



Systematic review



What are nursing students taught about complementary therapies and integrative nursing? A literature review

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ABSTRACT

Introduction: In Europe, more and more people use complementary therapies (CT) for the management of pain, anxiety, sleep problems and discomfort. However, nursing students are generally not taught about CT. Furthermore, nurses are not taught how to communicate about patients' complementary health seeking behavior, nor how to integrate CT in their nursing practice. The aim of this literature review was to explore what has been published about CT in nursing education.

Methods: A systematic search was performed in the MEDLINE, EMBASE, CINAHL and Cochrane databases. Articles on educational courses, programs and lectures were included. Instructions for nurses as part of clinical studies were excluded, as these do not reflect formal nursing education. Data was analysed with qualitative content analysis. Furthermore, we extracted data on educational context, educational content and educational methods.

Results: From 5273 records, sixteen articles were eligible. The course content varied but suggested that general information about CT and hands-on techniques is important, such as practicing communication about CT and critical thinking skills. A range of methods were used to teach, but only three articles described competencies, which included emphasis on safety and good communication skills.

Conclusion: Despite patients' high CT use and demand for information from health care professionals about its use, information on how such knowledge is implemented in nursing education is scarce, especially in Europe. Developing a handbook for teachers about how to teach nursing students in Europe about CT in the context of nursing is needed.

1. Introduction

Pharmacological interventions remain the primary approach for alleviating symptoms of pain, anxiety, sleep problems and discomfort. However, more and more, both health care professionals and patients

show greater interest in the use of complementary interventions such as massage, breathing exercises, guided imagery and music interventions [1–4]. Furthermore, healthcare professionals are being urged to guide patients in the safe use of complementary interventions [5].

There is no well-defined terminology for interventions that are

Abbreviations: CAM, complementary and alternative medicine; CM, complementary medicine; CT, complementary therapies; CIP, Complementary Integrative Practice; EU, European Union; IHP, Integrative Health Practice; INES, Integrative Nursing Education Series; IM, integrative medicine; IN, integrative nursing; TCIM, traditional complementary integrative medicine.

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considered complementary to biomedical practice and nursing [6–8]. Historically, interventions that did not originate from conventional biomedical practice were called ‘alternative’. Later, the term ‘complementary and alternative medicine’ (CAM) came into use [9,10]. However, this term is currently considered outdated as ‘alternative’ refers to a non-conventional approach used instead of conventional medicine, whereas ‘complementary’ therapies (CT) are applied together with conventional medicine. Other terms used are complementary medicine (CM), and traditional complementary integrative medicine (TCIM). In this review, we use the term ‘conventional’ to describe the biomedical approaches and complementary therapies (CT) to describe interventions that are safe, evidence-informed and used complementary to conventional medicine. Approaches that aim to systematically integrate CT as part of the conventional health care system are referred to as integrative healthcare, integrative medicine (IM), or - when used in the nursing domain - integrative nursing (IN) [11,12].

Currently, a common European approach on how to educate healthcare professionals on CT or its integration in nursing is non-existent [1]. Thus, CT and IN have not been incorporated into the curriculum of nursing schools in Europe. Research findings indicate that incorporating IM in medical training significantly increases the safe use of integrative approaches in conventional health care [12]. Nurses have reported that one of the main barriers for CT practice and communication to patients is the lack of structural education about the subject; nurses are calling for more education about the use and benefits of complementary therapies for symptom management in nursing curricula [13,14]. Furthermore, a safety issue may arise as patients might be reluctant to discuss their use of CAM/CT with healthcare professionals.

Several European initiatives have aimed to establish a common approach towards CAM, CT and IM education and to facilitate collaboration of research, education and policy. A European Union (EU) 7th framework funded project named CAMbrella was conducted from 2010 to 2012 to foster a network for EU CAM research. Its other purposes were providing an overview of various aspects of CAM within the EU and setting up a platform for discussion about CAM research in Europe. One of the visions for 2020 was to improve the quality of CAM research by investing in education, training, and collaboration of the CAM research community [1]. Between 2014 and 2016 a project entitled “Improving the nursing care with best complementary therapy strategies based on European Union Standard” (BestCARE) was carried out in Turkey [15]. One of its purposes was to develop educational materials and training programs to improve professional knowledge and skills of CT on university level. A curriculum with CT was prepared for undergraduate and graduate nursing students at the Akdeniz University in Turkey, but it is not reported if this in fact was implemented.

