

Symptom Prevalence in Older Adults Diagnosed with Cancer Receiving Palliative Care: A Systematic Review and Meta-Analysis

Abstract

Background: Older adults diagnosed with cancer often experience multiple concurrent symptoms, making effective symptom management crucial. Nurses play a key role in identifying and managing these symptoms in palliative care settings.




Aim: This study aimed to determine the prevalence of common symptoms among older adults (defined as individuals aged ≥ 65 years) with cancer receiving palliative care.

Methods: This systematic review and meta-analysis included studies retrieved from the Web of Science, PubMed, Google Scholar, EBSCO, Embase, and Cochrane Library databases between 2014 and 2024, using the keywords palliative, cancer, symptom, and age-related terms (*older*, *elderly*, and *aged*). The methodological quality of the included studies was assessed using the Joanna Briggs Institute critical appraisal checklists. Data were pooled and analyzed using meta-analysis techniques.

Results: Eighteen studies (nine cohort and nine cross-sectional) with a total sample size of 48,503 participants were included. The pooled prevalence estimates were as follows: pain, 48.6%; fatigue, 61.0%; dyspnea, 48.6%; lack of appetite, 56.7%; nausea, 27.0%; sleep problems, 52.9%; depression, 32.4%; drowsiness, 56.6%; poor well-being, 42.3%; and anxiety, 22.1%. This study identified the prevalence of major symptoms among older adults with cancer receiving palliative care. Further high-quality studies are needed to explore underlying mechanisms and mediators affecting symptom management.

Conclusion: The results highlight the importance of developing nursing-led symptom assessment and management strategies to improve the quality of palliative care for older adults.

Keywords: Cancer, elderly, meta-analysis, palliative, symptom

 Serkan Budak,¹  Yasemin Karacan,²
 Ridvan Bayram³

¹Department of Health Care Services, Kütahya Health Sciences University, Simav Vocational School of Health Services, Kütahya, Türkiye

²Department of Nursing, Yalova University Faculty of Health Sciences, Yalova, Türkiye

³Department of Nursing, Bursa Uludağ University Faculty of Health Sciences, Bursa, Türkiye

Introduction

Cancer continues to be one of the most significant public health challenges worldwide, affecting populations in both developed and developing countries. According to recent global estimates, approximately 19.9 million new cancer cases and 9.7 million deaths occurred in 2022. Within five years of diagnosis, about 53.5 million individuals are still living with cancer.¹ It is projected that one in five people will be diagnosed with the disease during their lifetime, while one in nine men and one in twelve women will eventually die from it. With the steady aging of the global population, the number of older adults diagnosed with cancer is expected to rise dramatically in the coming decades. This growing burden highlights the increasing need for comprehensive chronic disease management and, in particular, for effective palliative care services.^{2,3}

Aging itself brings about a range of physiological, psychological, and social changes that influence both health and illness trajectories. When combined with a diagnosis of cancer, these changes can lead to complex and multidimensional challenges. Reduced organ function, the presence of multiple comorbidities, and geriatric syndromes contribute to physical discomfort, emotional distress, cognitive decline, and financial strain.⁴ Because cancer is closely associated with age, it has often been described as an “age-related disease.” The global rise in cancer among older adults not only affects individual health outcomes but also places additional pressure on healthcare systems, underscoring the central role of palliative care in supporting this vulnerable population.⁵

The World Health Organization (WHO) defines palliative care as “an approach that improves the quality of life of patients and their families facing problems associated with life-threatening illness.”⁶ It focuses on the early recognition and management of pain and other distressing symptoms through accurate assessment and interdisciplinary collaboration.⁷ Palliative care addresses not only the physical but also the psychological, social, and spiritual dimensions of illness. For patients with cancer—particularly older adults—these symptoms are often multiple, severe, and interrelated. Their cumulative impact increases the burden on families and the use of healthcare services.⁸ Consequently, palliative care has become a cornerstone in ensuring comfort, dignity, and quality of life. Nurses, in particular, play an essential role in assessing, prioritizing, and managing these symptoms through patient-centered and evidence-based care.

Nevertheless, the types and severity of symptoms observed in older adults with cancer receiving palliative care vary according to disease characteristics, treatment phase, and individual factors.^{9,10} Because of differences in study design, patient populations, and clinical settings, the literature on symptom prevalence remains highly heterogeneous. This inconsistency makes it difficult to establish a clear understanding of the overall

Cite this article as: Budak S, Karacan Y, Bayram R. Symptom Prevalence in Older Adults Diagnosed with Cancer Receiving Palliative Care: A Systematic Review and Meta-Analysis. J Educ Res Nurs. 2026;23(2):139-146.

Corresponding author: Serkan Budak
E-mail: serkan.budak@ksbu.edu.tr

Received: November 26, 2025
Accepted: January 31, 2026
Publication Date: June 01, 2026



Copyright@Author(s) - Available online at www.jer-nursing.org
Content of this journal is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.

symptom burden in this group. Meta-analysis, which allows researchers to combine data from multiple studies, provides an opportunity to generate more generalizable findings and strengthen evidence-based nursing and clinical practices.^{11,12}

Therefore, the present study systematically reviewed the existing literature on symptom prevalence among older adults with cancer receiving palliative care and synthesized the data using meta-analytic methods. The goal was to identify the most commonly reported symptoms and to clarify their distribution in this population. The results are expected to guide nurses and other healthcare professionals in developing effective, evidence-informed strategies for symptom assessment and management, contributing to improved care quality for older adults living with cancer.

Research Questions

1. What are the most frequently reported symptoms among older adults with cancer receiving palliative care?
2. How does the prevalence of these symptoms differ across healthcare systems?
3. What is the methodological quality of existing studies, and what areas require improvement?

Materials and Methods

The study design was a systematic review and meta-analysis. This study was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. The protocol was registered in the International Prospective Register of Systematic Reviews (PROSPERO; CRD42024614049). To minimize potential bias, the processes of literature searching, article selection, data extraction, and quality assessment were performed independently by two reviewers (R.B. and Y.K.). The results of their independent evaluations were compared and reconciled during discussion sessions chaired by the principal investigator (S.B.). Before data collection began, a meeting was carried out with the participation of all authors to ensure consistency in the review procedure.

Eligibility Criteria

The inclusion criteria were structured according to the Population-Exposure-Outcome-Study design (PEOS) framework: Population (P): older adults receiving palliative

care; Exposure (E): cancer; Outcomes (O): symptoms (such as pain, fatigue, dyspnea, and loss of appetite); and Study design (S): studies published in English between 2014 and 2024 describing the symptoms of elderly patients with cancer receiving palliative care. The screening and inclusion processes were carried out in accordance with the PRISMA guidelines for systematic reviews and meta-analyses.

Searching Strategy

The literature search for this study was conducted between July 2024 and December 2024. The search strategy was developed based on the study objectives, relevant Medical Subject Headings (MeSH), and previously published systematic reviews in the field. The Web of Science, PubMed, Google Scholar, EBSCO, Embase, and Cochrane Library databases were used for the search. The keywords "palliative" AND "cancer" AND "symptom" AND ["older" OR "elderly" OR "aged"] were combined using Boolean operators. In addition, the reference lists of the analyzed studies on this topic were checked to identify additional relevant articles.

Selection of Studies

Two researchers (R.B. and Y.K.) worked independently to identify and select studies for inclusion. At this stage, the inclusion criteria were applied. Duplicate articles were identified and removed using EndNote reference management software, followed by manual verification by two independent reviewers. Subsequently, the study titles, abstracts, and full texts were reviewed. Disagreements between the two researchers were discussed by all authors, and consensus was reached in the final stage.

