

Special Article

Building Palliative Care Capacity in North India: A Multicenter Approach



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Abstract

Context. In low-resource settings like Northern India, palliative care providers often lack adequate training, institutional support, and interdisciplinary collaboration that are indispensable for effective implementation.

Objectives. This article highlights strategies to build palliative care capacity through education, interdisciplinary collaboration, and system-level interventions in Northern India. The article describes a palliative care capacity-building project executed from 2023 through 2025. It presents scalable approaches to overcome barriers to palliative care, enhance palliative care competencies, and expand palliative care infrastructure.

Material and Method. The project proceeded in three phases and began with the selection and development of nine centers of excellence (Phase I), followed by associating each center with ten district hospitals to embed palliative care within the region (Phase II). Phase III focused on palliative care training for providers in 90 district hospitals. The project assessed capacity and quality improvements at the centers and evaluated providers' palliative care knowledge post-training in the district hospitals.

Results. The centers of excellence reported substantial capacity and continued improvements in palliative care delivery throughout the project. Physicians and nurses affiliated with the district hospital showed significant and lasting knowledge gains after palliative care training.

Conclusion. These results demonstrate significant progress in palliative care capacity with the region, but they, also, underscore the need for ongoing efforts in training, research, and systematic record-keeping. The project's success in its three phased approach illustrates the potential for education, collaboration, and system-level support to strengthen

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palliative care capacity. *J Pain Symptom Manage* 2026;71:e133–e140. © 2025 American Academy of Hospice and Palliative Medicine. Published by Elsevier Inc. All rights are reserved, including those for text and data mining, AI training, and similar technologies.

Key Words

Palliative care, capacity building, quality, India, education, training

Key Message

This article presents a multicenter palliative care capacity-building project in North India, that was conducted from 2023 to 2025 as part of a broader global initiative. Through institutional outreach and targeted training, this three-phased project enhanced palliative care knowledge and service reach in the region. The article describes scalable solutions to address palliative care gaps in resource-limited settings and informs global efforts toward equitable palliative care access.

Introduction

Palliative care provides a comprehensive, multidimensional approach towards care aimed at improving the wellbeing of patients and their families when they are confronted with life-threatening medical conditions. Ideally, palliative care should be integrated into all healthcare services.¹ Yet in many parts of the world, including developing regions such as North India, palliative provision remains limited and uneven.² At the same time, however, the need for palliative care has been steadily increasing in North India,³ driven by a complex interplay of demographic, epidemiological, and societal factors. Because of a significant rise in the prevalence of noncommunicable diseases, for instance chronic kidney disease, cancer and cardiovascular diseases in the region, the demand for specialized care that prioritizes the quality of life has never been more urgent.⁴ Since the population is, also, gradually aging and access to early diagnosis and treatment is limited, patients tend to present themselves for treatment in advanced stages of illness and the burden on patients and families facing life-threatening conditions is immense.⁵ Due to the fact that palliative care services remain underdeveloped in many parts of North India,⁶ palliative care faces considerable challenges in meeting the needs for palliative care within the population.

A major roadblock to progress in palliative care in North India is the lack of palliative care knowledge among both healthcare practitioners as well as the general population.⁷ The assumption that the sole purpose of medicine is to cure discourages timely referral to palliative care. Many health care professionals and lay persons continue to view it narrowly as end-of-life care, rather than as comprehensive support that can improve wellbeing at earlier stages of illness.⁸ North India requires a coordinated effort to expand training,

raise public and professional awareness, and embed palliative care more firmly within existing health services.

This article provides a capacity building framework to scale up palliative services in North India through the effective use of available medical facilities and supporting consistent progress through training. The article describes and evaluates the models' achievements and outcomes using a mixed-methods approach analyzing qualitative and quantitative data collected through in-person field visits and through surveys which were conducted online and in-person on paper.