In 2019, the EU-funded project Integrative Nursing Education Series (INES) was initiated to strengthen European nursing students’ knowledge, skills, and competencies regarding CT and IN, and integrating safe use of evidence-informed CT into nursing education (Erasmus+ 2019-1-NL01-KA203-060478). INES is a collaboration between five medical and academic institutions in four European countries. This study is part of the INES project and aims to explore what has been published about nursing education with regard to CT.

2. Methods

A literature review was performed following the classification by Grant and Booth [16] with the aim to examine and synthesize existing knowledge. The following questions guided the literature search: What has been published in scientific literature on educational context, content and methods used to teach nurses and nursing students about CT and IN, and on what conceptual frameworks is the teaching based?

2.1. Search methods and data selection

A systematic search was performed by a biomedical information specialist in four databases from their first available date until May 2021: Embase, Medline (Ovid), Cochrane, CINAHL. The search strategy included terms and relevant synonyms specifically for nursing, complementary therapies/integrative nursing, and education. The search terms were exploded to include therapies and interventions that are relevant for nursing education and nursing practice. We did not aim to include all the different complementary therapies, modalities and whole healing systems in this search. The search string with Boolean operators used in Medline (Ovid) is shown in Table 1. The term CAM was included in the search because it is still used sometimes as an umbrella reference to complementary interventions. The search had no restriction in language or date of publication. A pre-defined research protocol set the following inclusion criteria: Scientific publications about educational curricula, courses, programs and lectures for nurses and nursing students on the topic of complementary therapies and integrative nursing. A curriculum is a central guide for educators to what is essential for teaching and learning. Courses are a series of classes and an educational program is any program principally engaged in the provision of education. Exclusion criteria were publications about instructions as part of a clinical pilot study, efficacy study or implementation study of CT interventions as these do not reflect formal nursing education. Furthermore, publications about education for parents, historical perspectives and expert opinions not supported by literature and evidence were excluded.

Three authors selected the potentially eligible articles by independently screening the titles and abstracts of the retrieved records. If there was doubt about an inclusion, this was resolved by a fourth author. Two authors separately screened the potentially eligible full text articles. As this review examines educational programmes, the publications were not derived from quantitative or qualitative research designs. To validate strength and consistence of the sources, we applied the Joanna Briggs checklist for text and opinion [17]. To seek consensus two authors (TJG and AL) performed the critical appraisal (Table 2). The PRISMA 2020 Checklist for performing and reporting systematic reviews was followed to ensure transparency and accuracy [18].

2.2. Data presentation and analysis

Qualitative content analysis as described by Elo and Kyngäs [19] was chosen to analyse the findings. The process was inductive as categories were derived from the data by moving from the specific to the general to form a larger whole [19]. Units of analysis were embedded in the research question about the published content in educational courses or programs specifically about CT and IN. The data was organized by reading and rereading the material. From each included article, data on three pre-defined outcome categories were manually extracted to an

Table 1
Search strategy in Medline (Ovid)

Population	(exp Nursing/ OR exp Nurses/ OR exp Students, Nursing/ OR (nursing OR nurse OR nurses).ab,ti.)
Interest	AND (Complementary Therapies/ OR Mind-Body Therapies/ OR Aromatherapy/ OR Therapeutic Touch/ OR Osteopathic Medicine/ OR Therapy, Soft Tissue/ OR Music Therapy/ OR Mindfulness/ OR Meditation/ OR exp Integrative Medicine/ OR (((alternativ* OR complementar* OR music*) ADJ3 (treatment* OR therap*)) OR ((alternative OR complementar* OR integrative) ADJ3 (medicine OR nursing)) OR mind body OR mind-body OR mindfulness OR meditation OR Nonpharmacolog* OR (Non ADJ pharmacolog*) OR acupuncture* OR moxibust*).ab,ti.)
Context	AND (exp Education/ OR (education* OR workshop* OR teaching* OR training* OR curricular* OR course*) ab,ti.)

