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Nursing Interventions for Managing Dyspnea In Oncology Patients: A Scoping Review

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Abstract
Dyspnea or breathlessness is a widely known and usually disabling symptom, which can affect cancer patients, especially during their advanced stages. It significantly disables physical performance, mental health, and the general state of life. The proposed scoping review will map the extent of nursing interventions focused to address dyspnea in cancer care. In accordance with the framework proposed by Arksey and O Malley, the recent literature published during the past decade was searched in various databases to identify the variety of clinical and supportive care initiatives aimed at the leadership administered by nurses. Types of interventions were breathing techniques, patient positioning, emotional support, pharmacologic coordination, integrative therapies, which have been widely mentioned. Importance of indivisible care plans, patient education, and interdisciplinary collaboration also are mentioned in the review. Although diverse and various practices exist, there is a lack of consistency in practice and scarcity of high-level evidence to address a need to conduct vigorous research to support and provide high standards of homogenous nursing interventions in oncology breathlessness.

Keywords: ***Cancer care, Dyspnea, Breathlessness, Nursing support, Oncology nursing, Symptom relief, Non-pharmacological interventions, Patient-centered care, Palliative nursing, Scoping review.***

1.Introduction
Another symptom associated with cancer that is highly unpleasant to the patient is breathlessness or colloquially known as dyspnea. It is an uncomfortable realization that the breathing is difficult and it is one of the hardest to treat symptoms in oncology and palliative care. It is a disabling symptom, which undermines not only physical functioning of an individual, but it goes much deeper into the emotional sphere and the life quality. Since the cancer grows, and especially during the terminal stages, when people are struggling with the cancer, then there is increased breathlessness and hence there creates a need to have effective symptom palliations. As much as there is availability of pharmacological interventions, it is sometimes impossible to treat the causes of dyspnea in advanced cancer. This has led to reduction in pharmacological medication as alternative therapies in the clinical practice and most of the non-pharmacological therapies lie in the nursing support services(1).

Nurse as a professional most proximate to patient care can specifically appear the most effective in the provision of a variety of non-pharmacological treatment options that may alleviate the problem with breathing. These supports consist of direct physical methods and psychosocial strategies adopted as per needs. Some of such interventions that have been recurrently mentioned include, but are not limited to, fan therapy, guided breathing activities, positioning, relaxation, psychoeducational approaches and holistic methods, including yoga or acupuncture. These types of interventions may be flexible, non-invasive and can be implemented by trained nursing professionals into regular nursing practices.

The aim of this scoping review is to identify and characterize the different nursing support provisions, which are used in the treatment of breathlessness, in adult cancer patients, comprehensively. The purpose of the review is to understand what kind of interventions nurses are currently employing and the structure of administered interventions, as well as report performance by means of literature mapping. The review was carried out using the methodological framework as proposed by Arksey and O Malley and also the suggestions made by the Joanna Briggs Institute on scoping studies. The reporting structure was guided using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR).

Objective and scope of the research

The primary objective of the review was to determine the scope of the interventions led by nursing, or by a nurse or a nurse-implementable intervention, which help relieve episodes of dyspnea in patients with cancer. They are therapist situations in which the main providers are nurses, or in which therapy is realistically applicable by nurses.

The method of search was properly designed and applied to 4 major databases, such as PubMed, CINAHL, CENTRAL, and Ichushi-Web regarding the period of the study January 2022 to a database conception. The criteria of inclusion were rather rigorous: the studies needed to include cancer patients 18 years of age or older and quantitatively assess breastlessness, report nursing-led or nursing-compatible interventions.

Nursing Implications

This article affirms the fact that nurses play the primary role in managing such a complex symptom as acute dyspnea in a non-pharmacological manner. The nursing support usually includes individual, multi-component care plans that take into consideration the physiological and psychological manifestations of the problem of breathlessness. Since dyspnea is a multifactorial condition, and factors influencing the development of the pathology are physical, emotional, and environmental, the scope of nursing activities is especially appropriate to meet all of its demands. Additionally, psychoeducational support and symptom monitoring measures which are done by nurses will help the patient engage in patient care, thereby possibly avoiding emergency services measures.

