

Nurse's Knowledge, Attitude, and Practices of Complementary and Alternative Medicine

- A Scoping Review

Xietian Li

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Author: Xietian Li

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Supervisor: Sirkku Säätelä

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Abstract

Introduction: Complementary and alternative medicine (CAM) is becoming popular worldwide, and CAM is also very controversial in the healthcare field.

Background: CAM differs from conventional medicine because there is not enough evidence from randomized controlled trials. Nurses play an important role in CAM intervention.

Aim: This study aimed to determine nurses' knowledge, attitudes, and practices of CAM.

Methods: A scoping review method was used in this study. In the data collection, eight articles were chosen from scientific resources. In data analysis, the author synthesizes the data by summarising and describing.

Result: In the result part, there are three themes, Knowledge, Attitudes, and Practices. Theme Knowledge includes sub-themes of Assessment, Acquisition, and Education. Theme Attitude includes sub-themes of General attitude, Benefits, Effectiveness, Safety, and Duty. Theme Practices include sub-themes of Patient Education, Referral, Practices for others, and Nurses' self-care.

Conclusion: Nurses usually have limited knowledge and a positive attitude toward CAM. Nurses' CAM-related practices are also limited.

Language: English

Keywords: Nurse, Complementary and Alternative Medicine, CAM, knowledge, attitude, practice

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1 Introduction

Since the scientific revolution in the 16th century, science, modern medicine, and quantitative research have used skepticism (doubt anything), determinism (anything is determined by the law of nature and causation), and empiricism (observation and verification) to test and produce knowledge. This method is known as the “scientific method”, which encourages people to eliminate interpretations of the world by religions, superstitions, and mysticism (Topping, 2010). Before the birth and prosperity of science, modern medicine, and evidence-based medicine, human beings have already developed a lot of medical theories, medications, and therapies based on cultures, traditions, experiences, and beliefs, which are made up the main part of Complementary and Alternative Medicine (CAM) (The Associated Press, 2009).

CAM is always an important part that cannot be ignored and underestimated in the healthcare field in the world from the past to the future. A lot of people around the world are using CAM nowadays. Especially, cancer patients have a higher possibility of using therapies or medications of CAM. CAM is also one of the most controversial centers in the healthcare field. A lot of medical professionals criticize CAM because of no scientific medical evidence, unclear effectiveness, and underestimated side effects and drug interaction. The US government has spent huge sums of money to test the effectiveness of CAM, and they found that most CAMs are ineffectual (The Associated Press, 2009).

The role of nurses in patient education about CAM has always been ignored. Nurses may be the healthcare professionals who spend the longest time with patients; and patients prefer to ask nurses more questions than doctors, because of shyness or the time limitation of doctor appointments. Therefore, nurses need to learn more about CAM for patient education. In this research, the author focuses on the attitudes, knowledge, and practices of nurses regarding CAM. The author uses a scoping review which is a qualitative research method to try to find out the result. Via this study, the author tries to encourage nurses to pay more attention and focus on CAM to improve the quality of patient education and reduce risks related to CAM. Furthermore, finding out the problem of patient education and providing some advice for improvement is also one of the purposes of this study.

2 Background

CAM is a medicine that differs from conventional medicine because of the lack of enough evidence from randomized controlled trials. CAM is becoming more and more popular around the world, from developing countries to developed countries. CAM is also the focus of controversy in the health and medical field.

2.1 Definitions and distinction of concepts

Before the discussion, we need to know the meaning of some important concepts and to distinguish the differences between different concepts.

2.1.1 Conventional medicine and evidence-based medicine

Conventional medicine/ Modern medicine/ Mainstream medicine/ Western medicine/ Orthodox medicine is the medicine whose effectiveness and safety are testified by randomized controlled trials and scientific research, and which is used by doctors, pharmacists, nurses, and therapists to diagnose, relieve symptoms, and treat diseases. The common medical methods used by conventional medicine include medications and some therapies such as surgery and radiation (NCI, n.d.).

Evidence-based Medicine has been the new development of Conventional Medicine since the 1990s. In evidence-based medicine, doctors use the best scientific research selected from multiple research by a systematic review and meta-analysis method, if it is possible, and apply the best available research in clinical decisions. This process also considers the patient's beliefs and desires, as well as the doctor's experience in clinical (NCI, n.d.).

2.1.2 Complementary medicine, alternative medicine, and integrative medicine

Complementary medicine is the non-conventional medical intervention used by patients with conventional medicine methods together at the same time (NCCIH, 2021b). Alternative medicine is the non-conventional medical intervention used by patients to replace conventional medicine methods (NCCIH, 2021b). Integrative medicine is a combination of complementary medicine/ alternative medicine and modern medicine. Integrative medicine often combines one or several interventions of mainstream medicine with one or several interventions of CAM. It focuses more on the holistic health of patients,

rather than only disease or symptom, just one part or one system of the body (NCCIH, 2021b).

2.2 Interventions and contents of CAM

Even though the definitions of complementary medicine, alternative medicine, and integrative medicine are different, they usually use some common interventions, which include some therapies or medications. For example, vitamins, minerals, antioxidants, probiotics, herbs, and phytonutrients can belong to complementary medicine (to use with conventional medicine together) or alternative medicine (to replace conventional medications). If the CAM intervention got enough supportive evidence from randomized controlled trials, they also belong to conventional medicine (NCCIH, 2021a). CAM also includes psychological and physical interventions, such as Mindfulness, Alexander technique, Music therapy, Feldenkrais method, Tai chi, Rolfing Structural Integration, Massage therapy, Trager psychophysical integration, Yoga, Hypnotherapy, Pilates, Acupuncture, Art therapy, Spinal manipulation, Dance, Qigong, and Relaxation techniques (NCCIH, 2021a).

Except for common nutritional supplements and psychological and physical interventions, common interventions of CAM and integrative medicine also include some other interventions of traditional medicine, homeopathy, and naturopathy (NCCIH, 2021a). Traditional Chinese medicine is an old medicine system that differs from Western medicine. The diagnosis of traditional Chinese medicine uses the Yin, Yang, and five elements (Metal, Wood, Water, Fire, and Earth) theory to find out the “Pattern of Symptoms” rather than a specific disease. After diagnosis, the treatment is also based on Yin, Yang, and the five elements theory (Woodham & Peters, 1997, pp. 140–141). Ayurvedic medicine is a traditional Indian medical system that thinks that the 3 Doshas make up humans. The 3 Doshas are Vata, Pitta, and Kapha. The illness and disease are caused by the imbalance of Vata, Pitta, and Kapha, and Ayurvedic medicine practices can restore the balance of 3 Doshas (Ernst, Pittler, Wider, & Boddy, 2008, p. 52). Homeopathy dilutes natural substances that cause illness and disease into small doses to make homeopathy medication which can stimulate the body to deal with the illness and disease (Feingold, 2008, p. 17). Naturopathy believes in the healing ability of the human body. Naturopathy uses only

natural products and power to treat illness and disease. The ancient Greek Hippocrates is considered the earliest founder of Naturopathy (Fulder, 1996, p. 244).

2.3 Effectiveness of CAM and integrative medicine

Some medications or therapies of CAM and integrative medicine may have effectiveness (NCCIH,2021a). Yet the effectiveness of some interventions of CAM and integrative medicine cannot be verified by randomized controlled trials, and therefore these interventions are considered almost the same as placebo. For example, acupuncture is very popular as a method to relieve pain, yet a lot of trials are questioning the effectiveness of acupuncture. In 2009, based on 13 randomized clinical trials that involved 3025 patients, researchers found that the effectiveness of acupuncture for analgesia is very rare, and its limited effectiveness may be caused by bias or the psychological effect of therapy ritual, which means acupuncture has no clinical significance in pain relieving (Madsen, Gøtzsche, & Hróbjartsson, 2009). In 2012, based on 29 randomized controlled trials that involved 17922 patients, researchers found that fake acupuncture and real acupuncture have very small differences, and this small possible effectiveness may be caused by other factors rather than acupuncture itself (Vickers et al., 2012). In the oncological medical field, there is no evidence that medications or therapies of CAM and integrative medicine can treat or avoid cancer (NCCIH,2021a).