Table 2
Johanna Briggs Institute checklist

Checklist for narrative, expert opinion and text: (Yes=Y, No=N, Unclear=U, Not Applicable=A)							
	1) Is the source of opinion clearly identified	2) Does the source of opinion have standing in the field of expertise	3) Are the interests of the relevant population the central focus of the opinion?	4) Is the stated position the result of an analytical process, and is there logic in the opinion expressed?	5) Is there reference to the extant literature?	6). Is any incongruence with the literature/sources logically defended?	Overall appraisal
Booth-Larforce, C., et al., 2010	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	Include
Bucher, T. et al., 2021	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	Include
Chlan, L. & Halcon, L., 2003	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	A/A	Include
Clark, C.S., 2013	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	A/A	Include
Cornman, J. B. et al., 2006	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	Include
Ferreire Calado, R.S., et al. 2019	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	Include
Gregg, S.R. et al.,2020	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	Include
Halcón, L. et al.,2001	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	U/U	Include
Jossens, M. & Granley, B. J.,2006	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	A/A	Include
Joswiak, D. et al.,2016	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	N/N	Include
Melland, H.I. & Clayburgh, F. L., 2000	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	A/A	Include
Rankin-Box, D., 1995	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	A/A	Include
Richardson, S. F.,2003	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	U/U	Include
Stephenson, N.L. et al., 2007	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	A/A	Include
Toygar, I., et al., 2020	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	Include
Zick, S.M. et al.,2018	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	A/A	Include

Excel file available to all authors. Outcome category one ‘educational context’ consisted of terminology, duration of the course, educational level, the area of nursing and type of accreditation. Outcome category

two ‘educational content’ consisted of interventions taught, clinical symptoms addressed and theoretical frameworks, motivations and ideologies. Outcome category three ‘educational methods’ consisted of the

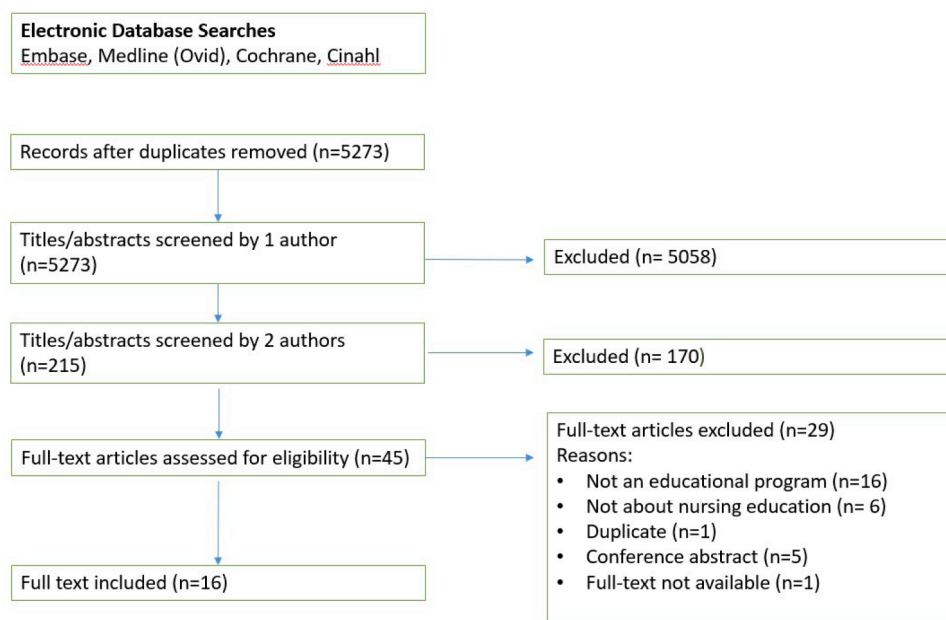


Fig. 1. Flowchart of the literature search.

competencies and learning outcomes, teaching methods and teaching materials. The data analysis comprised a thematic presentation and interpretation of the qualitative data as well as a calculation of the frequency of relevant quantitative data from the included articles by grouping them into the categories and present them in tabular format.

3. Results

The literature search identified 5273 accessible articles after removal of duplicates. One author (MvH) screened all 5273 articles for relevance and excluded 5058 articles. The titles and abstracts of the remaining 215 articles were screened for relevance by two authors (AL, TJG), which resulted in the exclusion of 170 articles. The remaining 45 articles were screened by full-text reading and 29 articles were excluded in this process. The flowchart (Fig. 1) summarizes the literature search and reasons to exclude. After the critical appraisal sixteen articles were included in the review, see Table 2. The included articles were published from 1995-2021. Thirteen articles were from the United States, one from the United Kingdom, one from Turkey and one from Brazil. There were two types of

publications: descriptive about the educational program and descriptive with evaluation of the educational program. Table 3 shows the characteristics of the included articles and the courses.