The findings further indicate that there is a need to carry out further studies regarding the applied feasibility of some of the interventions- walking therapy and yoga, in a palliative setting where physical restrictions are extreme. Future studies ought to focus more on the simplification, scaling capability, and invasiveness of nursing interventions that must be specific to the physical status and the prognosis of patients who are at their final stages. This scoping review has managed to determine and classify various interventions in nursing used in the management of breathlessness in cancer care(2). These interventions bring out the flexibility and the versatility of the nursing practice in management of one of the most bothersome symptoms of oncology care. These findings present a framework to guide clinical practice and leave the trail of further knowledge to become a universal methodology of nursing support in the future. Since dyspnea has become one of the most significant issues among patients with advanced cancer, providing nurses with evidence-based tools and practices can also be an essential step toward comprehensive care in cancer patients.

2.Methods

A scoping review study design was used in this study because it was necessary to conduct a methodological review of the scope of nursing interventions to reduce breathlessness in cancer patients. This procedure was formalized on the basis of the well-grounded framework proposed by Arksey and O Malley, whose framework was also supplemented by the recommendations of the Joanna Brigg institute. The reporting followed PRISMA extension 0f scoping reviews (PRISMA-ScR). To promote the level of methodological rigor and replicability, the protocol of this review was posted and published in advance.

Formulation of Research Question

The following was the central question that led to this review to be done: What are the reported nursing interventions in the literature that are helping in reducing breathlessness among adult patients with cancer? This question was designed to have many diverse interventions as long as they were nurse-deliverable or clearly nurse-led.

Search Strategy Database

A thorough search was done in four leading electronic databases that included PubMed, CINAHL (Cumulative Index to Nursing and Allied Health Literature), the Cochrane central register of controlled trials (CENTRAL) and the Ichushi-Web database that was run by Japan medical abstracts society. The searches encompassed all the years till January 31, 2022. Search terms used were initially established in PubMed and formatted to suit the syntax of the given database. The published protocol and supplementary files are detailed about the employed search strategies(3).

To be more comprehensive, manually, reference lists of articles identified were also checked. The resulting list of researches consisted of publications about the language (both Japanese and English), so the work of the research conducted both at home and abroad was noted.

Eligibility Criteria

Inclusion criteria were as follows: (1) the study population: adult patients (aged 18 and above) who were diagnosed with cancer, (2) intervention: it was intended to manage breathlessness, (3) categorized intervention: nursing support (either provided by the nurses or could be easily implemented by nurses), and (4) quantitative measurement of breathlessness by using validated scales. The peer-reviewed articles were not included in the research in case

more than 20% of the sample was not cancer patients, the intervention was not in the sphere of nursing practice, or the publication was not written in English or Japanese.

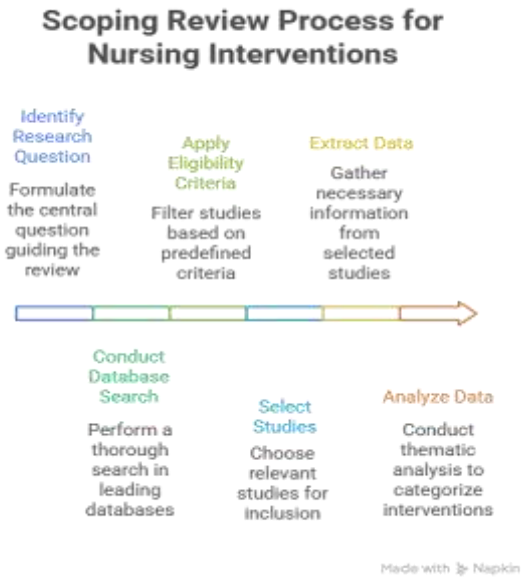

FIGURE 1 Scoping Review Process for Nursing Interventions

Selection of the Studies and Data Extraction

Titles and abstracts were reviewed inductively by two reviewers to determine their relevance and then they were reviewed full text by those who may be potentially eligible. Conflicting information would be solved by discussion. The data were extracted with the help of specially designed format containing the following important information: the type of study design, the year when it is published, country, characteristics of the sample, a type of nursing intervention, individuals providing care, a way of assessing breathlessness, the outcomes that are reported.

Data Decoding and Classification

Thematic analysis (qualitative) of the included studies was undertaken to categorize the nursing support types present in the described studies. Raw data of the characteristics of interventions were first recorded on a spreadsheet. Codes or scripts were created on common support strategies which were subsequently categorized into general themes with the sound sense of the patterns(4). The categories also needed a consistency and reliability in the classification adequacy and thus each category was used and confirmed by various authors.

