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Review

A systematic review of nurse-led dietary interventions for cancer patients and survivors☆

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ABSTRACT

Dietary problems are frequently reported in cancer patients and survivors which may reduce quality of life and cancer survival. Nurses' role in dietary management is recognized as important, but review evidence on nurse-led dietary interventions for cancer patients and survivors is lacking. This review aims to summarize evidence on nurse-led dietary interventions for cancer patients and survivors. Ten electronic databases (PubMed, CINAHL, CENTRAL, EMBASE, Web of Science, Ovid, CNKI, Wan Fang, CQVIP, Index to Taiwan Periodical Literature System) were searched from inception dates to November 11, 2021, using the key search terms "cancer/nutrition/nurse-led/intervention." Eligible studies were experimental studies on nurse-led dietary interventions for improving dietary intake in cancer patients and survivors published in peer-reviewed journals in English or Chinese. The methodological quality of the included studies was evaluated using the revised Cochrane risk-of-bias assessment tool. Data were extracted and summarized descriptively. Three randomized controlled trials on nurse-led dietary counseling published between 2005 and 2018 were included, with an overall high risk of bias. Two studies found positive intervention effects in improving fruit and vegetable intake, while the other study demonstrated an increase in energy intake. This is the first systematic review to summarize the evidence on nurse-led dietary interventions for cancer patients and survivors. Although available studies are limited, a positive trend was identified in that nurse-led dietary interventions are effective in increasing dietary intake in cancer patients and survivors. Additional studies in this field are required to further explore nurses' role in the development of nutritional oncology care.

Introduction

Worldwide, cancer is a major health problem, with an estimated 19.3 million cases diagnosed in 2020.[1] Patients diagnosed with cancer often encounter different dietary problems throughout the cancer trajectory. During cancer treatments and palliative care, cancer patients have frequently reported reduced food intake, poor appetite, and/or loss of weight, resulting in the prevalence of cancer-related malnutrition, varying from 19% to 71% in worldwide studies.[2–4] During the survivorship phase, 30%–69% of cancer survivors have reported engaging in unhealthy dietary behaviors, generally referring to the inappropriate intake of a particular food group, for example, a lack of fruit, vegetables, and wholegrains.[5] These dietary problems have been increasingly recognized as significant factors influencing quality of life in cancer patients and survivors.[6,7]

Strong evidence supporting effective dietary interventions for cancer patients was reported in three systematic reviews, which found positive effects of dietary counseling and/or oral nutritional supplements on improving energy intake and/or quality of life in cancer patients during treatment compared with usual care.[8–10] Furthermore, a recent systematic review of dietary interventions among cancer survivors demonstrated positive effects of dietary interventions for improving fruit and vegetable intake.[11] However, the dietary interventions included in the previous systematic reviews were all dominated by dietitians, and none of them focused on nurse-led dietary interventions for cancer patients and survivors.[8–11]

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There is growing recognition that nurses can play an important role in the management of dietary problems in diverse populations. Although there is little consensus on nurse-led nutritional care, it is generally considered a care model in which nurses are responsible for the overall coordination, management, and continuity of the nutritional support of patients with dietary problems.[12] Qualitative data have revealed the advantages of nurses providing dietary interventions, including the availability and accessibility of the nursing workforce to patients and nurses' continuous and trusting relationship with patients.[13–15] Systematic review papers have reported that nurse-led dietary interventions can improve dietary intake in older adults and in patients with chronic diseases, suggesting the potential of nurses' role in nutritional support.[16–18] However, evidence on the effectiveness of dietary interventions led by nurses in other populations is significantly lacking.

Previous empirical evidence has emphasized the importance of oncology nurses in promoting healthy dietary intake and weight management among cancer patients and survivors.[19] Studies on nurse-led dietary interventions for cancer patients and survivors have emerged in recent years, yet there is no published systematic review of the available evidence. In the current cancer care system, dietary interventions are led by dietitians in hospitals.[20] With an increasing population of patients diagnosed with cancer globally, dietitians alone may be inadequate in meeting patients' nutritional needs because the number of dietitians in the workforce is the lowest among all healthcare professionals.[21,22] In light of the solid evidence on dietary interventions carried out by nurses in non-cancer populations, the interventional benefits of the clinical outcomes would most likely apply to cancer patients and survivors as well.[16–18] A comprehensive summary of existing studies is an important step in assisting nurses in understanding the current status of nurse-led dietary intervention research and identifying future directions for developing advanced practice nursing for nutritional support. Hence, this systematic review aimed to summarize the evidence on nurse-led dietary interventions for cancer patients and survivors.