2.4 Safety of CAM and integrative medicine

All medications and therapies may have side effects and drug interactions with other medications, no matter of mainstream medicine or CAM and integrative medicine. In China, based on research includes 25927 hospitalized cases from 308 medical centers, researchers found recently that health supplements and traditional Chinese medicines are the biggest causes of drug-induced liver injury, with 26.81% of drug-induced liver injury are caused by them; researchers also found that the incidence rate of drug-induced liver injury in China is 23.8 of 100000 which is higher than the incidence rate, 2.7 of 100000, in America, and the incidence rate of most western countries. Based on that, researchers encourage health professionals in China to enhance their attention to the high incidence rate and causes of drug-induced liver injury in China (Shen et al., 2019).

2.5 The use of CAM

The prevalence of CAM and integrative medicine is controversial. Some researchers admit that the prevalence of CAM is difficult to find and count, and some researchers found the prevalence according to their standards. The use of complementary and traditional medicine is quite visible around the world. According to WHO, 80% of its member countries, 170 of 194 countries, reported the use of complementary and traditional medicine (indigenous medicine is also included) (WHO, 2019, pp. 44-45)

2.6 The reasons why patients use CAM

In Europe, patients have a lot of reasons to use CAM. Some patients are not satisfied with the treatments that they get from mainstream medicine, sometimes they don't get any treatments from mainstream medicine. Some patients don't want to take the medications or invasive procedures of mainstream medicine because they worry about the side effects. Some patients prefer natural medications and therapies. Some people think their relationships with professionals of CAM are better. Some patients prefer personalized treatment plans and services. Some patients got recommendations from friends and relatives. Some people need health maintenance from CAM. (Cambrella, 2012).

According to WHO, different countries have various reasons to use complementary and traditional medicines. Some developing countries use complementary and traditional medicine because of limited healthcare resources and conventional medicine services. For example, in Africa, the use of complementary and traditional medicine is more popular because of its high visibility and affordability. Some countries use it because of historical and cultural reasons. In the Republic of Korea, 86% population uses it based on historical and cultural reasons, even though their health care system is already quite developed. In Singapore, 76% population uses it based on the same reasons. Some countries use it as a complementary option. In North America and Europe, the users usually use it based on this reason, because the health care system is already quite developed (WHO, 2013, p. 27).

2.7 Previous research and health professionals' attitude to CAM

A systematic literature review published in 2020 shows that doctors', pharmacists', and nurses' attitudes about CAM are usually different. The similarity is that almost all health

professionals are complaining about the lack of high-quality resources of CAM, and the insufficient medical education and clinical training about CAM. Due to worries about interactions and negative effects, doctors have been observed to discount or discourage the use of CAM. Doctors are mostly not interested in the use of CAM in clinical situations, even though they showed interest in learning more knowledge about CAM. Especially in cancer treatments, a lot of doctors are worrying about patients' use of CAM, because evidence to support the effectiveness of CAM in cancer treatments is lacking, and CAM interventions for cancer patients have always some interactions with conventional medications or therapies, and CAM indeed have some negative effects that may hurt patients or make patients situation worse. Pharmacists had no preference for CAM, neutral is their attitude about using CAM in cancer treatment to relieve side effects and enhance the quality of life, but they did think that patients should trust pharmacists for getting information about CAM. The general attitude of nurses toward cancer patients using CAM was positive and welcoming. In cancer treatment, Nurses in the research showed their belief in the effectiveness of CAM, which is different from doctors' attitudes. In the research, it is more possible that nurses will support patients' decision to combine the use of CAM and the use of modern medicine (Keene, Heslop, Sabesan, & Glass, 2020).

3 Aim and research question

3.1 Aim of research

This study aimed to summarize and describe nurses' knowledge, attitudes, and practices of CAM, encourage nurses to learn more about CAM, and enhance nurses' attention to CAM to reduce risk related to CAM for patients.

3.2 Research question

What are nurses' knowledge, attitudes, and practices of CAM?

4 Theoretical framework

4.1 Dorothea E. Orem's self-care deficit theory

Dorothea E. Orem's Self-Care Deficit Theory of Nursing is the first theoretical framework for this research. To understand the meaning of Orem's Self-Care Deficit Theory, we have to learn some concepts and definitions in her theory. There are several major concepts and definitions included in Orem's Self-Care Deficit Theory of Nursing: In Orem's theory, "self-care" is the behaviors that people carry out to maintain health. In Orem's theory, "self-care deficit" means people's self-care is ineffective or inefficient, when a self-care deficit happens, patients need nursing from nurses. In Orem's theory, "nursing" means the management of patients' self-care to improve their health. Orem's Self-Care Deficit Theory of Nursing mainly talks about how people have the need to do self-care, and nurses need to manage patients' self-care to keep patients healthy (Alligood, 2014).

4.2 Patricia Benner's Novice to Expert Model

Patricia Benner's Novice to Expert Model explains how education and working experience help a novice nurse to develop and finally become an expert in the professional field. Novices are nurses without any experience. Novices focus more on rules in the workplace and nursing tasks themselves. Advanced beginners have very limited experience. They cannot prioritize and need supervision to apply knowledge. Competent can prioritize and have better time management and decision-making skills. Proficient have a bigger view of the whole clinical situation and can use experience and intuition to make decisions flexibly. Experts can understand the whole clinical situation in depth. Experts can make some innovations in nursing care. Experts can make better decisions based on work experience and intuition (Alligood, 2014).

5 Methodology

This research is conducted by a scoping literature review. The author used qualitative research methods to carry out this research. This research focuses on nurses' knowledge, attitudes, and practices of CAM, there are mainly two possible methods to conduct this research: Scoping Review (Qualitative) or Descriptive Study (Quantitative) based on questionnaires. Because of the limited research resources and the consideration of reliability and validity, the author thinks that a descriptive study is not a suitable research method for this study. A scoping review is more suitable for this study because we can identify and screen higher quality materials for this study via scoping review, which improves the quality of the study.

5.1 Scoping review

A scoping review, or scoping study, is a type of literature review method to rapidly "map" evidence and important concepts of related academic articles in a specific research area. Researchers usually choose scoping review for 4 academic purposes: to check and visualize the nature and range of existing research (for a future systematic review); to find out the availability of existing research and the necessity of developing a systematic review; to conclude and spread findings of existing research to professionals who need that; to find out what research is lacking (Arksey & O'Malley, 2005).

There are several literature review methods, and different methods of literature review are suitable for different studies. A scoping review is different from a systematic review. First, the scoping review can address literature with more topics, while the systematic review focuses on specific questions. Second, a scoping review can deal with articles with diverse study designs, which is different from the systematic review which can only deal with literature with the same or similar study designs. Third, the scoping review focuses less on the quality of article selection than the systematic review (Arksey & O'Malley, 2005).

5.2 Data collection

The process of screening and gathering information from reliable sources for the research is called data collection. In this research, before the real content analysis, the author screened and gathered scientific articles from different databases for this research. The databases used by the author include Academic Search Elite, CINAHL, Medline, and PubMed. The author also used PubMed as the supplement database for getting and checking more detailed information.

The first and most important database that the author used for searching is Academic Search Elite. The author tried to search for 3 times in Academic Search Elite. The keywords are “complementary and alternative medicine or CAM” and “nurse or nursing”. The filter (“Limit to” in the database website) is set to “Peer Reviewed”. The “Publication Date” is set from 2015 to 2025.

The second database that the author used for searching is CINAHL. The author tried to search for 2 times in CINAHL. The keywords are “complementary and alternative medicine or CAM” and “nurse or nursing”. The filter (“Limit to” in the database website) is set to “Peer Reviewed”. The “Publication Date” is set from 2015 to 2025.

The third database that the author used for searching is Medline. The author tried to search for 3 times in Medline. The keywords are “complementary and alternative medicine or CAM” and “nurse or nursing”. The filter (“Limit to” in the database website) is set to “Peer Reviewed”. The “Publication Date” is set from 2015 to 2025.

