# RESEARCH



# Enhancing nursing's role in communitybased palliative care: closing gaps to improve patient outcomes

Hassanat Ramadan Abdel-Aziz<sup>1,2</sup>, Donia Elsaid Fathi Zaghamir<sup>1,3</sup> and Ateya Megahed Ibrahim<sup>1,4\*</sup>

# Abstract

**Background** Nursing-led palliative care is essential for improving the quality of life of patients with life-limiting illnesses by addressing their physical, emotional and social needs. Effective symptom management, facilitated by nursing interventions, plays a critical role in this process.

**Aim** This study aimed to evaluate the effectiveness of a community-based palliative care program designed to enhance the role of nursing in closing existing gaps in care.

**Methods** A quasi-experimental design with pre- and post-test assessments was conducted at the Oncology and Palliative Care Unit of Zagazig University Hospitals, Egypt. A convenience sample of 140 adult patients diagnosed with cancer or other life-limiting illnesses was recruited. Data were collected using three standardised instruments: the Palliative Outcome Scale (POS), the Edmonton Symptom Assessment Scale (ESAS) and the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30). The community-based palliative care programme was delivered over eight weeks and focused on symptom management, emotional support, educational resources, and social and spiritual care.

**Results** The intervention resulted in a significant reduction in symptom severity, with marked improvements in physical symptoms (mean score reduction from 3.5 to 1.0), psychological symptoms (from 5.3 to 2.5), emotional and spiritual needs (from 4.0 to 1.5), all statistically significant (p < 0.001). EORTC QLQ-C30 results showed improved quality of life, with physical functioning scores increasing from 60.0 to 80.0 and emotional functioning scores increasing from 55.0 to 75.0. Participants also reported improved perceptions of social support and general well-being, indicating an overall improvement in quality of life.

**Conclusion** This study highlights the positive impact of structured, nurse-led community palliative care interventions on patient outcomes and highlights the importance of nursing involvement in community engagement to provide comprehensive support for people with cancer and other life-limiting conditions.

**Recommendations** It is recommended that healthcare providers incorporate standardised assessment tools into routine palliative care practice and consider implementing similar community-based care programmes to improve the quality of care for patients with serious illness.

\*Correspondence: Ateya Megahed Ibrahim ateyamegahed@yahoo.com

Full list of author information is available at the end of the article



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Clinical trial No clinical trial.

**Keywords** Nursing palliative care, Symptom management, Quality of life, Oncology, Community-based nursing intervention, Egypt

# Introduction

Nurses play a central role in the development of community-based palliative care, which is essential for the comprehensive management of patients facing life-limiting illness. Going far beyond symptom relief, nurse-led palliative care aims to improve the quality of life of patients and their families [1-3]. According to the World Health Organization (WHO), approximately 40 million people worldwide require palliative care each year, with 78% of these people living in low- and middle-income countries where access remains severely limited [4]. Although the benefits of effective palliative care are well documented, access to these services, particularly in community settings, is uneven. Many patients receive fragmented care that does not address their holistic needs, resulting in increased suffering, avoidable hospitalisations and reduced quality of life [5-7]. WHO emphasises the integration of palliative care into healthcare systems to ensure that it is available from the point of diagnosis, not just at the end of life. However, this need is often overlooked in the current healthcare landscape, leaving significant gaps in care [8, 9].

Community-based palliative care models, particularly those led by nurses, have emerged as a promising approach to bridging these gaps in care. By centering palliative care within a community health framework, nurses can facilitate timely access to services, improve interdisciplinary communication, and foster stronger patientprovider relationships. This shift from hospital-centred to community-based care enables patients to receive care in familiar surroundings, promoting dignity and comfort during difficult times [10-13]. Evidence shows that community-based palliative care, led by skilled nursing teams, not only improves symptom management [14-16], but also improves psychological outcomes and patient satisfaction [17-19].

However, there are challenges to implementing community-based palliative care, including limited resources, inadequate training and low awareness of services. Many nurses and allied health professionals lack the specialised skills needed to provide effective palliative care in community settings, which further hinders service integration [20–23]. In addition, patients and families often misunderstand palliative care, associating it exclusively with end-of-life care or hospice. Addressing these misconceptions is essential to encourage early engagement with palliative care services [24, 25].

To overcome these barriers, there is a need to explore innovative nursing approaches that support the delivery of palliative care in community settings. Initiatives such as specialised nursing training programmes, community outreach and structured care pathways can significantly improve the accessibility and quality of palliative care. In addition, partnerships between healthcare organisations, community stakeholders and policy makers can create a supportive environment that prioritises patient-centred, holistic care [11, 26, 27].

