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Effectiveness of the IMNCI Training Module on Knowledge Regarding Assessment and Treatment of Under-Five Children Among Nursing Students

Dr. Nutan Kumari[1] Dr. Sarika Yadav[2] Ms Rachna[3] Ms. Kulpooja[4]

[1]Associate Professor, Faculty of Nursing, SGT University, Gurugram (Haryana)122505, India

[2]Associate Dean, Faculty of Nursing, SGT University, Gurugram (Haryana)122505, India

[3]Associate Professor, Faculty of Nursing, SGT University, Gurugram (Haryana)122505, India

[4] Associate Professor, Faculty of Nursing, SGT University, Gurugram (Haryana)122505, India

[*] **Corresponding Author: -**

Dr. Nutan Kumari, 9625814300, Nutan_fnur@sgtuniversity.org

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ABSTRACT

Background: The Integrated Management of Neonatal and Childhood Illnesses (IMNCI) is a comprehensive strategy developed by WHO and UNICEF to address major causes of childhood mortality. Training nursing students in IMNCI is essential to prepare them for quality paediatric care. **AIM**: To evaluate the effectiveness of the Integrated Management of Neonatal and Childhood Illnesses (IMNCI) training module in improving the knowledge of nursing students regarding the assessment and treatment of under-five children. **Methods:** A quasi-experimental pre-test and post-test design was employed to assess the effectiveness of the IMNCI training module among 100 nursing students. Participants included students from B.Sc. Nursing 6th Semester, Post Basic B.Sc. Nursing, and M.Sc. Nursing 1st Year, selected through purposive sampling. A structured questionnaire was used to assess knowledge before and after a six-day (40-hour) IMNCI training conducted by certified trainers. Data were analysed using descriptive statistics and paired t-test to evaluate knowledge improvement. Chi-square test was applied to assess associations between demographic variables and knowledge scores. **Results**: Out of 100 nursing students, the study found a significant improvement in knowledge levels after IMNCI training. Pre-test data showed that only 20% of students had adequate knowledge, while 30% had inadequate and 50% had moderate knowledge. Post-training, 64% achieved adequate knowledge, with a decline in inadequate knowledge to just 8%. The paired t-test analysis revealed a statistically significant improvement in mean knowledge scores from **46.96 ± 9.08** (pre-test) to **68.22 ± 9.54** (post-test), with a **t-value of 15.15** and **p < 0.001**, indicating that the IMNCI training module was highly effective in enhancing the students' knowledge regarding the assessment and treatment of under-five children. **Conclusion:** The IMNCI training module significantly improved the knowledge of nursing students. Integrating IMNCI into the undergraduate and postgraduate nursing curriculum is recommended to strengthen child health services.

INTRODUCTION

The Integrated Management of Neonatal and Childhood Illnesses (IMNCI) module, developed by the World Health Organization (WHO) and UNICEF, aims to reduce childhood morbidity and mortality by improving the quality of healthcare for children under five years old. The IMNCI strategy combines improved case management of common childhood illnesses, enhanced health systems, and improved family and community health practices. Nursing students, as future frontline healthcare providers, are critical recipients of this training.

Effective nursing education is essential to prepare students to handle paediatric cases competently. Traditional nursing curricula often fall short in providing the depth of practical skills and up-to-date knowledge required to manage complex childhood illnesses. Therefore, integrating the IMNCI module into nursing education has the potential to bridge this gap.

This study assesses the effectiveness of IMNCI module teaching by certified IMNCI trainers on the knowledge acquisition of nursing students. By focusing on a structured, hands-on approach delivered by experienced trainers, this research aims to determine whether such targeted training significantly enhances the students' ability to manage neonatal and childhood illnesses compared to traditional teaching methods. The outcomes of this study could inform curriculum development and training practices in nursing education, ultimately contributing to better healthcare outcomes for children.

NEED OF THE RESEARCH STUDY

The burden of neonatal and under-five mortality continues to be a critical public health concern in India and other developing countries. A significant proportion of these deaths are preventable through timely identification and appropriate management of common childhood illnesses such as pneumonia, diarrhoea, malaria, malnutrition, and neonatal infections. In response, the World Health Organization (WHO) and UNICEF introduced the

Integrated Management of Neonatal and Childhood Illnesses (IMNCI) strategy, which emphasizes case management skills of healthcare providers and improved family and community practices.

Nurses form the backbone of the healthcare delivery system, especially in resource-constrained settings. However, studies indicate a gap in the practical knowledge and preparedness of nursing students to handle paediatric emergencies and manage common childhood illnesses effectively. Despite the availability of IMNCI guidelines, inadequate training, and lack of structured integration into nursing curricula pose significant challenges.

