BMJ Open

Nursing support for breathlessness in patients with cancer: a scoping review

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To cite: Kako J, Morikawa M, Kobayashi M, *et al*. Nursing support for breathlessness in patients with cancer: a scoping review. *BMJ Open* 2023;**13**:e075024. doi:10.1136/bmjopen-2023-075024

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (http://dx.doi.org/10.1136/bmjopen-2023-075024).

Received 24 April 2023
Accepted 25 September 2023

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ABSTRACT

Objective To identify nursing support provided for the relief of breathlessness in patients with cancer.

Design A scoping review following a standard framework proposed by Arksey and O'Malley.

Study selection Electronic databases (PubMed, CINAHL, CENTRAL and Ichushi-Web of the Japan Medical Abstract Society Databases) were searched from inception to 31 January 2022. Studies reporting on patients with cancer (aged ≥18 years), intervention for relief from breathlessness, nursing support and quantitatively assessed breathlessness using a scale were included.

Results Overall, 2629 articles were screened, and 27 were finally included. Results of the qualitative thematic analysis were categorised into 12 nursing support components: fan therapy, nurse-led intervention, multidisciplinary intervention, psychoeducational programme, breathing technique, walking therapy, inspiratory muscle training, respiratory rehabilitation, yoga, acupuncture, guided imagery and abdominal massage.

Conclusions We identified 12 components of nursing support for breathlessness in patients with cancer. The study results may be useful to understand the actual state of nursing support provided for breathlessness in patients with terminal cancer and to consider possible support that can be implemented.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This is the first scoping review on nursing support for breathlessness in patients with cancer.
⇒ Searches were limited to studies published in Japanese and English; therefore, relevant articles published in other languages may have been excluded.
⇒ The study was not designed to assess methodological quality.
⇒ The search was limited to studies where at least 80% of the participants had cancer.

INTRODUCTION

Breathlessness is a subjective symptom defined as 'an unpleasant or uncomfortable sensation during breathing'[1] and is frequently described as a devastating symptom. Breathlessness is one of the most common refractory symptoms to palliate[2] and has substantial implications for quality of life.[3 4] Furthermore, the prevalence and severity of breathlessness in patients with terminal cancer tend to increase as the patient approaches death.[5 6] Therefore, relief from breathlessness is an urgent challenge.

Treating the primary cause of breathlessness in patients with terminal cancer is difficult; hence, a combination of non-pharmacological and pharmacological interventions is recommended, depending on the prognosis.[7] Recent clinical practice guidelines have focused on non-pharmacological interventions and have stated several non-pharmacological interventions that serve as first-line treatment options for breathlessness.[8 9] For example, these guidelines recommend fan or air flow therapy, breathing techniques, breathing retraining, education and self-management strategies, rehabilitation, acupressure or reflexology for breathlessness. Fan therapy is reportedly effective for patients with terminal cancer;[10–13] however, evidence accumulated for other non-pharmacological interventions is limited.

Nurses are healthcare workers who provide non-pharmacological therapy, and the support provided is known as nursing support. For example, fan therapy, a simple method of blowing air on the face for 5 min,[14–16] is a support that can be implemented by nurses, physicians, therapists and others; thus, fan therapy is a form of nursing support. In addition, fan therapy has been reported in studies on patients with terminal cancer having breathlessness, and thus, may be implemented in real clinical settings. Nevertheless, few studies have investigated other nursing support for patients with terminal cancer having breathlessness.

Therefore, this study aimed to comprehensively review studies on nursing support for breathlessness in patients with terminal and non-terminal cancers and to understand the nursing support components reported in the literature. The results of this study will clarify

the actual state of nursing support provided for breathlessness in patients with terminal cancer and allow for the examination of possible support that can be implemented in the future.

METHODS

We conducted a scoping review to comprehensively explore and map the nursing support provided to reduce breathlessness in patients with cancer. We applied a standard framework proposed by Arksey and O'Malley[17 18] and expanded by the Joanna Briggs Institute.[19] We followed reporting guidelines described in the Preferred Reporting Items for Systematic Reviews and Meta-analyses Statement extension for Scoping Reviews.[20] The scoping review protocol was published prospectively.[21] This study is a scoping review of breathlessness, a symptom addressed in the study protocol. In addition, we conducted a Delphi study on the feasibility of nursing support; the results of the Delphi study will be reported separately. In the protocol paper, nursing support was defined as support that nurses can implement. Although some previous studies have used the term 'nursing intervention', we used the term 'nursing support' in this review. If the care provider was a nurse, the care was identified as nursing support. If the care provider was not stated, the researchers, including nurses and physicians, discussed whether nurses could perform the care in their daily clinical practice; if judged possible, it was identified as nursing care.