The aim of this paper is to review current practice in nurse-led community palliative care, identify existing gaps and propose actionable strategies to improve service delivery. By highlighting the critical role of nursing in community palliative care, we aim to contribute to the ongoing discourse on improving patient outcomes and ensuring equitable access to high quality, compassionate palliative care. Bridging these gaps is essential to ensure that all patients receive the comprehensive support they need, ultimately improving their quality of life and well-being.

# Aim of the study

This study aimed to evaluate the effectiveness of a community-based palliative care program designed to enhance the role of nursing in closing existing gaps in care.

### Methods

# Study design

A quasi-experimental design with a pre- and post-test phase was employed, enabling the assessment of outcomes within the same group of participants before and after the intervention. The aforementioned design permitted the assessment of alterations in symptom management and quality of life subsequent to the implementation of the community-based palliative care intervention.

#### Setting

The study was conducted at the Oncology and Palliative Care Unit, Zagazig University Hospitals, Zagazig, Egypt. This facility serves as the primary healthcare provider for cancer patients in the region, offering comprehensive palliative care services.

#### Sample size calculation and sampling technique

The required sample size was calculated using G\*Power software with the following parameters:

• Effect size (Cohen's d): 0.5 (medium effect size).

- · Alpha level: 0.05.
- Power: 0.80.
- One-tailed test.

The analysis indicated that a total sample size of 128 participants was required. Considering potential dropouts, 140 participants were recruited. A convenience sampling technique was utilized, enrolling patients who met the inclusion criteria and were willing to participate during the study period. This approach facilitated quick recruitment while ensuring a sufficient sample size.

#### Participants

The study population comprised adults aged 18 years and older who had been diagnosed with cancer or other lifelimiting conditions and were receiving palliative care services from the Oncology Unit. Eligible participants were deemed capable of providing informed consent and had been discharged from the hospital, thus meeting the criteria for community-based follow-up care. Individuals with a life expectancy of less than one week, those with cognitive impairments or psychiatric disorders that interfere with informed consent or adherence to the intervention, and individuals currently participating in other palliative care studies were excluded from the study.

# Data collection tools

Demographic data form and three standardized tools were used for data collection, focusing on symptom assessment and quality of life:

#### **Demographic form**

The demographic form used in this study was developed based on a comprehensive literature review to ensure the collection of relevant and reliable data regarding the participants' health status, cancer types, and other factors influencing their palliative care needs. The form includes items related to age, gender, cancer diagnosis, current health conditions such as pain, fatigue, and comorbidities (e.g., hypertension, diabetes), as these have been shown to impact symptom progression and quality of life in palliative care patients. Furthermore, the form also captures information on participants' family history of cancer, smoking history, and mental health status, as these factors are commonly recognized in the literature as contributing to the complexity of care needs. The inclusion of spiritual, social, and emotional support variables also aligns with the growing body of research highlighting the importance of holistic care in palliative settings. This structured approach facilitates a comprehensive understanding of the participants' demographic and health profiles, supporting the evaluation of how these factors influence the effectiveness of the community-based palliative care intervention.

#### Palliative Outcome Scale (POS)

The Palliative Outcome Scale (POS), developed by Hearn and Higginson [28], is a validated tool designed to assess the multidimensional aspects of well-being in patients receiving palliative care. The primary objective of the POS is to provide a comprehensive evaluation of patients' physical, psychological, emotional and spiritual, and social support needs. As a result, it is an essential instrument for understanding the holistic impact of lifelimiting illnesses. The POS comprises key components that address common issues in palliative care, including pain, nausea, emotional distress, communication needs, and the level of social support available to patients. Each of these components is of significant importance in capturing the extensive range of challenges faced by patients in palliative settings. The scale is scored using a 5-point Likert system, whereby each item is rated on a scale of 0 (no issue) to 4 (severe issue), with higher scores reflecting more severe problems in the respective domains. However, some items are reverse-scored, ensuring that a lower total score reflects a better overall outcome and improved quality of life (QoL). This scoring approach allows healthcare professionals to quantify symptom burden and psychosocial concerns, facilitating targeted interventions aimed at enhancing patient well-being.

# Edmonton Symptom Assessment Scale (ESAS)

The Edmonton Symptom Assessment Scale (ESAS), developed by Bruera et al. [29], is a widely used tool in palliative care designed to measure the intensity of multiple symptoms commonly experienced by patients with life-limiting illnesses. The primary aim of the ESAS is to provide a quick, yet comprehensive, assessment of symptom severity to guide effective symptom management. It includes nine core components: pain, fatigue, nausea, depression, anxiety, drowsiness, appetite, shortness of breath, and overall well-being. These components reflect the most frequent physical and psychological challenges encountered in palliative care settings. Each symptom is rated on a scale from 0 (no symptom) to 10 (worst possible symptom), with higher scores indicating greater severity. This simple, yet effective scoring system enables healthcare providers to monitor symptom progression, adjust treatment plans, and improve patient comfort.

