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# A SYSTEMATIC REVIEW OF THE PALLIATIVE CARE IN PATIENTS WITH ADVANCED COLORECTAL CANCER; FAMILY MEDICINE PHYSICIAN'S PERSPECTIVES

BADER THUWAINI M ALANAZI[1], FAHAD SAAD ALMUTAIRI[2], DANA SAAD FAHAD ALMUTAIRI[3], ABDULLAH DHAFER A AL OWAYMIR[4], OMAR SALEM AHMED ALQASEM[5], FAHAD SAAD ALMUTAIRI[2], YASMYEEN OMAR ABDULAZIZ ALAQEEL[6], BANDAR MASHHI ALDHAFEERI[7], BASSAM MASHHI L ALDHAFEERI[8]

[1]REGISTRAR OF FAMILY MEDICINE, HAFER ALBATIN HEALTH CLUSTER, SAUDI ARABIA
[2]SENIOR REGISTRAR OF FAMILY MEDICINE, HAFER ALBATIN HEALTH CLUSTER, SAUDI ARABIA
[3]FAMILY MEDICINE RESIDENT, EASTERN HEALTH CLUSTER, SAUDI ARABIA
[4]GENERAL PRACTITIONER, ASEER HEALTH CLUSTER, SAUDI ARABIA
[5]SENIOR REGISTRAR OF FAMILY MEDICINE, KING FAHAD MILITARY MEDICAL COMPLEX,
[2]MINISTRY OF DEFENSE HEALTH SERVICES, DHAHRAN, SAUDI ARABIA
[6]NURSE SPECIALIST, PRINCE SAUD BIN JALAWI HOSPITAL, AL-AHSA, SAUDI ARABIA
[7]SENIOR REGISTRAR OF FAMILY MEDICINE, NORTHERN AREA ARMED FORCES HOSPITAL, HAFAR ALBATIN, SAUDI ARABIA
[8]FAMILY MEDICINE RESIDENT, HAFER ALBATIN HEALTH CLUSTER, SAUDI ARABIA

**Abstract**

**Objectives:** To aggregate and analyze the existing body of research surrounding palliative care for patients with advanced colorectal cancer (CRC).

**Methods:** A comprehensive search of four databases led to the discovery of 711 relevant publications. After eliminating duplicates with Rayyan QCRI and assessing each article for relevance, 131 full-text articles were examined, and ultimately, 7 studies were selected based on the inclusion criteria.

**Results:** We included seven studies with a total of 2649 patients with CRC, of whom 1408 (53.2%) were males. Palliative chemotherapy demonstrated improved survival compared to best supportive care. Primary tumor resection (PTR) was an independent predictor of better OS, regardless of tumor location. Systemic therapy followed by radiotherapy also showed survival benefits. Structured palliative care programs improved prognostic awareness and advance care planning. Comparable survival outcomes were observed between young-onset and older mCRC patients. ‘

**Conclusion:** Palliative interventions, when individualized and integrated early, offer meaningful benefits in mCRC management. A multidisciplinary, patient-centered approach is essential for optimizing outcomes. Further research is needed to standardize treatment pathways and refine prognostic tools.

***Keywords:*** Palliative care, metastatic colorectal cancer, quality of life, Systematic Review.

## INTRODUCTION:

Palliative care plays a crucial role in the treatment of patients with advanced CRC, focusing on relieving symptoms, enhancing quality of life, and providing support for both patients and their families [1]. With CRC being one of the most common types of cancer globally, and with its progression often leading to significant physical, emotional, and psychological distress, a comprehensive approach to palliative care is essential [2].

Advanced CRC is characterized by the spread of malignant cells beyond the original tumor site, often to distant organs such as the liver and lungs. Patients diagnosed at this stage frequently experience debilitating symptoms, including severe pain, gastrointestinal complications, fatigue, and psychological distress. Traditional oncological treatments primarily focus on curative intent, offering options like chemotherapy, radiation, and surgery [3]. However, these interventions may not fully address the burden of symptoms or the complexity of the patient's experience. Palliative

care serves as an essential adjunct to these treatments, designed to alleviate suffering and promote comfort regardless of the stage or prognosis of the disease [4].