Identifying the research question

A systematic literature search was conducted on nursing support for breathlessness in patients with cancer. The research question for this study was as follows: What types of nursing support are provided to alleviate breathlessness in patients with cancer?

Identifying relevant studies

We searched PubMed, Cumulative Index to Nursing and Allied Health Literature, Cochrane Central Register of Controlled Trials in the Cochrane Library and Ichushi-Web of the Japan Medical Abstract Society Databases from their inception to 31 January 2022. We also assessed relevant studies from the article list and manually searched them through key journals. Search formulas were first created in PubMed as an initial search. Subsequently, search formulas were created to match other databases (see the protocol paper[21] or online supplemental file 1 for details of the search formula). JK and MM completed this initial search in consultation with the librarian.

The eligibility criteria were determined by physicians and nurses specialising in symptom management of patients with cancer, details of which are described in the review protocol.[21] Briefly, the inclusion criteria were (a) articles on patients with cancer aged 18 years or older, (b) intervention studies for relief from breathlessness, (c) nursing support articles and (d) articles

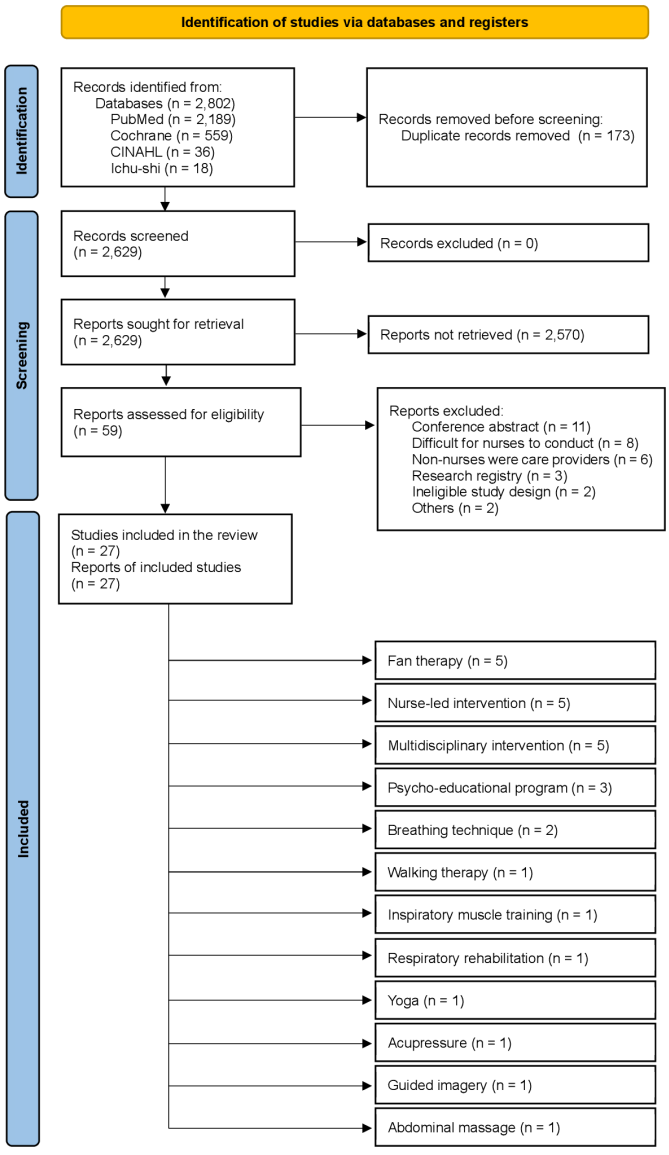

Figure 1 PRISMA flow diagram. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-analyses.

that quantitatively assessed breathlessness using a scale. Moreover, we excluded papers involving more than 20% of participants without cancer, secondary analyses, and papers in languages other than Japanese and English.

Study selection process

Two authors (JK and MM) independently assessed the titles and abstracts of all studies, followed by full-text screening against the eligibility criteria. Any discrepancies in study selection were resolved by discussion. The study selection process is summarised in figure 1.

Charting the data

A form was created to extract study characteristics, including the first author's name, publication year, country of publication, study design, aims, sample size, age, sex, primary cancer sites, type of nursing support, provider, outcome measurement tools and results of the interventions for breathlessness. Data were extracted

independently by the same two authors. Studies were excluded at this phase if they did not meet the eligibility criteria.

