

Pre-Post Evaluation of a Palliative Care Education Intervention in a Lebanese Medical Center

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Abstract

Lebanon ranks among the smallest nations globally, covering a total area of 10,452 square kilometers. At present, male life expectancy in the country is around 76.6 years, while female life expectancy reaches approximately 79.3 years. It is widely acknowledged that extended longevity often entails chronic conditions, major illnesses, and greater demands on healthcare resources. Given the rapid growth of the aging population and the steadily rising life expectancy, a corresponding increase in age-related health problems is anticipated. These include non-communicable diseases as well as cancer. As the largest professional group in Lebanon's healthcare system, nurses play a central role in shaping and improving the standard of palliative care (PC) provided across all stages of illness. This study aimed to examine the effectiveness of a dedicated educational workshop in enhancing knowledge, attitudes, and practical skills in palliative care among working nurses at a university-affiliated medical center in Lebanon. The research adopted a mixed-methods design that combined a quasi-experimental component with a qualitative process evaluation. This allowed for measuring nurses' knowledge, attitudes, and skills regarding palliative care before and after the intervention, while also assessing the workshop process itself. A convenience sample consisting of 45 registered nurses from diverse clinical departments within the university medical center participated. The one-day workshop was held at a major referral hospital located in Beirut. Inferential statistics were applied for data analysis.

All data were processed using SPSS version 25 for Windows. A paired t-test indicated a statistically significant improvement in scores from pre-test to post-test [$t(39) = 11.07, P < 0.001$], with a 95% confidence interval for the mean difference of (17.58–25.45). Before the workshop, 38 participants (90.5%) failed the examination; after the workshop, this number dropped to 12 (30.0%). Strong emphasis is placed on monitoring workshop attendees over time to evaluate both short- and long-term effects of the training. In addition, similar educational workshops should be extended to reach a larger number of nurses throughout Lebanon and neighboring countries in the region.

Keywords: Education, End-of-life care, Lebanon, Nursing, Palliative care

Introduction

Lebanon is one of the smallest countries in the world, spanning an area of 10,452 square kilometers. Roughly 6.7 million inhabitants reside in the country, more than 80% of whom live in urban zones [1]. Demographic patterns in Lebanon have shifted noticeably, with life expectancy at birth now standing at 79 years [2]. The nation is currently experiencing an epidemiological shift in which lifestyle-related illnesses such as diabetes, cardiovascular disease, cancer, and hypertension have shown a sharp increase. Meanwhile, poverty-related conditions, including infectious and contagious diseases, are on the decline, although they have not been fully eradicated [3].

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The heavy load imposed by non-communicable diseases (NCDs), together with the fast-growing elderly population, underscores the critical importance of integrating palliative care (PC) into routine healthcare services. Such care is essential to reducing patients' suffering. A 2017 report estimated that around 15,000 Lebanese patients require palliative care services each year [4]. This demand is projected to rise further due to multiple factors, including the expanding elderly population, the substantial influx of Syrian refugees (approximately 1.5 million over the last 10 years [5]), and the continued growth in non-communicable diseases [4].

It should be emphasized that, both globally and especially within low- and middle-income settings, a variety of educational and training approaches have been adopted to expand access to palliative care nursing education at undergraduate and postgraduate levels for both generalist and specialist practitioners [6, 7].

The final stage of a person's life is often one of the most meaningful experiences they encounter. Even though patterns of death have evolved dramatically throughout the 21st century, people in Lebanon and across most countries in the region continue to resist the notion of palliative care (PC), largely because they link it directly to terminal care only [8]. Multiple research projects from Europe, the United Arab Emirates, and the broader Eastern Mediterranean Region indicate a clear need for expanded training to develop advanced palliative care skills among doctors and nurses alike [9-12].

Within Lebanon, Abu Saad Huijer and Daher [13], together with Daher and Doumit [14], both active in the National Committee for Pain Relief and Palliative Care (NCPRPC), singled out pain management and palliative care as a top national concern. They called for systematic undergraduate education on these topics for nursing and medical students and insisted that relevant content must be embedded throughout nursing and medical training programs. The writers further underlined the importance of developing specialized postgraduate programs in pain relief and palliative care within the country.