Description of the Capacity Building Project

The project progressed in three phases over two years (February 2023 through February 2025). [Fig. 1](#) provides a schematic overview of the capacity building project. Phase I involved the selection and development of nine centers of excellence in palliative care, which had already started palliative care services through the national level Cancer Treatment Center (CTC) Palliative Care program. This program was started by All India Institute of Medical Sciences (AIIMS), New Delhi, the Asia Pacific Hospice Network and the Lien Collaborative and aimed to increase the availability of palliative care services.⁹ The nine nodal centers were AIIMS Rishikesh Uttarakhand, AIIMS Jodhpur Rajasthan, Rabindranath Tagore Medical College Udaipur Rajasthan, Banaras Hindu University Varanasi Uttar Pradesh, Cancer Research Institute Himalayan Institute of Medical Sciences Dehradun Uttarakhand, Dayanand Medical College Ludhiana Punjab, Government Medical College and Hospital Chandigarh, Government Medical College Srinagar J&K, Government Hospital Gandhi Nagar Jammu and Kashmir. A two-day online palliative care refresher course was conducted on May 6 and 13, 2023 for 20 doctors and 14 nurses who were already providing palliative care in the nine nodal centers. An additional in-person meeting was held on July 8 at AIIMS Delhi with representatives of the nine nodal centers to plan the further course of the project and schedule dates for in-person visits by two project staff members to assess the palliative care services. In addition to this, data on the palliative care services in the nine nodal centers were collected through a Google form, which asked a representative of each center to respond to questions



Fig. 1. Schematic overview of the capacity building project.

regarding palliative care inpatient department (IPD), palliative care outpatient department (OPD), pharmacy, and opioid procurement services. The representatives were asked to complete the form at two time points, in February and August 2023, to track changes in palliative care development and consistency of palliative care services.

Phase II began with the in-person site visits by project staff from August 2023 through January 2024. Phase II also aimed to associate each of the nine centers of excellence with ten district hospitals. The project leaders requested all nodal centers to reach out to their area's health care management officers to send a list with ten district hospitals along with the names of two doctors and two nurses who were going to participate in the capacity building workshop for their respective hospital. The health care management officers manage all government health care employees within their area.

Phase III consisted of training the doctors and nurses selected from the 90 district hospitals so that they would be able to take the lead in the establishment of palliative care services in their hospitals. A workshop was organized for them in AIIMS National Cancer Institute Jhajjar, Haryana on July 20 and 21, 2024. This training was modelled on the IAPC FCEPC which stands for Foundation Course in the Essentials of Palliative Care. The aim of this foundation course is to teach participants the essential principles of and approaches to palliative care so that they can implement these in every-day practice and, in this way, improve patient care and outcomes. The course emphasizes symptom management in palliative care and handling difficult conversations.¹⁰ The participants were asked to undergo a knowledge test before the beginning of the

training and at the very end. They were, again, asked to complete the knowledge test in January 2025, six months after the training. The knowledge test included two tools: the Palliative Care Knowledge Test (PCKT) developed by Nakazawa et al.¹¹ and the AIIMS knowledge tool (AIIMS KT) specifically designed to assess the particular knowledge gained from the training. The PCKT consists of 20 items about palliative care. Participants indicate whether the statement is correct or incorrect and receive one point for each correct answer. A total score is calculated by counting the number of correct answers. AIIMS KT consists of 21 statements that participants mark as either correct or incorrect, receiving one point for each correct answer. The questionnaire that was used to assess palliative care knowledge can be found in Appendix 1.

The physicians and nurses from the ten district hospitals that were recruited by the Government Medical College in Kashmir were unable to travel for the training due to a religious festival in the state of Jammu and Kashmir. Therefore, the doctors and nurses of these hospitals attended the training through Zoom. Since their training experience was different from the in-person training that had been received by the physicians and nurses from the other district hospitals, the physicians and nurses from Jammu and Kashmir were not requested to complete the knowledge test. 324 physicians and nurses participated in the in-person training. The four nodal centers in the state of Jammu and Kashmir were only able to recruit 28 doctors and nurses, eleven out of which were able to participate in the online training. In addition to the workshop, all workshop participants were invited to come to the New Delhi Capital Region for a three-day observership in different