Data Extraction

Research data were collected using a data extraction tool developed by the researchers. This tool included information on the year of publication, study design, study setting, patient characteristics (sample size, number of older adults, and mean age), measurement tools used, and reported symptoms. Data were independently identified, extracted, and cross-checked by two researchers in accordance with the eligibility criteria. The literature was first screened by reviewing titles and abstracts; after irrelevant studies were excluded, full texts were assessed for eligibility. The first author (S.B.) evaluated the year of publication, country of study, sample size, participant characteristics (age and gender), disease characteristics (symptoms, frequency, duration, and assessment), and study

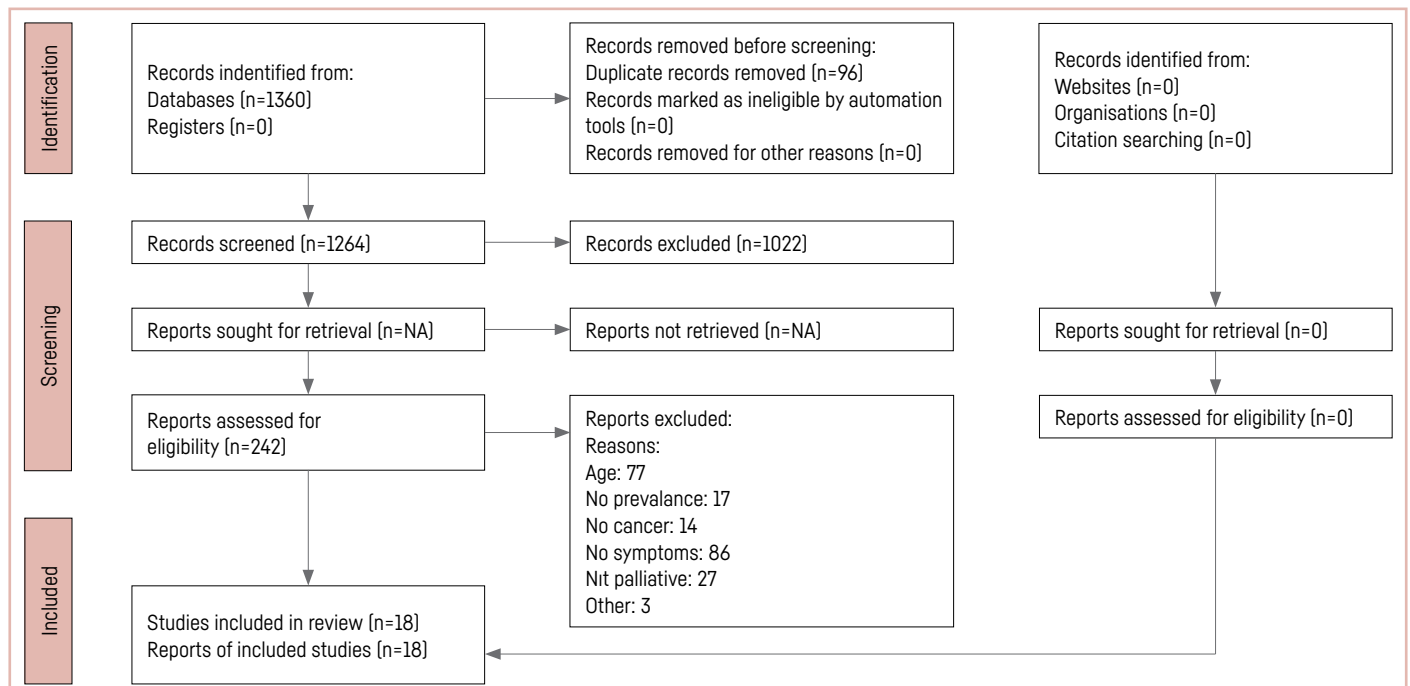


Figure 1. Flow diagram of the study selection process. The initial search identified 1,360 records. After removal of duplicates and screening of titles and abstracts, 37 full-text articles were assessed for eligibility. Following full-text evaluation, 18 studies met the inclusion criteria and were included in the meta-analysis.

results. In the final stage, two researchers (R.B. and Y.K.) reviewed and combined the extracted data. Any inconsistencies were discussed with the responsible researcher, and consensus was achieved.

Methodological Quality Evaluation of the Studies

The methodological quality of the included studies was independently assessed by two researchers (R.B. and Y.K.). Following these assessments, all authors discussed the findings and produced a single consolidated text. The Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Analytical Cross-Sectional Studies (8 items) and the JBI Critical Appraisal Checklist for Cohort Studies (11 items) were used to evaluate methodological quality of the studies.^[13] The response options for each item were “yes,” “no,” “unclear,” and “not applicable.” Based on the appraisal results, studies were classified as having “moderate” quality when fewer than 50% of items were rated “yes,” “average” quality when 51%-80% of items were rated “yes,” and “good” quality when more than 80% of items were rated “yes.”¹³

Data Synthesis

The data obtained in this study were synthesized using meta-analysis. Meta-analysis was conducted using the Comprehensive Meta-Analysis Version 3 (free trial) software (<https://www.meta-analiz.com/pages/demo.php>). Heterogeneity among studies was assessed using the Higgins I² test and forest plots. Heterogeneity was considered significant when the I² value exceeded 50%.¹⁴ When the I² value was ≤50%, a fixed-effects model was applied; when it was >50%, a random-effects model was used.¹⁴ For each outcome variable, a 95% confidence interval and estimated proportions were calculated. Publication bias was evaluated using Begg and Mazumdar’s rank correlation test, Duval and Tweedie’s trim-and-fill method, and funnel plots. According to the Begg and Mazumdar rank correlation test, a p value of <0.05 indicated the presence of publication bias. Duval and

Tweedie’s trim-and-fill method was used both to detect publication bias and to provide a solution for it. The funnel plot illustrates the missing studies identified using Duval and Tweedie’s trim-and-fill method. All tests were conducted on a two-tailed basis, and a p value of ≤0.05 was considered statistically significant.

Ethical Considerations

Ethical approval was not required for this study, as it is a systematic review and meta-analysis based exclusively on previously published studies. The study was conducted in accordance with the PRISMA guidelines, and all original studies included in the review were appropriately cited. Research integrity and ethical standards were maintained throughout the review process.

Results

Search Results

The initial search yielded 1,360 records. After title and abstract screening, duplicate articles were removed, and 37 full-text articles were assessed for eligibility. Following full-text review, 18 studies met the inclusion criteria and were included in the analysis. A detailed overview of the study selection process is presented in Figure 1.

Characteristics of the Studies and Participants

This systematic review and meta-analysis included a total of 18 studies comprising 48,503 participants. All included articles were published in English; nine were cross-sectional and nine were cohort studies (five retrospective and four prospective). All participants were older adults with cancer receiving palliative care. Across the included studies, a total of 42 distinct symptoms were reported [Appendix 1].