Daher *et al.* [15] observed that healthcare workers are increasingly interested in palliative care, supported by parallel growth in educational offerings. Still, less than 5% of practitioners who actually provide end-of-life (EOL) care within the palliative care framework have ever studied the subject during their initial university training. The great majority only developed their expertise after completing their formal studies [15]. In a separate paper, Daher *et al.* [16] emphasized that widespread, affordable, and culturally accepted palliative care services will only become a reality in Lebanon once both patients and professionals receive urgent, targeted education in this field. It should be noted that properly delivered palliative care can match or exceed the results of curative treatment alone. It also proves more economical and effectively reduces physical pain and emotional distress for patients as well as their families [16, 17]. A Knowledge to Policy (K2P) policy brief prepared by Soueidan *et al.* [4], which examined the local context, core problems, possible policy solutions, and obstacles to implementation, placed stronger education and training for health professionals in palliative care among its central recommendations for embedding PC into Lebanon's health system.

Although initiatives to train nurses in palliative care and end-of-life issues have intensified, serious obstacles remain in providing sufficient learning materials and support to nurses directly involved in providing or assisting with such care. According to the Atlas of Palliative Care in the Eastern Mediterranean region, none of the 22 countries that responded had any nursing school offering a standalone palliative care course [17].

Across the Middle East, palliative care continues to develop slowly despite ongoing efforts in several Arab nations [12, 18]. Existing programs in the region are mainly hospital-based, functioning either as consultation teams or specialized inpatient wards. The countries with the most such programs are Saudi Arabia, Jordan, and Egypt. Meanwhile, no palliative care providers could be identified in Syria, Libya, Yemen, Djibouti, or Somalia [17].

Recurring themes in the published literature highlight several persistent difficulties. Palliative care is still poorly integrated into nursing and medical education programs throughout the region. Even in richer nations, the majority of caregivers have had minimal or no formal training in this area [17]. A recent investigation in the United Arab Emirates [11] exposed the absence of organized palliative care training and the very limited structured teaching or evaluation of trainees' competencies in palliative and end-of-life care.

Educators and nursing leaders, both in Lebanon and internationally, recognize that coordinated action is necessary. They agree on the importance of weaving palliative care and end-of-life concepts into the professional nursing curriculum and equipping nurses to handle death and dying as a realistic possibility for the patients they serve [3, 19-21].

In Lebanon, work is actively progressing on educational programs designed to prepare healthcare professionals in palliative care. In 2007, the World Health Organization (WHO) introduced a Public Health Strategy (PHS) to weave palliative care into the national healthcare framework. This strategy was implemented by raising awareness among policymakers, healthcare staff, and the general population.

The main aim was to launch nationwide palliative care initiatives alongside national cancer control efforts, positioning palliative care as one of four fundamental elements of complete cancer care: (1) suitable policies, (2) reliable availability of essential drugs, (3) training for healthcare workers, and (4) public education. This method offers a practical and effective approach to incorporating palliative care into any country's health system [22].

Naifeh Khoury [23], who teaches at the School of Nursing at the American University of Beirut, suggested a long-term vision. She advocated for the steady, structured integration of palliative care and end-of-life topics into

professional nursing education by creating a dedicated Foundation Course in Palliative and EOL Care [24]. Only through the establishment of such a specific course can nurses significantly improve the standard of care they deliver to patients and their families [23].

14 years later, it is reasonable to observe that various opportunities and improvement initiatives have emerged. These developments have led to clear advances in palliative care (PC) both internationally and in Lebanon [4, 25]. Following the comprehensive Public Health Strategy (PHS) established for Lebanon, the Ministry of Public Health's National Committee for Pain Relief and Palliative Care (NCPRPC) [26] has taken initial steps to roll out palliative care services nationwide. This is being carried out through a nationwide strategy designed to deliver meaningful improvements in pain management and palliative care for people of all ages and across different diseases. The committee focuses on four key domains: education, practice, research, and public policy.

