



Complementary and Alternative medicine from the nursing student's perspective

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<p>Abstract:</p> <p>Complementary and alternative medicine (CAM) is a group of different medical and healthcare systems and interventions that claim similar healing properties than conventional medicine without strong support from evidence. Nowadays, CAM use is increasing around the globe (NCCIH 2019). The aim of this study is to evaluate the nursing students' attitude, opinion, knowledge and personal use of CAM. In this study there are 3 research questions: 1.) What CAM treatments have been used by nursing students. 2.) What opinions and attitude do students of nursing have regarding CAM treatments in healthcare? 3.) Do nursing students recommend CAM to the patients? The theoretical frameworks that gives structure to this study is based on the importance of ethics in Katie Eriksson's theory of caritative care, the concept of Evidence-based practices and Patricia Benner's theory about acquisition of nursing expertise. The study is a literature review consisted of 17 articles. The data is analyzed using a qualitative content analysis method inspired in Graneheim and Lundman (2004). The study shows that student nurses have a positive attitude towards of CAM and have personally used one or more CAM treatments. Their knowledge of CAM is limited and would want CAM to be included in the nursing curriculum. Most of the students would recommend CAM therapies or methods to the patients. In concordance with the limitations of the study, there is need for independent unbiased research and it is necessary to address the student's lack of knowledge on the matter.</p>	
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Table of Contents

1	INTRODUCTION	5
2	Background.....	7
2.1	Complementary and alternative medicine (CAM)	7
2.1.1	<i>Prevalence complementary and alternative medicine by country</i>	8
2.1.2	<i>Why people use CAM</i>	9
2.1.3	<i>Impact in Society</i>	11
2.2	Previous research.....	12
3	Theoretical framework.....	13
3.1	Ethically driven nursing	13
3.2	Evidence-based practices	14
3.3	Novice to expert.....	17
3.4	Relevance of the theoretical Framework to the Study	19
4	Aim and research questions	20
5	Methodology	21
5.1	Relevance in working life.....	21
5.2	Data Collection	22
5.2.1	<i>Inclusion and exclusion criteria</i>	25
5.3	Data analysis	26
5.3.1	<i>Reading and Coding</i>	27
5.4	Ethical Aspects of the study	28
6	Findings.....	30
6.1	Taxonomy.....	30
6.1.1	<i>Formal aspects of knowledge and education</i>	31
6.1.2	<i>Attitudes and beliefs</i>	33
6.1.3	<i>Experience in use</i>	36
7	Discussion	37
7.1	What complementary and alternative treatments have been used by nursing students? 37	
7.2	What opinions and attitudes do nursing students have regarding complementary and alternative treatments in healthcare?	38
7.3	Do nursing students recommend CAM to the patients?.....	40
7.4	Findings related to the theoretical framework	41

7.5	Credibility and transferability	42
8	CONCLUSION.....	44
8.1	Strengths, Limitations and recommendations	45
	References	46
	Appendices	55
	APPENDIX 1. Literature research	55
	APPENDIX 2. Example of inductive analysis.....	60
	APPENDIX 3. Acronyms	61

Figures

Figure 1: Out - of - pocket Spending on Complementary Health Approaches in the USA 2012	9
Figure 2. Relationships among practice, theory, research, and the EBP cycle.	16
Figure 3: Flow chart of data collection process and implication of inclusion and exclusion criteria.....	26

Tables

Table 1: Selection Process.....	24
Table 2: Inclusion and Exclusion Criteria	25
Table 3: Steps of the data analysis	28
Table 4: An Illustration of the taxonomy	31

1 INTRODUCTION

As the human being has been roaming the world, there has always been attempts to improve health or to recover from disease. Many attempts have been done to get the best interventions for human health problems, but for most of the history of humanity, health practices have been based on tradition, superstition or trial and error. Only after the scientific revolution and thanks to empiricism, human being found a method to evaluate the efficiency and efficacy of medical treatments. New treatments developed using the scientific methods have helped humans for a long time, furthermore, recently, the evidence-based practices approach is born to implement the ideas of empiricism into practice in the healthcare fields. During the last years, the so-called conventional medicine has greatly expanded the support from scientific evidence and the use of technology. However, at the same time, the interest about Complementary and alternative medicine (CAM) has also grown (Frass et al. 2012) and the most frequent users are those who have a serious medical condition such as HIV, chronic pain and cancer (Matute et al. 2011). The use of CAM does not come without consequences for economy and public health, but there are still several reasons why people choose these interventions over conventional medicine. Under this phenomenological landscape, healthcare professionals, researchers and policy makers are paying more attention to issues regarding CAM's safety and rational use (WHO 2013).

In this study, the authors place the scope over nursing student's attitudes and beliefs about CAM. It has been highlighted in scientific literature that nurses play a fundamental role when a patient chooses its preferred therapeutic approach (Smith 2009) consequently, the importance of this study relies on the assessment of future nurses' perceptions about CAM and the potential use in clinical care settings. Keeping in mind care ethics as guiding principle of care provision and the importance of evidence-based approach, the reader will find an analysis of the recent literature addressed to clarify nursing students' use of CAM and the specific method or intervention they consider for personal use. Beliefs and attitudes of nursing students are explored and grouped in categories according to associations of semantic proximity. Finally, there is the question about whether students of nursing would recommend CAM to patients.

The purpose of the study is to find out if nursing students support the use of complementary and alternative medicine in healthcare. This study increases the knowledge about the familiarity between nursing students and complementary and alternative medicines in terms of believes, attitudes, knowledge, personal use and disposition to recommend CAM. The authors of the research hope that the result could be used to address educational needs of nursing students in evidence-based interventions, nursing ethics and the need for high quality research on the matter with independent, unbiased well-designed investigations. This thesis is commission by the Safety culture project at Arcada University of Applied Sciences.

