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Caring for Patients With Malignant Fungating Wounds

A Scoping Literature Review

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ABSTRACT

PURPOSE: The aim of this scoping literature review was to identify current knowledge related to management of malignant fungating wounds (MFWs), gaps in this knowledge, and areas for future research.**METHODS:** This was a scoping literature review.**SEARCH STRATEGY:** Six electronic databases (Embase, MEDLINE, Cochrane (CENTRAL), CINAHL, Scopus, and Web of Science) were searched spanning the years 1987 and 2022. The initial electronic database search retrieved 6041 studies. The search is based on 60 articles published between 1987 and 2022, along with 14 additional studies were based on search of reference lists of key articles.**FINDINGS:** Studies were divided into 2 main domains; the vast majority (65 of 72, 87.8%) focused on symptom impact, measurement, and management. The remaining articles (n = 9, 12.2%) focused on caring for patients with MFW; these studies focused on nursing care experiences and competencies, along with lay caregiver experiences. Findings indicated that instruments have been developed to evaluate symptoms of MFW but only a few have been validated. Most of the studies reviewed evaluated the influence of MFW on physical and psychosocial function. Local and systematic symptom managements such as modern dressings, wound care strategies, surgery, and radiotherapy as well as chemotherapy were found to be effective in alleviating symptoms. Findings also indicated that families and nurses encounter obstacles and burdens when caring for patients with MFW; limited studies were retrieved that investigated the competence and needs of nurses in their caring journey.**IMPLICATIONS:** Future studies should focus on: (1) using better designs to evaluate and compare topical agents and dressings to control odor, (2) validating assessment tools specific to MFW, (3) qualitative studies designed to enhance understanding family and nurses' experiences, and (4) improving the nurse's ability to care for patients with MFWs and their responses to managing these challenging patients.**KEY WORDS:** Evidence-based nursing, Malignant fungating wounds, Scoping review, Symptom management, Wound care.

INTRODUCTION

Malignant fungating wounds (MFWs) occur when a malignancy invades the skin and destroys surrounding tissue and vessels via direct infiltration from a primary lesion or metastasis from a distant primary tumor.¹⁻⁴ The prevalence and incidence of MFW are not known; though data from recent studies suggest they occur in 5% to 15% of patients with terminal cancers. Approximately one-third of MFWs are attributed to

the primary tumors and two-thirds are linked to metastases. Commonly associated signs and symptoms are pain, exudate, malodor, and hemorrhage.^{1,5,6} Patients with MFW experience psychosocial distress, including feelings of social isolation, loneliness, and living alone.^{7,8} Wound management associated with psychosocial symptoms also influences the quality of life in these patients.⁹

The complex nature and terminal prognosis of MFWs require a comprehensive, holistic nursing approach to meet patients' biological/physical, psychological, social, and spiritual needs. The aim of this scoping review is to review knowledge of assessment and management of MFWs. We also explored gaps in knowledge and areas for future research.¹⁰

SEARCH STRATEGY

This scoping review followed the 5-step approach of Arksey and O'Malley¹¹ including: (a) identifying the research question; (b) retrieving relevant studies; (c) selecting relevant studies; (d) charting the data; and (e) collating, summarizing, and reporting finding. Quality assessment for potential bias in selected studies was not conducted.¹¹

A literature search of electronic databases was conducted in December 2022. The databases included Embase, MEDLINE (Ovid), Cochrane (CENTRAL), CINAHL (EBSCO-host), Scopus, and Web of Science. The search strategy was

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TABLE 1.
Search Terms for Malignant Fungating Wounds

Controlled Vocabulary	Keywords
neoplasms	neoplasm*OR metasta* OR tumor* OR tumour* OR cancer* OR carcin* OR oncolog*
chronic wound (Emtree)	fungat* OR malignan*
skin ulcers (MeSH)	wound* OR leison* OR malodor* OR malodour*
fungating wounds (CINAHL)	OR odor*

developed in collaboration with a reference librarian; Table 1 lists the terms used in our search. Inclusion criteria were empirical studies (both quantitative and qualitative): systematic reviews with meta-analysis or meta-synthesis of pooled findings. Exclusion criteria were citations from gray literature such as seminar proceedings and abstracts, review articles without a systematic technique for searching the literature, and records not written in English.