Table 1
Capacity of Nodal Centers

	Assessment February 2023	Assessment August 2023
OPD patients per month	25–500 (mean 125.56, SD 160.73)	36–600 (mean 152.89, SD 187.64)
IPD patients per month	10–125 (mean 54.8, SD 42.58)	5–125 (mean 44.14, SD 45.63)
Palliative care beds	2–16 (mean 8.29, SD 4.68)	2–20 (mean 8.86, SD 5.87)
Pharmacy	8 centers	8 centers
Trained doctors	6 centers	6 centers
Trained nurses	7 centers	8 centers
OPD record keeping	8 centers	9 centers
IPD record keeping	5 centers	6 centers

palliative care settings (home care, palliative care OPD and IPD, pharmacy, physical therapy, social work, wound care, paediatric palliative care, and hospice). These observerships took place in different batches starting from July 2024 onwards through February 2025.

Project Impact and Outcomes

When the nodal centers were assessed for the first time in February 2023, all nine nodal centers had functional OPD palliative care services. [Table 1](#) shows that the centers had significant foundational capacity, with the number of patients seen per month in OPD varying widely across centers, ranging from 25 to 500 patients. Eight centers provided IPD services with an average of 8.29 palliative care beds per center. The mean number of IPD admissions per month was 54.8. OPD and IPD services were supported by in-house pharmacies, with most centers having such a pharmacy for opioid dispensing. However, notwithstanding this foundational capacity, gaps were noted in systematic record keeping and palliative care training. One center was not maintaining OPD patient records and four centers were not maintaining IPD patient records systematically. Moreover, not all physicians and nurses providing palliative care had undergone palliative care training.

In August 2023, representatives at the nodal centers were requested to complete the questionnaire a second time with current data to capture potential improvements and seasonal changes. Some relevant improvements were noted in patient numbers, training, and record keeping. The number of OPD patients per month increased to 36 to 600 patients. The mean number of IPD admissions per month slightly decreased to 44.14, although one center had added four palliative care beds. The number of centers with trained doctors had remained the same, but one additional center had a trained nursing team. Improvement was also observed in patient record keeping because all centers were now keeping OPD records and only two centers were still not keeping IPD records.

Table 2
Demographic and Professional Characteristics of Doctors and Nurses From 90 District Hospitals Participating in the Palliative Care Capacity-Building Workshop

Factor	Value
Age, mean (SD)	38.45 (8.18) (n = 273)
Gender	
Female	135 (49.45%)
Male	138 (50.55%)
Profession	
Doctor	128 (47.06%)
Nursing officer	144 (52.94%)
Experience (Years), mean (SD)	10.84 (7.64) (n = 272)
Previous palliative care training	
No	208 (76.47%)
Yes	64 (23.53%)

After this second assessment, doctors and nurses of the district hospitals participated in the capacity building workshop. As shown in [Table 2](#), the participants were middle aged. The gender distribution was nearly equal. Regarding professional background, there were slightly more nurses than doctors. The participants tended to have a substantial number of years of experience in healthcare. However, less than one in four of the participants had received any prior palliative care training.

When the workshop participants were requested to complete the two knowledge tests (PCKT and AIIMS KT) at three different time points (pretraining, post training, and at six-month follow-up) and this data was analyzed, interesting patterns emerged. As shown in [Table 3](#), the mean test score on the PCKT by Nakazawa et al. improved significantly from the pretest to post-test and remained improved till follow-up assessment. The pretest mean score was 9.81 (SD = 3.35, n = 241), which increased to 12.71 (SD = 2.95, n = 250) postintervention. However, the score slightly declined to 12.23 (SD = 2.77, n = 106) at follow-up. Nevertheless, the overall difference between pre- and post-test results and pre- and follow-up test results was statistically significant ($P < 0.001$) ([Table 2](#)). The same pattern was observed in the AIIMS Knowledge Tool (KT), where the score improved from 10.93 (SD = 3.35) at pretest to 14.76 (SD = 3.27) post-test and slightly declined to 14.26 (SD = 3.19) at follow-up after six months. The improvement from pretest to post-test and pretest to follow-up was statistically significant ($P < 0.001$).

Using a Random Slopes Linear Mixed Model on the complete dataset, the scores remained significantly improved from pretest to post-test and pretest to follow-up, even after adjusting for age, gender, profession, and experience ($P < 0.001$) ([Table 4](#)).