2 BACKGROUND

Complementary and alternative medicine is a popular term that can be understood in different manners. It would be necessary to give an overview of the research problem starting with concept clarification. In the present investigation, there is outlined evidence about CAM's popularity, its impact on the general public, the reasons why users draw upon CAM and a brief account of the previous research on the topic.

2.1 Complementary and alternative medicine (CAM)

The definition of complementary and alternative medicine (CAM) varies significantly around the World. Complementary and alternative medicine has been used referring to diverse concepts like for example “experience-based medicine”, “holistic medicine”, “traditional medicine”, and person-centred medicine. Considering that CAM covers a great variety of disciplines and methods, it is necessary to present a pragmatic definition of CAM to understand the term (Cambrella 2012b). CAM is a group of different medical treatments or modalities which are not part of mainstream medicine. Complementary medicine is utilized together with mainstream medicine while alternative medicine is utilized as a treatment instead of using the mainstream medicine (NCCIH 2017). In this article, the authors are going to refer to such practices as CAM, although the National Center for Complementary and Integrative Health (NCCIH) replaced the term CAM for complementary health approaches (CHA) in 2016 (Jackman et al. 2017).

The NCCIH divided CAM into five different categories. A first category consists of an alternative medical system that includes a health theory and a set of practices that evolved separately from conventional medicine. Some examples of the alternative method are homoeopathy, traditional Chinese medicine, naturopathy, ayurvedic medicine. A second category incorporates mind-body interventions that aim to facilitate the mind's capacity to affect the self-wellbeing such as meditation, spiritual healing, praying and relaxation. A third category would consider biologically-based treatments that are based on natural substances like herbs, food supplements or any so-called natural products, the efficacy of

which is not based on evidence. The fourth category understands manipulative and body-based methods, defined by the manipulation of movements of one or several parts of the body. Few examples are chiropractic medicine, massage, body-work, osteopathy. The last category includes energy therapies. These interventions focus on alleged energy that either radiates from the body or from outside sources such as healing touch, therapeutic touch, Reiki, external Qi Gong, magnets or pulse electromagnetic fields (NCCIH 2017).

2.1.1 Prevalence complementary and alternative medicine by country

The use of complementary and alternative medicine has rapidly increased over the years in developed countries and traditional medicine stays popular in undeveloped countries (Cambrella 2012a). In 21 European countries, it has been found that 25,9% of the population has used one or more CAM in a period of twelve months. CAM was used more as a complement to conventional medicine rather than an alternative treatment. In addition, CAM treatments have been found to be two to four times more frequent among those with health problems as compared to those in good health. The used of CAM varied greatly among different countries, from a high of 40% in Germany to as low as 10% in Hungary. Herbal medicine, homoeopathy, chiropractic, acupuncture and reflexology were the most frequently used CAM treatment in Europe. Spiritual healing and acupressure are used as an alternative treatment. CAM use is higher in women and in those with higher education (Kemppainen et al. 2017). It is reported a prevalence of between 6-71% in the UK, 5-57% in Switzerland, 9-53% in Norway, 45-95% in Denmark, 5-43% in Finland and 15-47% in Spain (Cambrella 2012a). World Health Organization stated that three-fourths of the world's population used complementary and alternative medicine for healthcare (Pirincci et al. 2017).

Over the years the expenditures of CAM have been increasing. In 2012, adult Americans spent 30.2 -28.3 billion dollars in CAM modalities (see figure 1). With so many people spending money and using CAM modalities, it is essential to provide information that is based on evidence to help them make informed decisions (NCCIH 2017).

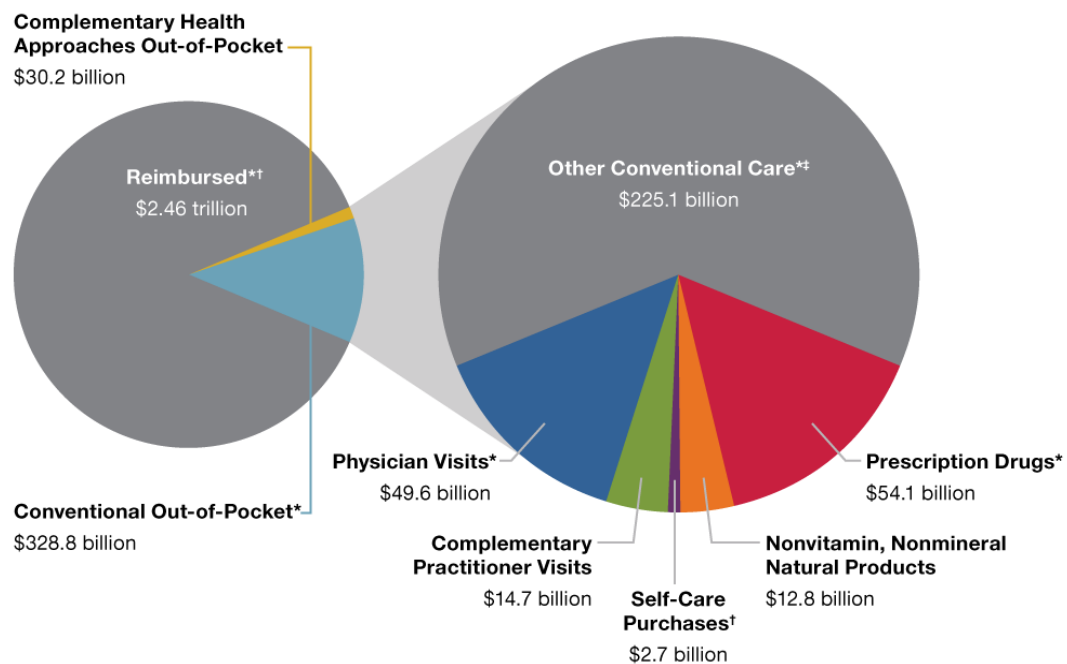


Figure 1: Out - of - pocket spending on Complementary Health Approaches in the USA 2012 (NCCIH 2017)