The search strategy is summarized in the Figure (PRISMA flow diagram). The initial search of the 6 electronic databases retrieved 6041 records; 5103 records were retained after removing duplicates. This additional cohort was narrowed to 302 studies based on title and abstract review. We attempted to retrieve all 302, but found that 34 were not available leaving 268 studies that were read in full. This process led to 60 studies

included in this scoping review. In addition, ancestry searches of key references led to inclusion of an additional 14 studies. A majority of authors of included records reside in Western countries (Table 2). A detailed analysis in supplemental digital content data from each study is summarized in the Appendix (<http://links.lww.com/JWOCN/A109>). Most studies were structured review articles; 27.0% (20 of 74) were systematic, scoping, or rapid reviews. Ten studies (13.5%) were randomized clinical trials or nonrandomized comparison studies. We also included 20 case studies (27.0%) and 10 qualitative studies (13.5%, Table 3).

Included studies were then divided in 2 groups: 65 (87.8%) were classified as patient-focused, and 9 (12.2%) were classified as caregiver-focused. Patient-focused studies focused on symptom measurement 5.4% (4/74), symptom impact 18.9% (14/74), and wound or symptom management 63.5% (47/74). Caregiver-focused studies included nursing experiences 6.8% (5/74), nurses' competencies 1.4% (1/74), and family experiences 4.1% (3/74). In the domain of patient focus, physical symptoms,^{12,13} psychosocial concern, and associated impact of patients and caregivers were examined in the descriptive level.¹⁴⁻¹⁶ Correlational tended to focus on relationships between symptoms and health-related quality of life.^{8,14,17} Randomized clinical trials or nonrandomized comparison cohort study designs tended to evaluate the efficacy of topical agents and