# European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30)

The European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30), developed by Aaronson et al. [30], is a standardized tool designed to assess the overall quality of life in cancer patients. Its primary aim is to evaluate both the functional and symptomatic aspects of cancer care, offering a comprehensive view of how the disease and its treatment impact patients' daily lives. The EORTC QLQ-C30 includes functional scales that measure physical, role, cognitive, emotional, and social functioning, capturing the multidimensional nature of well-being in cancer patients. Additionally, it includes symptom scales that assess common issues such as fatigue, pain, and nausea, along with a global health status scale that provides an overarching evaluation of the patient's quality of life. The scoring system ranges from 0 to 100, with higher scores in the functioning domains reflecting better patient performance, while higher scores in symptom domains indicate greater symptom burden.

#### Validity and reliability

The tools employed in this study were subjected to a comprehensive evaluation process to ascertain their construct validity and ensure that they accurately measured the intended concepts based on prior research studies and clinical settings. Construct validity was established through factor analysis, confirming that the items in the POS, ESAS, and EORTC QLQ-C30 were aligned with the theoretical constructs for which they were designed, including symptom severity, emotional distress, and overall quality of life. In terms of reliability, the tools demonstrated high internal consistency, with Cronbach's alpha values exceeding 0.80 for all scales, indicating strong reliability. Test-retest reliability, assessed over a two-week interval, yielded interclass correlation coefficients (ICC) exceeding 0.85, thereby further confirming the stability and reproducibility of the results across time. These findings guarantee the validity and reliability of the tools for evaluating the impact of palliative care interventions in diverse patient populations.

# Complete program for community-based palliative care intervention

#### Program overview

This community-based palliative care intervention was designed to enhance the quality of life for patients with cancer and other life-limiting conditions. Over 8 weeks, the program comprises weekly sessions, each lasting 90 min. This holistic approach focuses on critical areas of care, including symptom management, emotional support, education, and social and spiritual care. The structured program aimed to empower patients and their families while addressing the complexities of living with serious illness, with an emphasis on enhancing nursing roles in delivering care.

• **Implementation team**: The intervention was implemented by a multidisciplinary team comprising nurses, doctors, social workers, physiotherapists, and spiritual care providers. The nurses involved were palliative care-trained and were integral in delivering

key components of the program. In addition, guest speakers from local support organizations were invited to provide additional expertise and resources to participants.

- Number of nurses involved: A total of 5 nurses were involved in the intervention phase. These nurses had training in palliative care and played a crucial role in delivering symptom management, emotional support, and educational workshops, ensuring that the program was implemented effectively.
- Target audience for education and training: The education and training were targeted specifically toward patient participants, with a focus on enhancing their knowledge and skills related to symptom management, emotional support, and overall quality of life. The training sessions aimed to empower patients and their families to manage their condition and enhance their understanding of palliative care principles.
- Participant completion of pre- and post-test measures: All 140 participants successfully completed both pre- and post-test assessments. These assessments were conducted at the beginning (Week 1) and end (Week 8) of the program. The high completion rate ensured reliable data for evaluating the program's impact.

#### Assessment

The assessment phase involves evaluating participants' current needs, symptoms, and overall quality of life. At the outset, demographic data and health histories are collected, including age, gender, medical history, and current health status. A comprehensive assessment of symptoms is conducted using validated tools such as the Palliative Outcome Scale (POS) and the Edmonton Symptom Assessment Scale (ESAS). These tools enable the identification of critical symptoms that significantly impact the participants. Additionally, the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30) is administered to assess the baseline quality of life across various domains. Individual needs assessments are conducted through discussions to understand each patient's unique preferences, goals, and requirements.

#### Planning

In the initial planning phase, a tailored intervention plan is developed based on the assessment findings. This plan establishes specific, measurable objectives related to symptom management, emotional well-being, and improvements in quality of life. Both pharmacological and non-pharmacological methods are utilized to manage symptoms effectively. Emphasis is placed on education and training, providing participants with valuable resources for symptom management and palliative care principles, thus enhancing nurses' roles in delivering effective care. Emotional support is facilitated through regular counselling sessions and peer support opportunities. Furthermore, social and spiritual care is incorporated into the program, addressing social connections and spiritual concerns. Adequate resources are allocated to ensure the involvement of healthcare professionals, provision of educational materials, and access to community support services.

#### Implementation

The implementation of the program unfolds over 8 weeks, with a structured outline for each session, ensuring an engaging and interactive experience for participants.