2.1.2 Why people use CAM

Many reasons and factors have been appointed about beliefs on complementary and alternative medicines. According to the World Health Organization, there can be described three general patterns of why people use CAM. Firstly, complementary and alternative medicine could be a source of primary healthcare. In some countries, healthcare services are still limited and generally expensive. In developing countries like many of the African countries, the use of health practices from traditional medicine is very commonly used due to its affordability and because they can be readily accessible. Many people in these countries, especially in remote areas, considered traditional medicine as their first option as native healers are usually residing within their villages. Medical doctors are scarcer than the native healers (WHO 2013). Historical and cultural influences define a second pattern in CAM usage. Although conventional medicine is well-established, people are still using CAM. These can be seen in many parts of Asian countries, where CAM has

been used for centuries. The last described usage pattern is the use of CAM as a complement of conventional medicine which is very common among the western countries (WHO 2013)

There are various underlying reasons that could motivate people to use CAM. Some of these reasons are the feeling that conventional treatments have failed to cure an illness, an increasing dissatisfaction with conventional treatments and the side effects of medications. The desire to receive holistic personal care and the wish to be in control of their well-being as well as the desire for a healthy lifestyle is often associated with traditional and complementary medicine (T&CM) usage. Others have stated that using traditional or complementary medicine is their personal and cultural choice. Many believe that T& CM can prevent illnesses and cure disease. During the last decade, consumers have been more aware and proactive regarding their health. Under the naturalistic fallacy that implies the false assumption that natural means safe, many consumers have turned to T& CMs products and practices (WHO 2013). Furthermore, T& CM's approach recognizes the need to focus on the quality of life when a cure is deemed not possible. These are common for patients with specific chronic conditions. In United States, patients with musculoskeletal problems who visited osteopathic physicians in general practice settings gave a reason for 23% of all visits in a period of one year. In France, chronic musculoskeletal disorder patients made up a greater proportion of visits to physicians who offered alternatives to conventional medicine. In China, based on data from the national monitoring of T& CM services, the top five diseases for admission to traditional and complementary medicine hospitals in 2008 were: cerebrovascular accident, intervertebral disc displacement, haemorrhoids, ischemic heart disease and essential hypertension. It is clear, that patterns of use and the underlying reasons of availing traditional and complementary medicine vary among countries and different cultures. One thing is certain though, patients' desire for cure and even just maintaining good health are the major reasons that make traditional and complementary medicine prevalent and significant nowadays (WHO 2013).

2.1.3 Impact in Society

There have been identified risks associated with complementary and alternative medical products, incompetent CAM practitioners and self-treatment. The possible exposure to unreliable or misleading information may cause misdiagnosis, delayed diagnosis and failure to use effective conventional treatments (WHO 2013). In addition, alternative medicine treatments can be harmful to patients as a result of negative interactions with evidence-based treatments, or because the patient might choose to engage in treatments that are not based on evidence (Novella 2018). Some examples of the risk associated with CAM are hepatic failure, bladder cancer, poisoning, anticholinergic or arsenic poisoning, haemorrhage, among others (Jones 2009). Some children who have visited CAM practitioners have a lower probability of receiving influenza vaccinations and will more likely suffer disease that can be prevented by a vaccine because parents are advised against vaccination by those practitioners (Bleser et al. 2016).

In the healthcare field, it is frequent to encounter health-related pseudoscientific beliefs

in the form of medical interventions such as those found in alternative medicine. Many people perceive that there is no risk in supplements since they come from natural resources. However, evaluate the risk of supplements is a challenging issue because there is lack of research on the topic. There is need for longitudinal studies with larger samples. Therefore, data on safety and effectiveness about supplements is insufficient (Gavura 2011). The responses of non-prescription medicines are usually not monitored by healthcare professionals. Because of this lack of involvement from the health professional, the side effects of CAM interventions are hard to determine or guide. Any adverse effects from natural products or from its combination with conventional medicines are hard to monitor since the consumer does not usually report the adverse effects to the healthcare professionals. Their reasons for not reporting are wanting to take responsibility for self-prescriptions, not knowing to whom to report it and how to report side effects. The process of reporting is complex, there is lack of trust to the healthcare providers and some are concerned that they will lose access to the natural health products (Walji et al.

2010). Additionally, not only CAM lacks experimental support but also, they do not undergo the same controls as traditional medication. For example, the Food and Drugs Administration of the U.S.A acknowledges that homoeopathic products do not require FDA approval. The FDA is proposing a new approach for these products on the grounds that some homoeopathic products have been found to contain potentially harmful ingredients, others are unsafe, and some do not meet good manufacturing practices. When a new drug or a conventional medical intervention appears available for the practitioner, there has been decades of trials and experimentation until the new proposal gathers enough experimental support showing its benefits over the existing interventions of medicines this does not seem to be the case for some of the CAM interventions (FDA 2017).