Methods

The systematic review was conducted following the recommendations of the *Cochrane Handbook for Systematic Reviews of Interventions*.[23] The review was reported according to the updated Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Appendix 1).[24] Protocol of the systematic review has been developed and specified in advance, but the review protocol was not registered in any database.

Eligibility criteria

The eligibility criteria were defined as per the PICOS (participants, interventions, comparisons, outcomes, and study design) format.[23] To be eligible for this review, the participants of the included studies must be cancer patients or survivors.[6] The interventions must be nurse-led dietary interventions. For the review, "dietary intervention" was defined as any alteration or treatment in an individual's diet with a planned goal to improve the individual's overall health.[25] Nurse-led interventions in this review were viewed as any interventions in which nurses were the key personnel in developing and/or delivering the interventions but were not exclusive of other medical staff members' involvement as appropriate.[12] No restraints were set for comparators, adding to the breadth of and variation in the literature search. Outcomes were any measures that assessed dietary intake, for example, food intake, energy intake, and nutrient intake.[26] The study design was limited to randomized controlled trials (RCTs), quasi-experimental design, and pre-post experimental design. The types of publications were limited to primary studies published in peer-reviewed journals and written in English or Chinese.

Information sources and search strategy

A comprehensive and systematic electronic search was conducted using 10 bibliographic databases: PubMed (1946–), CINAHL Complete (via EbscoHost, 1937–), Cochrane Central Register of Controlled Trials (CENTRAL, via Cochrane Library, 1996–), EMBASE (1974–), Web of Science Core Collection (1970–), Ovid Journals (1853–), China National Knowledge Infrastructure (CNKI, 1915–), Wan Fang Data (1998–), Chongqing VIP (CQVIP, 1989–), and the Index to Taiwan Periodical Literature System (1970–). The literature search was conducted on January 27, 2021, and updated on November 11, 2021.

Two reviewers (GT and CH) used free words and controlled vocabularies to explore the optimal search strategies, which were further refined through discussion with an experienced librarian. Key search terms included "cancer," "nutrition," "nurse-led," and "intervention," which were used in various combinations and are listed in Appendix 2. The full electronic search strategies tailored to each database is shown in Appendix 3. Additional manual searches of the reference lists of the included studies supplemented the electronic search.

Study selection

Search records were imported into and managed using EndNote X20. After duplicate records were removed, a random sample of 100 records were selected and screened by two reviewers (GT and CH) independently to achieve consensus in paper selection. The first author (GT) conducted the abstract and title screening, excluding those that did not meet the selection criteria. After screening abstracts and titles, the potentially eligible records were reviewed and double-checked by another reviewer (CH). Then, these potentially eligible records were examined by full-text review to determine the final inclusion in this review. Reasons for excluding papers were recorded. Disagreements in judgment during the selection process were resolved through group discussion. A PRISMA flow diagram was used to display the search results.

Data charting and data extraction

A data-charting form was developed based on the *Cochrane Handbook for Systematic Reviews of Interventions* to extract the following data: study information (author, publication year, country), study designs, participants, interventions, comparators, outcomes, and results.[23] Regarding intervention characteristics, the AIMD intervention framework was used to report the aims, ingredients, mechanisms, and delivery of the interventions.[27] All data were charted and extracted by the first reviewer (GT) and cross-checked by another reviewer (CH). The authors of the included studies were contacted via email for clarification whenever there was insufficient or unclear data.

Risk of bias

Two reviewers (GT and CH) assessed the risk of bias using the revised tool for assessing risk of bias in randomized trials as recommended by the Cochrane Collaboration's tool.[28] The five domains of randomization process, deviations from the intended interventions, missing outcome data, measurement of the outcomes, and selection of the reported results were included in this tool.[28] Each domain is assessed as high risk, low risk, and some concerns. For each study, if one or more domain(s) was assessed as high risk or multiple domains were assessed as some concerns, the overall risk of bias was high, and if all five domains were assessed as low risk, the overall risk of bias was low; otherwise, the overall risk of bias was some concerns.[28] Methodological strengths and limitations of the included studies were described narratively. Discrepancies in judgment during the assessment of risk of bias were settled by consensus within the team.