In the area of palliative care education, a specialized subcommittee was established to develop a national curriculum, train healthcare staff in basic palliative care principles, and increase public understanding by integrating palliative care topics into health education efforts nationwide. As a result, experts suggested developing a modular curriculum that includes a one-credit palliative care course for undergraduate medical and nursing students, along with ongoing workshop-style training for working healthcare professionals.

Yet, so far, Lebanon has not published any follow-up or assessment studies examining the effectiveness of these teaching efforts. In much the same way, only a small number of evaluations measuring the success of palliative care training activities can be found in nursing publications from the Middle East [27]. When researchers reviewed all palliative care articles published in the Eastern Mediterranean Region from 2005 to 2016, they found only 73 distinct papers. This low count highlights the limited financial support and modest research productivity in palliative care for the whole area [17].

If Lebanese nurses are not given purposeful training in palliative care skills, proper education, and enabling policies, the result will surely be avoidable, intense suffering related to health issues, together with greater financial pressure on the country's healthcare system.

It should be noted that the definition of palliative care used during this workshop matches the version officially accepted by the Lebanese Committee for Pain and Palliative Care. It is worded as: "Palliative care is an approach that improves the quality of life of patients and their families facing the problems associated with 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" [28]. This definition also covers end-of-life care.

To conclude, there is a strong need to design and carefully test educational programs to enhance the competencies of active healthcare workers in palliative care in Lebanon and the surrounding region. The goal of this study was to assess how an educational workshop affected practicing nurses' knowledge, attitudes, and skills in palliative care at a Lebanese university medical center, and to suggest directions for upcoming training efforts.

Materials and Methods

Design and sample

The study adopted a mixed-methods design that combined a quasi-experimental element with a qualitative process evaluation to achieve its objectives. Through the nursing office, an invitation was sent to nurses employed in adult medical-surgical wards, critical care sections, and additional specialized units such as multiple sclerosis, post-anesthesia care, and respiratory services. This invitation formed part of a larger process improvement project that the nursing office had introduced.

A convenience sample of 45 registered nurses from several clinical departments at the university medical center volunteered and were selected by the nursing office to participate in the workshop conducted in 2019.

Inclusion criteria:

1. Registered nurses employed in medical-surgical units, critical care areas, and other listed areas (these other areas include multiple sclerosis, post-anesthesia, and respiratory units)
2. Registered nurses who have worked for more than 6 months

Of the 45 registered nurses who attended the workshop, 42 completed the pre-test, and 39 completed the post-test.

Setting

The session was held in Lebanon as a single-day event lasting 10 hours, with scheduled breaks. It was held at a facility connected to the medical center and during the nurses' normal shift hours. The venue supported effective learning by providing essential tools and resources for clear communication and smooth interaction between the speakers and attendees.

Development and implementation

A comprehensive one-day training workshop focused on the fundamentals of palliative care (PC) was designed and delivered by a team of experienced local physicians and nurses specializing in this field. The workshop material was built around the core ideas of Adult Learning Theory.

The workshop aimed to achieve the following goals: (1) improve nurses' understanding of PC; (2) help them recognize various forms of pain and choose suitable methods to manage it; (3) encourage critical review of shortcomings, building blocks, frameworks, and essential ideas in PC; (4) enable identification of the origins and proper handling of physical as well as psychosocial symptoms associated with PC; (5) strengthen abilities in conveying difficult or "bad news" to patients and family members; and (6) enhance competencies in responding to the specific requirements of patients during their final hours.

Instructional approaches included formal presentations using PowerPoint slides, group discussions supported by audiovisual resources, opportunities for open-ended questions, and guided reflections on selected video clips.

Regional palliative care specialists, including both doctors and nurses, gave the presentations. Topics for these lectures were drawn from and modified in accordance with the Education in Palliative and End-of-Life Care (EPEC) curriculum. The lecture topics included: History and Evolution of Palliative Care; Principles of Palliative Care; Palliative Care in Lebanon; Pain assessment and pharmacological pain management; Symptom Assessment and Management; Psychological Dimensions of Palliative Care; Communication of Bad News; Ethical and Legal Issues; Goals of Care and Advance Care Planning; and Care of Patients in their last hours of life and those who are bereaved.

