

Nurses' Knowledge and Attitudes toward Complementary Therapies for Cancer: A Review of the Literature

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ABSTRACT

Complementary therapies (CTs) are nonconventional supportive therapies, which are used by the patients with cancer. The use of CTs has been known to alleviate symptoms as a result of chemotherapy and to improve quality of life. However, if CTs are inappropriately used, there may be adverse reactions or no effect resulting in poor support of the cancer treatment. Nurses play an important role in supporting patients with cancer who often seek information regarding CTs. Within their scope of practice, it is expected that nurses have sufficient knowledge about the safety and effective use of CTs, and positive attitudes toward supporting patients who wish to use CTs. This review aims to examine existing literature regarding nurses' knowledge and attitudes toward CTs for patients with cancer. English language articles obtained from recognized nursing and midwifery databases such as CINAHL, Google Scholar, Medline, ProQuest Central, and Scopus for the period

between 2002 and 2015 were searched. A total of 96 articles were retrieved using the search terms with only 13 eligible articles meeting the inclusion criteria. Three major themes were identified by the thematic analysis of reviewed studies: nurses' knowledge about CTs, nurses' attitudes toward CTs, and sources information about CTs. The majority of studies investigating nurses' knowledge and attitudes toward the use of CTs for oncology was conducted in developed countries. Overall, it was identified that nurses need to improve their knowledge and skills about CTs so that they were more confident to assist patients in integrating conventional treatment and CTs for cancer management.

Key words: Attitudes' cancer care, complementary therapies, knowledge, nurses, nursing

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Introduction

Conventional treatments such as surgery, chemotherapy, radiotherapy, and hormonal therapy are provided to manage cancers.^[1,2] In addition, complementary therapies (CTs) have also been used among patients with cancer after diagnosis, during or after chemotherapy.^[3] CTs encompass a wide range of nonmedical healthcare practices, therapies, procedures, and devices that can be used alongside conventional medicines. These include natural products, mind and body medicine, manipulative therapies and body-based practices, and other CTs and alternative medical systems.^[4] There is a significant interest in the use of CTs among patients with cancer since this treatment could improve physical and emotional well-being, boost immunity, reduce the side effects of chemotherapy, and improve the quality of life (QoL).^[5-7] The use of CTs for cancer management in developed countries is very popular.^[8-10] In developing countries, such as Asia, Africa, Latin America, and the Middle East, 80% of the population used CTs as primary healthcare and as treatments for cancer.^[11-13]

However, in some cases, the integration of conventional medicine and CTs for cancer treatment may be ineffective and/or harmful.^[14] It is necessary that healthcare providers, including nurses, can provide appropriate information about CTs to patients who are interested in using them as part of their cancer management. A review of literature has been conducted to explore what is known and what the gaps in knowledge are for nurses in relation to the use of CTs among adult cancer patients.

Methods

Search strategies

The articles in this literature review were obtained from recognized nursing and midwifery databases including CINAHL, Google Scholar, Medline, ProQuest Central, and Scopus. The search was limited to these databases, due to this study being focused in the nursing field. The search strategy employed synonyms and Boolean operation where keywords were combined with “and” and “or.” The keywords included “complementary therapy,” “adult patients,” “cancer treatment,” “nurses’ attitudes,” “nurses’ knowledge,” and “nurses’ perceptions about complementary therapies.”

Inclusion and exclusion criteria

Only English language publication articles were included in this review. Studies were focused on nurses’ knowledge and attitude toward the use of CTs for adult patients with

cancer. Articles that related to CTs for infant and children with cancer were excluded from the study as they were not the focus in this review.

Results

In total, 96 articles published between 2002 and 2015 were retrieved from the databases. After reviewing the titles and abstracts, 54 citations were removed due to irrelevance to the topic. From the 42 remaining articles, only 17 articles were found to be focused on nurses’ knowledge and attitudes about CTs. Finally, 13 eligible articles that met the inclusion criteria were included in this review [Figure 1].

