

Effectiveness of a Blended Learning Educational Intervention on Knowledge and Awareness of Palliative Care among B.Sc. Nursing Students in a Selected Institution

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Abstract

This study evaluates the effectiveness of a Blended Learning Educational Intervention on knowledge and awareness of palliative care among B.Sc. Nursing students in a selected institution.

Our study's baseline Pre-Test results (mean = 5.49) exposed gaps in student understanding of palliative care, emphasizing the need for improved teaching strategies.

In conclusion The Post-Test results (mean = 8.04), supported by strong statistical significance ($p < 0.001$) and a large effect size ($d = 1.18$), demonstrated that the hybrid module had a transformative impact.

Keywords: *Blended Learning, Knowledge and awareness, Palliative Care.*

1. Introduction

Background of the study-

Palliative care is increasingly recognized as an essential component of healthcare worldwide. The World Health Organization

(WHO, 2020) defines palliative care as “an approach that improves the quality of life of patients and their families facing life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems—physical, psychosocial and spiritual.” Unlike curative treatment, palliative care does not aim to cure disease but focuses on alleviating symptoms, providing comfort, supporting families, and ensuring dignity in dying.

According to the Global Atlas of Palliative Care (WHO & WPCA, 2014), more than 40 million people require palliative care annually, yet only about 14% actually receive it. The majority of those in need—nearly 78%—live in low- and middle-income countries where services are underdeveloped. The global burden of diseases such as cancer, cardiovascular conditions, diabetes, neurological disorders, and chronic respiratory illnesses makes palliative care a critical priority in healthcare systems.

In India, the demand for palliative care is particularly acute. The Indian Association of Palliative Care (IAPC, 2019) estimates that less than 2% of the Indian population has access to palliative care services. The Quality of Death Index (The Economist Intelligence Unit, 2015) ranked India 67th out of 80 countries, indicating severe deficiencies in the delivery of end-of-life care. While Kerala has pioneered a community-based model of palliative care that is globally acclaimed, other states, including Uttar Pradesh, lag significantly in developing and sustaining structured palliative care services.

Nurses form the backbone of healthcare delivery and are central to palliative care services. They spend the maximum time

with patients, provide direct care, communicate with families, manage symptoms, and play an important role in emotional and psychosocial support. Nursing students, as future professionals, must therefore be trained early in the principles and practices of palliative care. However, several studies highlight gaps in knowledge, attitudes, and practices among nursing students. For example, Rani et al. (2017) found that 72% of undergraduate nursing students had only average knowledge of palliative care, with notable deficiencies in communication and pain management. Similarly, Rajeshwari & Sailaxmi (2019) revealed that undergraduate students had poor knowledge of ethical and holistic aspects of palliative care. These findings reflect a widespread challenge across India and other LMICs.

Traditional teaching methods in nursing—such as didactic lectures and textbook-based learning—are often inadequate to prepare students for the sensitive and complex demands of palliative care. Students require experiential, interactive, and reflective methods that not only impart knowledge but also nurture empathy, communication, and ethical decision-making. With advances in education, blended or hybrid learning has emerged as a promising strategy. Blended learning combines face-to-face methods (lectures, demonstrations, skill practice, discussions, role play) with technology-mediated strategies (recorded lectures, online quizzes, digital case scenarios), thus offering a more holistic and flexible learning environment.

Research shows that blended learning is effective in enhancing knowledge and critical thinking in health sciences education. McCutcheon et al. (2015)

reported that blended learning strategies improved students' clinical competencies and long-term retention. Lau et al. (2016) further demonstrated that blended approaches improved satisfaction and problem-solving skills in nursing education.

Thus, there is a strong global, national, and educational rationale for exploring innovative teaching strategies like blended learning workshops to strengthen palliative care education among nursing students.

Need of the study

The need for palliative care is growing worldwide due to the rising prevalence of chronic, life-limiting illnesses. According to the Global Burden of Disease Study (2017), non-communicable diseases account for over 60% of deaths in India, many of which would benefit from palliative care interventions. Despite this, palliative care remains poorly integrated into the healthcare system, and undergraduate nursing curricula often do not provide adequate exposure to its concepts and practices. Nursing students are frequently exposed to patients with terminal illnesses during their clinical postings. Without proper knowledge and training, they may experience uncertainty, lack of confidence, or distress in managing patients at the end of life. Several studies have documented this gap. Palliative care education is therefore essential for undergraduate nursing students. By providing structured training in communication, ethics, pain management, end-of-life care, and dignity in dying, students can be better prepared to deliver compassionate, patient-centered care. However, given the academic workload and limited teaching resources in nursing institutions, innovative teaching-learning