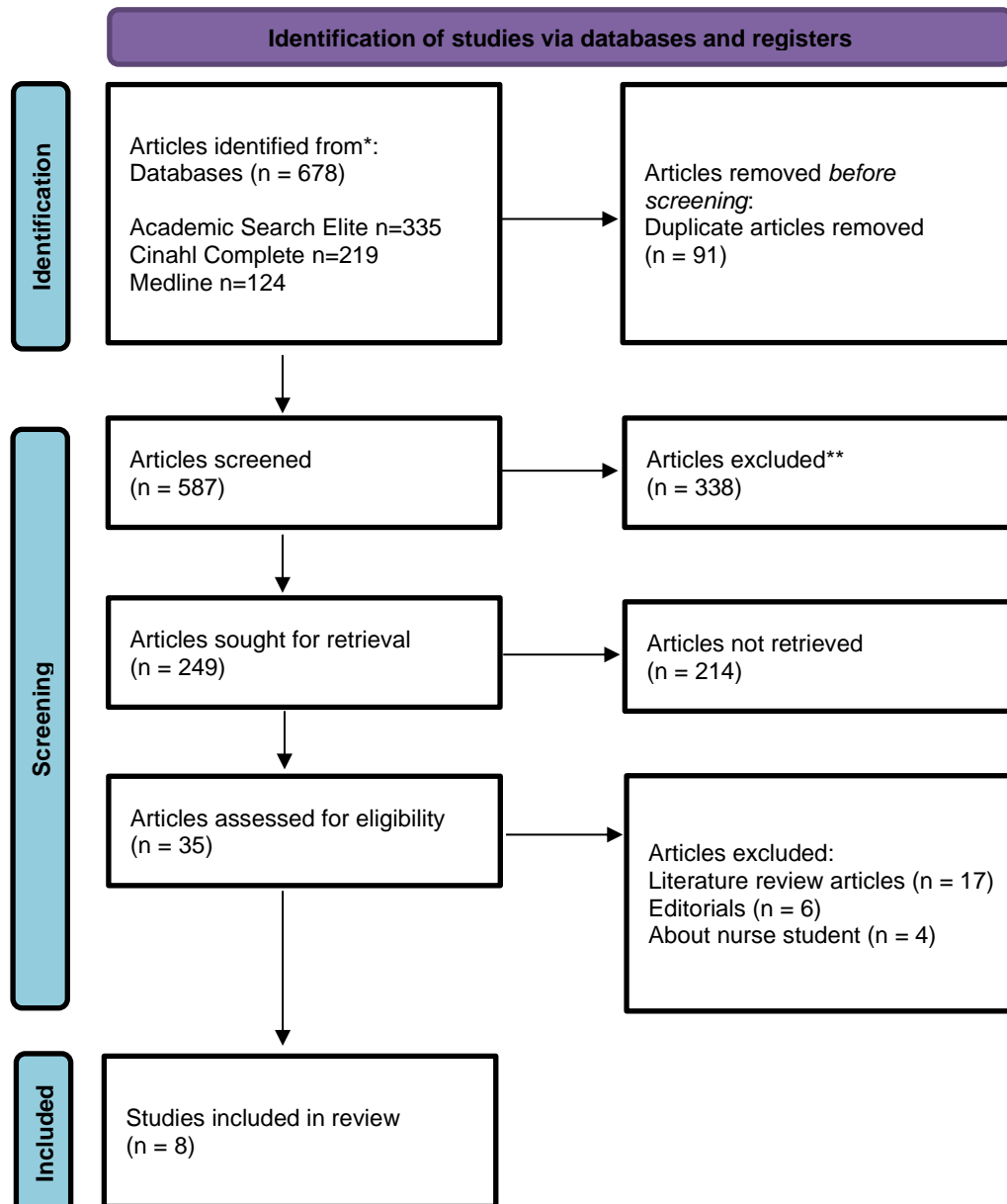
5.2.1 Exclusion and inclusion criteria

As Table 1. shows, for the scoping review, the author included scientific articles and research published in English after 2015 from peer-reviewed journals. The methodologies of included articles include quantitative research based on surveys, qualitative research based on interviews, and mixed method research combining both quantitative and qualitative methods. All the articles included are about nursing. Respondents to the included articles are nurses.

Table 1. Exclusion and inclusion criteria

Exclusion Criteria	Inclusion Criteria
Non-English article	English article
Non-peer reviewed	Peer-reviewed journal
Articles published before 2015	Articles published after 2015
Non-scientific material: editorial, review, commentary, comment, letter, response, opinion, news, guideline, government website, thesis from Theseus.fi	Scientific article from academic journal, research, investigation, thesis, dissertation, (professional book)
Systematic literature review research	Quantitative research based on a survey
Scoping literature review research	Qualitative research based on interview
Meta-analysis article research	Mixed method research
Only about medicine	About nursing
Nursing student, practical nurse as respondent	Nurse as respondent
Repeated articles	

5.2.2 Prisma flow chart for this article



5.3 Data analysis

This is a scoping review of studies with different study designs. The author analyzed and synthesized the results of eight included articles by summarizing and describing the quantitative and qualitative results of the included studies. The author considered what information from the included articles should be kept and interpreted, and the author also compared the similarities and differences between the results of the included articles.

To manage the data collected, we need to develop a coding scheme to sort and organize our data. Following the development of a coding scheme, the data are read and coded according to how well they relate to some classification. It may take multiple readings of the text to fully understand its intricacies, making this a challenging endeavor. Often, during coding, researchers find that the original coding scheme needs to be changed. For instance, concepts for new codes could surface. To determine whether the new code should be used in this situation, it would be essential to read all previously coded information again (Polit & Beck, 2022).

For analysis, we use codes to form the categories and themes. The search for broad categories and themes serves as the first step in the analysis procedure of qualitative materials. The data produces themes. Themes frequently emerge from categories of data. Finding "themes" entails looking for natural variations in addition to their similarities (Polit & Beck, 2022).

5.4 Ethical considerations

Ethics is important in any scientific research. A research must discuss the ethical considerations. The study follows the standards of honesty and accuracy in the whole research process. The author considered ethics and scientific standards in the data collection, the data analysis, and the result evaluation. The author respects other researchers' contributions and works. The author cites other researchers' studies properly, and thanks to all the other researchers' contributions. The ethical evaluation is complicated. As this is a scoping review study, no human participants were included in this study and there is no need to obtain a research permit to conduct this study (TENK, 2023).

6 Result

In the result part, there are three themes, Knowledge, Attitudes, and Practices. Each theme included several sub-themes. As Table 2. shows, Theme Knowledge includes sub-themes of Assessment, Acquisition, and Education. Theme Attitude includes sub-themes of General attitude, Benefits, Effectiveness, Safety, and Duty. Theme Practices include sub-themes of Patient Education, Referral, Practices for others, and Nurses' self-care.

Table 2. Themes and Sub-themes of Result

Theme 1	Knowledge				
Sub-themes	Assessment	Acquisition	Education		
Theme 2	Attitude				
Sub-themes	General attitude	Benefits	Effectiveness	Safety	Duty
Theme 3	Practices				
Sub-themes	Patient Education	Referral	Practices for others	Nurses' self-care	

6.1 Knowledge

The theme of Knowledge includes several sub-themes: Assessment, Acquisition, and Education.

6.1.1 Assessment

In general, most nurses in research think that they do not have enough knowledge about CAM, even though they might think that some CAM practices are more familiar. According to Makarem's study, nurses were unfamiliar with most therapies and herb medicine in the survey. In the survey, mass, relaxation therapy, and prayer or spiritual healing are the most familiar CAM practices for nurses. Nurses know least about naturopathy, Tai Chi, and

Osteopathy or Chiropractic. As for the herbal medicine of CAM, ginger, and garlic are the most familiar herbs for nurses; nurses know least about Valerian and Gingko Biloba (Makarem et al., 2022). According to Shorofi's study, most nurses do not have enough knowledge about CAM (Shorofi et al., 2017). According to Jong's study, most nurses have "Little" or "No" knowledge about most CAM practices in their self-assessment. Some nurses think that they have an "excellent or moderate" knowledge of massage and acupuncture, which are the most familiar CAM practices for nurses (Jong et al., 2015). In the interview Hall's study, most nurses in the interview think that they lack knowledge about CAM (Hall et al., 2018). According to Zeighami's study, most nurses have limited knowledge about various CAM practices. Nurses are familiar most with nutrition, herbal, and massage therapies. Nurses are most unfamiliar with acupuncture, relaxation, and touch therapy (Zeighami et al., 2020). According to Kim's study, nurses have very limited knowledge about CAM in the survey, and they have more knowledge about massage, yoga, acupuncture, aromatherapy, music therapy, and art therapy (Kim et al., 2016).