Summary of results

The included studies were heterogeneous in terms of participants, intervention characteristics, and outcome measures, rendering a meta-analysis of results impossible to perform. Hence, the results were summarized in tabular form and in a descriptive format to provide evidence for the review questions.

Results

Study selection

A total of 15,718 records were identified from electronic database searches. After 2587 duplicates were removed, the titles and the abstracts of 13,131 records were reviewed and 13,015 were excluded. The remaining 116 records were accessed for full-text review and 113 were excluded. A total of 127 records were identified from the reference list of the included studies. After screening titles of the 127 records, full texts of 18 records were assessed for eligibility and all were excluded. Finally, three studies were included in this systematic review. The study selection procedure is shown in Figure 1.

Study characteristics

The study characteristics are summarized in Table 1. The three studies were undertaken the United States,[29] South Korea,[30] and Spain,[31] respectively. Two studies were two-arm RCTs,[29,30] and one study had a three-arm RCT design.[31] In the three-arm RCT, the participants in the first intervention group only received printed booklets, which did not fulfill the definition of "nurse-led" in this review; hence, only data from the second intervention group and control group were extracted from that study.[31] All three studies were published between 2005[29] and 2018.[31] Sample sizes were between 56[30] and 492,[31] and the mean/-median age of the participants ranged from 54[30] to 63[29] years old.

All three studies focused on a single cancer type, which were head and neck cancer,[29] stomach cancer,[30] and breast cancer,[31] respectively. Two studies included patients with early-stage cancer,[29,30] while the remaining study did not report disease stage.[31] One study was conducted with cancer patients undergoing gastrectomy,[30] while the other two studies focused on the survivorship stage.[29,31] Only one study reported the mean time since diagnosis of cancer, which was around six years.[31]

Risk of bias

Table 2 shows the risk of bias results. Each included study was rated as high risk in at least one domain; thus, each study was assessed as overall high risk of bias. Two domains—"deviations from the intended interventions" and "missing outcome data"—were assessed as high risk in all three studies.[29–31] In addition, the domain "measurement of the outcomes" was assessed as high risk in two studies.[29,31]

Characteristics of the nurse-led dietary interventions

Aims: Two studies aimed to improve dietary intake in cancer survivors after primary cancer treatments by increasing their intake of fruits, vegetables, and/or wholegrains.[29,31] The remaining study aimed to increase energy intake in cancer patients undergoing gastrectomy.[30]

Ingredients: Although all the studies applied nurse-led dietary counseling with planned goals, their components differed slightly according to the aims of the dietary interventions. In the two studies that aimed to improve dietary intake, the nurses provided information about health consequences related to the intake of the targeted foods and developed individualized targeted food intake goals for each participant.[29,31] In the other study that focused on improving energy intake, the nurses first conducted nutritional assessments using the Patient Generated Subjective Global Assessment tool.[30] Then, the nurses provided dietary advice and developed individualized dietary plans for the patients based on