Table 1. Critical appraisal checklist for analytical cross-sectional studies and cohort studies

Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Total (%)	Quality score
Kuang et al. (2024) ^[17]	+	+	+	+	+	+	+	+	100	Good
Miyashita et al. (2024) ^[18]	+	+	-	-	+	-	-	+	50	Moderate
Nakamura et al. (2023) ^[32]	+	+	+	+	+	+	+	+	100	Good
Pandya et al. (2019) ^[20]	+	+	+	+	+	-	+	-	75	Average
Turner et al. (2014) ^[24]	+	+	+	+	+	-	+	+	75	Average
Lancker et al. (2015) ^[25]	+	+	+	+	+	-	+	-	75	Average
Van Lancker et al. (2017) ^[26]	+	+	+	+	+	+	+	+	100	Good
Vettori et al. (2020) ^[29]	+	+	-	-	+	-	-	-	37.5	Moderate
Yoon et al. (2021) ^[27]	+	+	+	+	+	+	+	+	100	Good
Total (%)	100	100	77	77	100	44	77	66		

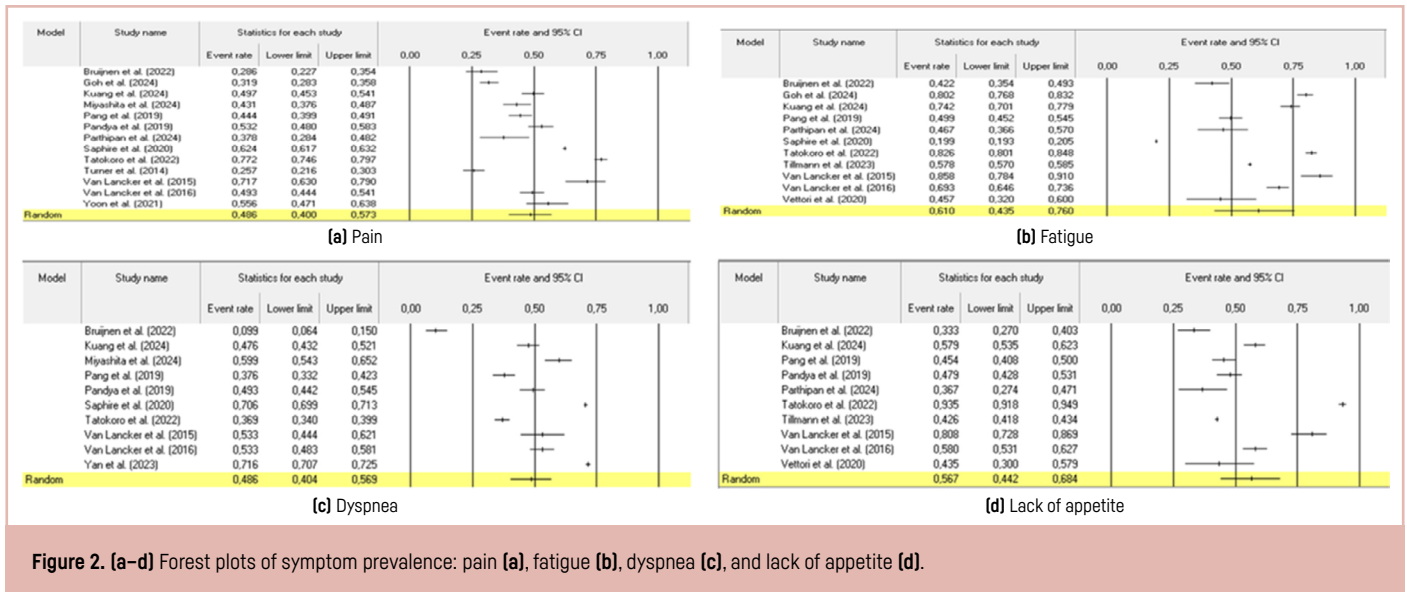
Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Total (%)	Quality score
Bruijnen et al. (2022) ^[15]	+	+	+	+	-	+	+	+	+	NA	-	72	Average
Goh et al. (2024) ^[16]	+	+	+	+	-	+	+	+	+	NA	+	81	Good
Gouraud et al. (2019) ^[31]	+	+	+	+	+	+	+	+	+	+	+	100	Good
Pang et al. (2019) ^[19]	+	+	+	+	-	+	+	+	+	NA	-	81	Good
Parthipan et al. (2024) ^[21]	+	+	+	+	-	+	+	+	+	NA	+	81	Good
Saphire et al. (2020) ^[22]	+	+	-	+	+	+	-	+	+	NA	+	72	Average
Tatokoro et al. (2022) ^[23]	+	+	-	+	-	+	-	+	+	NA	-	54	Average
Tillmann et al. (2023) ^[28]	+	+	+	+	-	+	+	+	+	NA	+	81	Good
Yan et al. (2023) ^[30]	+	+	+	+	+	+	+	+	+	NA	+	90	Good
Total (%)	100	100	77	100	33	100	77	100	100	11	66		

+ : Yes, - : No, NA: Not applicable, Q: Question. Source: Adapted from the JBI Critical Appraisal Tools.^[33]

Table 2. Meta-analysis findings of included studies

Variables	Number of studies	Number of cases/total	Estimated proportion [95% CI]	Heterogeneity			Test for overall effect: Z/p
				Tau ²	Q-value/df/p	I ²	
Pain	13	12434/20779	0.486 [0.40–0.57]	0.397	711.06/12/0.000	98.31	6.67/0.000
Fatigue	11	15235/36204	0.610 [0.43–0.76]	1.404	5730.42/10/0.000	99.82	0.83/0.40
Dyspnea	10	20169/29718	0.486 [0.40–0.56]	0.277	1027.57/9/0.000	99.12	23.56/0.000
Lack of appetite	10	9118/19725	0.567 [0.44–0.68]	0.628	675.15/9/0.000	98.66	1.37/0.16
Nausea	8	4001/19220	0.270 [0.20–0.34]	0.220	241.22/7/0.000	97.09	-44.12/0.000
Sleep problems	8	1901/3119	0.529 [0.39–0.65]	0.582	327.38/7/0.000	97.86	6.27/0.000
Depression	7	853/3077	0.324 [0.25–0.40]	0.213	98.13/6/0.000	93.88	-15.62/0.000
Drowsiness	7	1172/2828	0.546 [0.32–0.75]	1.524	625.92/6/0.000	99.02	-0.80/0.41
Poor well-being	6	9094/17921	0.423 [0.31–0.53]	0.291	170.87/5/0.000	97.07	-4.65/0.000
Anxiety	6	488/2667	0.221 [0.09–0.42]	1.393	349.48/5/0.000	98.56	-20.64/0.000
Vomiting	4	287/1309	0.213 [0.14–0.30]	0.210	34.23/3/0.000	91.23	-18.10/0.000
Constipation	4	704/1856	0.400 [0.33–0.46]	0.066	20.97/3/0.000	85.69	-8.58/0.000
Dry mouth	4	814/1364	0.646 [0.47–0.78]	0.506	108.73/3/0.000	97.22	7.61/0.000
Diarrhea	3	176/826	0.240 [0.17–0.32]	0.116	12.39/2/0.002	83.86	-13.78/0.000
Numbness or tingling	3	352/1005	0.327 [0.25–0.41]	0.082	12.65/2/0.002	84.20	-9.62/0.000
Sputum production	3	624/1552	0.404 [0.33–0.48]	0.064	13.29/2/0.001	84.95	-6.99/0.000
Weight loss	3	3730/16766	0.435 [0.21–0.68]	0.848	200.33/2/0.000	99.00	-38.61/0.000
Psychological problems	3	8274/17087	0.359 [0.20–0.55]	0.465	148.52/2/0.000	98.65	-9.09/0.000
Cough	2	204/520	0.411 [0.32–0.50]	0.057	3.59/1/0.058	72.18	–
Urinary incontinence	2	129/520	0.235 [0.17–0.31]	0.055	2.63/1/0.104	62.06	–
Fecal incontinence	2	53/520	0.103 [0.07–0.13]	0.000	0.90/1/0.342	0.000	–
Changes in taste	2	212/520	0.470 [0.24–0.70]	0.708	22.96/1/0.000	95.64	–
Vertigo	2	158/520	0.304 [0.26–0.34]	0.000	0.12/1/0.728	0.000	–
Distress	2	430/844	0.509 [0.47–0.54]	0.000	0.29/1/0.587	0.000	–
Sadness	2	390/844	0.462 [0.42–0.49]	0.006	1.61/1/0.203	38.18	–
Memory problems	2	517/844	0.612 [0.57–0.64]	0.000	0.49/1/0.483	0.000	–
Concentration problems	2	203/520	0.413 [0.31–0.52]	0.081	4.65/1/0.031	78.52	–
Itching	2	98/520	0.224 [0.09–0.45]	0.745	20.27/1/0.000	95.06	–
Sore mouth	2	105/520	0.227 [0.12–0.37]	0.231	9.08/1/0.003	88.98	–
Tension	2	174/520	0.335 [0.29–0.37]	0.000	0.03/1/0.852	0.000	–
Brooding	2	285/520	0.579 [0.44–0.70]	0.127	6.46/1/0.011	84.52	–
Nervousness	2	220/520	0.456 [0.32–0.59]	0.147	7.66/1/0.006	86.96	–
Heartburn or belching	2	111/520	0.251 [0.11–0.47]	0.476	18.64/1/0.000	94.63	–
Fear	2	137/520	0.301 [0.15–0.49]	0.333	14.54/1/0.000	93.12	–
Anger	2	113/520	0.236 [0.15–0.34]	0.113	5.00/1/0.025	80.01	–
Loneliness	2	147/520	0.305 [0.21–0.42]	0.107	5.36/1/0.021	81.35	–
Confusion	2	47/520	0.166 [0.08–0.30]	0.306	9.66/1/0.002	89.65	–
Lack of willpower	1	118/400	0.295 [0.25–0.34]	–	–	–	–
Weakness	1	289/304	0.951 [0.92–0.97]	–	–	–	–
Edema	1	834/1032	0.808 [0.78–0.83]	–	–	–	–
Delirium	1	854/1032	0.828 [0.80–0.84]	–	–	–	–
Dysuria	1	176/1032	0.171 [0.14–0.19]	–	–	–	–