2.2 Previous research

Several studies can be found about student nurses and CAM. These studies focused on the knowledge and opinions of the nursing students. A research conducted by Uzun and Tan (2004) and Halcón et al. (2003) which aim was to describe and determine the nursing student's opinion and knowledge about complementary and alternative medicine in Turkey. The purpose of the research is to highlight the importance for the nursing students to be educated about CAM's efficacy and safety. Another research was done by Öztekin et al. (2007) evaluate the nursing student's willingness to use CAM to cancer patients in clinical settings, their opinion about it, personal use and their source of information. This research analyzed different CAM modalities that nursing students are willing to use or recommend to the cancer patients and their perception about these modalities. A systematic review by Frass et al. (2012) described the use and acceptance among general public and healthcare personnel. The research's aim is to present an overview of the use of complementary and alternative medicine as well as the role of healthcare professionals. The research is also interested on finding out the difference perceptions among the general practitioners, doctors, nurses and students towards CAM. In addition, this research wanted to explore the CAM treatments that are popularly use in different countries.

3 THEORETICAL FRAMEWORK

The theoretical framework of this article is structured within ethics as guiding principle of care as stated in Katie Eriksson's theory, the approach of evidence-based practices and the view of Patricia Benner in the development of nursing competence.

3.1 Ethically driven nursing

The basic duty of nurses is to care, and caring is considered essential to ethical nursing practice. According to the Code of Ethics, nurse's duties are to promote health, prevent sickness, restore well-being and alleviate suffering. Several nurse theorists have declared caring to be central value for the ethical dimensions of nursing practice. Theory of nursing ethics should emphasize caring as a moral obligation (Fry & Johnstone 2008). The importance of ethics is fundamentally revealed in the main theoretical model that enforces the administration of care in Finland, the Theory of Caritative Caring by Katie Eriksson. According to this theoretical model, caring ethics is the guiding principle that rules work and decision making. It includes the concept of Caritas (meaning love and charity) as a fundamental motive of caring science and caring in general. In this theoretical approach, ethics precedes ontology, meaning that the call to serve as moral action dealing with the interpersonal relationships between patient and nurse, precedes any other description of concepts or categories. Therefore, any ethical categories that could be formulated emerge from caring ethics, along with a caring culture. At the same time, the nursing care process constitutes the supporting structure of caring as an essential requirement to action. According to this approach, caring is an expression of Caritas that can be visible when alleviating suffering and serving life and health. Additionally, caring also can be seen as a search for truth. Katie Eriksson stated that evidence is the truth, reality and being in the world (Alligood & Marriner-Tomey 2010). In this research, the evidence is an ethical guiding principle embodied in the concept of evidence-based practices and as a core feature in the acquisition of knowledge for the development as an expert nurse in Patricia Benner's model.

Ethical principles like accountability, justice, authenticity, beneficence and non-maleficence can support in the assessment of the ethical decision in the clinical situations (Fry & Johnstone 2008). Clinical and ethical judgment are integral, and nurses deal with ethical principles in every decision making. These principles that support the assessment of ethical decisions are reasons for evidence-based care. Nurses have the responsibility to protect the patient's safety and provide high-quality care in a competent manner (Benner 1984), by these principles, nurses are obliged to practice evidence-based care which decreases possible harm. Nurses are expected to provide care that is effective and holistic as well as make an informed decision that is based on researched evidence. Likewise, care interventions should be appropriate for the health condition of the patient. According to nursing ethics, every person who is taken on as a patient, have the right to receive appropriate treatment, to expect that they will be cared for and that those who care for them will do no harm (Fry & Johnstone 2012). Nurses are liable for the quality of their practice. Nurses are responsible and accountable for the continuation of their professional growth and maintain their competence in nursing practice as well as advocates for evidence-informed decision-making in their practice. To provide a higher standard of care, nurses must continue to develop their knowledge and aim for excellence in nursing practice (ANA 2015).

3.2 Evidence-based practices

The caregiver who care for patients, needs to apply ethical knowledge in the clinical practice. To care for the patient, it is needed to have an inner ethical attitude that contains respect and responsibility for human being. These requirements are meant to protect patients keeping them away from harm and injuries. To apply ethical nursing and caring into practice, evidence-based nursing is required (Karlsson et al. 2012). Evidence-based practice (EBP) is based on research findings and it appoints to practices that result in the best possible patient outcomes. Many researches have shown that EBP produce better outcomes than regular nursing (Leufer & Cleary- Holdforth 2009). When offering EBP to a patient, nurses are showing care for the patients, translated as preventing harm, alleviating suffering, protecting patient safety and providing high-quality care. Caring about the patient guides the nurse towards a deeper seeing and knowing, towards ontological

evidence as truth. As one caring aspect is the search for truth, nursing practice based on evidence is necessary (Eriksson 2010).

Evidence-based practice (EBP) is an interdisciplinary approach to clinical practice that first appeared in the medical profession and quickly spread to other clinical practitioners. EBP aims to make clinicians integrate their clinical expertise with contemporary, relevant research; caring, at the same time, for cost-effectiveness and fairness. Meeting the aims of EBP would produce clinical interventions standardized to a degree, with less variability between clinicians and, therefore, better outcomes for the patients (Stwine & Abrandt-Dahlgreen 2004). Evidence-based practice is an expected core of competency for all healthcare workers. EBP is widely promoted and EBP is essential when nurses want to improve patient outcomes (Leufer & Cleary- Holdfort 2009). To accomplish the best outcomes for patient, it is important to use evidence-based nursing in the clinical practice, connected with reliable researches and with nursing theory (see Figure 2), (Walker & Avant 2011). Nurses are responsible for providing their patients with high-quality care. Moreover, nurses have professional responsibility to perform nursing practice that is based on research findings (Thomson et al. 1994).