One of the core tenets of palliative care is the management of symptoms associated with advanced CRC. Pain, for instance, is one of the most distressing symptoms reported by patients, often resulting from tumor growth or treatment side effects. Palliative care teams employ a multimodal approach to pain management, which can include pharmacological methods (such as opioids and non-opioid analgesics) along with non-pharmacological interventions like physical therapy, acupuncture, or mindfulness techniques. By focusing on pain relief, palliative care enhances a patient's ability to engage in daily activities, fostering a sense of autonomy and dignity in the face of their illness [5].

In addition to physical symptom management, palliative care addresses the psychological and emotional needs of patients with advanced CRC. The diagnosis and progression of cancer can provoke a wide range of emotional responses, including anxiety, depression, and existential distress. Palliative care teams, which typically include psychologists, social workers, and trained counselors, provide psychosocial support that helps patients and their families navigate these challenges [6]. Interventions might include psychotherapy, supportive counseling, and the involvement of support groups, fostering open communication about fears and hopes, and facilitating coping strategies to help patients maintain a sense of control during their treatment journey [7].

Family involvement is also a critical aspect of palliative care in advanced CRC. The disease not only impacts the patient but also significantly affects family members and caregivers, who may experience their own emotional and physical strain. Palliative care recognizes the importance of supporting the entire family unit—providing education about the disease process, assisting with care logistics, and offering respite care when needed [8].

Another significant component of palliative care is advanced care planning. Patients with advanced CRC face critical decisions regarding their treatment options and end-of-life care. Palliative care teams facilitate discussions about goals of care, ensuring that the patient's values and preferences are expressed and honored [9]. These discussions involve exploring the patient's understanding of their prognosis, treatment side effects, and personal priorities, aiding in the development of a care plan that aligns treatment options with the patient's desires. Establishing advance directives can also alleviate stress for family members who may feel uncertain about decision-making during a crisis [10].

Moreover, palliative care extends its benefits beyond the patient's immediate needs by integrating with various healthcare services. Effective communication and collaboration between oncologists, palliative care specialists, and primary care teams enhance the continuity of care [11]. This integrative approach facilitates knowledge sharing about symptom management, helps streamline treatments, and ensures all members of the healthcare team are aligned in their efforts to provide compassionate care. This model of care is becoming increasingly recognized as instrumental in improving patient outcomes, as it ensures that comprehensive strategies are employed throughout the continuum of disease [12].

Despite the recognized importance of palliative care, there remains a significant gap in understanding its effectiveness and implementation in the context of advanced CRC. Many patients experience inadequate symptom management, psychosocial distress, and a lack of comprehensive support measures as they navigate their illness journey. Thus, there is a pressing need to address how palliative care can be more effectively integrated into the treatment pathways for patients with ACC to enhance their overall well-being.

The aim of this systematic review is to aggregate and analyze the existing body of research surrounding palliative care for patients with advanced CRC.

**Study Objectives**

1. To catalog the various palliative care interventions employed in the context of advanced CRC.
2. To evaluate the impact of these interventions on patient-reported outcomes, including quality of life and symptom relief.
3. To identify common barriers to effective palliative care delivery for patients with advanced CRC.
4. To gather insights from patients and caregivers that will inform future palliative care strategies and clinical practices.

**Methods**

This systematic review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [13]. The study aimed to comprehensively evaluate the role, effectiveness, and outcomes of palliative care interventions in patients with advanced CRC. A systematic search was conducted across multiple databases, including PubMed, Web of Science, SCOPUS, and Cochrane Library, to identify relevant English-language studies examining palliative care strategies in advanced CRC. The search strategy incorporated MeSH terms and keywords related to palliative care, supportive care, CRC, advanced cancer, quality of life, symptom management, survival outcomes, and end-of-life care.

Two independent reviewers screened the search results, assessed study eligibility, extracted data, and evaluated study quality using standardized tools. Discrepancies were resolved through discussion or consultation with a third reviewer, if necessary.