There is an urgent need to assess whether focused IMNCI training improves the competence of nursing students in managing neonatal and childhood illnesses. Evaluating the effectiveness of such training can provide valuable insights for curriculum planners, educators, and policymakers. If proven effective, the IMNCI module can be widely adopted as a standardized component of nursing education, ultimately contributing to the national goal of reducing child morbidity and mortality.

This research study, therefore, aims to bridge the gap by evaluating the impact of structured IMNCI training on the knowledge levels of nursing students, thereby supporting the development of a more skilled and responsive nursing workforce in paediatric care.

Objective of the Study: -

1. To assess the level of knowledge regarding assessment and treatment of under five children based on IMNCI guidelines among nursing students
2. To Evaluate the effectiveness of IMNCI module training programme on the knowledge levels of nursing students.
3. to find out association between level of knowledge, regarding assessment and treatment of under five children based on IMNCI guidelines among nursing students with selected demographic variables.

METHODOLOGY OF THE STUDY:

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Research Design: - Quasi Experimental Research study

One Group Pre-test and Post Test

Purposive Sampling technique

Study Setting and Participants:
The study was conducted at Nursing College
SAMPLE SIZE: - 100 Nursing Students B.SC, MSC and Post Basic Nursing Students

Intervention
IMNCI Training Module, 40 Hours by Certified Trainers: Theory + Practice.

Data Collection Tool

1. **Demographical Variables To assess the Baseline data**
2. **Structured Knowledge Questionnaire**

Data Collection Methods: -

The data collection was carried out following ethical clearance from the institutional ethics committee and informed consent from the participants. A total of 100 nursing students from B.Sc. Nursing (6th semester), Post Basic B.Sc. Nursing, and M.Sc. Nursing (1st year) were selected using purposive sampling. Initially, a pre-test was administered using a structured and validated multiple-choice questionnaire based on IMNCI guidelines to assess the baseline knowledge of participants regarding the assessment and treatment of under-five children.

Following this, the participants underwent a six-day (40-hour) IMNCI training module delivered by certified trainers. The training included interactive lectures, case-based discussions, skill demonstrations, and simulation-based learning. After the completion of the training, a post-test using the same questionnaire was conducted to assess the effectiveness of the intervention. All responses were collected and compiled for analysis. Confidentiality of the participants was maintained throughout the process, and they were informed that their participation was voluntary and that the data collected would be used solely for research.

RESULT AND DISCUSSION

Table:1

Frequency and Percentage distribution of the study sample

N=100

Demographic Variable	Category	Frequency
Age	20–21 years	94
	22–23 years	6
	Above 23 years	0
Gender	Male	12
	Female	88
Monthly Income	₹15,000–20,000	56
	₹20,000–25,000	24
	₹25,000–30,000	12
	₹30,000+	8
Religion	Hindu	86
	Muslim	14
Residence	Urban	48
	Rural	52
Father's Education	No Formal Education	16
	Primary Education	46
	Secondary Education	30
	Graduate	8
Mother's Education	No Formal Education	34
	Primary Education	28
	Secondary Education	34
	Graduate	4
Academic % (Last Year)	<50	4
	51–60%	22
	61–70%	48
	>70%	26

Table Number: 1 shows the demographic data of 100 nursing students shows that the majority (94%) were aged between 20–21 years, indicating that most participants were in their early twenties and likely in the later stage of their undergraduate nursing program. Only 6% were aged 22–23 years, and none were above 23 years.

In terms of gender, female students (88%) made up most of the sample, reflecting the common gender distribution trend in nursing education, while male students accounted for only 12%.

Regarding monthly family income, more than half of the students (56%) reported incomes between ₹15,000–20,000, followed by 24% in the ₹20,000–25,000 range. A smaller percentage of families earned ₹25,000–30,000 (12%) and above ₹30,000 (8%), suggesting a predominantly lower-middle-income background.

With respect to religion, most participants were Hindu (86%), while 14% were Muslim. This reflects the local demographic trend of the study location.