Studies have shown that nurses face challenges to use evidence care practice. At an individual level, nurses' barriers to EBP are inadequate knowledge in accessing research, poor computer skills, poor patient compliance, nurse's beliefs that EBP is not necessary, lack of skills in evaluating the quality of scientific evidence, research articles are difficult to understand, and nurses do not have time to search for information from research articles. Moreover, challenges can be also be found in nursing education programs that are placing too little focus to EPB and there is also lack of organizational support in organizations where managers do not have enough interest, motivation and vision for evidence-based nursing (Cullum et al. 2008). It is important to promote and integrate evidence-based practice into nursing practice to improve the quality of care and to produce better patient outcomes. EBP is also a guide for nurses in clinical decision making in daily nursing practice, it helps to reduce costs and to improve nurse's knowledge (Leufer & Cleary-Holdforth 2009). Patients want to believe that healthcare professionals know and offer what is best for them and it is one of the reasons why patients often use healthcare services

(Songur et al. 2017). In the age where information is vast and easily accessible, patients are keen to ask more informed questions with regards to their healthcare condition. (Youngblut & Broton 2001). Steps on promoting evidence-based practice have been suggested to guide the healthcare providers; these steps define the topic of interest, gather and appraise evidence, act on the best recommendation, assess outcomes and share the study results to other nursing professional (Melnik et al. 2010). These steps will help nurses address dilemma in the patient-care situation and make healthcare decision.

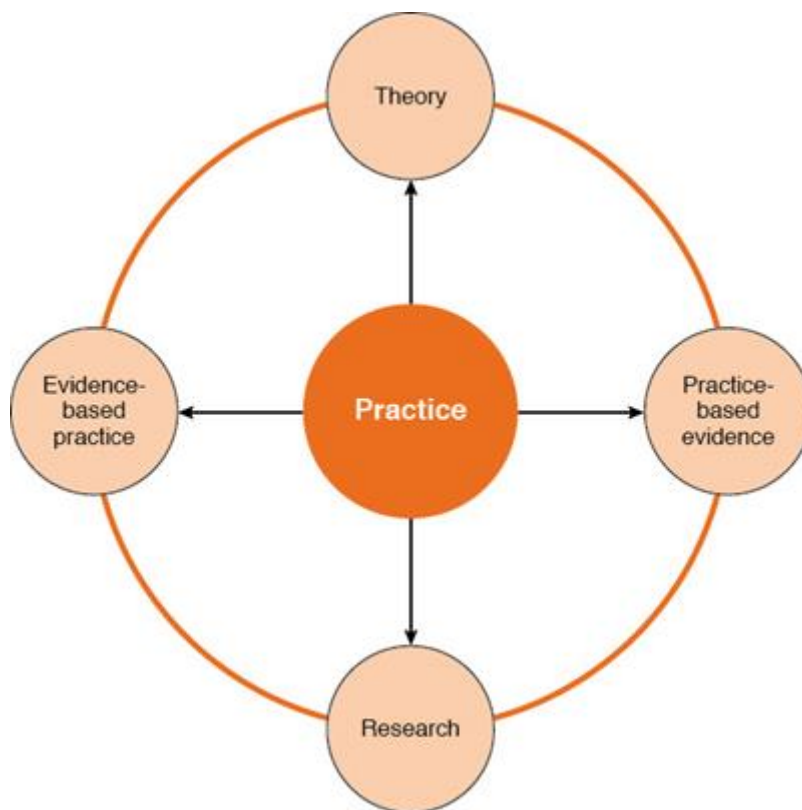


Figure 2. Relationships among practice, theory, research, and the EBP cycle (Walker & Avant 2011)

3.3 Novice to expert

The purpose of this research studies aspects of the nursing student's knowledge and the buildup of professional competence to provide high-quality healthcare. Specifically, there is information gathered about nursing student's opinions and attitudes toward CAM. The importance of knowledge in the development of a competent nurse has been theorized. According to some authors, nurses are going through a set of stages in order to become an expert in their field. Patricia Benner (1984) described a path of five stages that a novice nurse needs to advance until becoming an expert. A path in which clinical knowledge is modified by the experience redefining and improving the skills of a nurse when facing situations with patients in the healthcare setting.

Benner defines two categories of knowledge: theoretical knowledge (knowing that) and practical knowledge (knowing how). In her theory, the author states that knowledge in an applied discipline consists on exerting practical knowledge through evidence-based knowledge and clinical experience. In order to gain expertise as a professional, a nurse needs to refine its knowledge through its clinical practice. Therefore, the necessity of the experience to become a competent nurse is of vital importance for this theory. Practical knowledge can be identified studying six areas where practical knowledge becomes public and where knowing how is extended: graded qualitative distinctions; common meanings; assumptions, expectations and sets; paradigm cases and personal knowledge; maxims; and unplanned practices. Subtle changes in the attributes of a situation can be perceived by experienced nurses as a judgement about graded qualitative distinctions in a given context. In the circumstances of a clinical situation, there is an emergence of responses, meanings, intentions, coping options, etc., among nurses that define the so-called common meanings. Predictions about how a given situation is going to develop or the predisposition to act in certain ways in particular situations, configures assumptions, expectations and sets for a clinical situation in a particular context. Experience is built from cases that nurses have faced in previous situations that helps putting together theoretical knowledge and clinical practice. Paradigm cases are used by proficient and expert nurses to approach new situations in patient care; therefore, every nurse brings its personal knowledge to a particular clinical situation. Maxims are rules or instructions that can only

be understood by people with a similar level of understanding of the situation they are facing. Maxims help nurses to communicate clinical knowledge or judgements. Unplanned practices in the healthcare facilities involve skills that go undocumented and unrecognized but that nurses acquire through their day to day routines and multiple responsibilities in a dynamic and ever- changing environment.

