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Enhancing oncology patient care: nurses' knowledge, attitudes, and perceived benefits of early palliative integration - a cross-sectional study

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Abstract

Background Palliative care aims to improve quality of life for patients with end-stage illnesses by addressing physical, psychological, social and spiritual needs. Early referral to palliative care improves patient outcomes, quality of life and overall survival in a variety type of cancers. This study aimed to assess knowledge, attitudes and perceived benefits of early integration of palliative care among oncology nursing.

Methods A descriptive cross-sectional study was conducted in public, private, and educational hospitals located in Palestine. Data were collected using paper based self-administered questionnaires from nurses working in hematology, general oncology, and bone marrow transplantation departments.

Results Among of 128 nurses, the study revealed a moderate level of knowledge (3.64 ± 0.96), Positive attitude (3.59 ± 1.02) and moderately recognized the perceived benefits of early palliative care (3.57 ± 1.02). A statistically significant difference in nurses' knowledge, attitudes and perceived benefits of early palliative care based on clinical experience. Pearson's correlation showed a significant positive relationship between the total knowledge and attitudes score ($r = 0.211$, $p < 0.001$), as well as with perceived benefits total score ($r = 0.567$, $p < 0.001$). Moreover, there was a significant positive relationship between the total attitude score and perceived benefits score ($r = 0.303$, $p < 0.001$).

Conclusions These findings suggest that enhancing knowledge and highlighting the benefits of early palliative care integration could foster more favorable attitudes among oncology nurses. investing in education and training to have all nurses prepared to provide high-quality palliative care results in better patient outcomes and less suffering. Patients with advanced cancer should be referred to the palliative care teams at an early stage of treatment in conjunction with their treatment in order to improve patient outcomes and quality of life.

Keywords Attitudes, Early Integration, Knowledge, Palliative Care, Nurses, Oncology, Perceived benefits, Palestine.

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Introduction

Palliative care (PC) is a specialized approach aimed to improve the quality of life for patients with potentially life-limiting or life-threatening conditions by addressing their physical, psychological, social, and spiritual needs [1]. It involves a holistic approach focused on early identification, comprehensive assessments, and effective management of pain and other symptoms, while also providing support to patients and their families throughout the course of an illness. PC is provided by an interdisciplinary team usually including physicians, nurses, and social workers [2]. Additionally, it includes specialized services that offer expert guidance and audit to support care plans, as well as end-of-life care focused on symptom control and comfort during a patient's final days [3, 4].

Early integration of palliative care

Palliative care (PC) can be integrated at any time following a diagnosis, regardless of whether a patient is receiving disease-modifying treatments. However, early integration of PC has been proven to be more beneficial in term of enhancing quality of life, improving symptom management, and may even contribute to increased overall survival rates [5]. Collaboration between PC and oncology teams to integrate early PC interventions has shown improvements in patient well-being [6–9]. Moreover, early integration helps reduce the emotional burden of family caregivers and enables them to provide better support to their loved ones. Beyond its direct benefits to patients and families, PC also improves the healthcare system by reducing costs and maximizing resource utilization. The growing prevalence of diseases such as cancer, especially in low- and middle-income countries with restricted healthcare resources, has resulted in a growing demand for palliative care services, which remains unmet [10, 11].

Palliative care as part of comprehensive cancer care

Cancer is one of the leading causes of death worldwide, with a disproportionate impact on low- and middle-income countries. Global cancer incidence and mortality rates are expected to increase significantly. Globally, in 2022, there were close to 20 million new cases of cancer and 9.7 million cancer-related deaths; by 2040, annual new cancer cases could rise to 29.9 million, with cancer-related deaths reaching 15.3 million, with a particular burden on resource-constrained countries [10–14]. In Palestine, cancer represents the second leading cause of death after heart disease and accounts for 14% of the overall mortality, with the most prevalent types of cancer being breast, colorectal, leukemia, and lung cancers [15, 16]. The increased burden associated with the rising number of cases underscores the timely call to implement accessible and comprehensive PC services to alleviate the suffering of patients and their families [10].