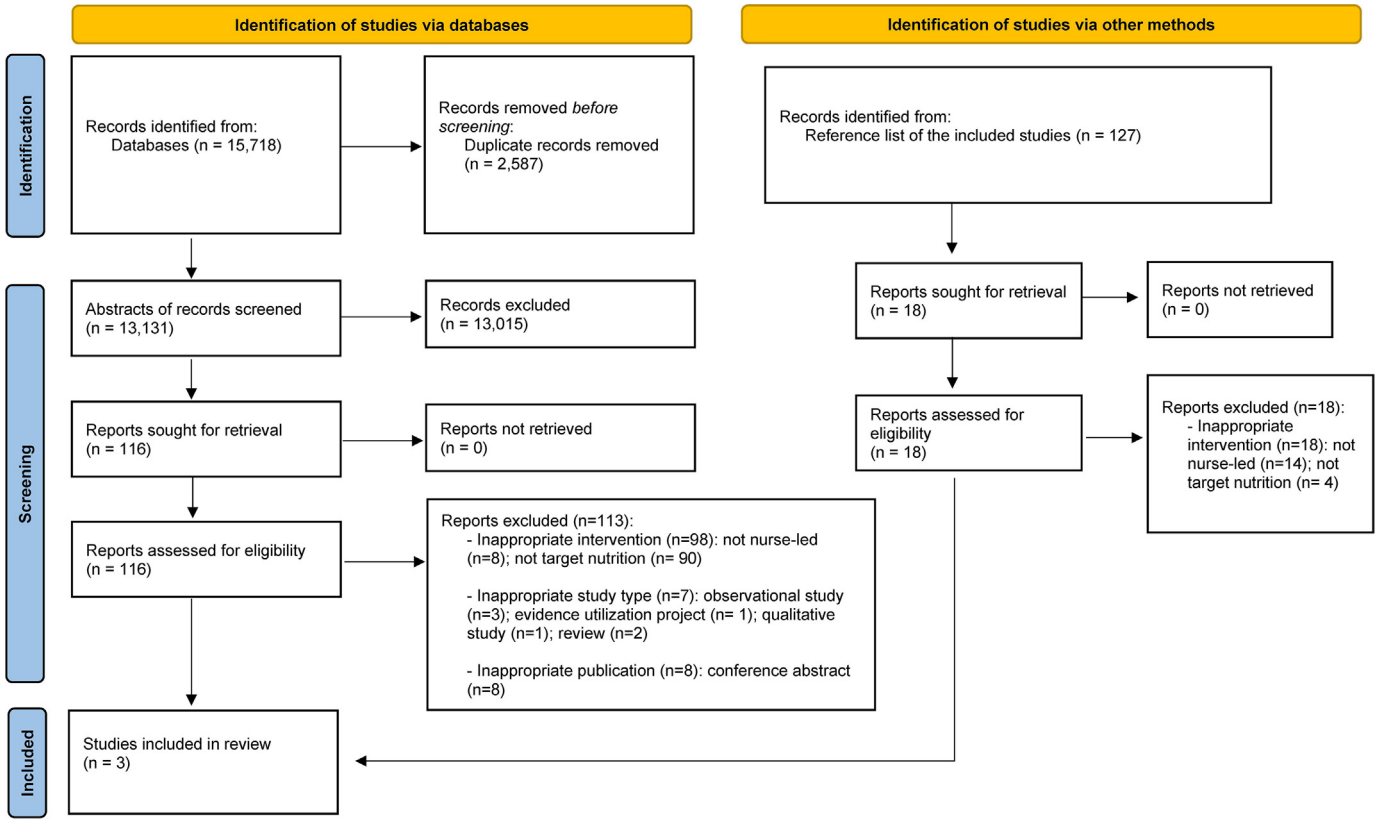

Figure 1. PRISMA 2020 flow diagram.

Table 1
Characteristics of included studies ($n = 3$).

No.	First author, Year, Country	Study design	Sample size	Participant characteristics	Intervention				Comparator	Outcome assessment		Results
					Aim	Ingredients	Mechanisms	Delivery		Time points of assessment	Measurements and tools	
1	Cartmel, 2005, United States	RCT	$N = 70$ (IG = 36, CG = 34)	Mean age = 63 years, 28% female, head and neck cancer, stage I to II, time since diagnosis NR, during survivorship	To improve intakes of fruits and vegetables	Nutritional counselling: dietary advice; goal setting	Transtheoretical model	- Delivered by a trained nurse - Mixed settings of hospital and home - Individualized face to face and telephone counselling - Five sessions in six months	Usual care	Baseline, Month 6	- Fruit and Vegetable intake (servings/day): Self-developed questionnaire	IG vs. CG, change value, mean ± SE - Fruit and vegetables: (2.07 ± 0.50 vs. 0.49 ± 0.31) ($P = 0.009$)
2	Kim, 2014, South Korea	RCT	$N = 56$ (IG = 28, CG = 28)	Mean age = 54 years, 39% female, stomach cancer, stage I to III, time since diagnosis NR, underwent gastrectomy	To improve energy intake, body weight and quality of life	Nutritional counselling: nutritional assessment; dietary advice; dietary plan; monitor and feedback	Conception of patient participation	- Delivered by several nurse researchers - Mixed settings of hospital and home - Individualized face-to-face and telephone counselling - Four sessions in three months	Usual care	Baseline, Week 12	- Energy intake (Kcal/d): 3-day food diary - Body weight (kg): weighing scale - Quality of life (Score): FACT-G	IG vs. CG, post-intervention value, mean ± SE - Energy intake: 2031.6 ± 159.9 vs. 1845.7 ± 149.6 ($P < 0.001$) - Body weight: 58.20 ± 10.62 vs. 56.43 ± 88.43 ($P = 0.737$) - FACT-G score: 86.27 ± 6.50 vs. 60.09 ± 9.00 ($P < 0.001$)
3	Del Valle, 2018, Spain	RCT	$N = 492$ (IG1 = 164, IG2 = 164, CG = 164)	Mean age = 55 years, 100% female, breast cancer, mean time since diagnosis = 6 years, stage NR, during survivorship	To improve intakes of fruits, vegetables, and wholegrains	Nutritional counselling: dietary advice; goal setting	Transtheoretical model	- Delivered by a trained nurse - Home setting - Individualized telephone counselling - One session in 12 months	Wait list	Baseline, Month 12	- Fruit and vegetables intake, wholegrains intake: self-developed questionnaire	IG2 vs. CG, post-intervention value, odds ratio (95%CI) - Fruit and vegetables: 2.72 (1.42–5.22) ($P = 0.003$) - Wholegrains: 0.73 (0.43–1.24) ($P = 0.727$)