Meta-analysis results were calculated using a random-effects model. Analyses were performed using Comprehensive Meta-Analysis software.^[14]



Quality Assessment Results of the Studies

Of the nine cross-sectional studies included, three were rated as adequate, two as average, and four as good quality. Three studies met 100% of the checklist criteria with “yes” responses, three met 77%, one met 66%, and one met 44% of the criteria (Table 1). In addition, of the nine cohort studies, three were rated as average quality and six as good quality. Within the checklist, “yes” responses were given to 100% of items in six studies, 77% in two studies, 66% in one study, 33% in one study, and 11% in one study (Table 1).

Symptom Prevalence

Across the 18 included studies, 42 distinct symptoms were identified. Meta-analyses were conducted for 37 symptoms that were reported in at least two studies. Pain, fatigue, dyspnea, lack of appetite, nausea, sleep problems, depression, drowsiness, poor well-being, and anxiety were each reported in at least six studies (Table 2).^{15–32}

Pain was reported in 13 studies, with an estimated prevalence of 48.6%. Fatigue was documented in 11 studies, with a prevalence of 61.0%. Dyspnea and loss of appetite were each reported in 10 studies, with estimated prevalence of 48.6% and 56.7%, respectively. Nausea and sleep disturbances were observed in eight studies, with estimated prevalence of 27.0% and 52.9%, respectively. Depression and drowsiness were reported in seven studies, with prevalence rates of 32.4% and 54.6%, respectively. Poor general well-being and anxiety were each noted in six studies, with estimated prevalence of 42.3% and 22.1%, respectively. Vomiting, constipation, and dry mouth were reported in four studies, with prevalence rates of 21.3%, 40.0%, and 64.6%, respectively. Diarrhea, numbness or tingling, sputum production, weight loss, and psychological problems were observed in three studies, with estimated prevalence of 24.0%, 32.7%, 40.4%, 43.5%, and 35.9%, respectively (Table 2).

Cough, urinary incontinence, fecal incontinence, altered taste, vertigo, distress, sadness, memory problems, concentration difficulties, itching, sore mouth, tension, brooding, nervousness, heartburn or belching, fear, anger, loneliness, and confusion were each reported in two studies. The estimated prevalence was 41.1% for cough, 23.5% for urinary incontinence, 10.3% for fecal incontinence, 47.0% for altered taste, 30.4% for vertigo, 50.9% for distress, 46.2% for sadness, 61.2% for memory problems, 41.3% for concentration difficulties, 22.4% for itching, 22.7% for sore mouth, 33.5% for tension, 57.9% for brooding, 45.6% for nervousness, 25.1% for heartburn or belching, 30.1% for fear, 23.6% for anger, 30.5% for loneliness, and 16.6% for confusion (Table 2).

Lack of willpower, weakness, edema, delirium, and dysuria were each reported in a single study. The estimated prevalence was 29.5% for lack of willpower, 95.1% for weakness, 80.8% for edema, 82.8% for delirium, and 17.1% for dysuria (Table 2).

Results on Heterogeneity Between Studies

The I^2 statistic and forest plot methods were used to evaluate heterogeneity among reported symptoms. I^2 values were calculated for a total of 37 symptoms, and 31 of these values exceeded 50% [Figs. 2, 3], indicating a high level of heterogeneity. Forest plots were generated for symptoms reported in at least 10 studies (Fig. 2), which also demonstrated high heterogeneity.

Results on Publication Bias

Begg and Mazumdar’s rank correlation test, Duval and Tweedie’s trim-and-fill method, and funnel plot analyses were applied to symptoms reported in at least six studies to assess publication bias. According to Begg and Mazumdar’s rank correlation test, all p-values were greater than 0.05 for the examined symptoms, including pain ($p=0.90$), fatigue ($p=0.10$), dyspnea ($p=0.55$), lack of appetite ($p=0.78$), nausea ($p=1.00$), sleep problems ($p=0.45$), depression ($p=0.65$), drowsiness ($p=0.65$), poor well-being ($p=0.85$), and anxiety ($p=0.34$). These results indicate no significant publication bias based on this test.

According to Duval and Tweedie’s trim-and-fill method, three missing studies were identified for dyspnea, two for nausea, and two for poor well-being. For all other symptoms (pain, fatigue, lack of appetite, sleep problems, depression, drowsiness, and anxiety), no missing studies were imputed, suggesting stable and symmetric distributions. The funnel plots illustrating symptoms with missing studies are presented in Figure 3.

Discussion

This systematic review and meta-analysis provides a comprehensive overview of the symptom burden experienced by older adults with cancer receiving palliative care. The findings highlight the wide range and clinical relevance of symptoms that require careful consideration in patient management. Common problems such as pain, fatigue, dyspnea, lack of appetite, nausea, and sleep problems were particularly prominent. In particular, the high prevalence of pain and fatigue represents important findings that should be carefully considered in treatment planning for this population.