3.1. Educational context

The course titles and the terminology used to describe the courses varied from commonly used terms Integrative Health and CAM to lesser-known terms such as complementary and alternative therapies (CAT), Complementary Integrative Practice (CIP) [25] and Integrative Health Practice (IHP) [28]. Four articles gave a definition of the terminology used [25,27,31,32], referring to practices and products that are not usually included in conventional medicine. Across the articles, it is argued that CT is connected to nursing due to the holistic approach, but more detailed argumentation of that is missing. Chlan and Halcon [22] state that CAM “are rooted in a philosophical and spiritual paradigm that emphasizes wholeness and balance of the mind-body-spirit. This holistic perspective has been part of nursing philosophy and practice since its inception”. They argue that now is the time for nurses and nurse-educators to

Table 3
Characteristics of included articles and the courses

Author	Country / University	Institution (academic/hospital)	Type of publication	Area of nursing	Name of course	Duration of course	Level
Booth-Larforce, C., et al. 2010 [20]	USA. University of Washington	Academic	Descriptive / evaluation	General	CAM CAMp	4 weeks summer education	Bachelor, PhD, Doctors
Bucher, T. et al., 2021 [21]	USA. Lexington, Kentucky	Hospital	Descriptive / evaluation	Palliative care	I.C.A.R.E.	3 x 75 min	Post graduated
Chlan, L. & Halcon, L., 2003 [22]	USA. University of Minnesota	Academic	Descriptive	General	Complementary and alternative therapies (CAT)	3 hour didactic lecture and 150 hour clinical experience in ICU	Not described
Clark, C.S., 2013 [23]	USA. University of Maine	Academic	Descriptive	Oncology	Reiki course	7 weeks	Bachelor, PhD, Doctors
Cornman, J.B. et al., 2006 [24]	USA. University of Washington	Academic	Descriptive/ evaluation	General	CAM CAMp	4 weeks summer education	PhD
Ferreira Calado et al., 2019 [25]	Brazil, University Center Tabosa de Almeida	Academic	Descriptive/ evaluation	General	Complementary and Integrative Practices (CIP)	Thematic unit with a workload of 36 hours/class	Not described
Gregg, S.R. et al., 2020 [26]	USA; Tucson, University of Arizona	Academic	Descriptive/ evaluation	Primary care and family nurse	Non-opioid integrative treatment options	Two modules	Master
Halcón, L. et al., 2001 [27]	USA; University of Minnesota	Academic	Descriptive/ evaluation	General	Integrating complementary, cross-cultural and spiritual practices (CAM)	Not specified (vision to incorporate CAM in all nursing courses)	Master and Doctoral
Jossens, M. & Granley, B. J., 2004 [28]	USA, Dominican University of California	Academic	Descriptive/ evaluation	General	Integrated Health Practices (IHP)	A five-semester, 43-unit, alternate weekend program, with separate clinical hours	Masters
Joswiak, D. et al., 2016 [29]	USA; Minneapolis	Hospital	Descriptive/ evaluation	Acute care	Aromatherapy program	A 68-minutes session	Post graduated
Melland, H.I. & Clayburgh, F. L., 2000 [30]	USACollege of Nursing, University of North Dakota	Academic	Descriptive/ evaluation	Not described	Course on complementary therapies	3 hours weekly in a semester or a workshop format: 5 full days	Graduated students
Rankin-Box, D., 1995 [31]	UK School of Nursing and Health Studies, Stockport College of Higher and Further Education	Academic	Descriptive	Not described	Diploma in complementary medicine	A module program	Diploma module
Richardson, S. F., 2003 [32]	USA A study of 105 Nursing Educations in the USA	Academic	Descriptive / evaluation	Not described	A status of complementary health and healing in baccalaureate nursing education (year 2001)	Does not give information in the survey	Bachelor
Stephenson, N.L. et al., 2007 [33]	USA ECU Scholl of Nursing, Greenville, North Carolina	Academic	Descriptive/ evaluation	Not described	Complementary and alternative therapies (CAT)	A 3-semester-hour graduate-level online course	Masters and doctoral students
Toygar, I. et al., 2020 [34]	Ege University, Turkey	Academic	Descriptive/ evaluation	Not described	Complementary and alternative therapies (CAT)	2 hours weekly for 14 weeks	Nursing students
Zick, S. M. et al., 2018 [35]	USA National Cancer Institute and University of Michigan	Academic	Descriptive	Oncology	Integrated oncology (IO)	One year	Postgraduate

re-evaluate how nurses can be educated to promote healing and wellbeing with the inclusion of complementary concepts and practices.