Discussion

The findings of this study underscore several significant key observations. A first key observations is the substantial progress that was made towards supporting

Table 3
Comparison of Scores on the Palliative Care Knowledge Test (PCKT) and the AIIMS Knowledge Tool (AIIMS KT) at Three Time Points: Before the Training (Pre), Immediately After the Training (Post), and Six Months After the Training

Factor	All Participants who Completed the Assessment at the Relevant Time Point	Participants Who Completed the Assessment at all time points	PValue ^a
PCKT (Pre), mean (SD)	9.81 (3.35) (n = 241)	10.27 (3.19) (n = 105)	<i>P</i> (Overall) < 0.001
PCKT (Post), mean (SD)	12.71 (2.95) (n = 250)	13.06 (2.89) (n = 105)	<i>P</i> (Pre vs. Post) < 0.001
PCKT (6 month), mean (SD)	12.23 (2.77) (n = 106)	12.22 (2.78) (n = 105)	<i>P</i> (Pre vs. 6 month) < 0.001
AIIMS KT (Pre), mean (SD)	10.93 (3.35) (n = 241)	11.59 (3.18) (n = 105)	<i>P</i> (Overall) < 0.001
AIIMS KT (Post), mean (SD)	14.76 (3.27) (n = 250)	15.30 (2.93) (n = 105)	<i>P</i> (Pre vs. Post) < 0.001
AIIMS KT (6 month), mean (SD)	14.26 (3.19) (n = 106)	14.26 (3.20) (n = 105)	<i>P</i> (Pre vs. 6 month) < 0.001

^aRepeated measure ANOVA was used, PCKT (Huynh-Feldt epsilon = 0.97), AIIMS KT (Huynh-Feldt epsilon = 1.00).

Table 4
Random Slopes Linear Mixed Model Comparing Changes in PCKT and AIIMS KT Scores Across Three Time Points (Pretest to Post-Test and Pretest to Follow-Up After Six Months)

PCKT	Coef. (95% CI)	PValue	Coef. (95% CI) ^a	PValue ^a
Time				
Pre	Ref		Ref	
Post	2.88 (2.44, 3.32)	<0.001	2.85 (2.41, 3.29)	< 0.001
6-month follow-up	2.20 (1.62, 2.78)	<0.001	2.25 (1.67, 2.84)	< 0.001
AIIMS KT	Coef. (95% CI)	PValue	Coef. (95% CI) ^a	PValue ^a
Time				
Pre	Ref		Ref	
Post	3.79 (3.36, 4.21)	< 0.001	3.75 (3.33, 4.18)	< 0.001
6-month follow-up	2.94 (2.37, 3.51)	< 0.001	3.00 (2.43, 3.57)	< 0.001

^aAdjusted for age, gender, profession, and experience.

and building palliative care services and capacity at the nodal centers and the district hospitals. While executing this project, the project staff noted the generally very positive and supportive attitude of hospital administrators towards this project. This illustrates the commitment to expand palliative care capacity and quality at the regional and local level in Northern India. The integration of systematic interventions, including improvements in record-keeping, and an increase in OPD-patient volume are all emblematic of substantial progress in palliative care capacity and quality. Moreover, these developments are crucial for ensuring sustainable service delivery and improved patient outcomes in palliative care.

One of the key observations that illustrates the progress made is the statistically significant improvement in knowledge of palliative care among physicians and nurses, as assessed by both the Palliative Care Knowledge Test (PCKT) and the AIIMS Knowledge Tool (AIIMS KT). The post-training test scores demonstrated substantial gains, confirming the effectiveness of the educational intervention. Although there was a slight decline in scores at the six-month follow-up, they remained significantly higher than baseline levels, which indicates the lasting impact of training on knowledge retention.