The only exception of research is Geisler's study. According to Geisler's study, nurses have a lot of knowledge about various CAM practices. Nurses know most about herbs, acupuncture, aromatherapy, and homeopathy; they know least about ayurvedic medicine, horse therapy, and indigenous medical practices (Geisler et al., 2015).

6.1.2 Acquisition

Obtaining reliable information about CAM is very important for both health professionals and patients. In research, nurses mentioned that they usually have some difficulties acquiring information about CAM, for example, they don't know where they can get the trusted information. According to Makarem's study, it is difficult for most nurses to get information about varied CAM therapies; and it is difficult for half of nurses to get information about herbs (Makarem et al., 2022). In the interview of Hall's study, some nurses mentioned that they tend to get information from pharmacists rather than doctors (Hall et al., 2018).

6.1.3 Education

The most crucial factor for nurses' knowledge level about CAM is the education they have received. Nurses usually do not have or do not have enough education about CAM

according to research included in this study. In the interview of Hall's study, most think that nurses need education about CAM. In the survey of Hall's study, only around forty percent of nurses in the study have learned something about CAM. Most think that nurses should receive basic CAM education (Hall et al., 2018). According to Geisler's study, most nurses showed their approval and willingness to get and join in more CAM education (Geisler et al., 2015). According to Kim's study, the author also thinks that most curricula of nursing programs do not include any or enough information about CAM (Kim et al., 2016).

6.2 Attitude

The theme Attitude includes several sub-themes: General attitude, Benefits, Effectiveness, Safety, and Duty

6.2.1 General attitude

Nurses usually have a positive or supportive attitude about CAM and show their interest in CAM, even though they do not have enough knowledge just like what this study mentioned in the previous part. The result of the survey in Makarem's study showed that the majority of nurses have a positive attitude toward CAM. By the way, females are usually more positive about CAM than males according to the statistics (Makarem et al., 2022). According to Shorofi's study, most nurses have a positive attitude toward CAM, some nurses are neutral, and few nurses have a negative attitude toward CAM (Shorofi et al., 2017). According to Jong's study, nurses have an overall positive attitude about CAM, and more than forty percent of nurses wish to adopt CAM therapies (Jong et al., 2015).

Additionally, other studies have similar results. In the interview of Hall's study, most nurses had a positive attitude about the use of CAM as a complementary method to mainstream medicine; in the survey of Hall's study, most nurses think that CAM matches the point of view of holistic health, almost all nurses agree that patients have the right to use CAM and health professionals should respect patients' decision and rights, and nurses who joined CAM training have a general more positive attitude about CAM. The attitude difference between nurses who joined CAM training and nurses who didn't join training is quite different, females also have a more positive attitude about CAM than males (Hall et al., 2018). According to Geisler's study, nurses have usually a positive attitude toward CAM; most nurses respect patients' beliefs and rights about CAM, and nurses agree that health

professionals should not encourage non scientifically tested therapies (Geisler et al., 2015). According to Zeighami's study, nurses have a generally positive attitude toward CAM (Zeighami et al., 2020).

The only exception is Kim's study. According to Kim's study, there is a trend to avoid using CAM, not only among doctors and the public, but also among nurses' self, which caused barriers for nurses to practice CAM; nurses also showed their interest in yoga, meridian massage, aroma therapy, music therapy, art therapy, and acupressure (Kim et al., 2016).

6.2.2 Attitude to benefits

In general, nurses have a positive attitude about the benefits of CAM. According to Makarem's study, most nurses think that introducing CAM into conventional medicine in practice will make patients more satisfied, and most nurses also think that more patients will be attracted (Makarem et al., 2022). According to Jong's study, half of nurses think that CAM can reduce health costs for society (Jong et al., 2015); In the interview of Hall's study, some nurses think that CAM makes patients optimistic and therefore increase sociopsychological benefits, and CAM gave patients more options (Hall et al., 2018); According to Geisler's study, most nurse practitioners think that it is reasonable to use CAM with conventional medicine together (Geisler et al., 2015).

6.2.3 Attitude to effectiveness

In general, nurses have a positive attitude about the effectiveness of CAM. According to Jong's study, on the one side, most nurses think that CAM supports healing and recovery; on the other side, more than half of nurses think that lacking evidence is a barrier to their CAM practice (Jong et al., 2015); According to Zeighami's study, most nurses believe in the effectiveness of CAM. The effectiveness of nutrition, music, and herbal therapy are agreed upon by almost all nurses. Relatively, more nurses do not know whether hypnosis, touch, and energy therapies are effective or not (Zeighami et al., 2020). According to Geisler's study, on the one hand, most nurse practitioners believe in the effectiveness of acupuncture, mind or body practices, meditation, massage, or bodywork; on the other hand, few nurse practitioners respectively believe in the effectiveness of chelation and electromagnetic therapies. Most nurse practitioners do not believe that the CAM's effect is the result of a placebo effect (Geisler et al., 2015).

The exception is Hall's study. In the interview of Hall's study, most nurses think that the use of CAM should be based on scientific evidence and worry about the effectiveness of CAM, while other nurses think it is acceptable to use CAM based on some subjective evidence; In the survey of Hall's study, more than half nurses disagree that CAM's effectiveness is placebo effect, most nurses think that CAM benefit patients based on anecdotal evidence (Hall et al., 2018).

6.2.4 Attitude to safety

In general, nurses have a positive attitude about the safety of CAM, even though some nurses mentioned their worry about the safety of CAM. According to Jong's study, more than half of nurses do not think that using CAM has a bad effect on conventional medicine, even though more than half of nurses think that lack of scientific evidence is the second biggest barrier to their CAM practice (Jong et al., 2015); According to Geisler's study, most nurse practitioners disagree with the negative impact of CAM on conventional medicine (Geisler et al., 2015).

There are also exceptions. According to Makarem's study, most nurses agree that, for public health, CAM is a threat (Makarem et al., 2022); In the interview of Hall's study, some nurses worry about the supervision of CAM, some nurses worry about the incompatible between CAM and conventional medicine. In the survey of Hall's study, most nurses' answer showed their concern, as most nurses do not think that herbs and health supplements are harmless (Hall et al., 2018).

6.2.5 Attitude to duty

According to Makarem's study, nurses think that they have limited duty to educate patients about CAM (Makarem et al., 2022); According to Jong's study, some nurses think that CAM is not relevant to their work, and some think that talking about CAM is not nurses' responsibility, therefore they rarely talk about CAM in the communication between nurse and patients (Jong et al., 2015). In the interview of Hall's study, many nurses think that it is beyond nurses' scope of practice to integrate CAM into conventional medical practices; the practice of integrating CAM will put nurses at risk of being sued. In the survey of Hall's study, less than forty percent of nurses think that CAM practices are within nurses' scope

of practice, although more nurses agree to integrate CAM into their practices to some extent (Hall et al., 2018).

6.3 Practice

The theme Practice includes several sub-themes: Patient education, Referral, Practices for others, and Nurses' self-care.

6.3.1 Patient education

Patient education and consultation services about CAM provided by nurses are very limited in practice. Both the quantity and the quality of this practice are not enough. It is struggling for nurses to provide this kind of service in practice. According to Makarem's study, most nurses feel uncomfortable consulting patients about CAM therapies, and fewer discussions about the Pros and Cons of CAM are initiated by nurses, more than forty percent of these kinds of discussions are initiated by patients, patients are more like to initiatively talk about this topic than nurses. Nurses talked about the possible benefits and harmful outcomes of CAM to a small percentage of their patients. Nurses who joined CAM training or seminars can answer patients' questions about CAM more easily than nurses who didn't join CAM training (Makarem et al., 2022). According to Shorofi's study, about the use of medical herbs among surgical nurses, less than half of nurses ask patients about this topic; about the use of medical herbs among normal clients, nurses didn't ask patients about this topic so much (Shorofi et al., 2017). According to Jong's study, most nurses never or rarely asked patients' use of CAM (Jong et al., 2015). In the survey of Hall's study, most registered nurses talked about CAM with their patients after patients asked for help from nurses (Hall et al., 2018).