Barriers to palliative care implementation

A large proportion of adults in low- and middle-income countries with PC needs are diagnosed with an already late-stage cancer, stressing the urgent need for early integration of PC interventions [17–19]. Unfortunately, numerous implementation and accessibility challenges exist, especially in developing countries like Palestine, such as conflicting roles, disagreements about goals of care, emotional effects on decision-making, and lack of patient/family willingness to engage with PC services [20–24]. Moreover, additional barriers have been identified in low-income countries, such as a lack of knowledge among nurses, patients, and families; financial burdens for patients and families; time constraints, insufficient interest, and a lack of team support [25–27]. Addressing these issues through better education and training for nurses is crucial for optimal care delivery.

Nursing role in early integration of palliative care

Early integration of high-quality PC greatly relies on nurses. Studies indicate that nurses need specialized training to effectively address the diverse needs, whether physical, emotional, social, or spiritual, of patients and their families at the end of life [1, 27–30]. In low-resource countries, nurses are usually the main care providers, highlighting the urgent need for comprehensive education and training programs [31, 32]. Additionally, training in PC has been shown to improve communication and collaboration among healthcare workers [3, 27, 28, 30, 33].

Palliative care in Palestine

The high rate of chronic diseases, which represent around 70% of mortalities in Palestine, proves the urgent need for palliative care. In 2020, cardiovascular diseases, complications of diabetes, and cancer were the three main challenges in health, accounting for 24.7%, 14.6%, and 14.1% of total deaths [34]. Despite the significant need for palliative care (PC) services in Palestine, a comprehensive system for PC delivery is currently lacking. Furthermore, dedicated PC services, specialized training programs for healthcare professionals, and readily accessible educational resources remain largely underdeveloped [35, 36]. Moreover, only a few hospitals in Palestine currently provide PC services such as pain management and end-of-life support. However, even fewer are involved in caring for patients with cancer. Furthermore, PC remains undervalued in nursing curricula, with limited opportunities for specialized training and professional development [35, 37]. Prior studies revealed limited palliative care (PC) knowledge among medical-surgical nurses,

including nursing students; however, there is a paucity of data among oncology staff nurses [30, 38, 39]. To help close the gap, a non-governmental body in the West Bank, alongside the Ministry of Health, has been implementing a training program for nurses and other healthcare professionals [35, 37, 40]. The effect of early PC integration is still understudied, especially in Palestine, despite its importance in improving the quality of life for patients.

This study aims to evaluate the knowledge, attitudes, and perceived benefits of early integration of palliative care among oncology nurses in Palestine. The results of may be used to target areas in need of improvement, inform service development for patient with cancer care and guide the development of PC policies in Palestine.

Methodology

Design

A descriptive cross-sectional design using a self-administered questionnaire was employed to assess nurses' knowledge, attitudes, and perceived benefits of early integration of palliative care among oncology nurses in Palestine.

Setting

This study took place in three hospitals in Palestine, including public, private, and academic institutions, ensuring a diverse representation of the healthcare environment. The focus was on the Hematology, General Oncology, and Bone Marrow Transplantation departments, given their pivotal roles in providing a wide range of cancer care services, including diagnosis, chemotherapy, radiation therapy, stem cell transplant, and PC. Additionally, these hospitals were selected based on their established reputations for providing high-quality, multidisciplinary oncological care.

Table 1 Score interpretation

Subscale	Interpretation
Knowledge	
Below 21	Poor Understanding
21–28	Moderate Understanding
Above 28	Good Understanding
Attitude	
Below 18	Negative Attitude
18–24	Neutral Attitude
Above 24	Positive Attitude
Perceived Benefits	
Below 24	Low Perceived Benefits
24–32	Moderate Perceived Benefits
Above 32	High Perceived Benefits

Sample

The study population consisted of registered nurses who worked in Hematology, General Oncology, and Bone Marrow Transplantation departments of the selected hospitals. Nurses were recruited employing a convenience sampling procedure. The sample size was determined using *Raosoft* Sample Size Calculator with a 95% confidence level, a 5% margin of error, and an estimated population of 163 nurses. The initial sample size calculation yielded a requirement of 115 nurses. To account for potential attrition, an additional 10% was added, resulting in a final sample size of 127 nurses.