Study characteristics

The majority of the reviewed studies were conducted in developed countries including Australia ($n = 3$), Hong Kong ($n = 1$), Italy ($n = 1$), South Korea ($n = 2$), and the USA ($n = 6$). Ten of the studies used quantitative methodology,^[15-24] two studies were qualitative studies,^[25,26] and one article utilized a mixed methods approach.^[27] The majority of the quantitative study designs was cross-sectional surveys including survey series and self-administered questionnaire surveys. One study used an electronically delivered survey and another used a conventional mailed survey. Semi-structured in-depth interviews were used to collect the data in all the qualitative studies.

Participants’ characteristics

The majority of participants included in the reviewed studies was registered nurses ($n = 6$), nursing faculties and students ($n = 4$), and oncology nurses ($n = 3$). The sample size of the reviewed articles ranged from

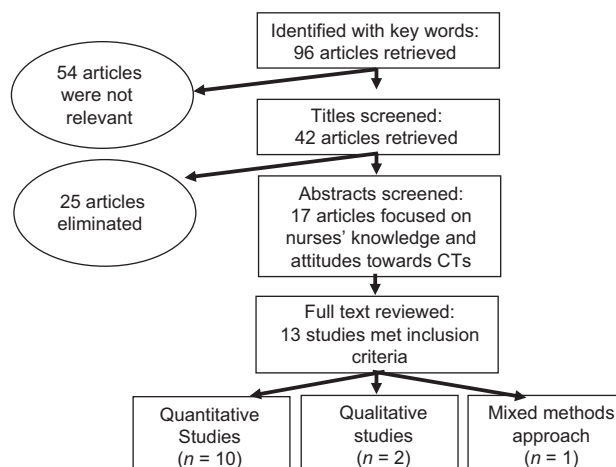


Figure 1: Article searching and selection process

4 to 850 participants. The detailed information regarding the sample is shown in Tables 1-3.

Findings

Qualitative and quantitative articles in this review were appraised using the ten questions from the Critical Appraisal Skills Programme (CASP 2006a, 2006b) that help make sense of randomized controlled trials and qualitative research. Rigor, relevance, and credibility are the main aspects considered in this tool. Overall, the critique showed the use of appropriate approaches and methods with findings significant and relevant to this review. Table 1 shows the summary of appraisal details displaying authors, year, location, aims, setting, sample, methodology and methods, major findings, limitations, rigor and validity, and significance to the issues.

To discuss the findings of this review, topic headings were defined based on the thematic analysis of articles reviewed. Thematic analysis was used to identify themes, essence, and patterns within the articles.^[28] Each article was read carefully, grouped, coded, and analyzed to obtain maximum understanding. Analysis of the reviewed articles identified three themes: “nurses’ knowledge about CTs, “nurses’ attitudes toward CTs,’ and “sources of information about CTs.”

Nurses' knowledge about complementary therapies

CTs are a group of nonconventional treatments that are used together with Western medicine to support the healing process.^[29] Studies reported that CTs including natural products, mind and body medicine, manipulative therapies and body-based practices, and other CTs and alternative medical systems have been used in managing symptoms of chemotherapy and improving QoL.^[29] However, in some cases, CTs may interfere with the reaction of the cancer medical treatment if they are used inappropriately. Interference in medical oncologic therapy can lead to reactions that may impair cancer-healing processes and worsen a patient's health condition; thus, it is essential that CTs should be used appropriately.^[29]

In general, patients obtain information about CTs from less credible information sources such as their family and friends, Internet, radio, television, and/or magazines.^[30] Although the information obtained may be suitable, it is important that patients receive trusted information, based on evidence from qualified professional healthcare providers.^[30] Nurses are one of the largest groups of healthcare providers who have regular contact with patients who have cancer.^[31] They play an important role in assisting patients with cancer and could be a credible information source to provide trusted advice

Table 1: Oncology nurses' knowledge, attitudes and source of information about CTs