Collating, summarising and reporting the results

The nursing support reported in the articles extracted from the literature review was categorised by care component using qualitative thematic analysis, which was performed via the following steps.[22 23] First, we extracted the nursing support data described in the included studies as raw data into Excel, read the data for possible support patterns and made notes as initial codes that would lead to the categorisation of nursing support components. Second, we created the initial codes based on the support providers and care delivery system. Third, we searched for patterns and grouped potential components of nursing support. Fourth, we reviewed the initial codes to find common nursing support components. Finally, we identified and clearly named each component. We used some nursing support terms defined in the included studies as references. In the analysis, the classification of nursing support by one author (JK) was examined by another author (MM), followed by the study group for validity.

Patient and public involvement

Patients or the public were not involved in the study design, data collection and analysis, decision to publish or preparation of the manuscript.

RESULTS

Search results

Figure 1 shows the literature screening process and results. Overall, 2802 articles were identified based on the eligibility criteria. After removing 173 duplicates, we screened the titles and abstracts of 2629 articles and further excluded 2570 articles. In addition, we assessed 59 full-text articles for eligibility and excluded 32 articles for the following reasons: conference abstract (n=11), difficult for nurses to conduct (n=8), non-nurses were care providers (n=6), research registry (n=3), ineligible study design (n=2) and others (n=2). The studies excluded because of 'difficult for nurses to conduct' interventions such as aromatherapy, reflexology and meditation performed by aromatherapists, reflexologists and mind–body practitioners, respectively, all of whom are licensed practitioners.

Online supplemental file 2 presents the characteristics and care components of nursing support as well as its design and main results. The 27 articles that were finally included were categorised into 12 care components of nursing support following the qualitative thematic analysis. They included articles reporting fan therapy (n=5),[14 15 24–26] nurse-led intervention (n=5),[27–31] multidisciplinary intervention (n=5),[32–36] psychoeducational programme (n=3),[37–39] breathing technique (n=2),[40 41] walking therapy (n=1),[42] inspiratory muscle training (n=1),[43] respiratory rehabilitation (n=1),[44] yoga (n=1),[45] acupuncture (n=1),[46] guided imagery (n=1)[47] and abdominal massage (n=1).[48] Eight articles were reported from the UK, followed by three from the USA and two each from China, Japan, Spain, Taiwan and Turkey. Of the 27 studies, 23 were randomised controlled trials (RCTs), and the remaining 4 were prospective studies. Seven studies included patients with terminal cancer in the study population and involved fan therapy,[14 15 24–26] guided imagery[47] and abdominal massage,[48] Overall, 19 articles reported improvement in breathlessness after intervention.[14 15 24–28 30 32 33 35 37–39 41 43 44 46 47] These articles included fan therapy, nurse-led intervention, multidisciplinary intervention, psychoeducational programme, breathing technique, inspiratory muscle training, respiratory rehabilitation, acupressure and guided imagery.

DISCUSSION

Our research question involved identification of nursing support categories for alleviating breathlessness in patients with cancer. We categorised the 27 included articles into 12 nursing support components.

The nursing support components for patients with terminal cancer were fan therapy, guided imagery[47] and abdominal massage.[48] As expected, fan therapy was the nursing support component with the most number of included studies; moreover, it is the highest rated recommendation by both the American Society of Clinical Oncology and the European Society for Medical Oncology clinical guidelines.[8 9] Guided imagery was defined as a 'range of techniques from simple visualisation and direct imagery-based instructions through metaphor or storytelling'. Guided imagery is likely to be implemented in patients with terminal cancer because it is less invasive; however, access to knowledge and information on its implementation is likely to be a challenge. Abdominal massage is feasible and routinely used in constipation management. Nevertheless, it may be difficult in patients with intra-abdominal lesions, and invasiveness can be an issue.

Nine of the 12 nursing support components have not been reported in patients with terminal cancer. First, the nursing support components included complex interventions, which were categorised as nurse-led and multidisciplinary interventions as well as psychoeducational programmes. We classified care components according to whether they are primarily nurse led or whether nurses are included in the support provided by multidisciplinary professionals. Subsequently, care provided by multidisciplinary professionals was categorised in terms of multidimensional or specialised care regarding psychological aspects. Nurse-led intervention is a package of interventions provided by nurses, including assessment of breathlessness, provision of information about breathlessness, and training in breathing and management techniques, with progressive muscle relaxation as needed over several weeks. Multidisciplinary intervention is a package of interventions provided by multiple professions, with