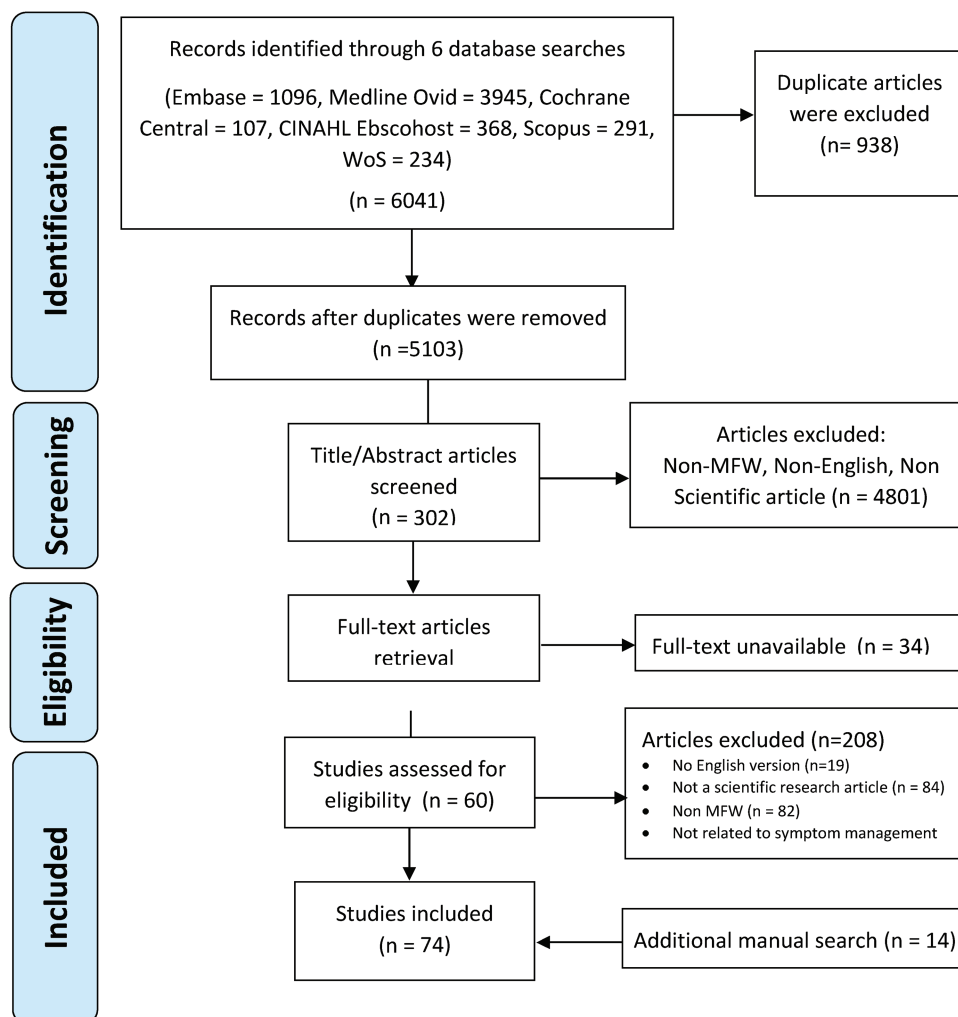


Figure. PRISMA flowchart.

TABLE 2.
Origin of Studies Based on Country

Country	Number of Studies n = 74
USA	10
UK	10
Brazil	7
Australia	7
Japan	6
Canada	6
China	3
Ireland	3
Switzerland	3
France	2
Denmark	2
Taiwan	2
Sweden	2
Singapore	2
Poland	2
India	2
Malaysia	1
Czech	1
Greece	1
Iran	1
Indonesia	1

dressings on odor in patients with MFWs.¹⁸⁻²⁰ Details of included studies are shown in Table 4.

FINDINGS

Thirteen instruments were identified that were designed to measure the symptoms of MFW. Four measured multiple dimensions such as physical symptoms, psychological concerns, coping mechanisms, and social interaction.^{21,22}

The Toronto Symptom Assessment System (TSAS-W) was developed to measure the severity of 10 major wound-related symptoms via a numeric ranging scale (NRS), where a score of 0 indicates no symptoms and a score of 10 indicates worst possible symptoms.²¹ The developers of the instrument suggest it is easily adaptable to all wound types, but the scale has not been fully validated and it is not specific to MFWs.

Two validated assessment tools specifically focusing on malignant wounds were identified; they are the Malignant Wound Assessment Tool—Clinical (MWAT-C) and the Malignant Wound Assessment Tool—Research (MWAT-R).^{22,23} Both the MWAT-C and MWAT-R include items designed to measure physical symptoms reported by patients with MFW; however, the MWAT-R also incorporates items that evaluate psychosocial aspects of MFW. The MWAT-R comprises 38 questions (yes/no or numeric rating scale) that evaluate physical symptoms, health-related quality of life, and psychosocial impact. Schulz and her coworkers²³ evaluated content validity of these instruments using a Delphi method. Savage and her colleagues²² evaluated content and face validity of the MWAT-R by evaluating patients’ understanding and opinions on the items through cognitive interviewing.

de Oliveira Souza and colleagues²⁴ identified 9 instruments measuring the intensity and quality of malodor associated with MFWs in an integrative review of quantitative and qualitative studies. They reported only the TELER had undergone psychometric evaluation.²⁴ The TELER system uses 6 levels to evaluate malodor using descriptors—content validity items, which were validated from the observation of health care providers and compatible with patients’ experiences.²⁵

Symptom Impact

Considered collectively, studies evaluating symptom impact found that patients with MFWs experienced low self-esteem, impaired body image, hopelessness, inability to fulfill role responsibilities, vulnerability, and social isolation.^{6,14,16,26} Probst and colleagues^{16,26} reported that women with MFW experienced a loss of control because of uncontrollable and unexpected symptoms. They found themselves unable to manage these symptoms, leading to social isolation as a coping strategy. Some respondents characterized the MFW as the worst part in their disease journey. Respondents also found it difficult to fulfill family responsibilities and expressed worry maintaining close relationships with family and friends due to an impaired body image associated with the MFW.⁶ They also described how finding effective strategies to manage MFW would help them to cope in a more positive way.¹⁴ These issues were also reflected in the structured reviews retrieved that focused on symptom impact of MFW.²⁷⁻²⁹

Other researchers used a quantitative approach and focused on the relationship between the symptom burden and health-related quality of life.^{7,8,17} For example, one study used mixed quantitative/qualitative methods to examine a combination of wound care principles and psychosocial support interventions in patients with MFWs.⁷ During a 4-week intervention, 3 home care wound nurses performed evidence-based and structured wound care and they explored the psychosocial impacts of MFW through weekly 1-hour consultations. Findings suggest that patients with MFWs felt more confident about their body safer to engage in social contact with others after this intervention.