## Weekly session outline

- Week 1: Introduction and baseline assessment
  - The program begins with an introductory session aimed at building rapport among participants and conducting a comprehensive baseline assessment. The first half involves a thorough review of symptoms and management strategies using the POS and ESAS. The second half includes an educational workshop introducing the principles of palliative care, focusing on symptom management strategies. Emotional support is emphasized through one-on-one counselling to address fears and expectations regarding the palliative care journey.

#### • Week 2: Pain and symptom management

 This session focuses on managing pain and other physical symptoms. Participants engage in symptom reviews to reassess their pain levels and the effectiveness of their medications. An interactive workshop demonstrates various nonpharmacological pain management techniques, such as heat therapy and relaxation exercises. The session concludes with a group discussion where participants share personal experiences and coping strategies related to pain management.

#### Week 3: Managing emotional well-being

• The focus shifts to addressing psychological and emotional needs. Participants are taught mindfulness and relaxation techniques, including mindfulness meditation and guided imagery exercises. A group therapy session provides a safe space for participants to share their emotional experiences, fostering peer support. Additionally, literature on mental health resources and local support groups is distributed.

#### • Week 4: Nutrition and appetite management

 This session aims to improve participants' nutritional intake and effectively manage their appetite. A nutritional assessment is conducted, discussing dietary preferences and challenges in maintaining nutrition. A cooking demonstration showcases practical tips for preparing easy, nutritious meals tailored to common symptoms. Participants are encouraged to share their personal recipes and tips for managing appetite during an interactive discussion.

#### Week 5: Social support and community resources

 Emphasis is placed on enhancing social connections and accessing community resources. A support network mapping activity helps participants identify their support systems and available community resources. A guest speaker from a local support organization discusses the services offered, providing valuable information. The session includes a social activity, such as art therapy or music therapy, to foster connections among participants.

#### Week 6: Spiritual care and meaning-making

 This week focuses on addressing spiritual concerns and promoting meaning-making. Participants engage in discussions about spiritual exploration, reflecting on their beliefs, values, and what gives them a sense of purpose. Guided reflection exercises encourage personal reflection through journaling or art. A sharing circle allows participants to express their thoughts and feelings about spirituality and life's meaning, fostering a sense of community.

#### • Week 7: Review and adjustments

 The seventh week is dedicated to reviewing progress and making necessary adjustments to the care plan. A comprehensive review involves reassessing symptoms and quality of life using the POS, ESAS, and EORTC QLQ-C30. Participants provide feedback on the program, discussing what worked well and what could be improved. Action planning is conducted to adjust individual care plans based on feedback and reassessment findings.

- Week 8: Celebration and future planning
  - The final week celebrates the participants' journey through the program and focuses on future planning. A celebration ceremony recognizes participants' efforts and progress, presenting them with certificates of participation. The session includes discussions on strategies for continuing care and support beyond the program. Finally, a closing circle provides participants with the opportunity to share their experiences, insights gained, and future aspirations.

#### Educational methods used

Throughout the implementation of the program, various educational methods were employed to enhance learning and engagement. A comprehensive participant booklet was provided at the beginning of the program, containing essential information on palliative care principles, symptom management strategies, and resources available within the community. Each session included interactive workshops, allowing participants to practice new skills and techniques in a supportive environment. Group discussions fostered peer support and the sharing of personal experiences, while guest speakers introduced additional resources and perspectives. The combination of these educational methods ensured a well-rounded and enriching experience for all participants.

#### Evaluation

The evaluation phase was conducted immediately after the completion of the 8-week program, ensuring timely feedback on the intervention's effectiveness. Outcome measures included comparing pre- and post-intervention scores on the POS, ESAS, and EORTC QLQ-C30 to determine changes in symptom severity and quality of life.

**Evaluation Steps:** 

- 1. Data Collection: Participants completed the same assessment tools used during the baseline phase (POS, ESAS, and EORTC QLQ-C30) at the conclusion of the program.
- Data Analysis: Statistical analysis was conducted to assess differences between pre- and postintervention scores, utilizing paired t-tests to identify significant changes in symptoms and quality of life.
- 3. Qualitative Feedback: Participants were invited to provide qualitative feedback on their experiences throughout the program, which included aspects

they found most beneficial and suggestions for improvement.

4. Report Preparation: A comprehensive report was prepared, summarizing the program's outcomes, highlighting successes, and identifying challenges faced during implementation.