Instruments

The questionnaire was developed by the researchers based on prior research regarding the early integration of palliative care in oncology patients, to assess nurses' knowledge, attitudes, and perceived benefits of early integration of palliative care in cancer care [41–43]. The questionnaire consisted of four Sect. 1) Socio-demographic data, such as age, gender, qualifications, and years of experience; 2) Knowledge of PC (7 items); 3) Attitudes towards early PC integration (6 items); 4) Perceived benefits of early PC integration (8 items) (Additional file 1). All items were measured using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree).

Higher scores on each subscale (knowledge, attitudes, perceived benefits) indicate better levels of knowledge, more favorable attitudes, and a greater perceived benefits of early PC integration, respectively. Cutoff scores for each subscale were determined using Bloom's taxonomy to categorize the results into different levels of knowledge, attitude, and perceived benefit (refer to Table 1) [44].

The content validity of this new questionnaire was assessed by a panel of ten Palliative Care experts. This panel included two associate professors, three nursing assistants, as well as five clinical nurses with over five years of oncology experience. Using a 4-point Likert scale, the panel evaluated each item for clarity, relevance, comprehensiveness, and applicability, ensuring the questionnaire accurately captured the intended constructs. Based on expert feedback, minor revisions were made to further refine the questionnaire and ensure it effectively measured the key aspects of palliative care knowledge, attitudes, and perceived benefits. Ultimately, all items were deemed appropriate, relevant, and representative of the construct being measured. The content validity was also measured using item-level (I-CVI) and scale-level (S-CVI/Ave) indices. Items with a content validity index of 0.80 or higher were included in the pilot survey [45]. The content validity of the questionnaire was confirmed with I-CVIs of 1.00 for all items and an S-CVI/Ave of 1.00, implying satisfactory content validity.

A pilot study with twenty nurses confirmed the scale's clarity and ease of understanding, and no modifications were needed. The questionnaires completed in the pilot phase were excluded from the final analysis. The reliability of the questionnaire was assessed through internal consistency using Cronbach's α coefficient. The resulting value was 0.84, which exceeds the minimum acceptable level of 0.7, indicating good reliability.

Data collection procedure

Before the data collection took place, collaboration with the selected hospitals was undertaken to strategize and synchronize the data collection efforts, aiming to achieve optimal response rates. Data collection started after obtaining consent from participants. Individually, participants were approached during their work shifts and provided with a participation information sheet and written informed consent alongside the questionnaire. Nurses were briefed both verbally and in writing regarding the study's purpose, objectives, methodology, and significance. Questionnaires were administered in English language and under the supervision of the researcher. No incentives were offered to participants. Data was collected from January 2022 to April 2022.

Statistical analysis

The obtained data were analyzed using the Statistical Package for Social Sciences (SPSS) version 26. Descriptive statistics, including mean scores, standard deviations, and percentages, were used to summarize socio-demographic data as well as knowledge, attitudes, and perceived benefits scores. The relationships between these scores and sociodemographic characteristics (such as age, gender, qualifications, and years of experience) were examined using Independent Samples t-tests and one-way ANOVA. Statistical significance was set at $p < 0.05$.

Ethical consideration

Ethical approval for the study was granted by An Najah National University's Institutional Review Board (Oct. 2021/30), and permission was obtained from the selected hospitals. Participation was entirely voluntary, with nurses providing written consent. Data obtained was coded to maintain anonymity of the participants.