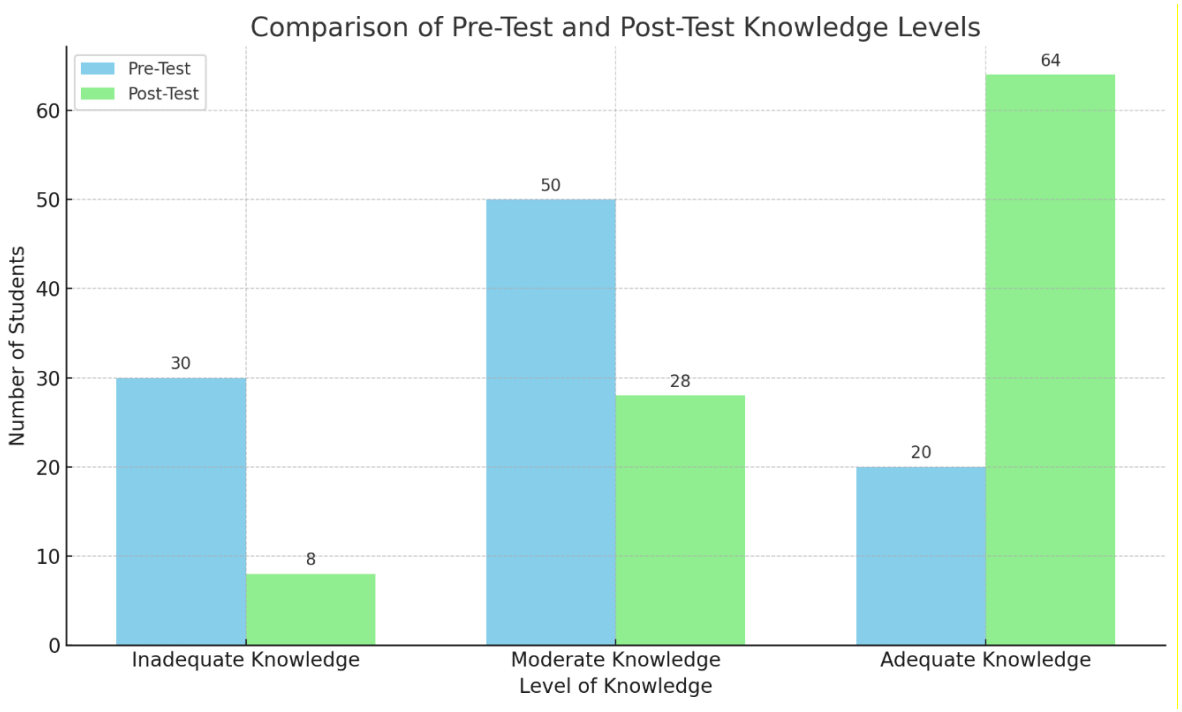
In terms of residence, participants were balanced, with 52% from rural areas and 48% from urban areas, which indicates a diverse socio-geographic background of the students.

When analysing father's educational background, a large number had completed only primary education (46%), while 30% had secondary education. A smaller number had no formal education (16%) or were graduates (8%). Similarly, mother's education was lower overall, with 34% having no formal education, another 34% with secondary education, and only 4% being graduates.

Finally, in terms of academic performance in the previous year, 48% of students had scored between 61–70%, followed by 26% who scored above 70%, suggesting that most students had moderate to good academic records. Only 4% scored below 50%.

Table 2
Comparison of Pre-Test and Post-Test Knowledge Levels Based on IMNCI Guidelines Among Nursing Students (N = 100)

Level of Knowledge	Pre-Test (n)	Pre-Test (%)	Post-Test (n)	Post-Test (%)
Inadequate Knowledge	30	30%	8	8%
Moderate Knowledge	50	50%	28	28%
Adequate Knowledge	20	20%	64	64%



Represent the marked improvement in the Adequate Knowledge category from 20% (Pre-Test) to 64% (Post-Test) after IMNCI training. Inadequate Knowledge significantly reduced from 30% to 8%, indicating effective learning outcomes. Moderate knowledge also saw a decline as more students transitioned to the adequate category post-training.

Table 3

Comparison of Mean Knowledge Scores Before and After IMNCI Training

Variable	Mean ± SD	t-value	p-value	Inference
Pre-Test Score	46.96 ± 9.08			
Post-Test Score	68.22 ± 9.54	15.15	< 0.001	Statistically Significant (p<0.05)

Table 3: - Represent the paired t-test was conducted to assess the effectiveness of IMNCI training on nursing students' knowledge scores. The results revealed a significant increase in post-test scores (Mean = 68.22, SD = 9.54) compared to pre-test scores (Mean = 46.96, SD = 9.08), with a **t-value of 15.15** and a **p-value < 0.001**. This indicates a **highly significant improvement** in knowledge following the intervention.