Data collection

All attending nurses completed a self-administered pre-test and post-test, which were handed out by an administrative staff member who was not part of the research team. Basic demographic details were collected to profile the participants. A set of 34 multiple-choice items, created by specialists based on their lecture content, was used to assess changes in nurses' knowledge, attitudes, and practical abilities at the beginning and end of the training.

Among these items, twelve addressed knowledge, eleven focused on attitude, and eleven targeted skills. The questions were constructed following Bloom's taxonomy. Two academics with relevant expertise confirmed both content validity and face validity. Participants needed approximately 30 minutes to answer all items. Every question was in multiple-choice format. The pre-test was administered before the workshop, and the post-test was given 1 hour after the session ended.

Scoring for the entire questionnaire was capped at 100%. Each question was worth the same number of points. Clear guidance was offered on the best way to respond to the items. Responses were collected anonymously on separate answer sheets. These sheets were identified as either pre-test or post-test, sealed in distinct envelopes, and later processed through computer analysis. Beyond the structured test, the local expert team conducted a qualitative process review to assess the overall quality and organization of the training program. Attendees were also encouraged to share their opinions regarding the relevance and sequence of the lectures, the overall length of the workshop, and how challenging the content felt.

Analysis

Statistical analysis relying on inference was performed on the collected data. All information was processed through SPSS version 25 running on Windows. Pre- and post-workshop total scores were described using average values, standard deviations (SD), and score ranges. These were then examined for differences using a paired t-test. Testing was two-tailed, and any result with $P < 0.05$ was regarded as statistically meaningful. The qualitative process evaluation was independently reviewed by two specialists, who summarized attendees' opinions on the overall training activity.

Ethical considerations

Since the project formed part of an ongoing internal quality enhancement effort at the Medical Center, formal review by an Institutional Review Board (IRB) was unnecessary. Nevertheless, necessary permissions were obtained from the relevant hospital authorities. Full confidentiality protections were put in place for all individuals involved and for the data gathered.

Results and Discussion

The largest share of attendees was women (77.8%), a figure consistent with the typical gender makeup of the nursing profession throughout Lebanon. In age terms, 88.9% fell into the 20–30 bracket, with the remaining 11.1% aged 30–40 years. Experience levels showed that 22.2% had 1–5 years on the job, 66.7% had 5–10 years, and 11.1% had over 10 years of service. These patterns closely resemble the broader makeup of nurses working in the country.

Participant distribution by clinical area was as follows: 44.4% assigned to oncology departments, 33.1% to general medical-surgical wards, 13.3% to intensive care settings, and 11.1% from multiple sclerosis, post-anesthesia, and respiratory care areas. Educationally, 88.9% held a Bachelor of Science in Nursing (BSN) while 11.1% had completed advanced graduate studies (**Table 1**).

Table 1. Demographic characteristics of the attending nurses at the palliative care workshop in Lebanon

| | Count | % |
|--------------------|---------------------|------|
| Gender (female) | 35 | 77.8 |
| | Unit | |
| Oncology | 20 | 44.4 |
| Medical surgical | 14 | 31.1 |
| Critical | 6 | 13.3 |
| Other ^a | 5 | 11.1 |
| | Age (years) | |
| 20–30 | 40 | 88.9 |
| 30–40 | 5 | 11.1 |
| | Years of experience | |
| 1–5 | 10 | 22.2 |
| 5–10 | 30 | 66.7 |
| More than 10 | 5 | 11.1 |

^a: Others include multiple sclerosis, the post-anesthesia care unit, and the respiratory care unit.

Thirty-nine nurses finished both the pre-test and the post-test. Their average pre-test score was 49.30 (SD = 8.95). Following the session, this rose to an average of 70.54 (SD = 12.62). The background characteristics of nurses who missed the post-test showed little difference from those who completed both assessments. Pre-test scores ranged from 29 to 65, while post-test scores ranged from 47 to 88.