Results

Sociodemographic

Out of 150 distributed questionnaires, 128 were returned, yielding an 85.3% response rate. A total of 128 respondents participated in the study, comprising 41 males (32%) and 87 females (68%). Most participants were between 20 and 25 years (35.2%). Bachelor's degree holders were predominant (76.7%). Additionally, the majority had less than five years of experience (55.5%).

Knowledge of palliative care

The overall mean score for the level of knowledge about palliative care was of 73% ($M = 3.64$, $SD = 0.96$), suggesting a moderate level of understanding, with some variation in responses. The data revealed varying degrees of confidence and knowledge across aspects of palliative care. For example, for the item "*I feel confident in my ability to discuss palliative care with patients and family members*" the mean score was 4.05 (0.67), indicating a high level of confidence in engaging in discussions about PC with patients and their families. Confidence in recommending PC consultations to Palliative Care specialized teams had a mean score of 3.59 (0.85), suggesting a moderate level. Nurses reported a generally good understanding, though with some variability, of a PC definition and roles ($M = 3.62$, $SD = 0.97$). Regarding the indications for PC referrals, the mean score was 3.55 ($SD = 1.07$), reflecting a moderate understanding with notable variability in responses. The ability to identify the appropriate timing for a PC consultation had a mean score of 3.40 ($SD = 1.13$), suggesting a lower level of confidence and greater variability in understanding when to initiate referrals. Nurses reported a mean score of 3.59 ($SD = 1.02$) for identifying the benefits of PC, and a slightly higher mean of 3.66 ($SD = 0.97$) for recognizing the benefits of early PC. This indicates a moderate to good understanding of the advantages of integrating PC early in the treatment process (Table 2).

An independent sample t-test revealed no statistically significant difference in the mean scores of nurses'

Table 2 Nurses' knowledge regarding early integration of palliative care

Item	Mean (SD)
1. "I feel confident in my ability to discuss palliative care with patients and family members"	4.05 (0.67)
2. "I feel confident in recommending palliative care consultations to providers"	3.59 (0.85)
3. "I able to define palliative care and its role"	3.62 (0.97)
4. "I able to identify indications for palliative care referral"	3.55 (1.07)
5. "I able to identify appropriate timing of palliative care consultation"	3.40 (1.13)
6. "I able to identify benefits of palliative care"	3.59 (1.02)
7. "I able to identify benefits of early palliative care"	3.66 (0.97)
Overall Mean	3.64 (0.96)

Table 3 Comparison of mean for the knowledge, attitude and perceived benefits scores based on socioemographic characteristics

Characteristics	Knowledge		Attitude		Perceived benefits	
Sex	**M (SD)**	***P* value**	**M (SD)**	***P* value**	**M (SD)**	***P* value**
Male	3.55 (0.45)	0. 19 [a]	3.44 (0.48)	0.04 [a]	3.48 (0.45)	0.20 [a]
Female	3.68 (0.54)		3.66 (0.57)		3.61 (0.52)	
Year of experience						
Less than 5 years	3.76 (0.52)	0.02 [b]	3.72 (0.52)	0.02 [b]	3.71 (0.49)	0.008 [b]
6–10 years	3.55 (0.46)		3.49 (0.52)		3.45 (0.49)	
11–15 years	3.44 (0.49)		3.30 (0.69)		3.34 (0.50)	
More than 15 years	3.35 (0.53)		3.45 (0.34)		3.33 (0.37)	