Symptom Management

We retrieved multiple studies that evaluated specific local or systemic therapies or general principles of wound management.^{12,30-35} Most focused on local therapies (dressings), used with or without systemic interventions such as antibiotics. Three studies were case studies³²⁻³⁵ and 3 were reports of original research evaluating the effects of topical or systematic therapies on pain, malodor, exudate, and bleeding.^{7,36-42}

Topical Therapies

Lund-Nielsen and colleagues⁷ described a wound care project for female breast cancer patients with MFW that focused on topical therapy selection; they reported that charcoal, hydrogel, alginate, and foam products reduced malodor, exudate, and necrotic tissue burden. Some dressings were coated with topical agents in order to increase their effect on wound outcomes. The use of antimicrobial products such as silver-coated dressings with octenidine dihydrochloride was examined in 2 studies; both reported that these additives reduced malodor associated with MFW.^{36,37} Peng and Dai⁴² conducted a randomized controlled study to examine the efficacy of combination of metronidazole and debridement gel in dressing in 36 patients with MFW. They reported significantly reduced malodor at

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TABLE 3.
Design of Studies

Study Design Included in Scoping Review	Number of Studies (N = 74)
Systematic review	17
Case study	15
Qualitative study	10
Non-RCT	7
Case-controlled study	5
Cross-sectional study	5
Validation study	3
RCT	3
Scoping review	2
Descriptive study	2
Prospective study	2
Observational study	1
Cohort study	1
Rapid review	1

Abbreviation: RCT, randomized controlled trial.

treatment days 3 and 12 when compared to the patients using silver wet dressings. The use of other dressings improved the malodor and heavy exudate was also supported by one cohort study for 32 patients with breast malignant wounds over a 20-month period. However, the wound size and the associated pain, by contrast, did not show much improvement in this study.⁴³ Three clinical trials^{36,44,45} and 3 structured review articles^{18,30,31} examined the efficacy of topical agents and antibiotics such as polyhexanide,⁴⁴ metronidazole,^{44,45} charcoal,¹³ or foam dressings coated with silver³⁶ on symptoms of patients with MFWs. Others were survey for investigating current practice in the management of wound odor¹² and one was an in vitro study

that analyzed the chemical compounds producing the malodor associated with MFW.⁴⁶

Four articles explored the use of honey and green tea for management of MFW; findings indicated these complementary interventions beneficial for symptom control.^{19,35,47,48} Topical oxygen therapy was also found to alleviate malodor, wound exudate, bleeding, pain, and anaerobic infection on wound surface of MFWs in patients with breast cancer in a multiple case study.⁴⁹ Another case study reported that the use of an ostomy pouching system connecting to a drainage system could help collect heavy exudate, and odor from an MFW located on the lower mandible of a 72-year-old female patient.⁵⁰

Considered collectively, findings from these studies indicate that malodor may be alleviated by several topical or systemic therapies including metronidazole, ionic silver, polyhexamethylene biguanide, green tea, manuka honey, nanocrystalline silver nanoparticles, and charcoal.⁵¹ However, we found no significant differences between these interventions and no standard or consensus concerning the best dosage and route of these therapies.^{13,19,20,52}

We found several articles that evaluated systemic or topical agents for relief of pain in patients with MFW.⁵³⁻⁵⁵ Maida⁵³ reported that vaporized medical cannabis oil reduced pain in a male patient with buccal cancer. A recent scoping review found a paucity of evidence concerning pain management in patient with MFW.⁵⁴ Tamai and colleagues⁵⁵ reported that pain in breast cancer patients with malignant wounds were due to changes in granulation tissues and wound edges, but their study did not evaluate the effect of topical therapies on this distressing symptom.