The paired t-test confirmed a clear, statistically significant increase in scores: $t(36) = 11.07$, $P < 0.001$. The 95% confidence interval for the average improvement was 17.58–25.45. Before training, 38 participants (90.5%) failed the examination. After the workshop, this number dropped sharply, with only 12 participants (30.0%) still falling short of a passing mark (**Table 2**).

Table 2. Difference between the pre-test and post-test scores (n = 39)

| Outcome | Pre | | Post | | P | Mean difference post-test–pre-test | 95% CI, mean difference |
|------------------|-------|------|-------|-------|---------|------------------------------------|-------------------------|
| | Mean | SD | Mean | SD | | | |
| Total test score | 49.30 | 8.95 | 70.54 | 12.62 | < 0.001 | 21.24 | 17.58–25.45 |

CI, confidence interval; SD, standard deviation.

Analysis of the results indicated that before the workshop, participants struggled across all three measured domains: knowledge, attitude, and practical skills. Notable progress appeared afterward in both knowledge and skill areas. Attitudes, however, continued to present difficulties. Specific weaknesses remained visible in pain management practices and in the delivery of difficult news to patients and families. Such shortcomings could be linked to deeply rooted cultural attitudes in Lebanon, particularly the social stigma attached to opioid medications and the hesitation many nurses feel when addressing sensitive end-of-life matters openly.

The process evaluation feedback revealed unanimous satisfaction among all attendees with the workshop material, which they described as highly relevant and directly applicable to their everyday clinical responsibilities.

Participants reported gaining substantial new insights, especially regarding effective communication methods, pain management strategies, and better ways to support family caregivers. Overall, they found the session to be a worthwhile educational opportunity. A common suggestion, however, was that the volume of information felt overwhelming for a single-day format, and many recommended extending the program across two days to improve absorption.

This research represents the first attempt to assess the impact of a palliative care (PC) educational workshop on nurses' knowledge and attitudes within a university medical center setting in Lebanon. Even though this PC training effort for nurses marked an initial step, the outcomes revealed clear gains in both knowledge and practical skills among those who attended; however, Lebanese nurses' overall attitudes toward palliative care remain a challenging area.

Comparable outcomes—apart from the attitude dimension—emerged from a major investigation [29] carried out in China involving more than 10,000 nurses. That online survey examined PC knowledge and attitude scores among matched pairs, focusing on the 17% of respondents who had completed a Jiangsu Nursing Association PC training program.

Findings showed that nurses who had undergone the training achieved markedly higher PC knowledge scores and displayed improved attitudes toward caring for dying patients. However, no notable gains were observed in areas

related to knowledge of psychosocial and spiritual care or in attitudes toward the inclusion of families in patient support. Another recent pilot project conducted in North Lebanon on nurses' PC knowledge [30] similarly concluded that ongoing, continuous education remains essential for nurses in the region.

Research drawn from various cultural contexts further confirms that targeted training strengthens professional nurses' understanding of palliative and end-of-life (EOL) care. For instance, a U.S. study [31] involving 73 nurses (more than one-third of whom worked in oncology) delivered a single 40-minute lecture and found a statistically significant increase in post-lecture test scores.

In another American oncology setting, investigators tracked the knowledge, attitudes, and actual practices of 46 oncology nurses before and one month after they completed a four-hour adapted version of the End-of-Life Nursing Education Consortium (ELNEC) curriculum designed specifically for oncology staff [24]. One month later, the nurses retook the test and also reported how many discussions they had held with patients and families about palliative care before versus after the training.

Significant positive shifts occurred in knowledge, attitudes, and behaviors related to PC, as evaluated through a modified Scale of End-of-Life Care in the Intensive Care Unit (EOLC-ICU). When the frequency of PC-related conversations was measured, the proportion of nurses who conducted three or more such discussions increased by 20%.

O'Shea and Mager [32] examined the effects of a six-week ELNEC course (totaling 12 classroom hours) on 134 nurses' knowledge and attitudes when caring for terminally ill patients, using pre- and post-test measures. The study documented a statistically significant improvement in both knowledge levels and attitudes (which became less negative) after the course.