There are significant differences between the findings of the systematic review and meta-analysis conducted by Van Lancker et al.³³ and those of the present study in terms of symptom prevalence, measurement methods, and clinical settings. Van Lancker et al.³³ identified weight loss, pain, anorexia, and dyspnea as the most common symptoms, whereas in our study, pain, fatigue, dyspnea, lack of appetite, nausea, and sleep problems were most prevalent. Similarly, the study by Henson et al.³⁴ on symptom burden in patients with cancer receiving palliative care reported that pain, dyspnea, nausea, vomiting, and fatigue were among the most common symptoms. Battat et al.³⁵ found that 61.6% of cancer patients receiving palliative care experienced drowsiness, 54.6% pain, 40.2% nausea, 55.0% lack of appetite, 28.4% dyspnea, 40.6% depression, and 47.2% anxiety. In a study by Vogt et al.³⁶ examining

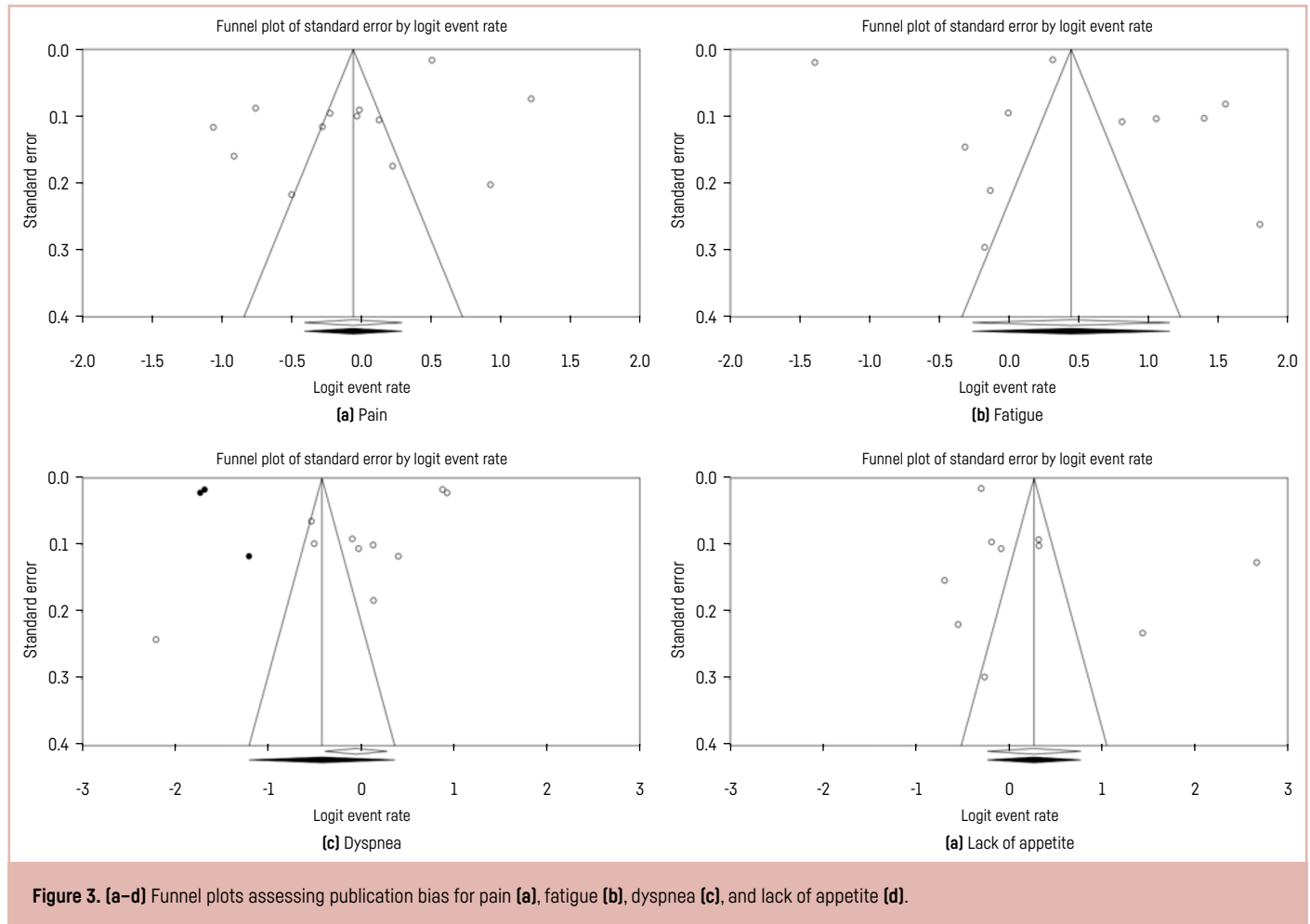


Figure 3. (a-d) Funnel plots assessing publication bias for pain (a), fatigue (b), dyspnea (c), and lack of appetite (d).

the palliative care needs of individuals with metastatic cancer across 20 centers in Germany, 64.0% of participants reported distress, 53.0% apathy, 46.0% depressive symptoms, and 36% loneliness. Across these studies, symptoms prevalence varied considerably.^{35,36} These differences are likely attributable to variations in study methodologies and factors such as cancer type, diagnostic and treatment approaches, and changes in living standards over time. The high heterogeneity observed across the pooled estimates is therefore not unexpected and can be explained by clinical and methodological differences among the included studies, including cancer types, disease stages, care settings, and symptom assessment tools. This variability should be interpreted as reflecting real-world palliative care practice rather than as a methodological limitation, and the findings should be interpreted with appropriate caution.

While only two (11.8%) of the 17 studies included in the review by Van Lancker et al.³³ employed valid and reliable measurement tools, a substantially higher proportion (66.7%) was observed in our study. Significant differences were also noted in terms of clinical settings. The lack of standardization in measurement methods is considered an important factor contributing to variations in reported symptom prevalence across studies. In a systematic review on prognosis and symptom management in patients with cancer, Hui et al.³⁷ emphasized that increased use of valid measurement tools is critical for accurate symptom evaluation. Nevertheless, it has been reported that a lack of standardization in measurement methods contributes to heterogeneity in symptom prevalence and complicates clinical decision-making processes.³⁸

National and international guidelines recommend the early integration of palliative care into the treatment of patients with advanced cancer and emphasize its positive effects.³⁹⁻⁴² Comprehensive cancer palliative care centers are increasingly highlighted as essential components of cancer care for managing symptoms and related problems using up-to-date knowledge and high-quality standards.^{43,44} Berendt et al.⁴⁵ examined differences in symptom burden between comprehensive

cancer center palliative care and other hospital-based palliative care services among 10,447 older adults requiring palliative care in Germany. In this study, pain, vomiting, constipation, depression, anxiety, and distress were found to be less prevalent in palliative care centers compared to other hospital settings. Temel et al.⁴⁶ in a study examining palliative care services, emphasized that the care environments has a direct effect on the nature of symptoms experienced by patients. Changes in care and treatment settings over time may influence patient characteristics and symptom prevalence, thereby directly shaping study outcomes. Zhang et al.⁴⁷ reported that palliative care significantly improved depressive symptoms and alleviated both physical and psychological symptoms in patients with end-stage cancer compared to traditional oncology care. The differences observed in our study underscore the influence of methodological and contextual variations across studies on the results and highlight the need for more standardized approaches to symptom management in patients with cancer.^{45,47}

From a nursing care perspective, the findings of this review suggest that symptoms such as pain, fatigue, dyspnea, lack of appetite, and sleep problems should be prioritized in routine palliative care assessments. These symptoms were consistently reported with high prevalence across studies and have a direct impact on functional status, comfort, and quality of life. Early identification and systematic monitoring of these symptoms by nurses may facilitate timely interventions and improve symptom control in older adults receiving palliative care.

For palliative care to be implemented effectively, the manner and duration of care are of critical importance. Adopting a multidisciplinary approach can improve the quality of life of patients and their families by addressing psychosocial, spiritual, and cultural needs in addition to managing physical symptoms.^{35,47} Early initiation of palliative care facilitates symptom management, enhances patients' ability to cope with disease, and leads to measurable improvements in quality of life.⁴⁶ Further-

more, establishing standards and individualizing care processes may help reduce heterogeneity and ensure that patient needs are met more effectively.³⁷ While effective pain control supports individuals' ability to maintain social and emotional functioning, alleviation of symptoms such as dyspnea provides both physical and psychological comfort. In addition, spiritual support and efforts to reduce the psychosocial burden on families may enhance resilience during the grief process and mitigate the effects of trauma. Palliative care supports patients' physical and emotional health in a holistic manner, and social and psychological support systems should also be established for families.^{48–50}

Strengths and Limitations of the Study

The main strengths of this study include the generally high methodological quality of the included studies, a low risk of publication bias, and the fact that all included studies collected data from hospital-based records. The main limitations are the lack of standardization in measurement instruments and the geographical variability of the included studies, both of which may have contributed to the observed heterogeneity in symptom prevalence.