3.Results

Results of Study Selection and Screening

The search cover-to-cover systematic search in several databases produced 2,802 citations as the result at the first stage. After discarding 173 duplicate records, 2,629 records were screened in terms of title and abstract. At this step the number of the articles that did not correspond to the inclusion criteria was 2,570. Thereafter, 59 articles were extracted and subjected to full-text evaluation. More exclusions followed-they were related to being conference abstracts (n=11), interventions that could not be applied by nurses (n=8), having non-nursing care providers (n=6), being registry studies (n=3), or using ineligible study designs (n=2) before the final 27 studies were identified on which the review was based.

Features of Included studies

The last 27 articles included studies done in many different countries and greatest numbers of studies done were in the United Kingdom (n=8), United States (n=3) and two in Japan, China, Spain, Taiwan and Turkey Most of the studies (n=23) were designed as a randomized controlled trial (RCT) and four others prospective.

Specifically, it can be noted that seven studies specifically incorporated patients diagnosed with the terminal-stage cancer. Such examinations mainly concentrated on such interventions as fan therapy, guided imagery, abdominal massage, so that less invasive treatment would have to be exacted in the late-stage palliative environments.

Classifications of Nursing Support Interventions Thematic

The thematic analysis applied helped to sort the nursing interventions into 12 different types of support by similarity in the purpose, means of delivery, and aspects of treatment. These 12 classes were as follows:

- Fan therapy (n=5) -Referral of air in the face through suitable or electric fans that narrow breathlessness.
- Nurse-led interventions (n=5) Multimodal care models that are entirely provided by nurses and include symptoms assessment, education, and coping strategies.
- Multidisciplinary interventions (n=5) - Multidisciplinary models of interacting with other healthcare professionals including nurses and others including physiotherapists and psychologists.
- Psychoeducational programs (n = 3) - Education and psychological-emotional support to enable patients to deal with breathlessness based on knowledge and emotional resilience.
- Breathing techniques (n=2) - How to learn to control respirations through particular methods to optimise pattern of breathing(5).
- Walking therapy (n=1) structured physical activity programs developed to progressively increase the ability.
- Inspiratory muscle training (n=1) - The strengthening of respiratory muscles with the help of resistance training.
- Respiratory rehabilitation (n=1) - Integrated approach to treating that included physical therapy, breathing exercises and education.
- Yoga (n=1) Exercises integrative movements based on the interaction of the art of movement and breathing, physical and mental balance.
- Acupuncture (n=1) - Customary method of treating symptoms by the means of stimulating pressure-points by pressuring them out.
- Guided imagery (n=1) mental visualization has been used to reduce the psychological perception of breathlessness.
- Abdominal massage (n=1) -It is a manual procedure performed to alleviate the pain associated with ascites and respiratory distress.

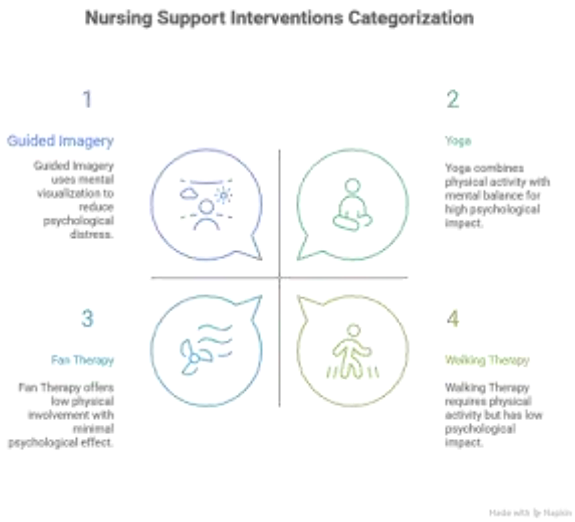

FIGURE 2 Nursing Support Interventions Categorization

Intervention Outcomes

Of the 27 papers incorporated, 19 indicated statistically improved breathlessness after the intervention. These practical interventions crossed many categories: fan therapy, multidisciplinary and nurse-led measures, psychoeducational training programs, breathing exercises, training of the inspiratory muscles, respiratory therapy, and acupressure along with exercises of guided imagery. The clearance of benefits linked to fan therapy seemingly stood out, especially in patients at the terminal stages. Conversely, other strategies that required greater physical involvement like walking therapy and respiratory training were mostly used on patients who had received active cancer treatment rather than those in palliative stages(6).