The duration of the courses varied from a single 68-minute lesson to a five-semester program. Courses were taught at bachelor, master, or PhD levels. Fourteen articles described courses taught at academic institutions, such as universities and nursing schools. Most courses were labelled as elective. Only five of the courses addressed a specific area of nursing, such as oncology, palliative care, acute care or primary health care. The included articles gave limited information about accreditation of the courses and how students were credited for completing them.

3.2. Educational content

The teaching material comprised a range of CT and CAM interventions. According to the analytic frame proposed by the U. S. National Centre for Complementary and Integrative Health [9], ten courses reflected body-mind therapies and four included both natural products and body-mind therapies. None of the courses included natural products alone. Two courses focused on one intervention alone, respectively aromatherapy [29] and Reiki healing [23]. Some courses also included spirituality, prayer, and metaphysical components [27,30] justified by the similarities between CAM and nursing philosophy. Clan and Halcon [22] emphasise “deep listening” and the ability of “being present” as core competencies for practicing integrative nursing. The most common clinical symptoms addressed in the courses were pain, anxiety, and nausea (Table 4).

A framework for nursing and nursing theories embedded in the courses was addressed in only two articles [21,27]. Halcon and colleagues refer to theorists such as Nightingale and Watson and to frameworks of holism and spirituality and how CAM integrated in nursing serves as an “*opportunity to reclaim its heritage*” (p. 124). Bucher and colleagues claim that Watson’s theory provides the theoretical framework for nursing practice at their institution, but do not mention if or how this is integrated in the course curriculum or teaching material. Others have argued that heterogeneous societies call for nurses to be aware of cultural diversity and non-western approaches to health by enabling students to work with different health paradigms [20,28]. Arguments for teaching a certain intervention were the growing amount of research evidence, popularity and easy to learn. In addition, increased consumer demand required nurses to be more knowledgeable about CT. Another argument refers to a holistic approach; nurses and nurse-educators need to re-evaluate and recreate how nurses could be educated to promote healing and wellbeing with the inclusion of complementary concepts and practices. The review of Richardson [32] claims that: “*Many complementary therapies are independent nursing interventions. Some of these interventions have become lost from nursing practice and nursing curricula with a greater emphasis on biotechnical medicine*” (p. 21). Almost all the courses/programs included teaching general knowledge about CT, CAM and IN, such as definitions and various health philosophies, legal and political guidelines, patient utilization of CT, and theoretical background of selected therapies.

3.3. Educational methods

Educational competencies and learning outcomes reflected a broad spectrum of teaching approaches - from limited skills based on one-hour stand-alone courses [29] to having CT and integrative care embedded in the curriculum [20,27]. Some authors emphasized that integration of CT in course curriculums facilitates theoretical empowerment, enhances students’ assessment skills in clinical practice, strengthens their reflective competencies and offers a significant potential in relation to clinical leadership [23,25,28]. Four articles described the competencies that the students should achieve, namely integrating CT into nursing practice, communication, cooperation and educational skills in relation to CT, and evaluation and safe practice of selected therapies. Jossens and Ganley [28] (p. 18) suggest eight specific learning outcomes; for