methods are required. Blended learning is particularly suited to this context. It allows students to combine classroom learning with self-paced digital resources, enhancing flexibility and engagement. For example, face-to-face sessions can provide role play and discussion opportunities to practice communication and ethical decision-making, while online modules and quizzes can reinforce theoretical knowledge. Such an approach also aligns with the current trends in higher education, where digital literacy and self-directed learning are emphasized. The present study aims to evaluate the effectiveness of a blended learning workshop on palliative care among B.Sc. Nursing 4th semester students. By comparing pre-test and post-test knowledge scores, the study will provide evidence on whether blended learning is effective in filling existing knowledge gaps. The findings will also guide educators and policymakers to integrate structured palliative care modules into nursing curricula. The results of this study have the potential to contribute to three important areas:

- (1) Nursing Education: Providing evidence to integrate palliative care into undergraduate curricula using innovative methods.
- (2) Nursing Practice: Equipping students with skills that will translate into improved patient care in clinical settings.
- (3) Health System Impact: Preparing future nurses who can contribute to the expansion and strengthening of palliative care services in India.

Scope of the study-

The result of this study can have great impact on knowledge and awareness of palliative care among B.Sc. Nursing 4th Semester students. The study focuses on delivering knowledge and awareness of palliative care such as its importance, good and bad communication, ethics, pain

management, role and responsibilities in B.Sc. Nursing students.

Statement of the problem-

Evaluating the effectiveness of a Blended Learning Educational Intervention on knowledge and awareness of palliative care among B.Sc. Nursing students in a selected institution.

Objectives of the study-

- To assess the pre-test and post-test scores of Blended Learning Educational Intervention on palliative care among B.Sc. Nursing students.
- To determine the effectiveness of Blended Learning Educational Intervention on palliative care among B.Sc. nursing students.

Hypothesis-

H₁: There will be significant difference between the mean pre-test score and post-test score of Blended Learning Educational Intervention on knowledge and awareness of palliative care.

Operational definitions-

Effectiveness: In this study 'effectiveness' refers to the extent to which Blended Learning Educational Intervention will bring about changes in knowledge about Palliative care among B.Sc Nursing Students.

Blended Learning Educational Intervention: In this study, Blended Learning Educational Intervention refers to an educational strategy to enhance the knowledge about palliative care through a planned integration of Face-to-face sessions (lectures, demonstrations, skill practice, discussions, role play), and Technology-mediated learning (recorded lectures, quiz).

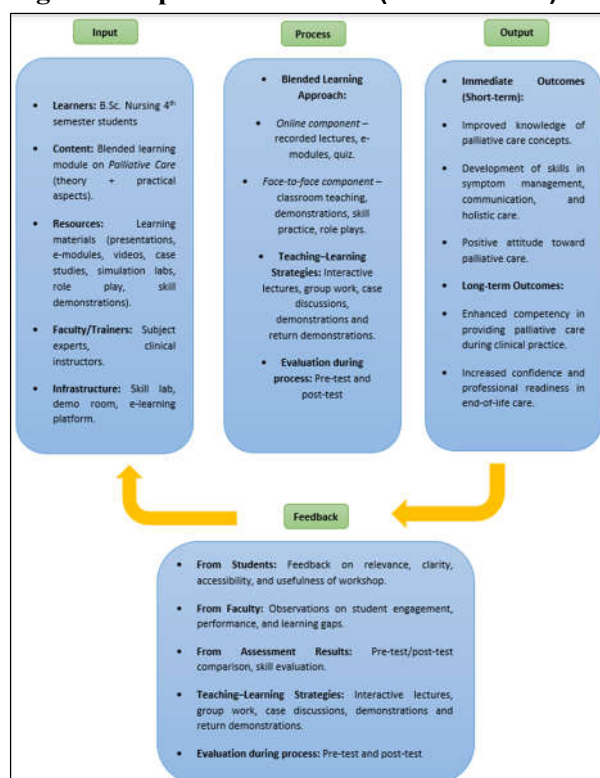
Palliative care: In this study, Palliative care refers to a specialized area of nursing aimed at improving quality of life for patients with serious and life limiting illnesses. The key components included are: concept, evolution, history, components, need, ethical aspects, effective communication and dealing with extremes, pain management, essential care, end of life care, dying with dignity.

B.Sc. Nursing: In this study it refers to nursing students who are studying in B.Sc. 4th semester.

Delimitations-

- Study is delimited to B.Sc. Nursing 4th semester students.
- Study is delimited to students who are willing to participate.
- Sample size is delimited to 40 students in a day.
- Study setting is delimited to GIMS, Greater Noida.