In Jordan, a more recent project [33] tested the influence of an e-learning palliative care curriculum developed by the International Children's Palliative Care Network. It involved 120 pediatric nurses from two hospitals, with one hospital acting as the control group and the other as the intervention group. Using a pre-test/post-test design, the researchers observed a statistically significant increase in knowledge and attitudes toward PCs among the intervention group only; no such changes occurred in the control group.

Over five years in the state of Maharashtra, India, a broad PC education initiative [34] targeted physicians, nurses, and other healthcare staff across three demonstration sites. The program featured various activities and a detailed training manual with teaching modules offered twice annually. Evaluation was performed via a telephone questionnaire administered to one quarter of the participants. More than 80% of the responding nurses stated that they now felt knowledgeable about palliative care and that their ability to manage pain and other symptoms had noticeably improved.

Collectively, the outcomes of these international studies align with the present findings, except for the attitude component [24, 31-34]. It appears evident that shifting attitudes on such a sensitive subject demands considerably more time and repeated training efforts.

Overall, the evidence suggests that even brief educational sessions or online courses can effectively enhance palliative care knowledge, attitudes, and clinical behaviors among healthcare professionals—particularly nurses—in both high-income settings and lower-middle-income countries such as Lebanon. Implementing structured PC education and ongoing training programs for all nurses assigned to palliative care units in Lebanon would substantially strengthen their ability to deliver this vital aspect of healthcare.

It is widely recognized that research findings generated in one nation do not automatically apply to another; therefore, nursing schools across Lebanon and nursing departments in major medical centers must deliberately design plans to embed palliative care (PC) into their local teaching curricula and ongoing professional development activities. This task calls on educational bodies in Lebanon to expand continuing education offerings that refresh and strengthen the capabilities and specialized knowledge of practitioners involved in palliative care. Because strong competence in palliative care is essential for nurses everywhere, thorough, well-structured competency-based training programs will be required to equip them to work effectively with patients receiving palliative support and their families. The present results further support the NCPNPC's suggestions in Lebanon regarding the need to weave palliative care content into both nursing and medical education programs and to create targeted continuing education opportunities for practicing healthcare staff.

It must be emphasized that healthcare providers cannot deliver care they have never learned. Consequently, incorporating this essential knowledge into continuing education frameworks or formal academic programs is likely to enhance the overall standard of care, raise patient satisfaction levels, and ultimately improve nurses' own job satisfaction, which in turn could lead to stronger staff retention rates.

Strengths

As an initial effort in this context, the study possesses several notable strengths. It contributes to the relatively small body of evidence on evaluating palliative care education outcomes for healthcare professionals, particularly nurses, in the Middle East. The findings also illustrate effective collaboration between Lebanese nurses and physicians in delivering palliative care training. Furthermore, the research shows that a single-day workshop can yield meaningful improvements in nurses' knowledge and practical skills in palliative care, underscoring the

urgent need for such programs and laying the groundwork for sustained educational initiatives. It also underscores the pressing need to address and improve nurses' attitudes toward palliative care.

Limitations

One key limitation was that the assessment questionnaire had not undergone formal validation. That said, all questions were drawn directly from up-to-date palliative care literature selected by the specialist lecturers involved. A further limitation involved the participant selection process and sample size. Because a convenience sample was used, the nursing office selected participants solely based on who responded to the invitation.

Conclusion

Nurses constitute the largest segment of the healthcare workforce in Lebanon and therefore occupy a central role in shaping the quality of palliative care provided across all stages of illness. Every nurse should receive dedicated palliative care training, in addition to regular continuing education. This study has shown that a specially designed palliative care workshop can lead to noticeable gains in nurses' knowledge and clinical skills. However, additional efforts are clearly needed to achieve meaningful shifts in Lebanese nurses' attitudes toward this field.

It is strongly advised that the workshop content be reviewed and updated, and that the questionnaire's validity and reliability be properly tested. In addition, follow-up assessments of the participants from this workshop should be conducted to measure both short-term and long-term effects of the training. Future workshops should also be extended to reach a broader group of nurses throughout Lebanon and the surrounding region. It is hoped that the outcomes of this research will help inform and support larger-scale studies in Lebanon and across the Middle East.

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