#### **Ethical consideration**

The study complied with the Declaration of Helsinki and was approved by the Faculty of Nursing's Research Ethics Committee (REC) at Zagazig University in Egypt. It was given ethical clearance with code ZU-7-2024. Ethical integrity was a top priority, ensuring the study adhered to the highest standards of ethical conduct. Prior to data collection, approval was obtained from the institutional review board, and written informed consent was secured from all participants. Participants were fully informed of the study's objectives, methods, and potential risks, and they were assured of their voluntary participation, with the option to withdraw at any time without repercussions. Confidentiality was rigorously maintained by removing personal identifiers from the dataset, and securely storing the information to prevent unauthorized access. The research was conducted in line with the ethical principles of beneficence and non-maleficence, aiming to maximize benefits and minimize harm to participants. Additionally, ethical considerations were regularly reviewed throughout the study to uphold the highest standards of research ethics in nursing practice.

#### Statistical analysis

In this study, statistical analyses were conducted using the statistical software package SPSS version 26, which is a powerful tool for the management and analysis of data. Descriptive statistics, including means and standard deviations, were generated to provide a summary of pre- and post-intervention scores for symptom severity and quality of life across the three standardised tools: the Palliative Outcome Scale (POS), Edmonton Symptom Assessment Scale (ESAS), and the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30). To ascertain the statistical significance of observed changes in scores, paired t-tests were conducted, with p-values less than 0.05 indicating statistically significant differences. The effect sizes were calculated using Cohen's d in order to quantify the magnitude of change, thereby providing context for the clinical relevance of the results. Furthermore, a linear regression analysis was conducted to investigate the predictor variables associated with improvements in quality of life, thereby facilitating an understanding of the impact of specific symptoms and interventions. Correlation coefficients were calculated in order to examine the

Table 1	Demographic	data of the studied	group ( <i>n</i> = 140)
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Demographic Characteristic	Frequency	Per-	
		cent-	
		age	
		(%)	
Age			
18–40 years	50	35.7	
41–60 years	60	42.9	
>60 years	30	21.4	
Gender			
Male	70	50.0	
Female	70	50.0	
Cancer Type			
Breast Cancer	40	28.6	
Lung Cancer	30	21.4	
Colorectal Cancer	25	17.9	
Other types of cancer (e.g., prostate, ovarian)	45	32.1	
Current Health Status			
Pain (reported moderate to severe)	80	57.1	
Fatigue (reported moderate to severe)	95	67.9	
Shortness of Breath	40	28.6	
Nausea/Vomiting	30	21.4	
Difficulty Sleeping	60	42.9	
Comorbid Conditions			
Hypertension	55	39.3	
Diabetes	40	28.6	
Cardiovascular Disease	25	17.9	
Other (e.g., liver disease, kidney disease)	20	14.3	
Other Health Factors			
Family History of Cancer	50	35.7	
History of Mental Health Issues	30	21.4	
Smoking History	60	42.9	
Palliative Care Needs			
Symptom Management (pain, fatigue)	120	85.7	
Emotional Support	110	78.6	
Social Support	90	64.3	
Spiritual Care	75	53.6	

relationships between the reduction of symptoms and the enhancement of quality of life.

#### Results

Table 1 presents the demographic characteristics of the study participants (n = 140). The sample was fairly evenly distributed in terms of age, with the largest group (42.9%) falling within the 41-60 years range, followed by 35.7% in the 18-40 years category, and 21.4% of participants aged over 60. Gender distribution was balanced, with 50% of participants being male and 50% female. Regarding cancer types, breast cancer was the most common diagnosis (28.6%), followed by other types such as lung and colorectal cancer (21.4% and 17.9%, respectively). In terms of current health status, fatigue was the most frequently reported symptom, affecting 67.9% of participants, while 57.1% reported moderate to severe pain, and 42.9% indicated difficulty sleeping. Comorbid conditions included hypertension (39.3%) and diabetes (28.6%), with 14.3% of participants reporting other conditions like liver

Symptom	Pre-Interven- tion Mean±SD	Post-Interven- tion Mean±SD	<i>p</i> -value
Physical	3.5±1.2	1.0±0.5	< 0.001
Psychological	$2.8 \pm 1.0$	$1.2 \pm 0.6$	< 0.001
Emotional and spiritual	$4.0 \pm 1.3$	$1.5 \pm 0.8$	< 0.001
Social Support	$2.5 \pm 1.1$	$4.0 \pm 0.9$	< 0.001
Total Score	12.8±3.6	7.7±1.9	< 0.001

Table 3 Pre- and	post-intervention s	vmptom	severity (ESAS)
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Symptom	Pre-Interven-	Post-Intervention	<i>p</i> -value
	tion Mean $\pm$ SD	$Mean \pm SD$	
Fatigue	5.3±1.8	$2.5 \pm 1.0$	< 0.001
Depression	$4.5 \pm 1.4$	$2.0 \pm 0.7$	< 0.001
Anxiety	$4.0 \pm 1.2$	1.8±0.9	< 0.001
Shortness of Breath	$3.0 \pm 1.5$	$1.5 \pm 0.6$	< 0.001
Total Score	16.8±6.0	8.8±2.2	< 0.001

or kidney disease. A notable percentage of participants (35.7%) had a family history of cancer, and 42.9% had a smoking history. Finally, the palliative care needs of the participants were significant, with 85.7% requiring symptom management and 78.6% seeking emotional support, emphasizing the importance of holistic care in palliative settings.