Fig. 1 Conceptual framework (IPOF Model)



2. Methodology

Research Approach- Quantitative research approach

Research Design- Pre-experimental one group pre-test and post-test research design

Variables

Independent variable: Blended Learning Educational Intervention on palliative care

Dependent variable: Knowledge and awareness of B.Sc. Nursing students on palliative care.

Setting- Skill Lab

Population – B.Sc. Nursing Students

Sample - B.Sc. Nursing 4th semester Students

Sampling Technique – Purposive

Sample Size- 73

3. Result and Data Analysis

All three stages include the full cohort (n = 73). For Pre-Qualifying (15 marks), the mean was 11.46 (76.4%). For Pre- and Post-Test (10 marks), raw scores were provided and paired for all 73 students.

Objective 1: To assess the pre-test and post-test scores. The descriptive analysis demonstrated that the mean Pre-Test score was 5.49 (SD = 1.68), while the Post-Test mean increased to 8.04 (SD = 1.45) out of a maximum of 10. The Pre-Test distribution indicated that many students scored just around the competency threshold ($\geq 5/10$), with some even scoring as low as zero. This highlights limited baseline knowledge of palliative care.

In contrast, the Post-Test scores clustered tightly around higher values (8–10), with the minimum score rising to 3/10 and the maximum reaching 10/10. The 95% confidence intervals for the two means did

not overlap (Pre-Test: 5.11–5.88; Post-Test: 7.71–8.37), suggesting a statistically and practically meaningful difference.

Interpretation: These findings confirm that the students' knowledge substantially improved following the blended learning intervention. The shift in score distributions clearly illustrates that the workshop enabled students not only to retain core concepts but also to demonstrate mastery-level understanding of palliative care principles.

Table 1

Stage	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum	95% CI of Mean
Pre-Test	73	5.49	1.68	0.19	0.0	7.0	[5.11, 5.88]
Post-Test	73	8.04	1.45	0.17	3.0	10.0	[7.71, 8.37]

Students began with a Pre-Test mean of 5.49 (SD = 1.68) and improved to a Post-Test mean of 8.04 (SD = 1.45). The confidence intervals show minimal overlap, suggesting a clear improvement after the hybrid module

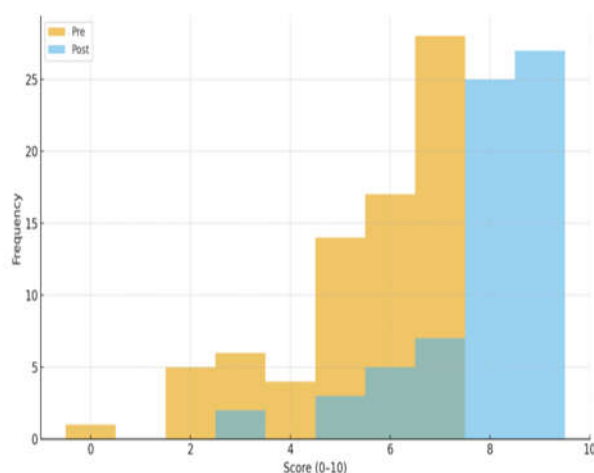


Figure 2: Score distributions for Pre-Test and Post-Test (n = 73).

Objective2: To determine the effectiveness of hybrid module-based learning

The paired-samples *t*-test revealed a mean gain of 2.55 marks (95% CI: 2.05–3.04). This difference was highly significant, $t(74) = 10.25, p < 0.001$. The effect size, Cohen's $d_z = 1.18$, falls in the large category, meaning that the observed difference was not only statistically significant but also educationally substantial. $\eta^2 = 0.59$, indicating that nearly 60% of the variance in scores can be attributed to the intervention itself.

Robustness checks confirmed the finding: although Shapiro–Wilk indicated slight deviation from normality in the difference scores, the Wilcoxon Signed-Rank Test also produced a significant result ($p < 0.001$). This convergence of results across parametric and non-parametric methods confirms that the intervention effect is genuine and not an artifact of distributional assumptions.

The McNemar test provided further evidence in terms of competency attainment. Before the workshop, about 55% of students scored $\geq 5/10$; afterwards, this figure rose to approximately 95%. Specifically, 16 students moved from “fail” to “pass,” while only 2 regressed, yielding $\chi^2 = 9.389, p = 0.002$. This demonstrates that the intervention not only improved average scores but also shifted a significant portion of the cohort into the competent category.

Interpretation: The hybrid module was highly effective in transforming knowledge levels. The effect size is among the strongest reported in nursing education interventions, underscoring the pedagogical value of blending interactive, technology-enabled learning with structured instruction.