Conclusion

Palliative care represents a fundamental model of care that enhances the quality of life of patients and their families by addressing physical, psychological, and emotional needs in advanced chronic diseases such as cancer. As essential members of the multidisciplinary team, nurses have a key responsibility to deliver high-quality, evidence-based, and compassionate care tailored to individual needs. This study not only raises awareness of the symptom burden experienced by older adults receiving palliative care but also identifies ongoing gaps in the literature. Such research is vital for strengthening nursing practice and ensuring that both patients and their families receive adequate support throughout the palliative care journey. Future research should prioritize prospective studies using standardized and validated assessment tools to better understand symptom prevalence and to inform individualized nursing interventions. Expanding the evidence base will contribute to the standardization of palliative care services across diverse care settings, patient populations, and cultural contexts.

Conflict of Interest: The authors have no conflicts of interest to declare.

Funding: The authors declared that this study received no financial support.

Author Contributions: Concept – S.B.; Design – S.B.; Supervision – S.B.; Data Collection and/or Processing – R.B., Y.K.; Analysis and/or Interpretation – R.B., Y.K., S.B.; Literature Review – R.B., Y.K.; Writing – R.B., Y.K., S.B.; Critical Review – R.B., Y.K., S.B.

Peer-review: Externally peer-reviewed.

Trial Registration: PROSPERO CRD42024614049.

References

- Güçlüel YÖ, Birbudak S. Healthcare staff' views on oral health in palliative care patients: a qualitative study. *J Educ Res Nurs.* 2024;21(4):273–280. [\[CrossRef\]](#)
- Pillner S, Gnangnon F, Noronha V, Soto-Perez-de-Celis E. Cancer incidence estimates in adults aged 60 years and older living in low-and-middle-income countries for the years 2020 and 2040. *Ecanccermedicallscience.* 2023;17:1594. [\[CrossRef\]](#)
- World Health Organization. Global Cancer Observatory. Accessed February 11, 2026. <https://gco.iarc.who.int/media/globocan/factsheets/populations/900-world-fact-sheet.pdf>
- Sedrak MS, Cohen HJ. The Aging-Cancer Cycle: Mechanisms and Opportunities for Intervention. *J Gerontol A Biol Sci Med Sci.* 2023;78(7):1234–1238. [\[CrossRef\]](#)
- Mudoti D, Addis G. Barriers experienced by community nurses in delivering pain management to end-of-life adult cancer patients. *J Educ Res Nurs.* 2025;22(1):32–38. [\[CrossRef\]](#)
- World Health Organization. Palliative care. Accessed February 11, 2026. <https://www.who.int/news-room/fact-sheets/detail/palliative-care>
- Radbruch L, De Lima L, Knaul F, et al. Redefining Palliative Care-A New Consensus-Based Definition. *J Pain Symptom Manage.* 2020;60(4):754–764. [\[CrossRef\]](#)
- Kumari K, Kalyani CV, Gupta S, et al. Meta-analysis on Effectiveness of Palliative Care versus Conventional Care amongst Advanced Gynaecological Patients with Cancer and Caregivers. *Indian J Palliat Care.* 2024;30(4):289–295. [\[CrossRef\]](#)
- Nipp RD, Subbiah IM, Loscalzo M. Convergence of Geriatrics and Palliative Care to Deliver Personalized Supportive Care for Older Adults with Cancer. *J Clin Oncol.* 2021;39(19):2185–2194. [\[CrossRef\]](#)
- van der Vlies E, Kurk SA, Roodhart JML, et al. The relevance of geriatric assessment for older patients receiving palliative chemotherapy. *J Geriatr Oncol.* 2020;11(3):482–487. [\[CrossRef\]](#)
- Al Maqbali M, Al Sinani M, Al Naamani Z, Al Badi K, Tanash MI. Prevalence of Fatigue in Patients with Cancer: A Systematic Review and Meta-Analysis. *J Pain Symptom Manage.* 2021;61(1):167–189.e14. [\[CrossRef\]](#)
- Bjerkset E, Röhrk K, Schou-Bredal I. Symptom cluster of pain, fatigue, and psychological distress in breast cancer survivors: prevalence and characteristics. *Breast Cancer Res Treat.* 2020;180(1):63–71. [\[CrossRef\]](#)
- Joanna Briggs Institute. Critical Appraisal Tools. Accessed February 11, 2026. <https://jbi.global/critical-appraisal-tools>
- Cleophas JT, Zwiderman HA. Modern meta-analysis: Review and update of methodologies. Switzerland: Springer International Publishing; 2017. [\[CrossRef\]](#)
- Bruijnen CP, Laeven CE, Koldenhof JJ, et al. Symptom burden of older patients with cancer during systemic therapy and its relationship with frailty: A prospective observational study. In: Bruijnen CP, ed. Shared-decision making in older patients with cancer the added value of frailty screening. Rotterdam: Gildeprint Enschede; 2022:120–138.
- Goh WY, Hum AYM. Symptom severity reported by older adults with cancer and its impact on survival prognostication. *J Geriatr Oncol.* 2024;15(8):102073. [\[CrossRef\]](#)
- Kuang Y, Jing F, Sun Y, Zhu Z, Xing W. Symptom networks in older adults with cancer: A network analysis. *J Geriatr Oncol.* 2024;15(3):101718. [\[CrossRef\]](#)
- Miyashita M, Evans CJ, Yi D, Gomes B, Gao W. Symptom burden, service use and care dissatisfaction among older adults with cancer, cardiovascular disease, respiratory disease, dementia and neurological disease during the last 3 months before death: A pooled analysis of mortality follow-back surveys. *Palliat Med.* 2024;38(5):582–592. [\[CrossRef\]](#)
- Pang L, de la Cruz M, Wu J, Liu D, Naqvi M, Bruera E. Symptom frequency and change of oldest old cancer patients. *Support Care Cancer.* 2019;27(11):4165–4170. [\[CrossRef\]](#)
- Pandya C, Magnuson A, Flannery M, et al. Association Between Symptom Burden and Physical Function in Older Patients with Cancer. *J Am Geriatr Soc.* 2019;67(5):998–1004. [\[CrossRef\]](#)
- Parthipan M, Feng G, Breunis H, et al. Understanding the incidence, duration, and severity of symptoms through daily symptom monitoring among frail and non-frail older patients receiving metastatic prostate cancer treatments. *J Geriatr Oncol.* 2024;15(3):101720. [\[CrossRef\]](#)
- Saphire ML, Prsic EH, Canavan ME, Wang SJ, Presley CJ, Davidoff AJ. Patterns of Symptom Management Medication Receipt at End-of-Life Among Medicare Beneficiaries with Lung Cancer. *J Pain Symptom Manage.* 2020;59(4):767–777.e1. [\[CrossRef\]](#)
- Tatokoro M, Matsuo N. The Impact of Aging on Symptom Prevalence and Management in Terminally ill Patients with Cancer. *J Pain Symptom Manage.* 2022;63(2):251–259. [\[CrossRef\]](#)
- Turner JP, Shakib S, Singhal N, et al. Statin use and pain in older people with cancer: a cross-sectional study. *J Am Geriatr Soc.* 2014;62(10):1900–1905. [\[CrossRef\]](#)
- Lancker A, Cypers S, Vanwynsberghe E, Verhaeghe S, Hecke A, Beeckman D. Symptom assessment in hospitalized older palliative patients with cancer: agreement among patients, nurses, and proxies. *Oncol Nurs Forum.* 2015;42(2):E73–E90. [\[CrossRef\]](#)
- Van Lancker A, Beeckman D, Van Den Noortgate N, Verhaeghe S, Van Hecke A. Frequency and intensity of symptoms and treatment interventions in hospitalized older palliative cancer patients: a multicentre cross-sectional study. *J Adv Nurs.* 2017;73(6):1455–1466. [\[CrossRef\]](#)
- Yoon SL, Scarton L, Duckworth L, et al. Pain, symptom distress, and pain barriers by age among patients with cancer receiving hospice care: Comparison of baseline data. *J Geriatr Oncol.* 2021;12(7):1068–1075. [\[CrossRef\]](#)
- Tillmann BW, Hallet J, Sutradhar R, et al.; members of the REcovery after Surgical Therapy for Older adults REsearch –Cancer (RESTORE-C) group. The impact of unexpected intensive care unit admission after cancer surgery on long-term symptom burden among older adults: a population-based longitudinal analysis. *Crit Care.* 2023;27(1):162. [\[CrossRef\]](#)
- Vettori JC, da Silva LG, Pfrimer K, et al. Older Adult Cancer Patients Under Palliative Care with a Prognosis of 30 Days or More: Clinical and Nutritional Changes. *J Am Coll Nutr.* 2021;40(2):148–154. [\[CrossRef\]](#)
- Yan M, Tjong M, Chan WC, et al. Dyspnea in patients with stage IV non-small cell lung cancer: a population-based analysis of disease burden and patterns of care. *J Thorac Dis.* 2023;15(2):494–506. [\[CrossRef\]](#)
- Gouraud C, Paillaud E, Martinez-Tapia C, et al.; ELCAPA Study Group. Depressive Symptom Profiles and Survival in Older Patients with Cancer: Latent Class Analysis of the ELCAPA Cohort Study. *Oncologist.* 2019;24(7):e458–e466. [\[CrossRef\]](#)
- Nakamura ZM, Small BJ, Zhai W, et al. Depressive symptom trajectories in older breast cancer survivors: the Thinking and Living with Cancer Study. *J Cancer Surviv.* 2025;19:568–597. [\[CrossRef\]](#)
- Van Lancker A, Velghe A, Van Hecke A, et al. Prevalence of symptoms in older cancer patients receiving palliative care: a systematic review and meta-analysis. *J Pain Symptom Manage.* 2014;47(1):90–104. [\[CrossRef\]](#)
- Henson LA, Maddocks M, Evans C, Davidson M, Hicks S, Higginson IJ. Palliative Care and the Management of Common Distressing Symptoms in Advanced Cancer: Pain, Breathlessness, Nausea and Vomiting, and Fatigue. *J Clin Oncol.* 2020;38(9):905–914. [\[CrossRef\]](#)
- Battat M, Omair N, WildAli MA, et al. Factors associated with palliative care symptoms in cancer patients in Palestine. *Sci Rep.* 2023;13(1):16190. [\[CrossRef\]](#)