**Eligibility Criteria**

**Inclusion Criteria:**

- Population: Adult patients (≥18 years) diagnosed with advanced or metastatic CRC.
- Intervention/Exposure: Palliative care interventions (e.g., pain management, psychosocial support, hospice care, early palliative care integration).
- Outcomes: Primary outcomes may include quality of life (QoL), symptom burden (pain, fatigue, nausea), survival outcomes, healthcare utilization (hospitalizations, ICU admissions), and patient/family satisfaction. Secondary outcomes may include depression/anxiety scores, caregiver burden, and advance care planning.
- Study Design: Randomized controlled trials (RCTs), observational studies (cohort, case-control), and qualitative studies assessing palliative care interventions.
- Studies conducted in the last five years (2020-2025).
- Publication Status: Peer-reviewed articles published in English.

**Exclusion Criteria:**

- Studies not focused on advanced/metastatic CRC or lacking a palliative care component.
- Animal studies, reviews, editorials, case reports, and conference abstracts without original data.
- Studies without comparative outcomes (e.g., single-arm interventions without controls).
- Studies combining palliative care with experimental cancer therapies without separate analysis.

**Data Extraction**

The screening process were managed using Rayyan (QCRI) [14] to ensure transparency and minimize bias. Titles and abstracts were screened for relevance, followed by full-text review of eligible studies. Data were extracted using a standardized form, including:

- Study characteristics (author, year, country, study design).
- Population details (sample size, cancer stage, palliative care intervention type).
- Outcome measures (QoL metrics, symptom scores, survival data, healthcare utilization).
- Key findings (effect sizes, statistical significance, confounders adjusted).

**Risk of Bias Assessment**

We utilized the ROBINS-I technique to evaluate the risk of bias because it allows for extensive assessment of confounding, which is significant because bias owing to omitted variables is common in studies in this field. The ROBINS-I tool is intended to evaluate non-randomized investigations and can be applied to cohort designs in which participants exposed to various staffing levels are monitored over time. Two reviewers separately assessed the risk of bias for each paper, and disagreements were resolved through group discussion [15].

**Data Synthesis Strategy**

Findings were summarized in evidence tables, categorized by intervention type and outcome. If sufficient homogeneous data were available, a random-effects meta-analysis was conducted to estimate pooled effects, with heterogeneity assessed via $I^2$ statistics. Subgroup analyses explored variations (e.g., early vs. late palliative care, inpatient vs. home-based care).

## RESULTS

The search process initially identified 711 publications **(Figure 1).** After removing 322 duplicates, 389 trials were screened based on their titles and abstracts. Of these, 254 did not meet the eligibility criteria, leaving 66 full-text articles for in-depth evaluation. In the end, 7 studies met the inclusion criteria and were selected for evidence synthesis and analysis.