Table 4
Educational content and symptoms addressed

Author	Which CAM interventions are included in the teaching material?	Which clinical symptoms are addressed in the course?
Booth-Larforce, C., et al., 2010	Chiropractic, massage	Not described
Bucher, T. et al., 2021	Hand-massage, breathing techniques and essential oils	Not described
Chlan, L. & Halcon, L., 2003	Acupressure, Music, Nutrition counseling, Aromatherapy, Meditation, Simple muscle relaxation, Healing/touch therapies, Presence/deep listening	Pain, Anxiety
Clark, C.S., 2013	Reiki/Holistic modalities and self-care. Hands-on Healing/touch.	Pain, Anxiety, Stress
Cornman, J. B. et al., 2006	Meditation, mind/body medicine, massage, music sound healing, reiki and therapeutic touch	Not described
Ferreire Calado, R.S., et al. 2019	Acupuncture and reiki	Balance of body, mind and spirit, analgesic effects and improve quality of life Chronic pain
Gregg, S.R. et al., 2020	Yoga/tai chi, meditation, guided imagery, massage and acupuncture	
Halcón, L. et al., 2001	Meditation, relaxation, breathing techniques, therapeutic touch, healing touch, reiki, massage, imagery, music therapy, yoga, aromatherapy, prayer and spirituality	Selected health and illness conditions: E.g. pain management, discomforts of pregnancy, incontinence, depression, PMS and menopause
Jossens, M. & Granley, B. J., 2004	Not any specific intervention	Subacute conditions and dependent life conditions
Joswiak, D. et al., 2016	Aromatherapy (lavender, mandarin, sweet marjoram and ginger) for inhalation, massage oil and bath salts	Pain, Anxiety, nausea and insomnia
Melland, H.I. & Clayburgh, F. L., 2000	1) energy work 2) nutritional approaches 3) environmental approaches and 4) metaphysical approaches	Not described
Rankin-Box, D., 1995	Not any specific intervention	Not described
Richardson, S. F., 2003	Mind-body therapies, manual therapies and energy healing	Not described
Stephenson, N.L. et al., 2007	Reflexology, spiritual healing, osteopathy, meditation, mindfulness, chiropractic medicine. TCM, acupuncture, massage healing touch.	Not described
Toygar, I., et al., 2020	Phytotherapy, acupuncture, Cup therapy, Hiddotherapy, hypnosis, ozone therapy, mesotherapy, larva therapy, apitherapy, prolotherapy, osteopathy, reflexology, homeopathy, chiropractic, music therapy	Not described
Zick, S.M. et al., 2018	Dietary supplements, mind-body therapies and energy medicine	Symptoms of cancer and side-effects

example, students will be able to “... demonstrate knowledge and clinical competences in an approach to health care that integrates Western, research-based practices with non-Western, culturally, philosophically, and/or spiritually based health practices”. Bucher and colleagues [21] describe specific learning objectives for each of the three integrative techniques taught in the course. Booth-LaForce and colleagues [20] (p.12-13) reported that students and faculty members agreed on four desired outcomes, including competence “in evaluating various healing practices and in assessment of CAM practices into patient history and being

able to discuss with patients' potential drug/CAM interactions". Chlan and Halcon [22] described six core competencies; for example, ability to openly discuss complementary therapies with patients, evaluate safety and efficacy of selected therapies, and incorporate appropriate complementary therapies in clinical practice. Furthermore, both Booth-LaForce et al [20] and Clan and Halcon [22] specified approaches to self-care and reflections of students' personal use of complementary therapies as desired competencies.

Table 5 gives an overview of the educational methods described in the included articles. Communication skills about CAM/CT/IN was an important learning outcome in five courses – covering the establishment of a trustful connection to the patients and informing them about the risks and benefits of CT. Communication skills are highlighted as an important competence in a cross-disciplinary approach. Most of the courses offer some sort of experiential learning opportunity along with traditional classroom learning, such as workshops, on-site camps, on-line interactive video sessions, guest teachers and a student-centred and individualized approach. For example, the CAM CAMP course [20,24] provides a 4-week on-site educational program of various CAM modalities taught by licensed practitioners emphasising an experiential

learning approach. The authors of half of all articles argued that it is important to aim at some academic competencies in courses at post-graduate level, such as reading and evaluating scientific research on CAM/CT/IN, writing assignments, using critical thinking, discussing and presenting assignments about CAM/CT/IN.