CG, control group; FACT-G, functional assessment of cancer therapy-general; IG, intervention group; NR, not reported; RCT, randomized controlled trail.

Table 2
Critical appraisal with included studies ($n = 3$).

No.	First author, year, country	Randomization process	Deviations from the intended intervention	Missing outcome data	Measurement of the outcome	Selection of the reported result	Overall risk
1	Cartmel, 2005, United States	Low	High	High	High	Low	High
2	Kim, 2014, South Korea	Low	High	High	Low	Low	High
3	Del Valle, 2018, Spain	Some concerns	High	High	High	Low	High

their nutritional assessment results.[30] Additionally, the nurses encouraged the participants to monitor and record their adherence to the dietary plan in user-friendly diet diary booklets, and then the nurses collected the diet diaries to assess the participants' feedback.[30]

Mechanisms: Two studies were based on the transtheoretical model, which is conceptualized as five stages of change ranging from precontemplation to maintenance.[29,31] The remaining study was based on the concept of "participant participation", which emphasized the importance of patients' active involvement in determining and monitoring their own nutritional care.[30]

Delivery: The interventions in all included studies were delivered by a trained nurse[29,31] or by several nurse researchers.[30] Two studies were delivered in mixed settings of hospital and home,[29,30] while the other study was delivered in a home setting alone.[31] Two studies adopted a combination of individual face-to-face education and telephone counseling,[29,30] whereas the other one used individual telephone counseling alone.[31] Two studies adopted high intensity interventions with five sessions over a six-month period[29] and four sessions over a three-month period.[30] The other study employed a less intensive intervention, with one session over a 12-month period.[31]

Control group

Two studies applied usual care as the comparators,[29,30] while the other study used a wait list control group.[31]

Effects of the nurse-led dietary interventions

All three studies reported the interventions' effects only at post-intervention time points. Two studies assessed dietary intake using self-developed, unvalidated questionnaires.[29,31] The remaining study measured dietary intake using a three-day food diary.[30] Only one study reported the additional outcomes of body weight and quality of life as measured by the weighted scale and the validated 27-item Functional Assessment of Cancer Therapy-General questionnaire, respectively.[30]

Dietary intake (Fruit and vegetables): Two studies on survivors of head and neck cancer[29] and breast cancer[31] measured fruit and vegetable intake. Both studies reported a statistically significant higher fruit and vegetable intake in the intervention groups compared with the usual care ($P = 0.009$)[29] or wait list control ($P = 0.003$)[31] groups post-intervention.