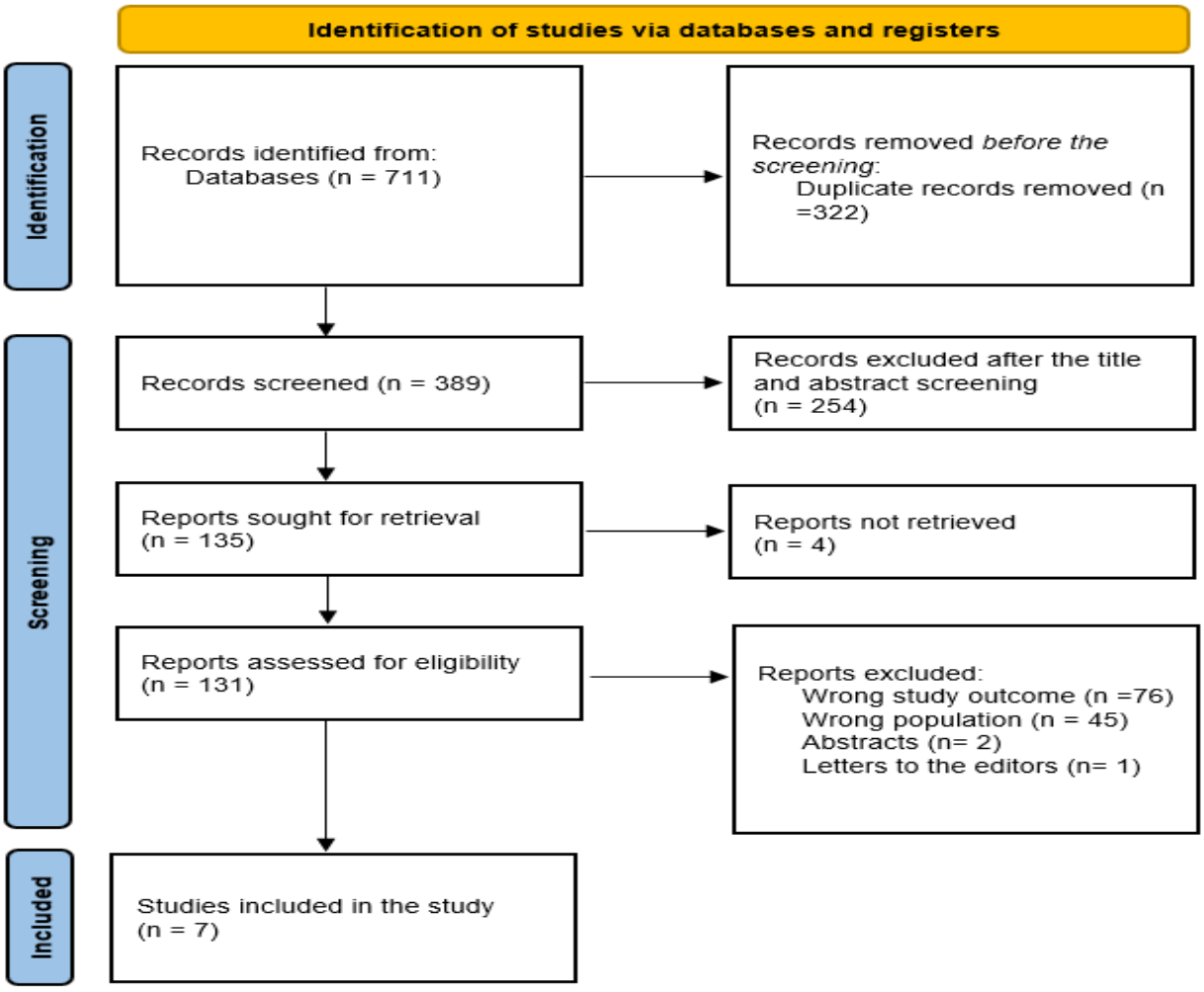


**Figure (1): Search summary illustrated in PRISMA flowchart.**

**Sociodemographic and clinical outcomes**

Seven studies were included, with a total of 2649 patients with CRC, of whom 1408 (53.2%) were males. The study designs consisted of five retrospective cohort studies [16-19, 22], and two prospective cohort studies [20, 21] **Table (1)**.

Palliative chemotherapy demonstrated a notable survival advantage when compared to best supportive care (BSC) in patients with metastatic colorectal cancer (mCRC), indicating its potential as a standard component of care for eligible individuals [16]. Additionally, resection of the primary tumor was found to be an independent prognostic factor for improved overall survival, regardless of the tumor's anatomical location. This suggests a broader applicability of primary tumor resection (PTR) in the palliative setting beyond specific tumor sites [17].

A combined treatment approach involving systemic therapy followed by palliative radiotherapy was associated with improved overall survival. This finding highlights the benefit of multimodal strategies in managing mCRC and supports the integration of radiotherapy for symptom control and survival extension [18]. Furthermore, PTR was shown to positively influence survival and was offered to patients considered suitable for surgery, particularly those with favorable prognostic indicators. This reinforces the importance of patient selection in surgical decision-making for palliative care [19].

An integrated palliative care program for mCRC patients showed a positive impact on prognostic awareness and advanced care planning, and it was well-received by patients, caregivers, and clinicians. This underscores the role of early and structured palliative interventions in enhancing patient-centered outcomes [20].

Multiagent chemotherapy, even in patients with poor performance status and no molecular selection, appeared to contribute to symptom control. This suggests that, with careful consideration, such patients might still derive benefit from active treatment strategies in a palliative context [21].

Finally, survival outcomes from palliative systemic therapy were found to be comparable between patients with young-onset colorectal cancer (YOCR) and those diagnosed at age 50 or older. This finding challenges the assumption that younger patients necessarily have better outcomes and supports a more nuanced approach to age-based treatment planning [23].

