatal nurses about developmental supportive care in NICU.
3. A procedure manual for the developmental supportive care in NICU needs to be developed and standardized.
4. Staff education relating to the psychosocial needs of NICU families and methods of providing support should be provided to all NICU health care professionals.
5. Replication of this study at different places in Bihar, developing an educational program, conducting similar studies on larger samples and

in different geographical areas.

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