The exception is Geisler's study. According to Geisler's study, most nurses are willing to talk with patients about CAM, more than half of the dialogues about CAM between nurses and patients are started by nurses, and some dialogues about CAM between nurses and patients are started by patients (Geisler et al., 2015).

6.3.2 Referral

According to Makarem's study, most nurses never refer patients to CAM professionals, even though more than half of nurses are somewhat likely to refer patients to CAM professionals (Makarem et al., 2022). In the survey of Hall's study, around half of registered nurses "never or rarely" refer patients to CAM professionals, and around forty percent refer patients to CAM professionals (Hall et al., 2018). According to Geisler's study, nurses want the referral to become easier. Nurses also think that there should be reliable and reputable CAM professionals for referring and recommending (some doctors also said that they do not know where to refer patients who need CAM interventions). Massage/bodywork, Vitamin, and Diet supplements are most often to be referred by nurses (Geisler et al., 2015).

6.3.3 Practices for others

In the interview of Shorofi's study, around half of the nurses had CAM practices for patients. Massage, music therapy, and supplements are the most commonly used CAM practices. No nurse reported the practice of homeopathy for patients. Regarding recommendations, it is more possible for nurses to recommend patients visit massage therapists, herbalists, chiropractors, and acupuncturists (Shorofi et al., 2017). According to Jong's study, very few nurses did CAM practices for others. Very few nurses among all respondents used CAM in public health care units and private businesses; few respondents did CAM practices for their friends and relatives. Health supplements/ herbs/ probiotics, Massage, and Mind-body therapies are the most popular CAM practices nurses do for others. Nurses usually recommend and did CAM therapies that they have used for themselves to patients (Jong et al., 2015).

In the survey of Hall's study, some nurses "never or rarely" recommend patients to use CAM, more than half of registered nurses "sometimes" recommend CAM to patients; around half of registered nurses "never or rarely" integrate CAM into their nursing, forty percent registered nurses "sometimes" integrate CAM into their nursing. There is a higher possibility for nurses who have CAM training to recommend CAM to patients than nurses who have no CAM training. In the interview of Hall's study, nurses think that there are challenges to integrating CAM into their nursing practices, and this kind of integration

makes them face the risk of being complained about and sued. Nurses are more cautious about recommending oral CAM supplements (Hall et al., 2018).

According to Tomic's study, more than forty percent of nurses and technicians advised patients to use CAM, and nurses and technicians usually advised those CAM interventions used by nurses and technicians themselves to patients (Tomić et al., 2018). According to Zeighami's study, most nurses do not have CAM practice in clinic settings and have no experience with CAM referrals. Some nurses advised the use of certain CAM interventions (Zeighami et al., 2020). According to Geisler's study, most nurses think that their patients are using CAM, at the same time, most nurses think that their patients didn't share the information to health professionals about their use of CAM (Geisler et al., 2015). According to Kim's study, nurses have very limited CAM practices, and they think there are barriers to practicing CAM (Kim et al., 2016).

6.3.4 Nurses' self-care

According to Shorofi's study, almost all nurses reported the personal use of CAM. Massage, supplements(non-herbal), and meditation are the most popular CAM programs among nurses (Shorofi et al., 2017). According to Jong's study, most nurses used at least one CAM practice to do their self-care, some nurses have had more than two kinds of CAM practices for self-care in the past two years: massage, health supplements/ herbs/ probiotics, mind-body therapies are the most popular CAM practices among nurses for self-using (Jong et al., 2015). In the survey of Hall's study, most registered nurses have used CAM for themselves (Hall et al., 2018). According to Tomic's study, around half of nurses and technicians use local traditional medicine and apitherapy for themselves, other CAM interventions are also used by nurses with various percentages (Tomić et al., 2018). According to Geisler's study, a lot of nurses use Vitamins, massage/ bodywork, prayer, mind-body, and diet supplements (Geisler et al., 2015).

7 Discussion

The research question is “What are nurses’ knowledge, attitudes, and practices about CAM?”. To get an answer to this question, the researcher analyzed 8 scientific articles and did this scoping review. After the analysis of the included articles, the author found the following findings:

7.1 Nurses usually have limited CAM knowledge

Through this scoping review of the included 8 research, the author found that nurses usually have limited CAM knowledge. The previous studies with similar topics also found the same result. According to Gyasi and Abass, nurses do not think that they have enough CAM knowledge in Ghana, despite their attitude being positive about CAM overall (Gyasi, Abass, Adu-Gyamfi, & Accam, 2017). According to van Rensburg and Razlog, in South Africa, the attitude of nursing students about CAM is positive in total, despite their limited knowledge reported at the same time in the same research (van Rensburg, Razlog, & Pellow, 2020). Chang and Chang’s review found similar findings, 66.4% of nurses’ attitudes about CAM are positive, and 77.4% have very limited knowledge about the risks and benefits of CAM, which is very worrisome (Chang & Chang, 2015).

Why do nurses usually have limited CAM knowledge? Lacking related education is the first reason. The nurse usually lacks CAM knowledge because of limited CAM education programs. According to WHO, 56% of surveyed member countries have no complementary and traditional medicine learning programs at the university level, and only 30% of member states provide such related programs, although the percentage has increased compared to before (WHO, 2013, p. 23). The unclear definition of CAM is also a reason why nurses don’t have enough CAM knowledge. Smith and Wu indicated that nurses usually do not have a clear definition of CAM, some nurses think that CAMs are humanistic health practices, some nurses think that CAM is non-invasive health interventions, some think that CAMs are medical practices that are not related to scientific evidence and are not based on randomized controlled trials, and some nurses are not sure about whether traditional medicines are CAM (Smith & Wu, 2012).

No reliable information source of CAM is also a reason. Buchan and Shakeel indicated that nurses get information about CAM from different sources, but most of them are not

authoritative. More nurses get information about CAM from their family, relatives, friends, and the Internet rather than from professional books and health professionals (Buchan, Shakeel, Trinidade, Buchan, & Ah-See, 2012). According to Zhao and Kennedy, nurses usually obtain CAM information from the internet and media (Zhao et al., 2022).

In the author's opinion, CAM is too big topic that includes too many things, and some patients usually hide their use of CAM, these can also be a reason to explain the result of this study.

7.2 Suggestion to increase CAM-related knowledge

More CAM-related education will be useful. Based on the result of this study, CAM courses should be introduced into the nursing program as a part of the curriculum. According to Richardson's research, in the US, most nursing programs include CAM courses or content to some degree (Richardson S. F, 2003). According to van der Riet, some universities in Australia also began their try to introduce CAM elective courses into the nursing bachelor curriculum (van der Riet, Francis, & Levett-Jones, 2011). In Onal and Sahin's research, they also found that, in Turkey, students usually have experience with CAM use, but their knowledge about CAM is very little, and they therefore advised that CAM and CAM training should become a part of the curriculum of nursing programs (Onal, Sahin, & Inanc, 2016).

Xie and Sang's survey in China among nursing undergraduates also advised that CAM courses must be added to or integrated into the current curriculum, and the lower grades should be the starting point. (Xie et al., 2020). According to Booth-Laforce and Scott, after participating in CAM-related courses and training, most nursing students' knowledge increased and higher interest showed among students; teachers included in the same program also reported similar results (Booth-Laforce et al., 2010). Zhao and Kennedy also suggested that nurses' strength of evidence-based practice skills and literature searching should be increased in the nursing program and curriculum (Zhao et al., 2022). According to Portela's study, Computer-based education seems to be the most economical and successful approach (Portela Dos Santos et al., 2022).

7.3 Nurses usually have a positive attitude towards CAM

Through this scoping review of the included 8 research, the author found that nurses usually have a positive attitude towards CAM. In Yildirim and Parlar's research, they found that despite that both medical students and nursing students have less CAM knowledge, nursing students have a more favorable attitude toward CAM (Yildirim et al., 2010). Liu and Tang said that even though nurses and their colleagues are positive toward CAM in general, they are also concerned about the regulation, the evidence, the cost, and the safety of using CAM (Liu, Tang, Baxter, Yin, & Tumilty, 2021).