Dietary intake (Wholegrains): The study on survivors of breast cancer measured the intervention's effects on the consumption of wholegrains and did not find a statistically significant between-group difference in wholegrain consumption ($P = 0.727$) post-intervention.[31]

Dietary intake (Energy intake): The study on stomach cancer patients undergoing gastrectomy measured the intervention's effects on energy intake and reported a statistically significant higher energy intake in the intervention groups compared with the usual care comparators ($P < 0.001$) post-intervention.[30]

Body weight: The same study on stomach cancer patients measured the intervention's effects on body weight and did not identify a statistically significant between-group difference in body weight ($P > 0.05$) at post-intervention.[30]

Quality of life: The same study on stomach cancer patients measured the intervention's effects on quality of life and found a statistically significant improvement in quality of life in the intervention group compared with the usual care control group ($P < 0.001$) post-intervention.[30]

Discussion

Summary of evidence

This review aimed to systematically summarize evidence on nurse-led dietary interventions for improving dietary intake in cancer patients and survivors. The results identified three studies that met the inclusion criteria, two of which aimed to improve food intake in cancer survivors following primary treatment,[29,31] while the other aimed to increase energy intake in stomach cancer patients undergoing treatment.[30] Despite the limited studies, this review demonstrated the promising effects of nurse-led dietary interventions for improving dietary intake.

All three included studies were assessed as high risk of bias, which was mainly due to the absence of or unclear blinding, inappropriate analysis of missing outcome data, and lack of a validated objective outcome measurement tool. Only one study applied single blinding to the participants in the control group,[29] and the other two studies provided no or unclear information about blinding.[30,31] The four previous systematic reviews on dietitian-dominated dietary interventions also identified similar limitations in inadequate blinding.[8–11] Inadequate blinding is a common issue in interventions based on education and/or counseling because such types of interventions rely heavily on the close interactions between the participants and the intervention providers, which increases the difficulty in designing comparators that are similar to the interventions and can mask the participants in different groups and/or the intervention providers.[32] In addition, nurse-led dietary education and/or counseling is not yet a common clinical practice, and both participants and intervention providers tend to be easily aware of the "new intervention" that they are undergoing.[33,34] It is recommended that future studies apply active or attention control groups, which is helpful in reducing participants' and intervention providers' awareness of intervention assignment and balancing participants' outcome expectations among different groups.[35] Outcome data from 85.7% to 92.8% of the randomized participants were analyzed in the included studies, none of which conducted sensitive analysis to detect whether the intervention effects were biased by missing outcome data.[29–31] Intention-to-treat analysis is recommended by the Cochrane Collaboration to reduce the bias caused by missing outcome data when assessing the intervention's effects.[23] All three studies applied subjective self-report methods for measuring dietary intake,[29–31] which caused a high risk of bias in the domain of outcome measurement. Subjective self-report methods for

measuring dietary intake have long been criticized for measurement errors because self-reports rely heavily on the respondents' willingness and/or ability to fully and accurately report the foods that they consumed.[36] Recent review evidence has recommended the administration of objective image-based dietary assessment methods to reduce possible bias caused by self-reporting.[37,38]

In accordance with a recent systematic review of dietitian-dominated nutritional interventions for cancer survivors,[11] this review found a positive trend in that nurse-led dietary interventions are effective in improving fruit and vegetable intake. In view of the strong relationship between fruit and vegetable intake and cancer survival, dietary interventions have the potential to benefit survival outcomes.[39–41] Notably, none of the included studies has examined the effects of the intake of other food groups recommended by the World Cancer Research Fund and American Cancer Society, such as consuming more beans while consuming less red meat, processed meat, sugar, alcohol, and salt.[7] More research is warranted to examine the effects of dietary interventions for improving intakes of other food groups in patients diagnosed with cancer. Additionally, this review identified evidence supporting the benefits of nurse-led dietary interventions for improving energy intake and quality of life in cancer patients undergoing treatment but not for body weight, which was similar to the findings in several systematic reviews on dietitian-dominated dietary interventions for cancer patients.[8–10]

The nurse-led dietary interventions included in this review were exclusively dietary counseling, which is the first-line dietary treatment traditionally delivered by dietitians.[6] In the nurse-led dietary counseling sessions, the nurses' tasks included performing dietary screening/assessment, offering dietary advice, setting dietary goals, and making dietary plans, which are the same contents in traditional dietitian-dominated dietary counseling.[8–11] This implies that the nurses' role in dietary interventions is beyond conventional roles in detecting and assessing patients with dietary problems as suggested by the ESPEN nutritional guideline for cancer patients.[6] In nutritional oncology care, dietitians usually provide dietary counseling in hospital settings,[20] while the nurses in two of the studies in the current review worked with cancer survivors in home settings. This suggested that nurses have advantages in providing nutritional care to cancer patients and survivors across the disease continuum in multiple settings compared with dietitians. In addition to nutritional counseling, oral nutritional supplements and enteral or parenteral tube feeding may be required depending on patients' severity of malnutrition and/or gastrointestinal function.[6] The ESPEN nutritional guideline recommends that health care providers with nutrition training take responsibility for different levels of nutrition-related activities.[6] Although the number of dietitians is limited, dietitians are still considered the key professional personnel to address patients' complex dietary issues.[42] If nurses can offer nutritional counseling as a first-line dietary intervention, it will give dietitians more time to focus on more serious dietary issues, and patients will benefit from having more and better multidisciplinary nutritional care services.