Significant at the $p < 0.05$ level

[a] Independent Samples *t*-test was used

[b] One-Way ANOVA test was used

Table 4 Nurses' attitudes towards an early integration of palliative care

Items	Mean (SD)
1. "Do the early and systematic integration of palliative care into usual oncology care significantly improve overall quality of life compared with usual care? "	3.75 (1.03)
2. "Patients receiving early palliative care had significantly better quality-of-life and mood scores"	3.70 (0.96)
3. "Patients who received palliative care have the opportunity to increase their prognostic awareness and strengthen their coping skills during palliative care clinic visits"	3.64 (0.99)
4. "Patients who received palliative care deal with the impact of the disease on function and quality of life"	3.32 (1.14)
5. "Early integration of palliative care improve collaboration with specialist services, patients, families, and caregivers"	3.63 (1.03)
6. "Early integration of palliative care increase healthcare provider confidence and communication skills"	3.49 (1.01)
Overall Mean	**3.59 (1.02)**

knowledge of palliative care for oncology patients based on sex ($p = 0.19$). However, a one-way ANOVA indicated significant differences in understanding based on years of experience ($p = 0.02$). Nurses with 15 years or more of experience demonstrated a higher level of understanding of PC (Table 3).

Attitudes towards early integration of palliative care

The overall mean score for attitudes towards early integration of PC was 3.59 ($SD = 1.02$), indicating generally positive attitudes, but with some variability in the level of agreement across different items. Again, the analysis of attitudes revealed varying levels of agreement across different items. The item "*Do the early and systematic integration of palliative care into usual oncology care significantly improve overall quality of life compared with usual care?*" received a mean score of 3.75 ($SD = 1.03$), indicating a generally positive attitude. Similarly, the item "*Patients receiving early palliative care had significantly better quality-of-life and mood scores*" had a mean score of 3.70 ($SD = 0.96$), reflecting a favorable perception. Nurses agreed that "*Patients who received palliative care have the opportunity to increase their prognostic awareness and strengthen their coping skills during palliative care clinic visits*" ($M = 3.64$, $SD = 0.99$). The item "*Patients who received palliative care deal with the impact of the disease on function and quality of life*" had a slightly lower mean score of 3.32 ($SD = 1.14$), suggesting moderate agreement. The perception that "*Early integration of palliative care improves collaboration with specialist services, patients, families, and caregivers*" was rated with a mean score of 3.63 ($SD = 1.03$), indicating a positive attitude. The item "*Early integration of palliative care increases healthcare provider confidence and communication skills*" received a mean score of 3.49 ($SD = 1.01$), reflecting moderate agreement (Table 4).

An independent samples *t*-test revealed a statistically significant difference in nurses' attitudes towards the early integration of PC for oncology patients based on sex ($p = 0.04$). Additionally, a one-way ANOVA identified significant differences in attitudes based on years of experience ($p = 0.02$). Nurses with 15 or more years of experience exhibited more positive attitudes towards early PC integration (Table 3).

Perceived benefits of early integration of palliative care

The overall mean score for perceived benefits of early PC was 3.57 ($SD = 1.02$), indicating a generally positive attitude, with some variability across different items. This suggests that nurses recognize multiple benefits of early PC integration, particularly in reducing psychological and emotional distress and improving quality of life for oncology patients.

The analysis of perceived benefits of early PC revealed positive attitudes across various aspects. The item "*Early palliative care reduces psychological distress*" received the highest mean score of 3.83 ($SD = 0.99$), indicating strong agreement. The belief that "*Early palliative care*

Table 5 Nurses' perceived benefits of an early palliative care Integration

Items	Mean (SD)
1. "Early palliative care reduces psychological distress"	3.83 (0.99)
2. "Early palliative care improves quality of life"	3.71 (1.02)
3. "Early palliative care enhances patients' prognostic understanding"	3.54 (1.00)
4. "Early palliative care enhances patients' coping strategies and provides additional psychological support"	3.40 (1.08)
5. "Early palliative care improves symptom control"	3.50 (1.01)
6. "Early palliative care reduces spiritual distress"	3.56 (0.99)
7. "Early palliative care reduces emotional distress"	3.59 (1.04)
8. "Early palliative care reduces financial distress"	3.41 (1.03)
Overall Mean	3.57 (1.02)