No	Author and Date	Aim and Objective	Settings and Participants	Study design	Results	Strengths and Weakness
1	Broom and Adams 2009	To examine oncology clinicians' approaches to CAM and the potential implications for patients, team dynamics and professional education	Australia (Developed country) 13 oncologists and 12 oncology nurses in two main hospitals in Australia	Qualitative, Interpretive tradition. In-depth interview. Data analysis: Charmaz' approach	Nurses appeared severely lacking in knowledge of different CAM and potential benefits and side-effects	There was no information about data collection process, no inclusion and exclusion criteria of participants
2	Rojas-Cooley and Grant 2009	To describe oncology nurses' experiences with patients communicating interest in or use of CAM therapies along with oncology nurses' CAM resources and educational interest	USA (Developed country) 850 oncology nurses of Oncology Nursing Society (ONS) in the United States	Quantitative National mailed survey, random sample	The most commonly used CTs was Prayer Nurses learned about CTs from patients (15%), books (13%) and journals (12%), formal training (2%), Advertisement (2%), psychologist (1%) Nurses were interested in developing their knowledge in naturopathy medicine (49%), TCM (44%), Ayurveda (41%)	Used a newly developed survey tool which there was information about validation of the tool The dependence on self-report of respondents
3	Zanini et al. 2008	To investigate the knowledge of Italian oncology nurses in relation to CAM therapies	Italy (Developed country) 270 oncology nurses in Italy	Quantitative Survey- Self-administered questionnaires	60.6% of the nurses had knowledge about CTs 69.7% of the nurses had attended training regarding CTs Sources of information: 60.6% were books, other health workers (50%), the internet (48%), workshops and seminars (29.8%), formal nursing education (17.0%) and only 5.3% from professional journals	Conducted developed country The result could not be generalised

CAM: Complementary and Alternative Medicines, CTs: Complementary Therapies, TCM: Traditional Chinese Medicines

for patients who seek information and are interested in the use of CTs. Nurses' recommendations regarding the efficacy and safety of CTs could impact on the decisions made by patients with cancer, on whether they use or do not to use CTs. This, in turn, may have significant impact on patients'

cancer treatment.^[31] Therefore, nurses should be well informed and have sufficient understanding and knowledge about CTs.

Nurses' understanding and knowledge of CTs could be reflected in their approach toward CTs. Studies indicated

Table 2: Registered nurses' knowledge, attitudes and source of information about CTs

No	Author and Date	Aim and Objective	Settings and Participants	Study design	Results	Strengths and Weakness
1	Holroyd, Zhang, Suen & Xue 2008	To investigate the beliefs and attitudes CAM in a population of Hong Kong registered nurses	Hong Kong (Developed country) 187 registered nurses	Quantitative Cross-sectional survey	71.9% of nurses the nurses agreed that CTs should be integrated into western medicine 85% of them agreed that CTs could benefit for patients 89.9% of the participants disagreed that CTs should be taken when using western medicine 92% considered that CTs could alleviate the symptoms of illness 93.6% wanted to learn more about CTs Source of CTs information: 64.2% from newspaper and magazines, 57.2% from friends, 43% from books, 24.1% from the internet, 21.4% from family	Small sample size The result could not be generalised
2	Shorofi & Arbon 2010	To determine nurses knowledge, attitude and personal use of CAM.	Australia (Developed country) Surgical ward nurses in five metropolitan hospitals in Adelaide	Mixed methods (Quantitative and Qualitative) Self-administered questionnaire (adopted from NCCAM). Descriptive and non-parametric statistic used SPSS	50% of nurses using CAM for patients 59% of nurses were positive about CAM 60% of them had very little knowledge about CAM	There were no sample size information Number of CAM therapies not listed Conducted in a developed country There result could no be generalised
3	Sohn & Loveland 2002	To investigate the level and source of nurse practitioner knowledge of CTs	USA (Developed country) 152 from random sample of 400 registered nurses in Missouri and Oregon	Quantitative A cross-sectional descriptive design.	Nurses in this study had moderate level of knowledge about CTs 67% of the participants learned CTs from their own experience 61.6% obtained information from professional journals and 64.4% from journals 54.8% received information from workshop and seminars, 54.1% from continuing education opportunities Only 24.0% reported that formal education was a source of knowledge about CTs 54.0% reported receiving training in CTs outside their NP programme. 60% was interested in future education about herbal therapy 83% (n-122) had recommended CTs to their patients	No information about pilot study, content validity Good sample size Conducted over than ten years ago The result was not generalizable
4	Trail-Mahan, Mao, Bawel-Brikley 2011	To explore hospital-based nurses' knowledge and attitudes regarding CAM	USA (Developed country) 152 registered nurses in California	Quantitative Descriptive study	47% of nurses could correctly define CTs Only 33% of the respondents were able to define CTs Only 1 of the participants strongly agreed with the use of CTs and 7 participants strongly disagreed with CTs Even though they had limited knowledge of CTs some of them agreed that patients use CTs Less than 50% of them familiar with CTs due to CTs have recently begun to be added in nursing curricula where surveyed practicing >6 years education nursing program that may not have CTs curriculum	Low response rate (18%) The result could not be generalised Conducted in developed country