36. Vogt J, Beyer F, Siermanns J, et al.; Arbeitsgemeinschaft Palliativmedizin (APM) of the German Cancer Society (DKG). Symptom Burden and Palliative Care Needs of Patients with Incurable Cancer at Diagnosis and During the Disease Course. *Oncologist*. 2021;26(6):e1058–e1065. [\[CrossRef\]](#)
37. Hui D, dos Santos R, Chisholm GB, Bruera E. Symptom Expression in the Last Seven Days of Life Among Cancer Patients Admitted to Acute Palliative Care Units. *J Pain Symptom Manage*. 2015;50(4):488–494. [\[CrossRef\]](#)
38. Passik SD, Weinreb HJ. Managing chronic nonmalignant pain: overcoming obstacles to the use of opioids. *Adv Ther*. 2000;17(2):70–83. [\[CrossRef\]](#)
39. Bakitas MA, Tosteson TD, Li Z, et al. Early Versus Delayed Initiation of Concurrent Palliative Oncology Care: Patient Outcomes in the ENABLE III Randomized Controlled Trial. *J Clin Oncol*. 2015;33(13):1438–1445. [\[CrossRef\]](#)
40. Bauman JR, Temel JS. The integration of early palliative care with oncology care: the time has come for a new tradition. *J Natl Compr Canc Netw*. 2014;12(12):1763–1771; quiz 1771. [\[CrossRef\]](#)
41. Davis MP, Temel JS, Balboni T, Glare P. A review of the trials which examine early integration of outpatient and home palliative care for patients with serious illnesses. *Ann Palliat Med*. 2015;4(3):99–121.
42. Haun MW, Estel S, Rucker G, et al. Early palliative care for adults with advanced cancer. *Cochrane Database Syst Rev*. 2017;6(6):CD011129. [\[CrossRef\]](#)
43. Berendt J, Stiel S, Nauck F, Ostgathe C. Early palliative care: current status of integration within German comprehensive cancer centers. *Support Care Cancer*. 2017;25(8):2577–2580. [\[CrossRef\]](#)
44. Lödel S, Ostgathe C, Heckel M, Oechsle K, Gahr S. Standard Operating Procedures (SOPs) for Palliative Care in German Comprehensive Cancer Centers - an evaluation of the implementation status. *BMC Palliat Care*. 2020;19(1):62. [\[CrossRef\]](#)
45. Berendt J, Brunner S, Heckel M, Tewes M, Ostgathe C, Gahr S. Symptom burden and relief in palliative care units of German Comprehensive Cancer Center and other hospitals. *J Cancer Res Clin Oncol*. 2024;150(3):160. [\[CrossRef\]](#)
46. Temel JS, Greer JA, Muzikansky A, et al. Early palliative care for patients with metastatic non-small-cell lung cancer. *N Engl J Med*. 2010;363(8):733–742. [\[CrossRef\]](#)
47. Zhang J, Fang H, Sun Y, Wang W, Yuan Y, Zheng K. Meta-analysis of Palliative Care on End-stage Quality of Life in Cancer Patients. *Altern Ther Health Med*. 2024;AT10548. 2024 May 17. [Epub ahead of print].
48. Abbasnezhad M, Rahmani A, Ghahramanian A, et al. Cancer Care Burden among Primary Family Caregivers of Iranian Hematologic Cancer Patients. *Asian Pac J Cancer Prev*. 2015;16(13):5499–5505. [\[CrossRef\]](#)
49. Kiyancicek Z, Caydam DÖ. Spiritual needs and practices among family caregivers of patients with cancer. *Acta Paul Enferm*. 2017;30(6):628–634. [\[CrossRef\]](#)
50. Penman J, Ellis B. Palliative care clients' and caregivers' notion of fear and their strategies for overcoming it. *Palliat Support Care*. 2015;13(3):777–785. [\[CrossRef\]](#)

Appendix 1. Characteristics and main results of studies included in the systematic review