improves quality of life" reflected a similarly positive perception ($M = 3.71$, $SD = 1.02$). Nurses agreed that "*Early palliative care enhances patients' prognostic understanding*" ($M = 3.54$, $SD = 1$). The item "*Early palliative care enhances patients' coping strategies and provides additional psychological support*" had a mean score of 3.40 (1.08), suggesting moderate agreement. The perception that "*Early palliative care improves symptom control*" was rated with a mean score of 3.50 (1.01), indicating a generally positive attitude. The item "*Early palliative care reduces spiritual distress*" received a mean score of 3.56 ($SD = 0.99$), reflecting positive perceptions. Nurses also agreed that "*Early palliative care reduces emotional distress*" ($M = 3.59$, $SD = 1.04$). Lastly, the belief that "*Early palliative care reduces financial distress*" had a mean score of 3.41 ($SD = 1.03$), suggesting moderate agreement (Table 5).

An independent samples *t*-test revealed no statistically significant difference in the mean scores of nurses' perceived benefits of early PC for oncology patients based on sex ($p = 0.20$). Conversely, a one-way ANOVA indicated significant differences in perceived benefits based on years of experience ($p = 0.008$). Nurses with 15 or more years of experience demonstrated a higher recognition of the benefits of early PC (Table 2).

Finally, a Pearson's correlation showed a significant positive relationship between the total knowledge and attitudes score ($r = 0.211$, $p < 0.001$), as well as with the perceived benefits total score ($r = 0.567$, $p < 0.001$). Moreover, there was a significant positive relationship between the total attitude score and perceived benefits score ($r = 0.303$, $p < 0.001$).

Discussion

This study aimed to assess the knowledge, attitudes, and perceived benefits of early PC integration among oncology nurses in Palestine. Firstly, regarding the knowledge about PC, our results showed that, similarly to studies conducted with similar populations in Turkey [46, 47] and Spain [48, 49], nurses' knowledge level was moderate. However, their knowledge level was higher than that observed in prior studies from Palestine with nurses working in medical, surgical, and critical care units [30, 38], and nursing students [39]. Our results were also higher than those of studies involving registered nurses providing care to patients with cancer conducted in Jordan [28] and Saudi Arabia [50]. In addition, they contrasted with those from Alshammari and colleagues [51], who reported low levels of knowledge among nurses in non-specialized palliative care settings. Previous studies have explained the insufficient knowledge of PC among nurses by a lack of PC education and specialized clinical practice courses at the undergraduate level, staff shortages, limited specialized PC units, and a lack of related policies [28, 30, 38, 39].

Secondly, regarding the perception of early integration of PC, our findings demonstrated that nurses generally had a positive perception, aligning with previous findings from Palestine [30, 38, 39]. Similar results have been observed in studies conducted outside of Palestine, including those in Jordan [28] and Ethiopia [52–54], as well as in a review study [51, 53]. These results highlight the global acceptance of the importance of PC. The positive attitudes seen in our study reflect the growing acceptance of early integration of PC into the Palestinian healthcare system to enhance patients' access to optimal symptom management and the provision of emotional and psychological support to families. This could be a direct result of increased education and training in PC in Palestine. However, while the majority of nurses held positive attitudes, a few highlighted factors that could affect these attitudes, including increased workloads, limited resources, and cultural beliefs surrounding death and dying [30, 51, 52, 55].

Thirdly, regarding the perceived benefits of PC early integration, our results indicate that nurses recognize multiple benefits, primarily in decreasing the psychological and emotional burden and improving the quality of life for patients with cancer. These findings were also found in studies led by Okyere and Kissah-Korsah [56] and Petrillo et al. [57] who reported that early integration of PC in the course of an illness was associated with a wide range of benefits for patients and their caregivers, including increased quality of life, alleviation of physical

and psychological symptom suffering, an improved prognostic understanding, and reduced end-of-life healthcare resources utilization [58]. Our results are consistent with other studies showing that early PC interventions are beneficial to patients with hematologic malignancies and bone marrow transplantation [59, 60].