(Continued)

Table 2: (Continued)

No	Author and Date	Aim and Objective	Settings and Participants	Study design	Results	Strengths and Weakness
5	Wang & Yates 2006	To describe how nurses' respond to people with cancer who use CAM and the factors which might contribute to these different responses	Australia (Developed country) Four nurses in Brisbane	A qualitative grounded theory approach with Semi-structured in-depth interviews	Experiences with CAM appeared to influence their attitude toward Cam and respond to patients Nurses who had positive experience with using CAM often described more positive attitude Nurses' attitudes were also affected by their beliefs about the evidence in support of CAM	Small sample size Cannot be generalised Conducted in a developed country
6	Young-Hee & Lee 2008	To compare nurses' and patients' knowledge and attitudes toward CTs	Korea (Developed country) 485 nurses 367 patients	Quantitative A cross-sectional survey	81.7% nurses heard about CTs but only 2.3% of nurses had sufficient knowledge about CTs 27% of nurses had received training or education regarding CTs 27% of nurses recommended CTs to their patients Nurses had more positive attitudes toward CTs than patients	Limited sample The result could not be generalised The study was conducted in developed country

CAM: Complementary and Alternative Medicines, CTs: Complementary Therapies, NCCAM: National Centre for Complementary and Alternative Medicines, SPSS: Statistical Package for the Social Sciences, NP: Nursing Practice

that nurses who have sufficient knowledge about CTs are more confident informing their patients about these therapies.^[15,16] The studies also showed that positive stances by nurses to open discussion with patients who used CTs for cancer management was important.^[17] In contrast, nurses who lacked knowledge about CTs were reluctant to communicate about CTs.^[18] According to Sohn *et al.*, nurses who lack an understanding of CTs are not able to adequately perform an appropriate nursing assessment regarding the use of CTs for patients who have cancer.^[18] Formal and informal education could help nurses develop their knowledge about CTs, which contribute to better quality of care for oncology patients.

Several studies indicated that education regarding CTs was expanding particularly in developed countries. A survey conducted by Sohn *et al.* in 2002 in the USA investigated the level of knowledge of 152 nurses in Missouri and Oregon.^[18] This is an early study, which reported that nurses had a moderate level of knowledge about CTs.^[18] Nurses in the study learned about CTs from their own experience (67%), professional journals (61.6%), workshops and seminars (54.8%), continuing education (54.1%), formal education (24.0%), and nonnursing practice programs (54%).^[18] It can be seen that nurses had developed their knowledge about CTs through informal and formal education although more current research is required in this area.

The literature showed that nurses' knowledge about CTs was continuously improving. In 2009, Rojas-Cooley and Grant reported that only approximately 50% of the

American oncology nurses (438 of 850) could correctly identify the combined term complementary and alternative medicine.^[16] In addition, this study noted that nurses were interested to develop their knowledge about CTs. Nurses in this study would like to know the possible benefits of CTs so that they would be more confident to assist patients with cancer.^[16] Trail-Mahan *et al.* in 2011 also reported that only 33% of 152 registered nurses in California (USA) were able to define CTs. Fewer than 50% of the nurses were familiar with CTs even though CT education had been recently introduced into the nursing curricula.^[19] Furthermore, a survey in Italy conducted by Zanini *et al.*, in 2008, reported that approximately 60.6% of 270 oncology nurses who participated in the study claimed to have knowledge about CTs.^[20] Approximately 69.7% of the nurses had attended training regarding CTs.^[20]