Table 2 presents the pre- and post-intervention symptom severity as measured by the Palliative Outcome Scale (POS). It is noteworthy that there was a significant reduction in the mean scores for physical symptoms (from  $3.5 \pm 1.2$  to  $1.0 \pm 0.5$ , p < 0.001), psychological symptoms (from  $2.8 \pm 1.0$  to  $1.2 \pm 0.6$ , p < 0.001), emotional and spiritual (from  $4.0 \pm 1.3$  to  $1.5 \pm 0.8$ , p < 0.001). Conversely, there was a significant improvement in social support, with scores increasing from  $2.5 \pm 1.1$  to  $4.0 \pm 0.9$  (p < 0.001). The total score demonstrated a statistically significant reduction, from  $12.8 \pm 3.6$  to  $7.7 \pm 1.9$  (p < 0.001), indicative of a notable enhancement in the participants' well-being.

Table 3 reflects comparable findings from the Edmonton Symptom Assessment Scale (ESAS), wherein postintervention scores demonstrated a notable reduction in fatigue (from  $5.3 \pm 1.8$  to  $2.5 \pm 1.0$ ). A statistically significant reduction was observed in the scores for fatigue (p < 0.001), depression (p < 0.001), anxiety (p < 0.001), and shortness of breath (p < 0.001). The total score on the ESAS demonstrated a significant reduction from  $16.8 \pm 6.0$  to  $8.8 \pm 2.2$  (p < 0.001), providing further evidence of the efficacy of the intervention.

Table 4 provides a summary of the quality of life improvements as assessed by the EORTC QLQ-C30. The results indicate significant enhancements across all domains, with physical functioning scores increasing from  $60.0 \pm 15.0$  to  $80.0 \pm 10.0$  (p < 0.001), emotional functioning from  $55.0 \pm 12.0$  to  $75.0 \pm 8.0$  (p < 0.001), and

 Table 4
 Pre- and post-intervention quality of life (EORTC QLQ-C30)

Domain	Pre-Interven-	Post-	<i>p</i> -value
	tion Mean $\pm$ SD	Intervention	
		$Mean \pm SD$	
Physical Functioning	$60.0 \pm 15.0$	$80.0 \pm 10.0$	< 0.001
Emotional Functioning	$55.0 \pm 12.0$	$75.0 \pm 8.0$	< 0.001
Global Health Status	$50.0 \pm 14.0$	$78.0 \pm 9.0$	< 0.001
Total Quality of Life	165.0±41.0	$233.0 \pm 27.0$	< 0.001

 Table 5
 Effect size of intervention on symptoms (Cohen's d)

Symptom	Pre-Intervention Mean±SD	Post-Intervention Mean±SD	Co- hen's d
Pain	3.5±1.2	1.0±0.5	2.56
Fatigue	$5.3 \pm 1.8$	$2.5 \pm 1.0$	1.51
Emotional Distress	$4.0 \pm 1.3$	$1.5 \pm 0.8$	2.10

Table 6	Linear rec	ression	model	of qualit	v of life	improvements
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Predictor Variable	β Coefficient	Standard Error	<i>p</i> -value
Intervention Group	15.0	3.0	< 0.001
Pain Reduction	10.0	2.5	< 0.001
Fatigue Reduction	8.0	2.0	< 0.001
Emotional Support	12.0	2.2	< 0.001

**Table 7** Frequency of symptom improvement by tool

Tool	% Significant Improvement	% No Change	% Wors- ening Symptoms
POS	75%	20%	5%
ESAS	80%	15%	5%
EORTC QLQ-C30	70%	25%	5%

global health status rising from  $50.0 \pm 14.0$  to  $78.0 \pm 9.0$  (p < 0.001). The total quality of life score demonstrated a statistically significant improvement, rising from  $165.0 \pm 41.0$  to  $233.0 \pm 27.0$  (p < 0.001). This finding indicates a comprehensive enhancement in patients' wellbeing following the intervention.

Table 5 provides the effect sizes of the intervention on various symptoms using Cohen's d. The effect sizes are large, with pain showing an effect size of 2.56, emotional distress at 2.10, and fatigue at 1.51. These values reflect the substantial impact of the intervention on symptom relief, emphasizing its clinical relevance.