The improvements observed in this study are consistent with findings from similar capacity-building initiatives in palliative care worldwide. Research has shown

that streamlined educational initiatives increased healthcare providers' expertise in palliative care, which resulted in improved patient management and enhanced delivery of palliative care services. In particular in low- and middle-income countries, capacity building projects have resulted in notable improvements in palliative care knowledge and skills.⁹

The fact that this project led to improved knowledge levels suggest a positive trajectory for palliative care capacity and service delivery, which is another key observation. This positive evolution will be further sustained by the introduction of a formal teaching program, such as the MD and DNB in palliative medicine, which are now being offered in Northern India. When doctors trained in this program will start practicing palliative care in healthcare organizations across Northern India, their expertise will further reinforce the developing palliative care knowledge and capacity in these healthcare organizations. All this is expected to contribute to the development of a well-equipped workforce capable to provide proper care for patients with complex palliative care needs.

These observations highlight the need for policy-makers to support the expansion of similar training and palliative care capacity building programs across India. Additionally, further establishing palliative care training within medical and nursing curricula as a mandatory component could help bridge existing knowledge gaps and enhance overall care standards.

Policymakers should also consider implementing refresher courses to sustain knowledge retention over time.

In line with that observation, despite the positive outcomes of this capacity building project, certain limitations in palliative care development must be acknowledged. The slight decline in knowledge scores at follow-up indicates the necessity of periodic refresher courses to reinforce learning. Additionally, challenges related to systematic data collection persist at some centers, potentially affecting the accuracy of service assessment. Moreover, due to project limitations, the researchers were unable to capture certain relevant data that would have further illustrated the progress that was made. This is illustrated by the lack of direct assessment of the impact of training on patient outcomes, which remains an important area for future investigation. Furthermore, this project did not capture details on the types of patients seen or the reasons for palliative care consultations (e.g., pain and symptom management versus goals-of-care discussions). Collecting such data in future studies would provide a richer understanding of service utilization and clinical impact. Neither did this project assess the participants' attitudes to palliative care. The attitudinal perspectives of participants from the nodal centers appeared positive in informal conversations. However, since they were not systematically assessed, they remain an area for future study.

Building on the progress achieved, future research will focus on evaluating the long-term impact of this capacity building program on patient care outcomes. Studies examining strategies for maintaining knowledge retention over extended periods and assessing the feasibility of scaling up training programs nationwide would be valuable. Furthermore, integrating digital tools for patient data management could enhance service efficiency and enable more robust monitoring of palliative care initiatives.^{12,13} Nevertheless, already at this stage, considering the observed impact of the project, it is safe to say that the presented approach of palliative care capacity building is a scalable model for palliative care expansion. This capacity-building model could even be adapted for implementation in developed countries, such as the United States, to enhance palliative care delivery in resource-challenged settings.

Conclusion

This project illustrates that structured capacity-building initiatives can significantly enhance palliative care

services. The three-phased model not only improved institutional capacity and record-keeping but also produced measurable, lasting gains in providers' knowledge and skills. A trained and confident workforce creates a stronger base for palliative care services in the future, which will lead to more reliable and higher-quality care delivery.

For India to meet the growing demand for palliative care, it is essential to continue training programs, and the formal integration of palliative care education within medical and nursing curricula. At the same time, supportive policies, infrastructure development, and digital tools for monitoring are needed to ensure that these gains remain consolidated. The combination of education and policy commitment can build a skilled palliative care workforce capable of expanding services equitably and addressing the unmet needs of patients and families across diverse regions.

Data Availability

The authors confirm that the data supporting the findings of this study are available from the corresponding author upon reasonable request.

Ethical Considerations

The study was approved by the ethics committee of the All-India Institute of Medical Sciences (AIIMS), New Delhi (ethics approval numbers IEC-208/04.03.2022, RP-53/2022, OP-42/13.12.2022, OP-01/03.08.2023, OP-08/03.11.2023). The study was, also, approved by the ethical committees of the ten centers of excellence.

Disclosures and Acknowledgments

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Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During the preparation of this work the authors used ChatGPT to improve the language of the manuscript. After using this tool, the authors reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

AIIMS-ICMR Capacity Building Workshop Palliative Care Knowledge Assessment

Please review the following statements and indicate whether each one is true or false.