Two studies in Australia also indicated that nurses had limited knowledge regarding types of CTs, potential benefits, and side effects of CTs.^[25,27] A qualitative study conducted by Broom and Adams in 2009, it was also found that there was insufficient knowledge about CTs among oncology clinicians (including nurses).^[25] Twelve nurses in this study reported that they needed more education about CTs so they could help their patients to make informed decisions about the use of CTs.^[25] Furthermore, these nurses revealed that they were dissatisfied with the lack of CT education and training which meant they were unable to support their cancer patients to use CTs.^[25] The nurses expressed their interest in further education to develop their knowledge about CTs. The specific interest areas were herbal therapy-based options including naturopathic

medicine (45%), traditional Chinese medicine (44%), and Ayurveda (41%).^[25] Overall, these studies indicate that nurses need and want educational development programs about CTs. Such programs would provide nurses with knowledge and skills required to safely recommend appropriate CTs options for their patients. Furthermore, a survey aimed to investigate nurses' knowledge, attitudes, and personal use of CTs conducted by Shorofi and Arbon in 2010 reported that 52.5% ($n = 169$) of medical-surgical nurses had very little knowledge about CTs while 7.8% ($n = 25$) had no knowledge about this treatment.^[27] The nurses in this study were interested in learning about CTs.^[27]

Nurses' attitudes toward complementary therapies

Six studies investigated nurses' attitudinal responses toward the use of CTs. Cindy Wang and Yates conducted a qualitative study in a developed country and subsequently discussed how nurses' responded to people with cancer who used CTs, and the factors that might contribute to those different responses.^[26] This study revealed that 12 nurses in two different hospitals in Brisbane, Australia, were sceptical and ambivalent toward CTs.^[26] These nurses did not either support or discourage their patients' use of CTs.^[26] The study also found that there were several factors that influenced nurses' attitudes toward CTs.^[26] These

Table 3: Faculties and nursing students' knowledge, attitudes and source of information about CTs

No	Author and Date	Aim and Objective	Settings and Participants	Study design	Results	Strengths and Weakness
1	Booth-Laforce, Scott, Heitkemper <i>et al.</i> 2010	To evaluate the impact of the faculty development program on CTS attitude and competencies, nursing faculty and students completed a series of surveys regarding CTS competencies, attitudes and perceptions	USA (Developed country) Nursing faculty members ($n=27$) Undergraduate, masters and doctoral students ($n=184$) at University of Washington School of Nursing (UW SON)	Quantitative A survey series that focused on CTS competencies, attitudes and perceptions	Faculty: 49% of faculty responded indicated that they had incorporated CTS content into their courses in the last 3 years 56% of the nursing faculty members increased their knowledge about CTS 54% of faculty increased in enthusiasm for information about CTS Students: 80% of the students indicated their courses contained CTS topics	Small sample size Minimal information how the questionnaire developed (there was no information about questioner validation) Unclear ethical consideration Cannot be generalised
2	Halcon, Chlan, Kreitzer <i>et al.</i> 2003	To describe the knowledge and attitudes of nursing faculty and students (BSN and MSN) regarding CTS and their integration into nursing practice	USA (Developed country) The University of Minnesota School of Nursing. Students: $n = 170$ (BSN) $n=73$ (MSN) $n=47$ (PhD) Faculty: $n=50$	Quantitative A cross sectional survey	60% of both students and faculty reported that their spiritual or religious beliefs influenced their attitudes toward CTS Over 95% of all groups agreed that CTS should be integrated into conventional medicine Source of information: Peer professional: Faculty (94%), BN (84%), Graduate (80) Professional journals: Faculty (90%), BN (75%), Graduate (82%) Mass media: Faculty (55%), BN (66%), Graduate (70%) Formal training: Faculty (62%), BN (54%), Graduate (77%) Internet: Faculty (41%), BN (62%), Graduate (40%).	Good information No ethic information Conducted 10 years ago Conducted in developed country The result could not be generalised
3	Kim, Erlen, Kim & Sok 2006	To examine the differences in knowledge of and experience with Complementary Alternative Therapy (CAT) among undergraduate students, graduate students and faculty members	South Korea (Developed country) 41 undergraduate students 57 graduate students 55 faculty members	Quantitative Survey with questionnaire, analysed using SPSS	All groups reported having general knowledge regarding CTS 91% believed patient should have CAT The participants had positive attitude regarding CTS More than 50% had no personal experience with CAT 85.7% agreed that nurses should have CAM education and training	Small sample size Minimal description of statistical report The result could not be generalised