When describing particular teaching methods, most of the articles highlighted the importance of teaching hands-on interventions. In some courses, selected therapies were demonstrated, and students were encouraged to practice these themselves. Thus, they would acquire a defined 'beginning skill' (marked as a hands-on skill in Table 5) in for example foot massage and guided muscle relaxation. Eight of the included courses/programs expected students to have experiences of one or more of the selected CT, as this would imply deeper understanding of how CT facilitates well-being and health. Gregg and colleagues [26] even present this as an innovative teaching and learning strategy named 'try-it-on'. They stated that "when the student as the stakeholder believes in the effectiveness of an integrative treatment modality through personal experience.....it is transferred to the patient" (p. 39). Chlan and Halcon [22] encouraged the students to explore complementary strategies for self-care – e.g., yoga and meditation – as a means

Table 5
Educational methods

Content Author	About CAM	Communication skills	Hands on teaching	Hands on skills	Experiential learning	Academic competent	Personal experiences of CAM?	Nursing theories
Booth-Larforce, C., et al., 2010	✓		✓		✓			
Bucher, T. et al., 2021	✓			✓	✓			
Chlan, L. & Halcon, L., 2003	✓	✓	✓	✓	✓		✓	
Clark, C.S., 2013	✓	✓	✓	✓	✓	✓	✓	
Cornman, J. B. et al., 2006	✓		✓		✓			
Ferreire Calado, R.S., et al., 2019	✓	✓	✓	✓	✓	✓		
Gregg, S.R. et al., 2020	✓	✓	✓	✓	✓	✓		
Halcón, L. et al., 2001	✓		✓	✓	✓	✓	✓	✓
Jossens, M. & Granley, B.J., 2004	✓				✓	✓	✓	
Joswiak, D. et al., 2016	✓		✓	✓	✓	✓	✓	
Melland, H.I. & Clayburgh, F.L., 2000	✓		✓	✓		✓	✓	
Rankin-Box, D., 1995	✓	✓			✓		✓	
Stephenson, N.L. et al., 2007	✓		✓		✓		✓	
Toygar, I. et al., 2020	✓					✓		
Zick, S.M. et al., 2018	✓		✓	✓	✓			

to maintain work-life balance in often stressful practice.

The article by Richardson [32] could not be included in Table 5 because it covers survey data and does not describe in detail the included programs and courses. Seventy-seven per cent of the representatives of 105 baccalaureate-nursing programs in the U.S.A. reported to include didactic content related to complementary health and healing. The majority indicated that the CT content was integrated into nursing courses already in the curriculum, and they highlighted experiential learning without further definition. Several respondents added that the opportunity to experience a complementary therapy directly enhanced learning.

4. Discussion

To our knowledge, this is the first literature review of articles about educational programs for nursing students on CT and IN. The findings show that there is not much published about this topic in Europe compared to the USA. Only four of the 16 articles specified the competencies that nursing students should develop. The content of the described courses included both alternative and complementary approaches. The terms used to describe complementary approaches varied, which shows the difficulty in how to describe these therapies for nursing practice [7,8]. Also, the choice of therapies taught varied, which may be related to national rules and regulation and popularity of the public regarding CAM/CT.

The courses mostly comprised general information about CAM/CT/IN practices and their application for symptoms such as pain, nausea and anxiety. Despite patient's common use of herbs and natural supplements [2] this was not the priority in the educational content of the courses. Furthermore, although oncology patients [36] and people suffering from mental health problems make much use of CT [37], the courses did not put emphasis on these patient groups.

Educational nursing programs in Europe are guided by the European Union directive 2013/55/EU, which gives regulation regarding number and content of clinical and theoretical hours [38]. CT is not included in that content as requirement within nursing education. Nursing schools and universities are free to offer other additional courses and introduce new topics. The legal status and regulation of CAM/CT/IN in Europe varies between countries [39]. This might explain a lack of education on these topics for nurses and other health care professionals. Another reason may be the lack of funding of such education. In the USA, twelve medical schools and two schools of nursing were given grants by the US National Institute of Health between 2000 and 2003 to develop education curricula and programs on CT. This support contributed to the improvement and development of education regarding CT [40]. In Europe, the CAMbrella project has called for such development and increased funding [41].

Barriers for integrating CT and IN into nursing education and clinical care in several European countries are discussed in the book Integrative Nursing [11]. In Germany, barriers are related to the weak position of nursing in the German healthcare system and medical-industrial complex [42]. In Ireland, educational programs need to be reoriented from a dominant hospital-centred disease-focused model toward more primary and community care focus [43]. Still, opportunities are also found in Europe. The theoretical basis for nursing in Scandinavia has a strong focus on caring and healing from a holistic perspective, which corresponds with CT and IN approaches [11,13].