nurses providing a base of assessment, information on breathlessness, and nursing care as needed and coordinating with other professions to ensure that the necessary support is provided. In addition, the package of interventions provides a combination of support categories, such as pharmacotherapy, diet and exercise instruction, mindfulness, breathing instruction, acupressure and education on managing breathlessness, as needed, for several weeks. Psychoeducational programme is a package of interventions provided by a nurse and a psychiatrist or psychologist working together, which includes relaxation/distraction, stress management, instruction on managing breathing difficulties, meditation, yoga, activity scheduling and psychoeducation, in combination as needed, over several weeks. The first feature common to all of these components of nursing support is that they provide a combination of interventions. Breathlessness is a symptom that is caused or aggravated by a complicated influence of multidimensional factors.[1 49–51] Recently, the breathing, thinking, functioning (BTF) clinical model has been developed to manage breathlessness.[52 53] The BTF model is used in the education of healthcare providers to promote effective symptom management by viewing breathlessness from the perspective of breathing, thinking and functioning. Therefore, multimodal interventions may further contribute to the management of breathlessness. The second feature common to these nursing support categories is targeting patients with cancer in the treatment phase of their disease. These nursing support categories aim to successfully manage breathlessness, thereby enabling patients with cancer to continue their anticancer treatment. Hence, it is inferred that no studies have been conducted on patients with terminal cancer.

Breathing techniques, inspiratory muscle training and respiratory rehabilitation have been reported in the field of non-cancerous respiratory diseases[54–56]; nevertheless, few studies have been conducted in the field of oncology. Future studies should assess these nursing support components in patients with cancer, as research evidence is being established in fields other than oncology. Walking therapy, a programme involving the gradual increase of walking distances, is administered for several weeks, depending on the patient's medical condition.[42] Thus, we assume that the nursing support is aimed at gradually improving the activities of daily living in patients with breathlessness. This type of support is difficult to apply to patients with terminal cancer; it is likely to be specific to patients undergoing anticancer treatment.

In terms of study design, 23 of the 27 included studies were RCTs. We identified RCTs that reported nursing support components other than guided imagery. However, one included study reported seven nursing support components, and hence, it is difficult to ascertain the accumulation of research evidence. The applicability of these nursing support components in patients with terminal cancer may vary depending on patient prognosis. Providing nursing support may be burdensome for highly vulnerable persons, such as patients with terminal cancer. Although fan therapy and guided imagery may be less invasive, respiratory rehabilitation and walking therapy are potentially burdensome to patients. For example, patients with terminal cancer with a prognosis of months have a relatively stable disease and small changes in breathlessness intensity.[57] Therefore, less invasive nursing support components may be applicable. Conversely, patients with cancer with a prognosis of weeks experience rapid deterioration in performance status[57] and an increase in breathlessness intensity.[6 57 58] Many nursing support components are likely to be more invasive for patients with a prognosis of weeks than for those with a prognosis of months. In the field of palliative care, nurses play an important role as care providers.[59] Accumulation of evidence in nursing care is expected in the future.

Strengths and limitations of the study

To the best of our knowledge, this is the first scoping review on nursing support for breathlessness in patients with cancer. We extensively searched multiple electronic databases from inception to 31 January 2022. Our selection criteria included all interventional studies, which enabled collection of evidence within the available literature. This scoping review has some limitations. First, searches were limited to studies published in Japanese and English, and hence, relevant articles published in other languages may have been excluded. Second, this scoping review was not designed to assess methodological quality. Therefore, our conclusion is not based on the synthesis of evidence regarding nursing support for reducing breathlessness. Third, the search was limited to studies where at least 80% of the participants had cancer; thus, studies conducted primarily on breathlessness in patients without cancer were not included. Therefore, it is possible that nursing support components not included in the results of this study are provided in clinical practice.

CONCLUSIONS

In this scoping review, we categorised nursing support for breathlessness in patients with cancer into 12 components. Future research should examine the feasibility of implementing these nursing support categories for breathlessness in patients with cancer with a prognosis of months or weeks and explore effective prognosis-based nursing support categories.

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Acknowledgements We thank Editage (www.editage.jp) for English language editing. This study received guidance from the National Center Consortium in Implementation Science for Health Equity (N-EQUITY) funded by the Japan Health Research Promotion Bureau (JH) Research Fund (2019-(1)-4) and JH Project fund (JHP2022-J-02).

Contributors All authors contributed to the preparation, drafting and editing of this scoping review. JK and MM conceived the idea of this research, followed by discussions with the other authors (MK, YK, KK, KN, YM, YS, MH, MN, MS and TS) who contributed to finalising the research idea. JK and MM developed the data extraction tool and the systematic database search strategy in consultation with the specialist librarian at Yokohama City University. All authors contributed to the preparation and editing of the manuscript and approved the final version of this manuscript. JK is responsible for the overall content as the guarantor.

Funding This work was supported by the JSPS KAKENHI (grant number 21H03236).

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not required.

Ethics approval Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article or uploaded as supplemental information.

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