Evidence concerning the control of bleeding in MFW was also sparse. The topical agent was also applied for controlling bleeding in a case study.⁵⁶ A second case study reported positive effects with application of an antifibrinolytic agent to manage bleeding in a 60-year-old man who was unable to undergo more aggressive treatments.⁵⁷

TABLE 4.
Focus, Domain Classification, and Design of 74 Studies

All Studies (N = 74)	Focus	Domain	Design of Study	
<i>Patient focus</i> (n = 65)	<i>Symptom measurement</i> (n = 4)		Validation study (n = 3); systematic review (n = 1)	
			Systematic review (n = 4); cross-sectional study (n = 4); qualitative study (n = 4); case study (n = 2)	
	<i>Symptom impacts</i> (n = 14)	General approach (n = 3)	Systematic review (n = 2); descriptive (n = 1)	
		Local therapy (n = 42)	Dressing with/without topical agents (n = 37)	Systematic review (n = 8); scoping review (n = 2); case study (n = 13); RCT (n = 5); non-RCT (n = 5); prospective (n = 2); cohort (n = 1); descriptive (n = 1)
			Surgery (n = 2) and radiation therapy (n = 3)	Case study (n = 5)
	Systemic therapy (n = 2)	Observational (n = 1); systematic review (n = 1)		
<i>Caregiver focus</i> (n = 9)	<i>Nurse's experience</i> (n = 4)	One qualitative study in family's experience	Systematic review (n = 1); rapid review (n = 1); qualitative study (n = 2)	
		<i>Nursing care competence</i> (n = 2)	Cross-sectional (n = 1); qualitative study (n = 1)	
	<i>Lay caregiver experience</i> (n = 3)		Qualitative (n = 3)	

Abbreviation: RCT, randomized controlled trial.

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We retrieved 4 records that explored surgery and radiation for management of MFW. Surgery was performed to reduce the tumor size rendering wound management easier in both a single case and multiple case study.^{58,59} We located 3 case studies that reported that patients with MFW of the breasts and oral cavity positively responded to radiation therapy. Specifically it alleviated pain, heavy discharge, hemorrhage, and ulceration after several weeks of radiation therapy.⁶⁰⁻⁶²

Systemic Therapy

Our search identified 2 records that evaluated or discussed systemic therapies on MFW. One evaluated the effects of ivermectin, albendazole, and clindamycin combined with a topical turpentine oil dressings to eradicate maggots from MFW in patients with head and neck malignancies.⁶³ They reported this intervention also alleviated pain, odor, and itchiness and improved tiredness, distress, and overall well-being.⁶³ Although one systemic review included only one randomized trial concluding the use of systemic metronidazole might be effective in reducing malodor. However, the small sample size in the study rendered it difficult to reflect the genuine effectiveness of systematic antibiotics in relieving symptoms of MFWs.⁹ A recent literature review suggested that prophylactic systemic antibiotics should be avoided for treating patients with MFWs.⁵¹

Nurse and Caregiver Experiences Related to MFW

We identified 9 studies that explored the experiences of nurses and caregiver when caring patients with MFWs.^{5,64-71} Four of these studies focused on nursing experiences when caring for patients with MFW; all but 1 used qualitative methods to collect and analyze data.^{65,69-71} The quantitative study aimed to evaluate nurses' competence and challenges when for caring for MFWs using cross-sectional data collection.⁶⁷ Considered collectively, findings from these studies suggest that symptoms of MFWs create distress among professional nurses and family caregivers. The qualitative studies explored 3 principal domains including nurse experiences, family experiences, and nurse competencies; they explored nurses' lived experience, difficulties, and how they cope with the situation.^{65,66,69} In addition, Alexander⁵ interviewed both patients and their caregivers and reported the caregivers described the experience of taking care of MFW and intense and unforgettable.