In what way does CT belong to the domain of nursing? The arguments from the reviewed articles for offering the courses speak of the increasing consumer demand, connection to holistic nature of nursing, and the phenomenon that many CT are natural nursing interventions, such as touch and massage. Furthermore, nurses should be able to help patients in their health seeking behaviour, especially regarding CAM/CT. Today, many patients do not disclose their CAM/CT use to health care professionals, from fear of negative responses [44]. The efficacy and safety of the use of CAM/CT/IN is of prime concern and nurses need

to know how to communicate and guide patients herein without judgement [14]. Holistic practice has permeated nursing for centuries and incorporating complementary procedures into nursing care carries on this tradition.

The INES project aims to develop a European manual for teachers on developing courses for nursing students about CT and IN. The findings from this review will inform the content development of this manual with regard to the educational methods. This review shows that existing courses place emphasis on students' personal experience with CT and creating hands-on experiences. Furthermore, the amount of time teachers can spend on this topic varies. The INES teachers' manual will take this into account and will suggest flexible course modules that teachers can adapt to their own unique situation.

4.1. Strengths and limitations

A strength of the present study is the use of systematic review methodology to search and identify relevant articles of educational content. A limitation in this process, however, consists of how to determine what was relevant scientific literature. According to Grant and Booth [16], a literature review typically includes published literature that possess some degree of permanence. The literature included in this review was published in scientific journals, but need not necessarily have been subjected to a peer-review process. In this process, for example, expert opinions and views were excluded. The critical appraisal by two authors ensured that the sources logically argued for relevant educational content. The literature search included the most relevant search terms to nursing education and practice, as it is highly unlikely that nursing curricula will include CT that will not be relevant to nursing practice. However, this may have been a biased choice. Focusing on literature published in scientific journals carries the limitation that relevant information from courses described in e.g., professional journals, textbooks or curriculum descriptions ("gray literature") were excluded. The INES study will cover part of this in a survey focusing on mapping relevant courses from educational institutions around Europe.

Descriptions of an educational intervention do not require a particular methodological approach, and the designs of the included articles varied. Twelve of the 16 articles included course evaluations presenting results from students' opinions about the course and the perceived benefits and outcomes. This provided a snapshot but no information of the long-term impact or how many students completed the courses or course repeats in the following years. While some of the included articles were very specific on course content, learning outcomes and teaching methods, other articles gave very limited information. Furthermore, there is large diversity in the included courses covering a single 68-minute lecture to a 5-unit semester course. The included articles did not make use of a template for reporting on educational data although our findings underline the importance of substantial information when building on existing knowledge. The publication guidelines for educational improvement (SCUIRE-EDU) [45] offers a framework for improving health professionals' education. Following this guideline in future publications might ensure precise information on educational context, content and methods.

5. Conclusion

This review considered sixteen articles about education on CT/CAM for nursing students. Given the generally limited information, it was not possible to comprehensively compare the different nursing programs' educational content, educational context or educational methods. Further development of a template for reporting such content is highly desirable. In spite of the strong public demand for safe and good information of how to use CT/CAM, still from the literature we conclude that it is generally not included in the educational programs for nurses in European educational institutions. It will be a challenge to create an

educational module and competency profile for integrative nursing that can be used in European educational institutions.

Author contributions

First author drafted the manuscript, verified the search results inclusion / exclusion of articles, and analysed the data.

Second author (MJEH) verified the search results inclusion / exclusion of articles, analyse the data, reviewed and edited the manuscript, and managed the journal submission

Third author (MB) revised and edited the manuscript

Fourth author (TF) revised and edited the manuscript

Fifth author (TH) verified the search results inclusion / exclusion of articles, and analysed the data.

Sixth author (MD) reviewed and edited the manuscript

Last author drafted the manuscript, verified the search results inclusion / exclusion of articles, and analysed the data

CRedit authorship contribution statement

Thora J. Gunnarsdottir: Conceptualization, Methodology, Validation, Formal analysis. **Marianne J.E. van der Heijden:** Conceptualization, Methodology, Validation, Project administration. **Martine Busch:** Conceptualization, Methodology, Validation. **Torkel Falkenberg:** Conceptualization. **Thomas Hansen:** Formal analysis. **Monique van Dijk:** Conceptualization. **Anita Lunde:** Conceptualization, Methodology, Validation, Formal analysis.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Data availability

The authors confirm that the data supporting the findings and conclusion of this study are available within the article and its supplementary materials.

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