**Table (1): Summary of demographic from the included studies.**

| Study ID | Country | Study design | Sociodemographic | Palliative care | Main outcomes |
|---|---|---|---|---|---|
| **Alkader et al., 2023 [16]** | Jordan | Retrospective cohort | Cases: 73<br>Mean age: 60.4<br>Males: 51 (69.9%) | Palliative chemotherapy | Palliative chemotherapy offers a notable improvement in survival outcomes compared to BSC. |
| **Kim et al., 2020 [17]** | South Korea | Retrospective cohort | Cases: 600<br>Mean age: 60<br>Males: 357 (59.5%) | Palliative PTR | Palliative resection of the primary tumor independently predicted improved overall survival in patients with metastatic CRC, irrespective of the tumor's original location. |
| **Ba et al., 2021 [18]** | China | Retrospective cohort | Cases: 776<br>Males: 457 (58.9%) | Palliative Radiotherapy | Systemic therapy followed by palliative radiotherapy resulted in improved overall survival for patients with mCRC. Consequently, this combined approach may be considered an effective treatment option for mCRC patients. |
| **Inci et al., 2023 [19]** | Sweden | Retrospective cohort | Cases: 188<br>Mean age: 65.8<br>Males: 109 (57.9%) | Palliative PTR | PTR positively influenced overall survival and may be a viable option for patients deemed fit for surgery. PTR was provided to palliative mCRC patients who exhibited prognostic factors linked to more favorable outcomes. |
| **Bischoff et al., 2020 [20]** | USA | Prospective cohort | Cases: 60<br>Mean age: 57.7<br>Males: 44 (66.7%) | Palliative care program | A pilot program integrating palliative care for patients with mCRC positively influenced prognostic awareness and the frequency of advance care planning, while also being well-received by patients, caregivers, and healthcare providers. |
| **da Silva Rocha et al., 2023 [21]** | Brazil | Prospective cohort | Cases: 28<br>Mean age: 57<br>Males: 10 (35.7%) | Palliative chemotherapy | Palliative multiagent chemotherapy in CRC patients with poor performance status and without molecular selection appeared to contribute to the management of tumor-related symptoms. |
| **Jeong et al., 2022 [23]** | South Korea | Retrospective cohort | Cases: 969<br>Males: 380 (39.2%) | Palliative systemic therapy | Survival outcomes from palliative systemic therapy were comparable between recurrent or metastatic |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | YOCR patients and those diagnosed at age 50 or older. |

**Table (2): Risk of bias assessment using ROBINS-I**

| Study ID | Bias due to confounding | Bias in the selection of participants into | Bias in the classification of interventions | Bias due to deviations from the intended interval | Bias due to missing data | Bias in the measurement of outcomes | Bias in the selection of reported result | Overall bias |
|---|---|---|---|---|---|---|---|---|
| **Alkader et al., 2023 [16]** | Low | Low | Mod | Low | Low | Low | Mod | Low |
| **Kim et al., 2020 [17]** | Low | Low | Low | Low | Low | Low | Mod | Low |
| **Ba et al., 2021 [18]** | Low | Low | Mod | Low | Low | Low | Mod | Low |
| **Inci et al., 2023 [19]** | Mod | Low | Low | Low | Low | Mod | Mod | Moderate |
| **Bischoff et al., 2020 [20]** | Mod | Mod | Low | Mod | Low | Mod | Mod | Moderate |
| **da Silva Rocha et al., 2023 [21]** | Mod | Mod | Low | Low | Low | Mod | Mod | Moderate |
| **Jeong et al., 2022 [23]** | Crit | Mod | Low | Low | Crit | Mod | Mod | Critical |

## DISCUSSION

This review highlights the diverse landscape of palliative care interventions for patients with mCRC. Across different geographical regions and study designs, palliative chemotherapy, radiotherapy, and PTR were consistently associated with improved overall survival and symptom control. These findings reinforce the clinical relevance of individualized and multimodal approaches in the management of mCRC.