After interviewing beginner nurses and nurses that are considered experts about patient care situations and observing them in the clinical setting, the Benner categorizes the different characteristics that a novice nurse and an expert show in their narratives when describing the same clinical incidents. These characteristics are grouped into five categories in a growing degree of clinical expertise. The five categories or stages that classify the level of expertise of a nurse fall within the parameters of the so-called Dreyfus model. In the first stage towards expertise, a novice nurse with no experience would respond to the attributes of a situation using context-free rules to lead their actions. An advance beginner would start to recognize environmental cues of the clinical situations, also known as aspects. These aspects are not entirely objective entities, are gained through experience and are necessary to apply individualized care to patients. A competent nurse has been on the job for a few years already and can see its actions in the frame of a long-term plan. Within the plan, the nurse can prioritize the aspects and attributes to be considered in a present situation with views of the future. At this stage, the nurse would not have enough experience to focus exclusively on the appropriate characteristics of the situation and needs to consider and discard less important aspects. A proficient nurse has developed a holistic view of a situation, and not so much by its aspects. The performance of a proficient nurse is guided by maxims that reflect the nuances of the situation. The context of a situation is especially relevant for a nurse at this stage and context-free rule would not provide meaningful learning opportunities. The expert nurse holds an intuitive understanding of the situation and does not need to rely so frequently on analytic principles.

3.4 Relevance of the theoretical Framework to the Study

Ethics is the government of care and nursing doctrine. Any treatment, intervention or method as it happens within the system of the relationship nurse-patient, belongs to the conceptual frame of ethics and happens under the structure of care ethics. The ethical principles that emerge from care ethics are a pre-requiring for nursing actions. All the findings from this research follow under the scope of care ethics and will be inspected and criticize in consequence. As a logic outcome of these axioms, the knowledge of nurses and the quality of their performance in a healthcare setting are dealt with utmost respect for the ethical principles of care. Accordingly, the evidence-based practices approach to clinical process is the way of dealing with this issue that the authors of the present study have deemed as the best to ensure that ethical principles are met.

In Patricia Benner's theory, the most important factors that predict the development of a nurse are experience and knowledge without forgetting that the development of a nurse happens within a context. According to this author, a nurse would face a situation during his clinical practice with all the nurse's previous knowledges, believes, ideas, opinions and understanding. From these ideas, one can conclude that the phenomenological framework of the nurse will influence the quality of the knowledge acquired through practice and the competence of the nurse as a professional. Positive opinions and attitudes towards medical interventions that are not based on evidence could hinder the acquisition of competence as an expert nurse since the health practitioner would be facing situations in the clinical field with lack of proper knowledge. A beginner nurse can only rely on the knowledge that has been acquired during the years of training and formation. The knowledge for the beginner nurse should be evidence-based to ensure proper care for the patients, and because it is within patient's rights to get the best possible treatment, right, that can only be achieved through evidence-based practices. Aspects related to CAM need to be properly evaluated so that the nurse can focus in the appropriate characteristics of the situation, and they need to be considered as possible components of the context where nursing interventions are taking place.

4 AIM AND RESEARCH QUESTIONS

The aim of the study is to investigate the nursing student's knowledge on complementary and alternative treatments (CAM). Also, nursing student's beliefs and attitudes towards complementary and alternative medicine will be investigated. The purpose of the study is to find out if nursing students support the use of complementary and alternative medicine in healthcare

The research questions of this study are as follows:

1. What complementary and alternative treatments have been used by nursing students?
2. What knowledge, opinions and attitudes do students of nursing have regarding complementary and alternative treatments in healthcare?
3. Do nursing students recommend CAM to the patients?

5 METHODOLOGY

The authors have chosen to conduct this research as a literature review. The research summarizes in general lines, journal, articles and other documents that describe the current state of the topic in the scientific literature. For its descriptive nature the research is qualitative, and the authors follow an inductive approach, in which, from specific data ideas are built up to offer general conclusions. The research should be carried away according to a certain rule to avoid biases, ensure its reproducibility and to determine the validity of the study (Bowling 2006). Therefore, the authors of the research clearly describe to the reader the search methods used, the inclusion and the exclusion criteria, the databases and the selected articles.

In this chapter, the reader will be able to assess the relevance of the study as the implications of the study for the working life is depicted. To ensure the validity and transferability of the results of the research, the method followed in the data collection is carefully described, as well as the inclusion and exclusion criteria, the way that the taxonomy for data analysis was created and ethical aspects relevant for the study.

5.1 Relevance in working life

The practical implications of this research are to deepen the knowledge about nurses' beliefs related to complementary and alternative treatments. Better understanding of the opinions and attitudes of nurses regarding CAM interventions will reflect to what extend evidence-based approach is used as a framework of nursing interventions. In the clinical settings, nurses are going to face situations where they need to offer counselling and recommendations about the use of CAM. It is within the patient's rights to receive information about different type of healthcare interventions and to receive the best available treatment for their conditions. Knowing what kind of CAM nurses are using, what kind of CAM nurses are recommending to patients and their opinions and attitudes about them, will help to evaluate aspects about the quality of care that nurses are providing. Since this

article focuses on nursing students, the result of the study could help to establish appropriate educational interventions that increase evidence-based nursing knowledge about CAM in novice nurses.

5.2 Data Collection

Data collection is the process of gathering information from all different sources that can provide answers to the research questions. In this study, the authors conducted the search in different electronic scientific databases like Academic Search Elite (EBSCO), CINAHL, SAGE, ScienceDirect and PubMed. Inclusion and exclusion criteria were used to filter the found articles. In every search, the same inclusion and exclusion criteria were applied. The chosen articles were those that could be relevant for the aim of the study and the research questions. Table 1 shows the search process of the materials.