(Continued)

Table 3: (Continued)

No	Author and Date	Aim and Objective	Settings and Participants	Study design	Results	Strengths and Weakness
4	Kreitzer, Mitten, Harris, Sahndeling 2002	To assess the attitudes of faculty and staff toward CAM in medicine, nursing and pharmacy within an academic healthcare system.	USA (Developed country) 627 faculty and students employed or enrolled at the University of Minnesota	Quantitative A survey	90% of faculty and students believed that clinical care should integrate CAM/CTs and conventional treatment 88% of faculty and 84% of students indicated that CAM should be included in their curriculum Most nursing students had more positive attitudes than pharmacy students More than 35% of nursing faculty felt prepared to advise patients regarding hypnosis, massage, music, prayer/spiritual healing and meditation 55% of the participant had sufficient knowledge to advise patients to use CTs 50% of the participants wanted more training regarding CTs 75% of pharmacy students were interested in receiving training in herbal medicine. Training was related to positive attitudes toward CTs for both students and faculty ($P < .05$) The training and use of CTs was limited Significant barrier to the use of CTs was lack of scientific support Faculty and students indicated a high degree of interest in acquiring more training in CT modalities	Good sample size Results were not representative of all nurses in the USA Conducted in developed country Conducted 11 years ago

BN: Bachelor Nursing, BSN: Bachelor Science in Nursing, MSN: Master Science in Nursing, PhD: Philosophy of Doctoral, CTs: Complementary Therapies, CAM: Complementary and Alternative Medicines, CAT: Complementary Alternative Therapy, SPSS: Statistical Package for the Social Sciences

factors included the ambiguous definition of CTs; nurses' personal philosophy about CTs; personal experiences and knowledge regarding CTs; evidence of the effectiveness of CTs; patients' experiences; impact on patients; the motives of patients who use CTs; and the organizational culture.^[26] Overall, the results of the study found that nurses did not have a positive attitude toward CTs for cancer management.

Positive attitudes toward the integration of conventional treatment and CTs were found among nursing faculty and students in developed countries.^[22,23] A quantitative survey conducted in the University of Minnesota in 2002 revealed that 90% of 627 faculty and students supported the integration of medical treatment and CTs in the clinical care for all patients.^[22] Approximately 88% of faculty and 84% of students agreed that a topic related to CTs should be included in their curriculum.^[22] Half of them indicated their interest to have more education and training regarding CTs.^[22] Similarly, a survey series conducted by Booth-Laforce *et al.* in 2010 reported that about 56% of 27 nursing faculty

staff at University of Washington School of Nursing had increased their knowledge and enthusiasm for information about CTs.^[23] Approximately 54% of them had incorporated CTs content into their courses.^[23]

Furthermore, another survey conducted among nursing faculty members and students in South Korea also indicated positive attitudes toward the use of CTs.^[24] The study revealed that about 91% of 175 participants believed that patients should have CTs.^[24] However, more than 50% of them had no experience regarding CTs in their clinical practice. Most of the participants in the survey agreed that nurses should have CT education and training.^[24] A study undertaken by Young-Hee and Lee in 2008 reported that 81.7% of 485 nurses in Korea had heard about CTs, but only 27% had received training or education about them.^[15] Thus, only 27% of these nurses had recommended to their patients to consider the use of CTs.^[15] It is evident that nurses who had insufficient information about CTs were not confident recommending them.