Palliative chemotherapy demonstrated a clear survival advantage over BSC, emphasizing its importance even in advanced stages of disease. Furthermore, the evidence suggesting that PTR can independently improve overall survival—regardless of tumor location—adds valuable insight into the ongoing debate regarding the role of surgery in the palliative setting. Radiotherapy, when used in conjunction with systemic treatment, also contributed to survival benefits, supporting its use beyond symptom palliation alone. Another systematic review and meta-analysis reported that chemotherapy has been shown to extend both the time to disease progression and overall survival in patients with advanced CRC. However, the observed survival benefit in this analysis may be underestimated, as some individuals in the control groups also received chemotherapy [23].

The advantages of chemotherapy must be carefully balanced against its potential toxicities and impact on quality of life—factors that have been insufficiently addressed in many clinical trials. Evaluating treatment-related toxicity is essential to determining the acceptability of chemotherapy in a palliative context [24]. However, numerous studies either provided minimal toxicity data or omitted it entirely, with only four utilizing validated scales to classify the severity of adverse effects. Furthermore, just one study directly compared toxicity between treatment and control

groups—a critical comparison, given that some symptoms may result from the disease itself rather than from the chemotherapy. Maintaining or enhancing quality of life is a key objective in palliative chemotherapy, yet seven out of thirteen trials failed to include any quality of life assessment [23].

This review also stated that the integration of structured palliative care programs was found to improve prognostic awareness and rates of advance care planning. This reflects the growing recognition of palliative care as a holistic and proactive element of cancer management, rather than a reactive, end-of-life service. The comparable survival outcomes between young-onset and older patients also call for reconsideration of age-based treatment assumptions. Providing optimal palliative care for patients with advanced CRC is a complex and demanding task, particularly when an initially asymptomatic and incurable primary tumor progresses to metastatic disease [24].

Surgical resection can play a valuable role in relieving symptoms and preventing potential tumor-related complications, as previously observed [24]. The primary aim of palliative care is to enhance quality of life. Effective communication and meticulous symptom management are closely linked to better outcomes for patients and their families, including improved quality of life, increased adherence to treatment, and potentially even extended survival [25].

A meta-analysis by **Kavalieratos *et al.*** published in 2016, which reviewed 40 palliative care trials, found that palliative care significantly improved patients' quality of life and reduced symptom burden [26].

The American Society of Clinical Oncology (ASCO) advocates for the integration of palliative care into standard oncology practice [27]. However, despite mounting evidence supporting its benefits, there remains limited agreement on how best to incorporate palliative care into everyday oncology workflows [28]. Barriers such as a shortage of trained professionals, limited access to services, and inadequate compensation models continue to hinder implementation—particularly in low-resource settings.

Palliative care also places strong emphasis on supporting family caregivers. Although research on caregivers is even more scarce than studies focused on patients, there is increasing recognition of its benefits for families [24]. Nevertheless, current reimbursement models often fail to account for family support services, especially those related to bereavement care.

The findings of this review suggest several important clinical takeaways. First, palliative chemotherapy should be considered a cornerstone of treatment for mCRC, even in patients with compromised performance status, provided they are carefully selected. Second, PTR and radiotherapy, traditionally reserved for symptom control, may also offer survival benefits and should be evaluated as part of a personalized treatment plan.

Incorporating structured palliative care programs early in the treatment trajectory can enhance communication, decision-making, and end-of-life planning, thereby improving the quality of care. Clinicians should also be aware that young age at diagnosis does not automatically confer a survival advantage, and treatment decisions should be guided by individual prognostic indicators rather than age alone.

**Strengths and limitations**

Inclusion of both retrospective and prospective cohort studies from diverse healthcare settings increases the generalizability of the findings. A wide range of palliative interventions were analyzed, providing a comprehensive overview of available options for mCRC patients.

The majority of studies were retrospective in design, which may introduce selection and reporting biases. Heterogeneity in treatment protocols, patient populations, and outcome measures may limit the ability to draw definitive conclusions. Some studies had small sample sizes, potentially affecting the statistical power and reliability of their findings.

## CONCLUSION

Palliative interventions in mCRC, including chemotherapy, PTR, radiotherapy, and integrated care programs, are associated with meaningful improvements in survival and patient-centered outcomes. These findings underscore the value of a tailored, multidisciplinary approach to palliative care in this population. Further prospective studies and randomized trials are warranted to refine patient selection criteria and optimize treatment strategies in advanced CRC.

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