Why do nurses usually have a positive attitude towards CAM? First, a nurse's positive attitude about CAM may be related to the placebo effect. Placebo is something that won't benefit or treat patients; instead, it provides pleasure or a positive psychological hint to patients. A lot of factors can affect the placebo effect. In clinical practice, some healthcare professionals think that compared to cruel reality and uncertainty, empathy, and sympathy can help to create better treatment results, so a placebo should also be included in the clinical intervention. They also think that, at least, a placebo should be practiced with active therapy together to get the best treatment result (Peters, 2001, pp. 18–27). The nocebo effect is the antonym to placebo, it is a negative psychological hint to patients. For example, the curse or social death can bring negative psychological hints to patients and can cause adverse effects on a person (Peters, 2001, pp. 14-15). When dealing with CAM, the nurse should recognize the difference between the placebo effect and the effect of evidence-based practice. This will help reshape nurse's attitudes toward CAM.

Secondly, one of the possible reasons why nurses have a positive attitude towards CAM even though they do not have enough CAM knowledge is the lack of evidence-based nursing. Brown and Wickline indicated that most nurses do not put evidence-based nursing into practice because they are largely always busy during work and after work and do not have enough time (Brown et al., 2009).

Moreover, Saunders found that, sometimes, even though healthcare professionals think that they have enough evidence-based practice knowledge, they don't carry out evidence-based practice in a clinical environment. Saunders also emphasizes that a lot of healthcare professionals have still misunderstandings and misconceptions about evidence-based practice (Saunders, Gallagher-Ford, Kvist, & Vehviläinen-Julkunen, 2019). Koehn's study

found nurses with higher education and evidence-based practice educational backgrounds are usually more cautious and concerned about the safety of CAM (Koehn et al., 2008).

In the author's opinion, with respect to tradition, the nurses who participated in surveys may be more interested in CAM, preferences by gender can also be the reasons to explain the result of this study.

7.4 Suggestion to develop objective attitudes towards CAM

As the above research showed, nurses usually have too positive attitude towards CAM, even though their knowledge about CAM is limited. In the future, nurses should focus more on Evidence-based Nursing Care to treat CAM more objectively and rationally. Nurses should also use Evidence-Based research to understand the effectiveness, safety, and risk of CAM. Evidence-based nursing integrates the best and newest research with healthcare professionals' knowledge and patients' opinions and favorites to create the best clinical decisions and solve clinical problems and challenges. Evidence-based nursing can improve the quality and safety of clinical nursing interventions, achieve the best results, and reduce the cost of nursing (Melnyk & Fineout-Overholt, 2023, p. 7).

Evidence-based nursing is based on evidence, and evidence has different types and qualities. The hierarchy of evidence is:

1. The constant findings of systematic reviews and meta-analyses based on multiple well-designed Randomized Clinical Trials about the effectiveness and safety of nursing and medical interventions are considered the best evidence level.
2. The findings from single Randomized Clinical Trials, Controlled Trials that are non-randomized, and case-control studies are considered the next best evidence.
3. It is important to note that systematic reviews of qualitative studies and descriptive studies, single qualitative and descriptive studies, authorities, and expert opinions belong to the lowest level of the Level of Research Evidence (Ackley, 2008, pp. 19–22).

Apart from the level of evidence, nurses should also note important factors in evaluating research. The study design should preferably include random assignments, a control group, and repeated measures. The sample selection will also influence the result of the study. The participants should be randomly assigned. The inclusion and exclusion criteria of

participating samples will also affect the results of the research. The duration of the study and intervention should be noted. The details and reproducibility of the intervention are also important. The study should preferably be blinded and double-blinded. Data collection, data analysis process, and findings should be clear. Limitations of the research should also be noticed (Ackley, 2008, pp. 22–23).

Evidence-based nursing is different from traditional Nursing research utilization. Compared to evidence-based nursing, traditional nursing research utilization is not as complicated as evidence-based nursing. In nursing research utilization, there is no systematic way to evaluate the quality of research and evidence, nurses usually apply one research to clinical setting without enough consideration about the level of the evidence. Patients' preferences, experts' opinions, clinical environments, and costs are not taken into account (Ackley, 2008, p. 5).

To achieve Evidence-based Practice, nurses have to master the skill to find related research based on evidence, and then evaluate this research obtained: The 1st step is to formulate questions based on clinical needs. The 2nd step is to identify and use a reliable resource platform; A library or medical library is usually considered a reliable resource platform. Nurses can use the libraries of local healthcare organizations, local universities, and municipalities to obtain evidence-based research. If available, nurses should also ask for help from medical reference librarians in finding evidence-based research; Online medical databases are also an available resource platform with reliability in finding research. For example, nurses can use PubMed, Ovid CINAHL, and Ovid MEDLINE to find research; Online resources, evidence-based practice websites, and electronic evidence-based practice nursing journals are the most efficient platforms for nurses to find research, even though the latter two platforms usually need the subscription of organizations and individuals. For example, the Academic Center for Evidence-Based Nursing supported by the University of Texas Health Science Center at San Antonio is one of the evidence-based practice websites for nurses. As for evidence-based nursing journals, *Clinical Effectiveness in Nursing*, for example, is an available nursing journal in finding research (Ackley, 2008, pp. 13–19). The 3rd step is to evaluate research according to the Levels of Research Evidence. It is important to remember that there is a quality hierarchy among various evidence or research, some evidence has better quality than others. The 4th step is to integrate clinical experience, and

patients' preferences to make the clinical decision. Step 5 is to evaluate the result of the decision (Ackley, 2008, pp. 23–25).

7.5 Nurses usually have limited CAM-related practices

Through this scoping review of the included 8 research, the author found that nurses usually have limited CAM-related practices. According to Smith and Wu's study in 2012, most nurses have limited CAM-related experience because nurses don't have enough knowledge, don't have time, and CAM is not a part of their daily jobs (Smith & Wu, 2012). According to Kamizato's study, only a minority of nurses have the experience of using CAM therapies, most nurses think it is difficult to use CAM because of limited time, knowledge, and skills (Kamizato et al., 2013).

Why do nurses usually have limited CAM-related practices? First, nurses are too busy to practice CAM. Xie and Sang's survey in China among nursing undergraduates showed that nursing students think limited time, poor taste, the popularity of conventional medicine, and limited as the biggest barriers to CAM practices (Xie et al., 2020). Second, nurses cannot find enough evidence to practice CAM. According to Zhao and Kennedy, nurses think that the biggest barrier for nurses to practice or use CAM is lacking evidence (Zhao et al., 2022). Third, according to van Vliet and Jong, most nurses reported lack of assistance, approaches, as well as time are the biggest three barriers to Integrative medicine intervenes for them (van Vliet et al., 2015).

7.6 Available guidelines for nursing practices

The guidelines for nurses' CAM practice suggested by global authorities are limited and not so available, but some local guidelines are available. The College of Registered Nurses of Alberta, the regulatory body of the Alberta Province of Canada, provides standards for nurses to practice complementary and alternative health care.

7.6.1 Practice standards of responsibility

The nursing assessment should include checking and documenting the patient's use of CAM. The nurse should check if the nurse himself or herself has the ability and qualification to practice CAM safely. The nurse can only manage CAM therapies or products approved

by health authorities. The nurse should consult doctors and pharmacists when needed. If the employer requires related education and working experience or any other things for practicing CAM, the nurse should follow employer requirements. The nurse should apply aseptic techniques in CAM practice. If possible, the nurse should report the side effects of CAM to healthcare authorities.

7.6.2 Practice Standards of Knowledge

If the nurse indeed has the ability to legally practice specific CAM interventions, they should try to get and keep the ability for the service quality. The nurse should use evidence-based knowledge to check if the CAM intervention is suitable for the patient. The nurse should use evidence-based knowledge to check the effectiveness and safety of related CAM for patients. The nurse should check the patient's medication history. The nurse should check the medication interactions and contraindications of the CAM products. The nurse should be ready and prepared for the unforeseen outcomes related to CAM use. The nurse should follow the standard nursing process, and document the details of the discussion between nurses and patients, such as patients' own needs, risks, and benefits of CAM interventions.