A cross-sectional survey conducted by Holroyd *et al.* in 2008 in Hong Kong reported that 71.9% of nurses agreed that CTs should be integrated into Western medicine.^[17] Most of those nurses (85%) believed that CTs were beneficial and about 92% of them considered that CTs could alleviate symptoms of illness.^[17] The study also reported that 93% of these nurses wanted to learn more about CTs.^[17] The results of that study were consistent with Shorofi and Arbon Australian study, which found that approximately 59% of nurses had positive attitudes toward CTs although they had insufficient knowledge about them.^[27] It seemed that nurses who had more knowledge about CTs were more open toward use them. In addition, nurses who had less clinical experience were more likely to use CTs.^[27]

The findings from the reviewed studies have shown evidence that nurses in developed countries had progressive attitudes toward CTs. However, some nurses were still not confident in recommending the use of CTs to their patients. The strength of these studies was in the findings, which demonstrated nurses' attitudes toward CTs. However, one of the studies was a qualitative design with a small sample size; hence, the results cannot be generalized. Furthermore, the quantitative studies used self-administered questionnaires. A limitation of the CT questionnaires is that they cannot cover all aspects of nurses' attitudes toward CTs. Some studies were conducted more than 10 years ago; hence, the findings are now outdated.

Sources of information about complementary therapies

Nurses in the reviewed studies received information about CTs from various credible sources such as professional journals, research- and evidence-based information, workshops, and training. Three studies reported nurses in the USA obtained information about CTs from outside their nursing practice programs through professional journals, workshops and training, continuing education, and formal education regarding CTs outside their nursing practice program.^[16,17]

However, Holroyd *et al.* who conducted a cross-sectional survey in 2008 showed nurses obtained information about CTs from less reputable information sources. This survey found that nurses received information about CTs from newspapers and magazines (64.2%), friends (57.2%), books (43%), the Internet (24.1%), and from family (21.4%).^[17] However, a study conducted by Zanini *et al.* in 2008 showed that books (60.6%), other health workers (50%), the internet (48%), workshops and seminars (29.8%), formal nursing education (17%), and journals (5.3%) were the sources of information about CTs for Italian oncology nurses.^[20] These studies indicate

that the majority of nurses in developed countries obtained knowledge about CTs from reputable sources. The strength of these studies was that the evidence-based information provided could be useful in supporting the development of nursing education programs on CTs. Conversely, there was no information or research found regarding sources of information about CTs in developing countries.

Discussion

This literature review has revealed nurses' knowledge and attitudes toward CTs in most developed countries. Throughout the identified themes, it is clear that nurses in this review had limited knowledge about CTs. As a result, nurses showed indecisive attitudes toward this treatment. Thus, they need to develop and broaden their knowledge about this treatment. Having a broader depth of knowledge on CTs could result in them being more confident to open communication regarding CTs with their patients.^[11,30] However, most of the studies reviewed were conducted in developed countries. There were no studies found that were conducted in developing countries. Thus, it is suggested that further research to assess nurses' knowledge and attitudes regarding the use of CTs for cancer management in developing countries is required as patients with cancer in these countries are likely to use CTs.^[30]

Results from the previous studies also indicated that professional journals, formal education and, workshops and training were the most credible CTs' information sources for nurses in developed countries.^[21-24] Less reputable sources such as mass media, books related to health, family and friends, and the Internet were included as sources information about CTs.^[25] Information from these sources could lead to a lack of evidence-informed professional practice.

Internet connections in developed countries are generally more accessible than in developing countries making it easier for nurses in developed countries to obtain reputable information regarding CTs from professional journals and websites than for nurses in developing countries.^[18] CTs for cancer management are commonly used in developing countries.^[11] However, there is minimal evidence-based information available regarding nurses' knowledge about the use of CTs for patients with cancer. This highlights the need for future research in this important area of healthcare.