The first search engine used was CINAHL, three attempts were made. In those three attempts, the same filter was used: Boolean- phrase, 2009-2019, English language and peer-reviewed. The first attempt, the keywords “Complementary and alternative medicine AND Nursing students” were used resulting in 13 hits. 6 articles were selected. In the second attempts, keywords “Complementary therapy AND Nursing students” were used, resulting in 9 hits. 2 articles were selected. In the third attempt, the author used the key words “Complementary alternative or herbal medicine AND nursing students” the search resulted in 14 hits. Only 1 article was selected since some of the articles that showed which were relevant to the topic had been selected from the first attempt.

The second search was conducted in Academic search elite (EBSCO) database using the Boolean- phrase: “Complementary and alternative Medicine AND Nursing students”, resulting in 23 hits. 3 articles were selected. There were many articles that showed in this search but that were not selected because they were already chosen in the previous search. The second attempt was made using the keywords “CAM AND opinions OR attitudes OR beliefs AND nursing”, resulting in 55 hits and 1 article was selected. In this database,

there were more relevant articles to the research but 4 were selected because of duplications with the CINAHL database.

The third database used was ScienceDirect. Two attempts have been made using the terms “Complementary and alternative medicine AND nursing students” and “Alternative therapies belief AND Nursing students”. The inclusion and exclusion criteria used to narrow down the search were: peer-reviewed articles, full-text, articles between 2009- 2019 and type of articles. The first attempt resulted in 7 hits. 1 article was selected. The second search attempt resulted in 595 hits. 1 article was selected.

The fourth database used was SAGE Journal. Using the keywords “Complementary therapy AND Nursing students” resulted in 54 hits. Based on the title of the articles, 1 article relevant to the study was selected.

The last database used was PubMed. Using the keywords “Traditional Medicine AND Nursing Students AND opinion AND knowledge” the search resulted in 18 hits. 1 article was selected.

Table 1: Selection Process

Databases	Search Key words	Results
CINAHL Search date: 28.1.2019	Complementary and alternative medicine AND nursing students Complementary therapy AND Nursing students Complementary alternative or herbal medicine AND nursing students	13 hits -> 6 articles selected 9 hits-> 2 articles selected 14 hits -> 1 article selected
EBSCO academic Search Elite Search date: 28.1.2019	Complementary and alternative Medicine AND Nursing students CAM AND opinions OR attitudes OR beliefs AND nursing	23 hits -> 3 articles selected 55 hits -> 1 article selected
Science Direct Search date: 29.1.2019	Complementary and alternative medicine AND nursing students Alternative therapies belief AND Nursing students	7 hits-> 1 article selected 595 hits -> 1 articles selected
SAGE Search date: 13.2.2019	Complementary therapy AND nursing students	54 hits-> 1 article selected
PubMed Search date: 1.3.2019	Traditional Medicine AND Nursing Students AND opinion AND knowledge	18 hits -> 1 article taken

5.2.1 Inclusion and exclusion criteria

Articles from databases were chosen using inclusion and exclusion criteria (see Table 2). Articles were chosen to research when the search period was with the range 10 years between 2009- 2019, articles in the English and peer-reviewed articles, full-text articles and articles that were relevant to research based on title and abstract. This process leads to articles relevant to the research. The list of the chosen articles can be found in Appendix 1.

Table 2: Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Peer-reviewed articles	Non-peer-reviewed articles
Articles not older than 10 years	Articles older than 10 years
Articles in English	Articles not in English
Relevant articles based on title and abstract	Irrelevant articles based on title and abstract.
Articles for free access	Articles need to pay for
	Duplicates



Figure 3: Flow chart of the data collection process and implication of inclusion and exclusion criteria

5.3 Data analysis

In the data analysis authors of the research are inspired by Graneheim and Lundman (2004) in their inductive analysis approach, because it is familiar, focused on healthcare, and it is widely used in nursing research. The author's approach involves reading the research articles several times to obtain a wider picture of the context. After reading the chosen articles, the condensed units of meaning are described from the articles, coded, and classified into categories and sub-categories, all under a general theme. This classification can provide answers to the research questions. This type of analysis is mostly used in qualitative research. In the qualitative content analysis, the main feature is to create

different categories derived from different theoretical models. With this analysis method, the authors aim to develop a system of categories distributing summarized statements, sentences or words related to each other through their content and context which allows classifying the content of texts (Flick 2002). Unit of analysis is the major entity what authors are analyzing in the research, indicating to a great variety of objects of research. In the meaning unit, words and statements are including aspects that are connected to each other through their content and context. Categories are described as groups of content that share a commonality. Categories must be exhaustive and mutually exclusive. Data should be fit only into one category and cannot fall between two categories. Sometimes categories include a number of sub-categories which are equal to the codes. Code has been referred as the label of a meaning unit. Finally, themes express the hidden meaning from the text of the article. (Graneheim & Lundman 2004).

5.3.1 Reading and Coding

Data search resulted in 17 relevant articles to the research after using inclusion and exclusion criteria. The first step in the data analysis was to read through selected articles several times. Every article has been read at least by two researchers. Relevant information was subtracted from the texts. A common unintended characteristic of the articles that were selected is that in every case, the articles consisted of surveys or questionnaires to nursing students. These articles constitute units of analysis. When reading articles, authors also highlighted keywords and key statements that were relevant to research questions. Statements, answers to questionnaire items and keywords constitute meaning units. The meaning units were placed in a word table by semantic proximity. Inductively establishing patterns, resemblance, regularities and relationships between meaning units, the authors could institute relevant categories and subcategories. The relationship between categories was classified under subthemes; which, at the same time, belonged to a global theme. With this classification, there was an aim to produce meaningful answers to the research questions. An example of how this process was undertaken can be found in appendix 2.