Similar to previous systematic reviews on nurse-led dietary interventions in non-cancer population,[16–18] this review failed to identify enough data describing the nurses' qualifications and competencies in providing dietary interventions for the studied population. The lack of description of the nurses' characteristics is a barrier to the replicability of those effective nurse-led dietary interventions and may impede the practice of nurse-led nutritional care. Professional governing bodies in a few developed countries, including the United States, Australia, and the United Kingdom, have recommended that nurses be involved in some nutritional care, encompassing performing nutritional screening and assessment, making dietary plans, and delivering enteral or parenteral nutritional care in collaboration with other disciplines in hospitals.[43–45] However, the work scope and education system of nurses specializing in nutritional care are still under development worldwide.[34] Furthermore, there is still a lack of accredited nutritional care programs for nurses to be qualified as a specialized nutritional support nurse.[34] No countries have a legislative role in authorizing nurses with credentials to carry out nutritional care.[46] This may partially account for the limited number of included studies in this review. In the field of cancer care, cancer patients and survivors are often faced with disease-specific nutritional problems, which are influenced by the presence of the tumor, anticancer treatments, and subsequent psychosocial changes.[6] Hence, nurses engaged in nutritional support in the cancer context are suggested to undergo cancer-specific nutritional training in a general nutritional training course.[15] Knowledge and skills in cancer and nutritional care should be integrated as part of the training course for nutritional support nurses. Future studies on nurse-led dietary interventions are also suggested to describe the nurses' characteristics in detail, including but not limited to their knowledge, skills, educational background, and nutrition-centered training.

Strengths and limitations

This was the first systematic review to identify nurse-led dietary interventions for cancer patients and survivors. A comprehensive literature search was conducted using both medical and nursing databases to capture as many eligible studies as possible. However, several study limitations need to be recognized. All three studies applied RCT designs, but the studies had an overall high risk of bias, mainly due to lack of blinding, lack of analysis of missing data, and lack of an objective outcome measurement tool. Furthermore, the possibility of publication bias cannot be ruled out since publication types were limited to primary studies published in peer-reviewed journals and written in English or Chinese. Lastly, although this review has identified the promising effects of nurse-led dietary interventions in improving dietary intake in cancer patients and survivors, solid conclusions cannot yet be made due to the limited number of included studies.

Implications

Although nutrition-related activities are essential elements of nursing care for cancer patients and survivors, dietary interventions led by nurses is an emerging trend. The role of nurses in supporting patients with dietary problems has been historically recognized as delivering nutritional screening and assessment. The systematic review suggested that oncology nurses might be capable of expanding their role in delivering dietary counseling across the disease trajectory. Future studies on nurse-led dietary interventions are suggested to provide more details about nurse's characteristics. In addition, more research is warranted to explore the training, education, accreditation, and legislation of nutrition support nurses. In view of the association between dietary intake and cancer survival and limited access to dietitians for cancer survivors living in community settings, an exploration of the possibility of nurses sharing the workload of nutrition-related care with dietitians should particularly be considered.

Conclusions

This is the first systematic review to summarize the evidence on nurse-led dietary interventions for cancer patients and survivors. Although the available studies were limited, a positive trend is identified in that the nurse-led dietary interventions were effective in increasing dietary intake in cancer patients and survivors. Additional studies in this field are required to further explore nurses' role in the development of nutritional oncology care.

Supplementary material

To access the supplementary material accompanying this article, visit the online version of the *Asia-Pacific Journal of Oncology Nursing* at https://doi.org/10.1016/j.apjon.2021.12.013.

Declaration of competing interest

None declared.

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