Study	Study design and setting	Patients characteristics	Measurement instrument	Symptom prevalence
Bruijnen et al. (2022) ^[15]	Prospective cohort/Department of Medical Oncology	Sample size: 192 Number of older adults: 192 Age: All patients ≥70 years Median age 74 years	Utrecht Symptom Diary	Fatigue (42.1%) Poor well-being (40.6%) Sleep problems (33.8%) Lack of appetite (33.3%) Pain (28.6%) Anxiety (23.9%) Depression (18.7%) Dyspnea (9.8%) Nausea (7.8%)
Goh et al. (2024) ^[16]	Prospective cohort/Palliative Care Service	Sample size: 840 Number of older adults: 592 Age: older adult group ≥65 years	Edmonton Symptom Assessment System	Fatigue (80.2%) Pain (31.9%) Poor well-being (23.9%) Anxiety (5.2%)
Gouraud et al. (2019) ^[31]	Prospective cohort/Geriatric Oncology Clinics	Sample size: 847 Number of older adults: 847 Age: All patients ≥70 years Median age 79 years	Mini Geriatric Depression Scale	Depression (31.7%)
Kuang et al. (2024) ^[17]	Cross-sectional/Shanghai Cancer Survivor (SCANS) Report	Sample size: 485 Number of older adults: 485 Age: Median age 72 years	MD Anderson Symptom Inventory	Fatigue (74.2%) Sleep problems (68.7%) Memory problems (62.3%) Lack of appetite (57.9%) Distress (51.8%) Drowsiness (50.5%) Pain (49.7%) Dyspnea (47.6%) Dry mouth (46.2%) Sadness (44.3%) Numbness or tingling (40.0%) Nausea (32.2%) Vomiting (28.5%)
Miyashita et al. (2024) ^[18]	Cross-sectional/Hospice and Home Care	Sample size: 304 Number of older adults: 304 Age: All patients ≥75 years	Unknown	Weakness (95.0%) Drowsiness (80.9%) Dyspnea (59.8%) Constipation (49.0%) Depression (45.0%) Pain (43.0%) Anxiety (42.1%) Nausea (39.1%) Diarrhea (25.9%) Vomiting (24.0%)
Nakamura et al. (2023) ^[32]	Cross-sectional/Cancer Center	Sample size: 272 Number of older adults: 272 Age: All patients ≥60 years	Center for Epidemiological Studies Depression Scale	Depression (15.6%)
Pang et al. (2019) ^[19]	Retrospective cohort/Cancer Center	Sample size: 441 Number of older adults: 241 Age: Older adult group ≥65 years	Edmonton Symptom Assessment System	Fatigue (49.8%) Poor well-being (49.8%) Sleep problems (47.8%) Lack of appetite (45.3%) Pain (44.4%) Drowsiness (39.9%) Anxiety (39.4%) Dyspnea (37.6%) Depression (33.3%) Nausea (26.5%) Psychological problems (17.2%)
Pandya et al. (2019) ^[20]	Cross-sectional/Geriatric Oncology Clinics	Sample size: 359 Number of older adults: 359 Age: All patients ≥65 years Median age 81 years	Clinical Symptom Inventory	Sleep problems (63.7%) Memory problems (62.1%) Pain (55.5%) Dry mouth (54.3%) Distress (52.6%) Dyspnea (52.0%) Sadness (50.8%) Lack of appetite (49.8%)

Appendix 1. Cont.

Study	Study design and setting	Patients characteristics	Measurement instrument	Symptom prevalence
Parthipan et al. (2024) ^[21]	Prospective cohort/Cancer Center	Sample size: 90 Number of older adults: 90 Age: All patients ≥65 years	Edmonton Symptom Assessment System	Fatigue (46.8%) Sleep problems (42.9%) Poor well-being (41.2%) Pain (37.5%) Lack of appetite (37.1%)
Saphire et al. (2020) ^[22]	Retrospective cohort/Medicare Database	Sample size: 16,246 Number of older adults: 16,246 Age: All patients ≥67 years	Unknown	Dyspnea (70.7%) Pain (62.5%) Psychological problems (49.4%) Weight loss (21.4%) Fatigue (19.9%) Nausea (19.2%)
Tatokoro et al. (2022) ^[23]	Retrospective cohort/Palliative Care Unit	Sample size: 1,032 Number of older adults: 1,032 Age: All patients ≥60 years Median age 79 years	Unknown	Lack of appetite (93.6%) Delirium (82.8%) Fatigue (82.6%) Edema (80.8%) Sleep problems (79.4%) Pain (77.2%) Sputum production (42.1%) Dyspnea (37.0%) Constipation (34.5%) Nausea (30.0%) Dysuria (17.1%) Drowsiness (11.4%) Anxiety (7.3%)
Tillmann et al. (2023) ^[28]	Retrospective cohort/Regional Cancer Centers	Sample size: 16,560 Number of older adults: 16,560 Age: All patients ≥70 years	Edmonton Symptom Assessment System	Fatigue (57.7%) Poor well-being (51.8%) Lack of appetite (42.5%)
Turner et al. (2014) ^[24]	Cross-sectional/Medical Oncology Outpatient Clinic	Sample size: 385 Number of older adults: 385 Age: All patients ≥70 years	Visual Analogue Scale	Pain (25.7%)
Lancker et al. (2015) ^[25]	Cross-sectional/General Hospitals	Sample size: 120 Number of older adults: 120 Age: All patients ≥65 years	Symptom Instrument For Elderly Patients Diagnosed With Cancer Receiving Palliative Care	Fatigue (85.8%) Drowsiness (84.1%) Lack of appetite (80.8%) Dry mouth (79.1%) Pain (71.6%) Weight loss (71.6%) Brooding (65.0%) Changes in taste (60.0%) Depression (55.0%) Dyspnea (53.3%) Nervousness (53.3%) Sputum production (48.3%) Concentration problems (47.5%) Cough (46.6%) Nausea (45.0%) Sleep problems (41.6%) Fear (40.0%) Constipation (40.0%) Loneliness (36.6%) Heartburn or belching (35.8%) Tension (34.1%) Itching (33.3%) Vertigo (31.6%) Diarrhea (30.8%) Sore mouth (30.0%) Anger (29.1%) Numbness or tingling (24.1%) Vomiting (23.3%) Confusion (23.3%) Urinary incontinence (19.1%) Fecal incontinence (12.5%)

Appendix 1. Cont.

Study	Study design and setting	Patients characteristics	Measurement instrument	Symptom prevalence
Van Lancker et al. [2017] ^[26]	Cross-sectional/Acute Care Hospitals	Sample size: 400 Number of older adults: 400 Age: All patients ≥65 years	Assessment Symptoms Palliative Elderly	Fatigue [69.3%] Drowsiness [65.8%] Lack of appetite [58.0%] Dyspnea [53.3%] Brooding [51.8%] Pain [49.3%] Psychological problems [46.0%] Nervousness [39.0%] Depression [36.3%] Tension [33.3%] Lack of willpower [29.5%] Dry mouth [77.0%] Weight loss [41.3%] Sleep problems [40.8%] Constipation [37.8%] Cough [37.0%] Concentration problems [36.5%] Changes in taste [35.0%] Sputum production [33.0%] Numbness or tingling [32.3%] Vertigo [30.0%] Urinary incontinence [26.5%] Nausea [26.3%] Loneliness - 103 [25.8%] Fear - 89 [22.3%] Anger - 78 [19.5%] Diarrhea [17.5%] Sore mouth [17.3%] Heartburn or belching [17.0%] Itching [14.5%] Vomiting [12.0%] Confusion [11.8%] Fecal incontinence [9.5%]
Vettori et al. [2020] ^[29]	Cross-sectional/University Hospital	Sample size: 46 Number of older adults: 46 Age: Unknown Median age 66 years	Unknown	Anxiety [50.0%] Poor well-being [50.0%] Drowsiness [45.6%] Fatigue [45.6%] Lack of appetite [43.4%]
Yan et al. [2023] ^[30]	Retrospective cohort/Sciences Database	Sample size: 13,159 Number of older adults: 10,139 Age: Older adult group ≥60 years	Edmonton Symptom Assessment System	Dyspnea [71.6%]
Yoon et al. [2021] ^[27]	Cross-sectional/Hospice	Sample size: 230 Number of older adults: 133 Age: Older adult group ≥65 years	McGill Pain Questionnaire	Pain [55.6%]

Source: Summary of characteristics and main findings of included studies (Refs. 15–32). Table created by the authors based on the original publications.