7.6.3 Practice standards of ethics

The nurse should be non-judgmental. The nurse should respect the patient's right to make the choice. The nurse should provide CAM-related patient education to patients. The nurse should pay attention to informed consent (College of Registered Nurses of Alberta, 2022).

7.7 Discussion about theoretical framework

CAM is becoming more and more popular worldwide, and a lot of patients already started to use CAM in their self-care. As a healthcare professional, nurses have the responsibility to learn more knowledge about CAM and to develop an objective understanding of CAM to help patients deal with CAM-related problems in patients self-care. Nurses should also use evidence-based practice knowledge to help patients check the effectiveness and safety of CAM interventions in patients' self-care to prevent risk, side effects, harm, and wasting money (Alligood, 2014).

Patricia Benner's Novice to Expert Model explains how education and working experience help a novice nurse to develop and finally become an expert in the professional field (Alligood, 2014). Nurses usually lack CAM-related knowledge and practices, CAM-related educational programs are therefore important for nurses, especially novices, in their career development. Through CAM-related educational programs and evidence-based nursing, nurses can develop their abilities in dealing with clinical problems related to CAM, and the quality of patient-centered services will also improve.

8 Limitation

The author only included 8 articles in English. The sample size is small. There may be a language bias because of no included studies in other languages.

This is a scoping review, the 8-research included in this research used different study designs, 7 studies were surveys that belonged to quantitative studies, and 1 research used mixed methods to mix both qualitative interviews and quantitative surveys. The data analysis and synthesis are already difficult due to different study designs among quantitative surveys, furthermore, one mixed method research is also included in this scoping review. The author didn't use a quantitative method to analyze the result, instead, the author analyzed the results of the included 8 studies by describing and summarizing.

9 Conclusion

Nurses may be the healthcare professionals who spend the longest time with patients, and patients prefer to ask nurses more questions than doctors, therefore, nurses are important in CAM intervention, and it is necessary to investigate nurses' knowledge, attitude, and practice of CAM and provide some suggestions for nurses or policy maker. The previous research is limited in quantity, and they are usually based on specific regions. This research tries to investigate the answer to the question in different regions.

In this research, we use the scoping review to analyze 8 previous research to answer the questions "How much knowledge do nurses have about CAM?", "What is nurses' attitude about CAM?", and "How many CAM-related practices did nurses do?" and we got the answers. Nurses usually have limited knowledge about CAM, nurses' attitudes about CAM are quite limited, and nurses usually do not have so many CAM-related practices.

In the future, educational institutes should provide more CAM-related educational programmes to nurses; nurses should persist in evidence-based practice and use available evidence to reshape the over-positive attitude towards CAM; nurses should follow available guidelines provided by local healthcare authorities to ensure the safety and effectiveness of CAM interventions.

More qualitative interviews and quantitative surveys about this topic should be done in the future around different countries and cultures.

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Appendices

Appendix 1. Included scientific articles for this scoping review

1	(Makarem et al., 2022)	Makarem, N. N., Brome, D., & Romani, M. (2022). Knowledge, attitude, and practices of complementary and alternative medicine: a survey of physicians and nurses at an academic medical center in Beirut. <i>The Libyan journal of medicine</i> , 17(1), 2071813. https://doi.org/10.1080/19932820.2022.2071813
2	(Shorofi et al., 2017)	Shorofi, S. A., & Arbon, P. (2017). Complementary and alternative medicine (CAM) among Australian hospital-based nurses: knowledge, attitude, personal and professional use, reasons for use, CAM referrals, and socio-demographic predictors of CAM users. <i>Complementary therapies in clinical practice</i> , 27, 37–45. https://doi.org/10.1016/j.ctcp.2017.03.001
3	(Jong et al., 2015)	Jong, M., Lundqvist, V., & Jong, M. C. (2015). A cross-sectional study on Swedish licensed nurses' use, practice, perception and knowledge about complementary and alternative medicine. <i>Scandinavian journal of caring sciences</i> , 29(4), 642–650. https://doi.org/10.1111/scs.12192
4	(Hall et al., 2018)	Hall, H., Brosnan, C., Cant, R., Collins, M., & Leach, M. (2018). Nurses' attitudes and behaviour towards patients' use of complementary therapies: A mixed methods study. <i>Journal of advanced nursing</i> , 74(7), 1649–1658. https://doi.org/10.1111/jan.13554
5	(Tomić et al., 2018)	Tomić, S., Malenković, G., Lalic, I., Tomić, S., & Lalic, N. (2018). Attitudes and beliefs of nurses and technicians towards complementary-alternative medicine. <i>Medicinski Pregled</i> , 71, 53-58.
6	(Zeighami et al., 2020)	Zeighami, M., & Soltani-Nejad, S. (2020). Knowledge, attitude, and practice of complementary and alternative medicine: a survey of Iranian nurses. <i>Journal of research in nursing : JRN</i> , 25(4), 380–388. https://doi.org/10.1177/1744987120925852
7	(Geisler et al., 2015)	Geisler, C., Cheung, C., Johnson Steinhagen, S., Neubeck, P., & Brueggeman, A. D. (2015). Nurse practitioner knowledge, use, and referral of complementary/alternative therapies. <i>Journal of the American Association of Nurse Practitioners</i> , 27(7), 380–388. https://doi.org/10.1002/2327-6924.12190
8	(Kim et al., 2016)	Kim, S., Lee, M. N., & Lee, S. (2016). Nurses' Knowledge, Perceived Barriers, and Practices Regarding Complementary and Alternative Medicine in South Korea. <i>Holistic nursing practice</i> , 30(6), 338–344. https://doi.org/10.1097/HNP.000000000000176

Appendix 2. Overview of knowledge

Author, Year	Places	Assessment	Acquisition	Education
Makarem et al., 2022	Beirut, Lebanon	unfamiliar with 13 of 15 CAM therapies; unfamiliar with 3 of 5 herb medicine	difficult for 59% (8.2% “very difficult” + 50.8% “difficult”) to get information about varied CAM therapies; difficult for 54.4% (11.5% “very difficult” + 43% “difficult”) to get information about herbs	
Shorofi et al., 2017	Adelaide, Australia	7.8% have "no knowledge" 52.5% have "very little knowledge" 34.8% have "some knowledge" 3.4% have "a lot of knowledge"		
Jong et al., 2015	Sweden	most nurses have “Little” or “None” knowledge about 12 of 13 CAM practices; more than 40% of nurses think that they have an “excellent or moderate” knowledge about massage and acupuncture, which are the most familiar CAM practices for nurses.		

Hall et al., 2018	Australia	In the interview, most nurses think that they lack knowledge about CAM	In the interview, some mentioned that they tend to get information from pharmacists than doctors	In the interview, most think that nurses need education about CAM. In the survey, only 38.7% of nurses in the study have learned something about CAM, and most think that nurses should receive basic CAM education.
Tomić et al., 2018	Subotica, Serbia			
Zeighami et al., 2020	Iran	<p>the majority have "no knowledge" or "low knowledge"</p> <p>know most: 24.5% have "high" and "very high" knowledge about nutrition therapy 19.3% have "high" and "very high" knowledge about herbal therapy 16.8% have "high" and "very high" knowledge about massage</p> <p>know least: 68.3% have "no knowledge" about acupressure 54% have "no knowledge" about relaxation</p>		

		47.2% have "no knowledge" about touch therapy		
Geisler et al., 2015	Minnesota, America	know a lot of knowledge about various CAM practices; know most about herbs, acupuncture, aromatherapy, and homeopathy; know least about ayurvedic medicine, horse therapy, and indigenous medical practices		most nurses showed their approval and willingness to get and join in more CAM education
Kim et al., 2016	South Korea	know very limited knowledge about CAM, since they only got 67.92 (± 11.1) points in a 132-point survey, and they have most knowledge about massage, yoga, acupuncture, aromatherapy, music therapy, and art therapy		most curricula of nursing programs do not include any or enough information about CAM