The importance of clinical experience in the development of nurses' competencies and knowledge is often claimed to be an essential factor for registered nurses working in specific areas such as PC [38, 52]. Additionally, findings from Toqan et al. [30], Bilal et al. [61], and Getie et al. [52] showed that experienced nurses, especially those working in oncology settings, had higher levels of knowledge. They tend to exhibit a favorable attitude toward PC and perceive more benefits from early integration. Our results indicated that a higher level of knowledge was observed in nurses practicing for more than 15 years, thereby supporting the idea that exposure to complex patient care environments enhances PC proficiency. However, this result contradicts the reported results of Paknejadi et al. [62] and Kassa et al. [3].

In our study, the lack of a significant difference in knowledge based on sex was confirmed by previous studies [3, 62]. Knowledge seems more influenced by education, training, and practical exposure than by sex-based differences. Inconsistent results were found by Altarawneh et al. [28], who reported that male nurses appeared to have higher levels of knowledge and more positive attitudes than females. These results collectively highlight the need for ongoing clinical exposure and training to improve PC knowledge. These findings support the development of education and interventions targeting nurses with fewer years in practice. This lack of sex differences indicates that such interventions be universally-inclusive of all nurses, but geared toward experience rather than sociodemographic factors.

In the current study, the findings revealed that there is a significant positive correlation between knowledge, attitudes, and perceived benefits of early integration of PC. This correlation reflects an important relationship in understanding how nurses approach PC. The results revealed a weak but significant positive correlation between knowledge and attitudes toward early integration of PC. This result is in line with other studies [3, 38, 61]. Greater knowledge of PC often leads to developing more positive attitudes toward its earlier implementation [28]. Furthermore, our results, in line with previous studies that revealed a strong positive correlation between the knowledge and perceived benefits of early integration of PC [56–58], indicated that nurses with a higher level of knowledge were more aware of PC benefits, particularly in terms of symptom management and emotional support. The relationship between attitudes and perceived benefits was positive and moderate, suggesting that nurses who had a more favorable attitude towards PC were also likely to recognize its benefits [56–58]. This positive attitude might lead nurses to promote the early integration of PC as an important way to increase the quality of life for patients in oncology settings. The significant correlation between knowledge, attitudes, and perceived benefits reinforces the importance of education and staff training in PC. It also may be possible to improve sustainability by increasing knowledge and, quite possibly, generating more favorable attitudes toward the benefits of PC.

Conclusion

The results of this study highlighted the importance of early integration of PC to improve the quality of life and symptom management of patients with cancer in Palestine. Results demonstrated a moderate level of knowledge, a positive attitude toward PC, and a good recognition of an early integration of PC benefits among oncology nurses in Palestine. Therefore, the early integration of PC in patients with cancer can be greatly improved by providing adequate knowledge and skills, a positive attitude through promoting effective pain management, relieving psychological distress, emotional support to patients and families, and offering spiritual care to bedside nurses. The study concludes that investing in education and training to have all nurses prepared to provide high-quality palliative care results in better patient outcomes and less suffering.

Supplementary Information

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Supplementary Material 1

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Author contributions
From the initial conception through the final preparation of this manuscript, all authors made substantial contributions to this research article. M.H, B.H and F.E: Conceptualization, Formal analysis, Investigation, Methodology, Writing - original draft, Writing - review & editing. A.A, B.S, and N.S: Conceptualization, Formal analysis, Project administration, Supervision, Writing – review & editing. R.Z, S.Q, and N.H: Formal analysis, Writing – review & editing. R.M and I.S: Formal analysis, Methodology, Writing – review & editing.

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Data availability
All data generated or analyzed during this study are included in this published article. The original data will be available from corresponding authors on reasonable request.

Declarations

Ethics approval and consent to participate
In this study, all methods were performed in accordance with the relevant guidelines and regulations. The study has been reviewed and approved by An Najah National University's Institutional Review Board (Oct. 2021/30), and permission was obtained from the selected hospitals. And written informed consents had been obtained from all the nurses.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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