Table 2: Paired Samples Statistics

Measure	Mean	N	Std. Deviation	Std. Error Mean
Pre-Test	5.49	73	1.68	0.19
Post-Test	8.04	73	1.45	0.17

Table 3: Paired Samples Test

Pair	Mean Difference	Std. Deviation of Diff	Std. Error Mean	95% CI Lower	95% CI Upper	t	df	Sig. (2-tailed)
Post – Pre	2.55	2.15	0.25	2.05	3.04	10.250	74	7.545e-16

Table 4: Effect Size & Robustness

Cohen's d_z	η^2 (paired)	Shapiro-Wilk W (diff)	Shapiro p	Wilcoxon W (post>pre)	Wilcoxon p
1.184	0.587	0.956	0.0103	2643.000	5.143e-12

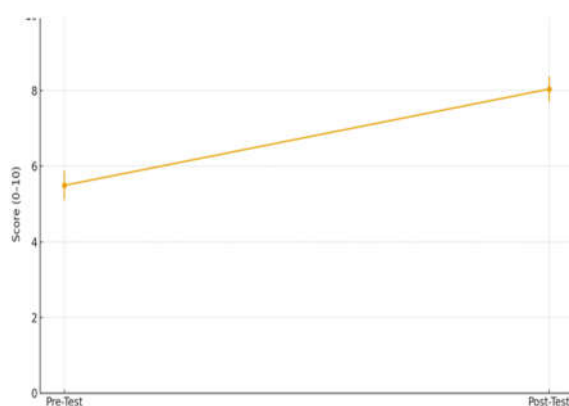
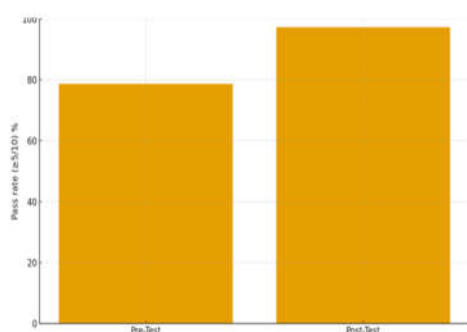


Figure 3: Paired means with 95% CI (n = 73).

Interpretation: The paired t-test shows a highly significant gain with a large effect size, confirming that the hybrid module substantially improved knowledge. Non-parametric Wilcoxon results agree, so the inference is robust to normality violations.

Table 5: McNemar Test for Competency ($\geq 5/10$)

Fail→Pass (b)	Pass→Fail (c)	McNemar χ^2	df	p
16	2	9.389	1	2.183e-03

Figure 4: Competency shift ($\geq 5/10$) from Pre-Test to Post-Test (n = 73).

Objective 3: To compare the effectiveness of post-test scores with other stages

When the Post-Test was compared with the Pre-Qualifying and Pre-Test stages, a clear hierarchy emerged:

- Pre-Qualifying (after video exposure): 11.46/15 (76.4%)
- Pre-Test: 5.49/10 (54.9%)
- Post-Test: 8.04/10 (80.4%)

Although Pre-Qualifying scores initially seemed relatively high, they reflected immediate recall after exposure to recorded material. The subsequent Pre-Test, conducted under examination conditions, revealed that this knowledge was not retained, as the mean dropped to 54.9%. This underlines the limitation of one-time passive exposure.

Following the hybrid module, however, Post-Test performance not only exceeded the Pre-Test but also surpassed the Pre-Qualifying level. This indicates that hybrid teaching methods were more successful than one-time video exposure in ensuring retention, conceptual clarity, and application of knowledge.

Interpretation: The Post-Test results highlight the superiority of blended learning over passive methods. The module not only bridged knowledge gaps but also enabled long-term retention and higher-order learning, proving that structured, active teaching strategies are necessary for complex topics like palliative care.

4. Conclusion

- The baseline Pre-Test results (mean = 5.49) exposed gaps in student understanding of palliative care, emphasizing the need for improved teaching strategies.
- The Post-Test results (mean = 8.04), supported by strong statistical

significance ($p < 0.001$) and a large effect size ($d = 1.18$), demonstrate that the hybrid module had a transformative impact.

- The competency rate jumped from 55% to 95%, proving that the intervention was not just marginally effective but fundamentally shifted students into the competent category.
- The comparison across stages shows that while video exposure (Pre-Qualifying) gave short-term gains, the hybrid module ensured retention and mastery, confirming its pedagogical superiority.
- Dissemination of this research supports scaling hybrid modules in nursing curricula nationwide, particularly in critical areas like palliative care.

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