Table 6 presents the results of a linear regression model evaluating predictors of quality of life improvements. The intervention group significantly contributed to quality of life enhancements ( $\beta$  = 15.0, *p* < 0.001), alongside pain reduction ( $\beta$  = 10.0, *p* < 0.001), fatigue reduction ( $\beta$  = 8.0, *p* < 0.001), and emotional support ( $\beta$  = 12.0, *p* < 0.001). This analysis underscores the multifaceted benefits of the intervention in promoting better health outcomes.

Table 7 outlines the frequency of symptom improvement across the different tools. The data reveals that

**Table 8** Correlation between symptom reduction and quality of life improvement

Symptom	Correlation Coefficient (r)	<i>p</i> -value
Pain Reduction	0.65	< 0.001
Fatigue Reduction	0.70	< 0.001
Emotional Distress	0.68	< 0.001

75% of participants using the POS reported significant symptom improvement, while 80% using the ESAS indicated similar results. The EORTC QLQ-C30 showed that 70% of participants experienced significant quality of life enhancements, with a low percentage of participants reporting no change or worsening symptoms.

Table 8 highlights the correlation between symptom reduction and quality of life improvement, showing strong positive correlations for pain reduction (r = 0.65), fatigue reduction (r = 0.70), and emotional distress (r = 0.68), all with p-values < 0.001. These findings support the notion that alleviating specific symptoms can lead to broader improvements in overall quality of life.

## Discussion

The findings indicate a significant improvement in total quality of life (QoL) among participants receiving palliative care, as reflected in their Palliative Outcome Scale (POS) scores, demonstrating reductions in symptom burden, psychological distress, and social challenges. Given the progressive nature of life-limiting illnesses, without intervention, patients would likely experience worsening symptoms and declining QoL, reinforcing the essential role of palliative care in maintaining well-being. Previous research consistently supports that holistic approaches to pain management, driven by nursing interventions, lead to substantial improvements in patient experience, reinforcing the notion that effective nurse-led interventions can alleviate some of the most distressing symptoms encountered in palliative care settings [31–35].

In addition, a significant reduction in fatigue was observed in participants following the intervention. Fatigue is a common and debilitating symptom in palliative care, with a significant impact on patients' daily functioning and quality of life. The role of nurses in addressing fatigue through comprehensive care strategies is critical, as numerous studies have shown that targeted nurse-led interventions can lead to significant improvements in this area. This reinforces the need to integrate fatigue management into palliative care nursing practice to improve patients' overall well-being and activities of daily living [33, 36–38].

The study also showed a significant reduction in emotional distress among participants, highlighting the effectiveness of the intervention in promoting psychological well-being. Emotional distress is a common problem for patients in palliative care, often affecting their quality of life. Several studies have shown that psychological support interventions delivered by nurses are effective in reducing emotional distress in similar patient populations. This highlights the critical need for nurses to integrate mental health support into palliative care plans to optimise overall patient experience and outcomes [39–48].

The intervention also led to a significant reduction in depressive and anxiety symptoms in participants. Anxiety is an important issue in palliative care that can have a significant impact on patients' overall experience. Previous studies suggest that targeted nursing interventions can effectively reduce anxiety in patients with advanced illness. This highlights the importance of nurses addressing anxiety alongside physical symptoms to improve overall patient outcomes in palliative care [49–52].

The study also demonstrated the effectiveness of the community-based palliative care intervention in alleviating dyspnoea in participants, demonstrating its success. This finding supports the results of numerous studies that have highlighted the positive impact of communitybased palliative care, particularly when delivered by nurses, on the management of respiratory symptoms in patients with life-limiting conditions. This reinforces the role of the programme in improving patient comfort and overall quality of life (53–54).

An increase in perceived social support was also observed following the intervention, highlighting the vital role of social interactions and support systems in improving quality of life for palliative care patients. The ability of nurses to facilitate these social connections is critical, as previous studies have shown that robust social support networks are significantly correlated with improved health outcomes in this population. These findings suggest that enhancing the role of nurses in building social connections during palliative care can have a significant impact on patients' perceptions of support and overall well-being [55–59].

In particular, an improvement in overall quality of life scores was observed, supporting the broad impact of the intervention. The concept of quality of life is multifaceted, encompassing physical, emotional and social functioning. Previous research has validated the use of QoL assessments in cancer patients, confirming that holistic nurse-led interventions not only alleviate specific symptoms, but also improve patients' overall experience of palliative care [11, 60–62].