Appendix 3. Overview of attitude

Author, Year	Places	General attitude	Benefits	Effectiveness	Safety	Duty
Makarem et al., 2022	Beirut, Lebanon	the majority have a positive attitude about CAM, as the mean attitude is 3.25 with a 0.59 standard deviation. female is usually more positive about CAM than male	62.5% think CAM will make patients more satisfied, 66.7% think that more patients will be attracted;		70.8% agree that, for public health, CAM is a threat	have limited duty to educate patients about CAM
Shorofi et al., 2017	Adelaide, Australia	22.4% have "very positive attitude" 36.6% have a "slightly positive attitude" 32.6% are "neutral" 4.7% have a "slightly negative" attitude 2.5% have a "very negative attitude"				

Jong et al., 2015	Sweden	nurses have an overall positive attitude about CAM 43% of nurses wish to adopt CAM therapies	53.7% think that CAM can reduce the health costs for society	72% think that CAM supports the healing and recovery 54.3% think that lacking evidence is the 2nd barrier to their CAM practice	52.8% don't think that using CAM has a bad effect on conventional medicine	28.4% think that CAM is not relevant 20.6% think that talking about CAM is not nurses' responsibility
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Hall et al., 2018	Australia	<p>Interview: positive about the use of CAM as a complementary method to mainstream medicine</p> <p>Survey: 80.8% think that CAM matches the point of view of holistic health, 93.4% agree that patients have the right to use CAM health professionals should respect patients' decisions and rights nurses who joined CAM training have a generally more positive attitude toward CAM the attitude difference between nurses who joined CAM training and nurses who didn't join training is quite different, female who got a 51.6 point in attitude score also have a more positive attitude about CAM than male who got a 47.7 point</p>	<p>Interview: make patient optimistic (sociopsychological benefit) gave patients more options;</p>	<p>Interview: the use of CAM should be based on scientific evidence and worry about the effectiveness of CAM, others think subjective evidence is acceptable</p> <p>Survey: 55.5% disagree that CAM's effectiveness is the placebo effect 64.7% think that CAM benefits patients based on anecdotal evidence;</p>	<p>Interview: some nurses worry about the supervision of CAM some nurses worry about the incompatibility between CAM and conventional medicine.</p> <p>Survey: 65% of nurses do not think that herbs and health supplements are harmless</p>	<p>Interview: many think that it is beyond nurses' scope of practice to integrate CAM into conventional medical practices; integrating of CAM will put nurses at risk of being sued.</p> <p>Survey: 37.7% think that CAM practices are within nurses' scope of practice, although 58% agree to integrate</p>
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							CAM into their practices to some extent
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Tomić et al., 2018	Serbia	<p>positive about CAM (attitude: 44.8±1.3); most respect patients' beliefs and right regarding CAM (Caring should include patients' beliefs and views about health: 4.9 ± 1,4) Health professionals should not encourage non scientifically tested therapies: 3.8±1.5</p>				
Zeighami et al., 2020	Iran	<p>Attitude's mean score is 3.56 (full score is 5)</p>		<p>71.1% believe in the effectiveness of CAM</p> <p>96.5% agree with nutrition therapy 96.2% agree with music therapy 95.6% agree with herbal therapy</p> <p>15.4% have "no idea" about hypnosis 12.4% have "no idea" about touch therapy 10.7% have "no idea" about energy therapy</p>		

Geisler et al., 2015	America		81% think that it is reasonable to use CAM with conventional medicine together	<p>84%, 87%, 88%, and 90% believe in the effectiveness of acupuncture, mind or body practices, meditation, massage, or bodywork;</p> <p>10% and 10% believe in the effectiveness of chelation and electromagnetic therapies.</p> <p>60% don't believe that the CAM's effect is actually the result of placebo effect</p>	nurses who disagree with the negative impact of CAM on conventional medicine account for 71%	
Kim et al., 2016	South Korea	avoid to use of CAM among nurses; interested in yoga, meridian massage, aroma therapy, music therapy, art therapy, and acupressure				

Appendix 4. Overview of practices

Author, Year	Places	Patient Education	Referral	Practices for others	Nurse's self-care
Makarem et al., 2022	Beirut, Lebanon	<p>Most feel uncomfortable to consult patients about CAM therapies. 11.5% of discussions about the Pros and Cons of CAM are initiated by nurses, and 42.6% of discussions are initiated by patients.</p> <p>Nurses who never talked about CAM's harmful outcomes with patient account for 37.7%, and who talked with 1-25% of patients account for 39.3%.</p> <p>Nurses who join training or seminars can answer patients' questions more easily.</p>	78.7% never refer patients to CAM professionals, even though 50.8% are somewhat likely to refer.		

Shorofi et al., 2017	Adelaide, Australia	<p>Ask surgical patients about the use of medical herbs: 15.8% "always ask" 10.9% "often ask" 17.7% "sometimes ask"</p> <p>Ask clients about the use of medical herbs: 24.5% "rarely ask" 29.5% "never ask"</p>		<p>49.7% had CAM practices for patients. massage: 23% music therapy: 19.6% supplements: 17.4% homeopathy: 0%</p> <p>Recommendations to CAM professionals: 48.4% of massage professionals 25.8% to herbalists 25.8% to chiropractors 18.3% to acupuncturists</p>	<p>95.7% reported the personal use of CAM: massage 72% supplements 70.2% meditation 57.5% ...</p>
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<p>Jong et al., 2015</p>	<p>Sweden</p>	<p>73% of nurses never or rarely asked about patients' use of CAM</p>		<p>11% of nurses (37 nurses out of 335 nurses) did CAM practices for others. 2.4% of nurses used CAM in public health care units; 2.4% of nurses used CAM in private business; 6.6% did CAM practices for their friends and relatives.</p> <p>Health supplements/ herbs/ probiotics, Massage, and Mind-body therapies are the most popular CAM practices nurses do for others.</p> <p>Nurses usually recommend and do CAM therapies that they have used for themselves to patients</p>	<p>83% used at least one CAM practice to do their self-care, 36.7% nurses have more than 2 kinds of CAM practices for self-care in the past 2 years: massage, health supplements/ herbs/ probiotics, and mind-body therapies are the most popular CAM practices among nurses for self-using</p>
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Hall et al., 2018	Australia	<p>Survey: 77.5% talked about CAM with their patients after patients asked for help from nurses</p>	<p>Survey: 48.9% “never or almost never” refer patients to CAM professionals, 44.1% referred patients to CAM professionals</p>	<p>Survey: 32.5% “never or almost never” recommend patients to use CAM, 55.5% “sometimes” recommend; 49.7% “never or almost never” integrate CAM into their nursing 40.5% “sometimes” integrate There is a higher possibility for nurses who have CAM training to recommend CAM to patients than nurses who have no CAM training.</p> <p>Interview: Nurses think that there are challenges to integrating CAM into their nursing practices and this kind of integration trying makes them face the risk of being complained about and sued. Nurses are more cautious about recommending oral CAM supplements</p>	88.8% have used CAM for themselves
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Tomić et al., 2018	Serbia			43.3% of nurses and technicians advised patients to use CAM, nurses and technicians usually advised those CAM interventions used by nurses and technicians themselves to patients	around 50% of nurses and technicians use local traditional medicine and apitherapy for themselves, other CAM interventions are also used by nurses with various percentages
Zeighami et al., 2020	Iran			<p>have the most practice in clinic settings: massages 6.9% herbal therapy 4.3% nutrition therapy 2.6% music therapy 2.6%</p> <p>have the most frequency of advisement: nutrition therapy 52.4% herbal therapy 43.3% music therapy 38.6%</p>	

Geisler et al., 2015	America	<p>80% are willing to talk with patients about CAM. 54% of dialogues are started by nurses, and 35% of dialogues are started by patients.</p>	<p>Nurses want the referral to become easier and they need reliable and reputable CAM professionals for referring and recommending.</p> <p>About nurses' referral, 85.2% of nurses responded "Yes" to massage/ bodywork, 80.5% responded "Yes" to Vitamins, 78% responded "Yes" to Diet supplements.</p>	<p>60% of nurses think that their patients are using CAM, and at the same time, 64% of nurses think that their patients didn't share information to health professionals about their use of CAM</p>	<p>84.2% of nurses use Vitamin, 82.4% of nurses use massage/ bodywork, 79.8% of nurses use prayer, 76.3 nurses use mind-body, 75.9% of nurses use diet supplements</p>
Kim et al., 2016	South Korea			<p>nurse have very limited CAM practices, and they think there are barriers to practicing CAM</p>	