These studies also explored obstacles when taking care of patients with MFW. Multiple studies identified malodor as especially distressing for nurses.^{5,65,66,69,70} Its impact negatively affected the nurse-patient relationship and threatened the trust relationship between the nurse and the patient.⁶⁹ Nurse respondents reported using various strategies to cope with these typically malodorous wounds such as changing their breathing pattern, meticulous hand hygiene after tropical or physical care, and scheduling care for patients with MFW around the end of their shift.⁵ Nurses felt powerless to support patients both physically and psychologically, and opined they would benefit from additional education when caring for patients with MFWs. They also need psychological support to decrease their guilt and care burden.⁶⁶ While nurses found caring for patients with MFW as especially difficult, they also reported ongoing efforts trying to build rapport with these patients and efforts to meet their physical and psychosocial care needs.^{65,69}

Nursing Care Competencies

Our search revealed that research concerning competencies related to MFW care is particularly sparse. We found a single,

cross-sectional study of 77 nurses with expertise in hospice care, oncology care, and WOC nursing.⁶⁷ Findings indicate that these nurses have variable educational needs and competencies; management of topical therapy and malodor of MFW was the greatest challenge. Another study reported that applying dressings to MFWs was particularly challenging owing to their location, size, and symptoms.⁶⁴ Additional challenges to caring for patients with MFW included inadequate resources and time to manage these challenging wounds.

Lay Caregiver Experiences

We found 3 articles that discussed the experiences of family or other lay caregivers.^{5,66,68} The experiences of family or lay caregivers also proved so challenging it was described as an unforgettable memory by some.⁵ Lay caregivers also struggled with the ongoing challenges of caring for an often large and malodorous wound that produced distressing physical symptoms and malodor while trying to maintain an appearance and demeanor that did not betray their feelings of disgust or anxiety toward the MFW. Lay caregivers indicated that caring for a person with a MFW occupied their lives and created social isolation for both the family member with the MFW and themselves.⁶⁸ Nevertheless, multiple lay caregivers also observed that they developed a closer and more intimate relationship with the patient as a result of the MFW and the ongoing and intense focus it required.

SUMMARY OF EVIDENCE

While MFW creates multiple physical and psychosocial challenges, the bulk of literature identified in this scoping review focused on malodor and topical therapy for its alleviation.¹⁸⁻²⁰ We found a lack of standard treatment for MFWs. For example, metronidazole is commonly used to reduce malodor but doses in the studies ranged from 0.75%^{72,73} to 0.8%^{38,74} delivered in a gel,^{38,72-73} liquid solution, or powder.¹⁹ We found no randomized controlled trial comparing any of these delivery vehicles for metronidazole. Rather, the bulk of records we retrieved were case studies.^{13,20,75}

We found 2 validated, multidimensional instruments designed to assess MFW,^{22,24} and most proposed instruments had not undergone psychometric evaluation for validity and reliability. In addition to numeric scales designed to measure the intensity of malodor, others used words to classify odor, varying from "none" to "intense," or "absent to intolerable," and "odorless to grave odor."^{21,22,24} All of these instruments are challenged by the inherently subjective nature of clarifying odors.^{1,22}

We also found that professional nurses and lay or family caregivers struggled experienced psychological distress when caring for MFWs.⁶⁸ We assert that additional research evaluating degree of knowledge, burden, and care ability of families in caring for patients with MFWs is needed.

We found a single cross-sectional study that evaluated educational needs of nurses when treating MFWs.⁶⁷ The authors of several studies recommended that nurses should be trained as wound care specialists, often functioning as part of an interdisciplinary wound care clinic or service.⁷⁶⁻⁷⁷ Understanding nurses' educational needs and identifying specific competencies is needed. Similar to families, nurses are challenged to cope with their own emotional distress when managing patients with MFW and additional research is needed to address their psychosocial needs.^{5,66,71}

CONCLUSIONS

This scoping summarizes current knowledge and gaps in our understanding of the management of patients with MFW. Additional research is needed to examine the effect of alternative topical agents and dressings on controlling odor, along with evaluation of the validity and reliability of instruments used to assess MFWs. We further recommend qualitative studies to explore psychological needs of caregivers including nurses and lay or family caregivers, along with development and evaluation competencies for nurses managing patients with MFW.

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