There were a number of limitations to this literature search. A common weakness in the quantitative and qualitative studies reviewed was the low response rates and small

numbers of study participants.^[15,18,20,25] As a consequence, the studies' findings could not be generalized. Several surveys did not provide clear information regarding how they maintained the rigor and integrity of the instruments used or of any ethical considerations when the studies were conducted.^[17,22,25] Two studies were dated; hence, the currency of the findings was questionable.^[18,20]

Another limitation of literature reviewed was that the majority of the participants were registered nurses, nursing faculty, and students. Only a few studies in this review included oncology nurses ($n = 3$). This might be due to nurses who practice oncology care are integrated with medical-surgical care. For instance, in developing countries such as Indonesia, oncology care is practiced by registered nurses who may or may not be oncology-focused.^[30] Therefore, this reviewed has focused on registered nurses' in general of their knowledge and attitudes as well as nursing faculties and nursing students.

However, oncology nurses have direct regular interaction with patients who have cancer.^[32] They may be more familiar with and have better understanding about CTs for cancer compared to general nurses, nursing faculty, and students. Information provided by oncology nurses would increase patients' awareness about the use of CTs for cancer treatment including the risks, benefits, and level of evidence of CTs.^[32,33] Thus, it is recommended that oncology nurses develop their knowledge about CTs by attending available CTs' seminars and workshops. Although scientific research regarding the efficacy and safety of CTs are limited, there are several CTs' available official websites and journals that provide credible information about CTs.^[34,35] These could help nurses improve their knowledge about CTs. Improvement knowledge and broadening attitudes may improve the quality of nursing practice and service in cancer treatment. Therefore, further research to assess knowledge and attitudes about CTs particularly among oncology nurses needs to be conducted.

The reviewed studies identified nurses' knowledge and attitudes toward the use of CTs for cancer management. Having sufficient knowledge and progressive attitudes is not enough to improve the quality of nursing practice in the use of CTs. Information regarding the availability of CTs treatment in both developed and developing countries have not included. There is limited evidence of efficacy and safety of CTs. For instance, herbal medicine, acupuncture, and yoga could alleviate the side effects of chemotherapy.^[13,36-38] Thus, there is the need for further research regarding the efficacy and safety of CTs for cancer treatment.

There were also limitations in the trustworthiness of the quantitative studies. In terms of nurses' attitudes toward CTs for patients with cancer, trustworthiness of the findings was limited, due to the use of self-report surveys to collect data. With this method, participants may choose given answers that are more socially and logically acceptable or they could seek the answers from other people. Finally, participants who had a stronger interest and greater knowledge about CTs could have a more positive attitude toward CTs resulting in biasing of the results. More rigorous research is required. This is particularly important in developing countries where there is limited evidence-based knowledge.

Conclusion

A diagnosis of cancer evokes a range of emotions ranging from disbelieve, denial, and to seeking an immediate cure or searching for an effective treatment. Patients with cancer have used both conventional treatment and CTs. The literature reviewed has shown that CTs could alleviate symptoms of chemotherapy, boost immunity and increase the QoL.^[13,36-38] The use of CTs as a complement to conventional cancer treatment can be beneficial; however, adverse effects that could be harmful and interfere with oncological medical therapy should be considered. Thus, it is essential that the integration of conventional treatment and CTs for cancer should be properly managed.

Nurses can be credible sources who could provide accurate and trusted information regarding CTs for patients who expressed an interest in seeking information about this treatment option. This review revealed that most nurses had insufficient knowledge about CTs but they were highly interested to learn about them. Education programs, formal workshops, and training were available for nurses in some developed countries to expand their knowledge about CTs. Several nursing schools had also included CTs topics into their undergraduate-nursing curriculum.

Most nurses in the reviewed articles gained information about CTs from less credible sources including patients, family and friends, books related to health, and mass media. The reviewed studies also indicated that a deficiency of knowledge about CTs resulted in nurses lacking confidence in discussing and recommending it to patients who sought information about this therapy.

In summary, it is necessary for nurses to increase their knowledge about CTs so that they develop a positive attitude toward CTs as an option for patients. Evidence-based information from nurses would assist patients in making

informed decision about the use of CTs (including the risks benefits and safety) and if suitable to their needs. With credible advice from nurses, the effectiveness of medical treatment that was combined with CTs could be maintained. Finally, further research in developing countries and studies with different methods of investigations need to be conducted to meet the needs of this population who are potentially high users of CTs for cancer treatment.

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Conflicts of interest

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