4.Discusssion

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The aim of the scoping review was to identify systematically the different kinds of nursing support that could be of use in alleviating breathlessness on patients with cancer. Study results supported the statement that 12 types of nursing intervention have been revealed through analysis of 27 studies, including simple non-invasive measures like fan therapy, multi-component programs with the multidisciplinary cooperation involvement. The results highlight the importance of nurses in giving symptom relief especially when it comes to the process of dealing with dyspnea which is a type of symptom that can be devastating both physically and emotionally to the cancer patient in most cases.

Out of the identified interventions, fan therapy proved itself to be the most researched and mostly successful one, particularly in patients diagnosed with the terminal-stage cancer. It is very hospitable and convenient to use with non-invasive nature and minimal implications in unlikely to demand many resources, which helps it fit perfectly in hospital-based and home-based palliative. Such a basic care intervention that is, blowing air over the face of a patient and doing so over an extended period of time, has been found to modulate the experience of breathlessness by facilitating the stimulation of facial mechanoreceptors and the temperature of the face. Due to its ease of use and effectiveness, the use of fan therapy has been recommended in clinical guidance since the American Society of Clinical Oncology (ASCO), as well as the European Society of Medical Oncology (ESMO)(7).

Besides fan therapy, the other types of therapy that were found to be practicable to terminally ill patients include guided imagery and abdominal massage. Guided imagery refers to the form of mental ingestion approaches that are organized and relaxing, and alleviate anxiety-induced intensification of shortness of breath. Though its evidence base remains limited nowadays, its non-physical character makes it an easy choice by the patients with a significantly impaired functional status. Likewise, abdominal massage as a procedure commonly used in order to relieve the discomfort in ascites, can result in the same effect of breathing, which is by lowering the intra-abdominal pressure. Nevertheless, it can be applied with limited results when the abdominal lesions or tumors are involved because it might be uncomfortable or contraindicated to use manual manipulation.

Surprisingly, 9 of twelve categories of interventions were previously unknown in case of terminal cancer care. Rather, they became more common with patients who had active treatment of cancer or early disease trajectory-related approaches, including nurse-led education programs, multidisciplinary practice, breathing retraining, respiratory muscle strengthening, walking therapy, and yoga. Such interventions are frequently associated with greater degrees of patient activity and physical ability seldom met at the terminal stages when the patient is frail and in the stage of progressive decline. Their major aim can be usually to control chronic dyspnea with preservation of quality of life and the possibility of continuing cancer treatment.

There was a substantial number of studies related to nurse-led interventions and the multidisciplinary approach that introduces a promising direction in the trend toward collaborative care. The most common strategy employed by nurses which involves patient education, emotional assistance, breathing exercises, and relaxation of the muscles gradually, during a number of weeks. These types of interventions are adaptive in their nature to meet patient needs as well as disease conditions. In contrast, the multidisciplinary programs are ones that require nurses, physicians, physiotherapists, dietitians, psychologists, among other people, to collectively promote a whole model of care. The multidimensional approach to interventions is proposed, including physical, psychological, and existential aspects of dyspnea, and those are likely to provide more sustainable symptom control. However, they are complicated and hence may not be possible in resource-limited environments(8).

The psychoeducational programs detected in the review offer a connection between the processes of psychological coping activities and issues related to physical relief of symptoms. The stress management, distraction techniques, relaxation exercises, and informational support are the most frequent program components. These interventions are typically provided by nurses along with mental health professionals and can sometimes alleviate the breathlessness itself but also the emotional stress that might accompany the breathlessness. The indicators of the included studies favor moderate outcomes of the enhancement of the breathlessness experience and emotions adjustment, but the adequate studies must be provided.

The presence of such interventions as breathing, inspiratory muscle training, and respiratory rehabilitation, more often used in the treatment of chronic respiratory diseases such as COPD, is an indicator of a possible possibility of cross-disciplinary education. Although these modalities appear to be effective on non-cancer patient groups, their usage in oncology is rather scarce. Such a disparity directs to a valuable direction to be studied in the future: adaptation and assessment of respiratory therapies in cancer treatment systems. The first is a potential obstacle is

that these therapies need continuous involvement on the part of the patient making it a challenge to continue participating in the treatments because of exhaustion or worsening condition.