DISCUSSION

The findings of the present study are consistent with several other research investigations that evaluated the effectiveness of IMNCI training among nursing students. A study conducted **by Kumari et al. (2021**) in Uttar Pradesh among 80 B.Sc. Nursing students using a pre-test/post-test quasi-experimental design reported a significant increase in knowledge scores following IMNCI training. The pre-test mean score was 42.6 ± 8.2, which improved to 66.3 ± 7.5 after the intervention. These results closely align with the current study, where the post-test mean score increased from 46.96 to 68.22, indicating that IMNCI training effectively enhances theoretical knowledge and clinical preparedness in paediatric care.

Similarly, **Devi and Thomas (2019)** assessed the knowledge level of 60 final-year nursing students and found that only 18% of students had adequate knowledge before the intervention. This figure rose to 70% after IMNCI training, with the change being statistically significant ($p < 0.001$).

Furthermore, **Rani et al. (2020) ca**rried out a study among 100 nursing students using a pre-experimental design. The pre-test mean score was reported as 44.3 ± 10.1, which rose to 67.8 ± 9.3 post-intervention, with a t-value of 14.78 and a p-value < 0.001. These figures are comparable to the present study, further validating the effectiveness of the IMNCI module.

Table: 3

Association Between Demographic Variables and Level of Knowledge of Nursing Students Regarding IMNCI Guidelines (N = 100)

Demographic Variable	Category	Inadequate Knowledge	Moderate Knowledge	Adequate Knowledge	Chi-Square Value (x^2)	p-value
Age	20-21 years	28	44	22	5.122	0.077 ^{ns}
	22-23 years	2	6	4		
Gender	Male	6	4	2	7.135	0.028 *
	Female	24	24	62		
Monthly Income	₹15,000-20,000	18	28	10	12.764	0.013 *
	₹20,000-25,000	6	12	6		
	₹25,000-30,000	4	6	2		
	₹30,000+	2	2	4		

Religion	Hindu	24	40	22	4.124	0.127 NS
	Muslim	2	2	0		
	Christian	4	6	2		
Residence	Urban	14	18	16	3.831	0.147 NS
	Rural	16	22	48		
Father's Education	No Formal Education	8	6	2	9.821	0.043 *
	Primary Education	12	20	14		
	Secondary Education	6	12	12		
	Graduate	4	4	6		
Mother's Education	No Formal Education	12	14	8	6.137	0.191 NS
	Primary Education	8	12	8		
	Secondary Education	8	12	14		
	Graduate	2	2	2		
Academic % (Last Year)	<50	4	0	0	14.763	0.011 *
	51–60%	10	8	4		
	61–70%	12	24	12		
	>70%	6	8	22		

Table 3: - The Chi-Square analysis was performed to determine the association between selected demographic variables and the level of knowledge regarding the assessment and treatment of under-five children based on IMNCI guidelines among nursing students. The findings revealed a statistically significant association between gender and knowledge level, indicating that female students demonstrated higher adequate knowledge scores compared to male students. Similarly, monthly family income was found to be significantly associated with knowledge levels, with students from families earning ₹30,000 and above showing better outcomes. The father's education level also showed a significant association, suggesting that students whose fathers had higher educational qualifications were more likely to achieve adequate knowledge.

In contrast, no statistically significant association was found between knowledge level and variables such as age, religion, residence, and mother's education. However, a highly significant association was observed between previous year academic performance and the level of knowledge. Students who had scored higher percentages in their previous academic year tended to perform better in the post-test, indicating that academic background plays a crucial role in knowledge acquisition. Overall, the results suggest that socio-economic and educational factors, particularly gender, income, father's education, and academic achievement, significantly influence the effectiveness of IMNCI training among nursing students.

CONCLUSION

The present study clearly demonstrates that the Integrated Management of Neonatal and Childhood Illnesses (IMNCI) module significantly enhances the knowledge levels of nursing students regarding the assessment and treatment of under-five children. The findings revealed a marked improvement in post-test knowledge scores following the structured training, with a statistically significant difference observed between pre- and post-intervention results ($p < 0.001$). The shift from inadequate and moderate knowledge levels to adequate knowledge indicates the effectiveness of the module in strengthening clinical competencies.

Given the rising need for competent child healthcare professionals, the study supports the integration of IMNCI training into nursing curricula at both undergraduate and postgraduate levels. Such initiatives not only build theoretical understanding but also foster evidence-based clinical decision-making among future healthcare providers. Therefore, implementing IMNCI as a core component of nursing education has the potential to contribute meaningfully to reducing child morbidity and mortality in the long run.

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