Palliative Care Knowledge Test (PCKT) ¹		True	False
1.	Palliative care should only be provided to patients for whom no curative treatments are available.		False
2.	Palliative care should not be provided along with anticancer treatments.		False
3.	One of the goals of pain management is to get a good night's sleep.	True	
4.	When cancer pain is mild, pentazocine/tramadol should be used more often than an opioid.		False
5.	When opioids are taken on a regular basis, nonsteroidal anti-inflammatory drugs should not be used.		False
6.	The effect of opioids should decrease when pentazocine or buprenorphine hydrochloride is used together after opioids are used.	True	
7.	Long-term use of opioids can often induce addiction.		False
8.	Use of opioids does not influence survival time.	True	
9.	Morphine should be used to relieve dyspnoea in cancer patients.	True	
10.	When opioids are taken on a regular basis, respiratory depression will be common.		False
11.	Oxygen saturation levels are correlated with dyspnoea.		False
12.	Anticholinergic drugs or scopolamine hydrobromide are effective for alleviating bronchial secretions of dying patients.	True	
13.	During the last days of life, drowsiness associated with electrolyte imbalance should decrease patient discomfort.	True	
14.	Benzodiazepines should be effective for controlling delirium.	True	
15.	Some dying patients will require continuous sedation to alleviate suffering.	True	
16.	Morphine is often a cause of delirium in terminally ill cancer patients.		False
17.	At terminal stages of cancer, higher calorie intake is needed compared to early stages.		False
18.	There is no route except central venous route for patients unable to maintain a peripheral intravenous route.		False
19.	Steroids should improve appetite among patients with advanced cancer.	True	
20.	Intravenous infusion will not be effective for alleviating dry mouth in dying patients.	True	
AIIMS Knowledge Tool (AIIMS KT)		True	False
1.	Do you think oral morphine is the mainstay approach for the management of moderate to severe cancer pain?	True	
2.	Thoracic spines are the most common site for malignant spinal cord compression.		False
3.	A numerical rating score of 6 on a 10-point scale indicates severe pain.		False
4.	Codeine belongs to step 2 of the WHO analgesic ladder.	True	
5.	The brief pain inventory is not a multidimensional pain assessment scale.		False
6.	A handheld fan is a recommended nonpharmacological measure for palliation of dyspnea.	True	
7.	Ondansetron is the drug of choice for opioid induced vomiting.		False
8.	Octreotide is a recommended drug for control of small bowel secretions in patients with malignant bowel obstruction.	True	
9.	"B" nerve fibers conduct fast pain sensation.		False
10.	Chronic use of Morphine leads to development of tolerance against opioid induced constipation.		False
11.	Pedal edema is not a clinical sign of superior vena cava obstruction.	True	
12.	"Hospice" is a type of comfort care that focuses on the palliation of a terminally ill patient's pain and symptoms.	True	
13.	Lymphedema is the collection of protein rich fluid in the interstitial space.	True	
14.	An intermittent pneumatic compression device works on the principal of the pressure gradient.	True	
15.	WHO principles of palliative care include: Intention to hasten death when possible Positive influence on course of illness	True	False
16.	The following are considered components of a good death: To have choice and control over where death occurs To have access to hastening of the dying process	True	False
17.	The following instructions should be given to patients and relatives for the use of fentanyl patch: Patients using patches should not use hot tubs Patch could be cut as per the dose requirement	True	False
18.	The following are signs of impending death: Loss of skin turgor Warm peripheries	True	False
19.	Indicate whether the following statements regarding the relation between Tramadol and Morphine are true or false: Tramadol 50 mg is more potent than Morphine 10 mg. The conversion ratio of Tramadol to Morphine is 10:1.	True	False
20.	Factor contributes to pain experience: Psychological factors Social factors	True True	
21.	Palliative care is needed in the following chronic debilitating conditions: HIV/AIDS End stage heart failure All dying patients MDR-TB Neurological disorders Chronic kidney disease on dialysis End stage liver failure Mental illness	True True True True True True True True	

¹This is the modified Palliative Care Knowledge Test developed by Nakazawa et al. (Nakazawa Y, Miyashita M, Morita T, et al. The palliative care knowledge test: reliability and validity of an instrument to measure palliative care knowledge among health professionals. *Palliat Med* 2009;23:754–66.) The test is reproduced here with permission from the authors.

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