Among the intervention groups is the walking therapy which was administered as an exercise program to boost levels of endurance and all round physical condition. This form of therapy would certainly be suitable to patients with early-stage disease or with well-managed disease but is unlikely to be suitable to the patient with rapidly worsening performance status. In future clinical protocols, it is imperative to outline the difference between appropriate interventions that are applied to patients in the treatment phase and those in the end-of-life treatment. This may be regarded as a major strength of the review as it identified and classified types of interventions both by their content but also by the feasibility and appropriateness of interventions relative to various points in the cancer trajectory. Those patients who have a few months to live can still be ambulatory and undergoing treatment thus some more physically demanding practices such as yoga or muscle training may be useful. Contrastingly, interventions must be low-burden, non-invasive, and fast in patients, who have a few weeks or days to live.

Although 19 of the 27 included articles have shown statistically significant benefits in breathlessness, the design, patient enrolment and duration of the interventions were variable restricting the generalizability of the findings. The quantitative outcome measures of dyspnea were used in most of the studies although they did not have long-term follow-ups, and therefore could not evaluate the sustainability of the effects. Besides, there was a limited range of studies that stratified their results on the basis of stage or prognosis of cancer, in particular, it is important to know how appropriate or such interventions are at any points of continuum of care.

The other weakness of the existing studies consists in underrepresentation of some regions, as well as languages. Only the English and Japanese publications were considered in this review and other publications, which might have provided relevant studies, written in the other languages, could have been omitted. Moreover, the quality of methods used in the studies included was not examined, as it is also a norm in the scoping review, and, therefore, restricts conclusive conclusions as to the effectiveness of the intervention(9).

To sum up, the review helps to lay a significant basis of evidence-based nursing intervention incorporation into the common practice of oncology and palliative care. It points at practices well-established in the field such as fan therapy but still relatively unexplored: inspiratory muscles training, guided imagery. Considering the dynamic nature and multidimensional scale of breathlessness in cancer, the intervention should be flexible, concrete, and aligned with the condition of patients and the objectives of care. Nurses as first line caretakers can take charge of this initiative best. It is also the contention of this paper that future studies should look to test the efficacy, feasibility, and acceptability of such interventions especially within an end-of-life context to be able to ascertain that nursing care is still developing, and keeping up to the needs of patients.

5.Conclusion and Future work

The scoping review presents an extensive picture of the extent of nursing interventions that can be used to help patients with cancer handle breathlessness. Systematically reviewing and synthesizing 27 studies we found 12 various forms of nursing support, some presenting simple methods of nursing nursing support, such as fan therapy, and others being quite complex and multidimensional. These interventions represent the changing status of the nurse in the management of symptoms, particularly in the fields of oncology and palliative care as the non-pharmacological method starts gaining increasing relevance as an essential element of comprehensive patient treatment approaches all over again.

The review has shown that despite terminally ill patients needing non-invasive treatment interventions, such as fan therapy, guided imagery and abdominal massage, walking therapy, respiratory rehabilitation and psychoeducational programmes are more applicable in treating patients in treatment and those with less advanced cases of disease. The given variation highlights that nursing interventions should be customized according to the functional status of patients, prognosis, and care intentions.

An important lesson of the review is that nurses could not only implement care, but may design and coordinate individual symptom management plans. The variety of successful interventions proves that nurses have the capabilities of a multipurpose toolbox that will enable them to explore breathlessness via physical, emotional, educational, and behavioural techniques. In addition, use of interdisciplinary teamwork and patient education also increases the effectiveness of such strategies.

Nevertheless, there are still vacuums. Most of the identified interventions lack high-quality, strong evidence that focuses on the oncology populations especially individuals at end-of-life stages. More studies are required to

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introduce standardized guidelines, assess effectiveness over a long period, and the applicability of such interventions in different clinical practice. The evaluation of how these practices can be modified and applied to the patients with poor physical capacity or highly progressive disease should be carried out with a special stroke. Conclusively, it is in this review that, it is clear, the vital and emerging role of nursing in the management of one of the most debilitating symptom in cancer-care management: breathlessness. It can give a basis of future research and practice by charting of existing evidence and of promising interventions. Future developments of this sphere will involve such principles as innovative approach, interdisciplinary cooperation and patient-centeredness which lie deep in the nature of the nursing profession.

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Conflicts of interest

The authors have no conflicts of interest to declare

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