The correlation between symptom reduction and improved quality of life highlights the interrelatedness of physical and psychological well-being in palliative care. A substantial body of evidence has shown that effective symptom management, particularly when facilitated by nursing care, is directly related to improved quality of life. This finding reinforces the importance of addressing The intervention produced a substantial effect size for pain, fatigue and emotional distress, indicating both statistical significance and meaningful clinical relevance. These effect sizes provide valuable insights into the practical implications of the research findings, highlighting the importance of implementing effective nursing interventions in palliative care settings to achieve substantial improvements in patient outcomes. This is consistent with previous research advocating for nurse-led interventions that result in significant improvements in both symptom management and overall quality of life [66–69].

#### Conclusion

The results of this study suggest that patients who received community-based palliative care with a focus on nursing interventions showed significant improvements in both symptom severity and quality of life. This was evidenced by significant reductions in pain, fatigue, emotional distress and anxiety, accompanied by improvements in social support and overall well-being. The active involvement of nurses in the delivery of tailored interventions was critical in achieving these results. The use of standardised assessment tools, including the Palliative Outcome Scale (POS), the Edmonton Symptom Assessment Scale (ESAS) and the EORTC QLQ-C30, validated the effectiveness of the intervention, highlighting the importance of comprehensive nurse-led symptom management in improving patient outcomes. These findings add to the growing body of evidence supporting integrated palliative care approaches that address both the physical and psychosocial dimensions of care, while highlighting the essential role of nurses in bridging gaps in palliative care.

#### Recommendations

According to the study's findings, creating communitybased palliative care teams have to be given top priority in order to guarantee that patients receive comprehensive, easily accessible, and ongoing treatment in their local areas. By strengthening these services, hospital admissions may be decreased, emotional and social support may be improved, and symptom management may be improved. To help with the prompt diagnosis and treatment of distressing symptoms, palliative care practices should also incorporate the regular use of validated symptom assessment tools. The observed improvements in symptom burden and psychosocial well-being imply that fewer hospital visits may occur, which could result in cost savings that could be used to enhance community-based palliative treatments, even though this study did not evaluate visits to healthcare facilities. Future studies should examine how community-based palliative care affects the use of medical facilities and related cost savings, since this will add to the body of evidence supporting patient-centered, sustainable care approaches. A comparative Analysis of QoL Assessment Tools: The Palliative Outcome Scale (POS) is another often used tool for measuring quality of life, although the EORTC QLQ-C30 was the main tool employed in this study. Future research could be enhanced and deeper insights into each instrument's merits in assessing patient well-being could be gained through a comparative examination.

#### Limitations

The study's limitations include its relatively small sample size and the absence of a control group, which may limit the generalizability of the findings. Furthermore, the use of self-reported measures may be susceptible to bias, as patients may underreport or overreport symptoms based on their perceptions or emotional state at the time of assessment. It is recommended that future studies pursue larger, multicentre designs with control groups in order to validate these results further and mitigate potential biases.

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#### Author contributions

A.I. contributed to the conception and design of the study, as well as the acquisition, analysis, and interpretation of data. H.A. and D.Z. were involved in the conception and design of the study, as well as data acquisition and interpretation. A.I. and D.Z. were responsible for drafting the article and critically revising it for significant intellectual content. A.I. H.A. and D.Z. jointly contributed to writing and editing the paper. All authors reviewed and approved the final version for publication.

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#### Data availability

No datasets were generated or analysed during the current study.

#### Declarations

#### Ethics approval and consent to participate

The study complied with the Declaration of Helsinki and was approved by the Faculty of Nursing's Research Ethics Committee (REC) at Zagazig University in Egypt. It was given ethical clearance with code ZU-7-2024. Ethical integrity was a top priority, ensuring the study adhered to the highest standards of ethical conduct. Prior to data collection, approval was obtained from the institutional review board, and written informed consent was secured from all participants. Participants were fully informed of the study's objectives, methods, and potential risks, and they were assured of their voluntary participation, with the option to withdraw at any time without repercussions. Confidentiality was rigorously maintained by removing personal identifiers from the dataset, and securely storing the information to prevent unauthorized access. The research was conducted in line with the ethical principles of beneficence and non-maleficence, aiming to maximize benefits and minimize harm to participants. Additionally, ethical considerations were regularly reviewed throughout the study to uphold the highest standards of research ethics in nursing practice.

#### **Consent for publication**

Not applicable.

#### **Competing interests**

The authors declare no competing interests.

#### Author details

<sup>1</sup>Nursing College, Prince Sattam Bin Abdulaziz University, Al-Kharj, Saudi Arabia

<sup>2</sup>Gerontological Nursing Department, Faculty of Nursing, Zagazig University, Zagazig City, Egypt

<sup>3</sup>Pediatric Nursing, Faculty of Nursing, Port Said University, Port Said City, Egypt

<sup>4</sup>Family and Community Health Nursing Department, Faculty of Nursing, Port Said University, Port Said City, Egypt

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