Table 3: Steps of the data analysis

Step 1: Reading and subtracting information from the articles.
Step 2: Establishing patterns and creating a taxonomy
Step 3: Listing and categorizing the articles as units of meaning

5.4 Ethical Aspects of the study

Ethics are rules or standards for conduct in a study. Ethics in research supports knowledge, truth, and avoid error while preventing fabrication, falsification and misrepresentation of the research data (Stichler 2014). The authors in this study followed research ethics to avoid fabrication, plagiarism and falsification. Ethical rules and regulations have been observed in the whole process of the research. Materials used in the study have been appropriately referenced, quoted and other researchers' works were credited. To ensure the reliability and validity of the research, authors used scientific Arcada University of Applied Sciences' and Helka's official academic databases, unofficial electronic sources are not in use. All the articles used in the research are peer-reviewed papers. Unethical mistakes are checked using URKUND that gives opportunity to students and teachers to detect and prevent plagiarism. The authors followed the Writing Guide 2018 Version 3.0 (3.10.2018) of Arcada on good scientific research. The authors of this article assume primary responsibility with a trustworthy conduct of research before themselves and also before their supervisors and the academic institution. During the research, the authors of the paper have observed attentively principles of honesty, carefulness, transparency and respect for the work of other authors. The development of this research

follows a systematic methodology that guarantees its reproductivity and, therefore, increases the validity of the results. Lastly, authors of the research had no conflict of interest when producing this research and they have not been received any financial support to this research.

6 FINDINGS

In this chapter the findings of this research are presented describing the results from literature review. The major categories of the scheme of classification are commented according to the subthemes.

6.1 Taxonomy

The following table (see table 4) shows how the authors have organized the information obtained during the data analysis. As it has been stated in a previous chapter, the classification has been created beginning with the specific units of meaning and from there, it has been developed an empirical generalization. But the reader would benefit from an explanation that starts from the wider theme and it is developed all the way until the more detailed units of meaning. The theme that rules the scheme connects broadly nursing students and CAM in close acquaintance. The upper motif is divided in three subthemes that are inspired in the research questions of the study. The first subtheme groups categories that refer to knowledge about the official recognition of the discipline by academic (nursing education) or scientific authorities (evidence and effectiveness). The units of analysis that give meaning to the category of nursing education are subdivided according to the students' evaluation about their own knowledge and the need of including CAM in nursing curriculum. The second subtheme includes all other attitudes or beliefs that do not fall under the first category. Comparing with the first subtheme, the categories under the second subtheme are more heterogenic. Only the category about health benefits contains a division. In this case physical and mental health beliefs and attitudes are described in their own subcategory. Finally, the third subtheme with a single category and no subcategories do not describe knowledge, attitudes or beliefs. It is a merely experiential division and the units of analysis that fall under the category describe specific CAM therapies or methods that students have use directly themselves. In the following section, with the subthemes and categories of this classification in mind, the findings from the data analysis are going to be clustered.

Table 4: An Illustration of the taxonomy

Theme	Familiarity between nursing students and complementary and alternative medicines									
Sub-theme	Formal aspects of knowledge and education			Attitudes and beliefs						Experience in use
Categories	Nursing education		Evidence and effectiveness	Safety and health risks	Relationship between CAM and conventional medicine	Counselling and recommendation	Supernatural beliefs	Health benefits		Personal use
Sub-categories	Assessment of own knowledge	CAM in nursing curriculum						Physical health	Mental health	
Units of analysis	7, 8, 9 11, 12, 6, 2, 17	7, 11, 5, 12, 6, 2,17	7, 8, 5, 12, 6, 16, 2, 1,	7, 8, 5, 12, 6, 16, 2, 1, 3, 13, 14, 4	1, 3, 5, 7, 11, 12, 13, 14, 4, 17	7, 11, 12, 6, 2, 9, 3, 4	8, 9, 12, 1	7, 9 13, 12, 6, 1	7, 8, 9	2, 4, 5, 7, 9, 12, 13

6.1.1 Formal aspects of knowledge and education

The inclusion of CAM in the curriculum of nursing studies depend highly on the different academic institutions. Consequently, there are differences on the judgement that CAM needs to be included in nursing curriculum and the knowledge that students admit about CAM. Part of this knowledge would include the awareness of the support from scientific

evidence to CAM's therapies and methods. In this subtheme there are going to be explored the attitudes and beliefs of nursing students about the status of recognition of CAM by academic or scientific authorities.

The first major category is nursing education. Education about complementary and alternative medicines seems to be an important area of instruction for nursing students. Respondents of the analyzed surveys identify lack of staff training as a barrier for the use of CAM in clinical settings (12, 17) and it has been found positive responses concerning the importance of knowledge about CAM as student and as future-practicing health professional (6, 12, 14). There is also a large level of agreement on the idea that all healthcare professionals should have some knowledge about the most common CAM therapies (6). When assessing own knowledge concerning CAM, numerous groups of nursing students evaluate lack of it (3, 8, 9). The answers of different surveys put this deficit into numbers ranging it from 43.3% to 75.7% of the samples stating insufficient knowledge about CAM (2, 3, 7, 11). Some articles determine a certain degree of knowledge about CAM among nursing students (2, 11, 15) but not many respondents agree on themselves having enough knowledge (7). This lack of knowledge materializes clearly in the popular claim that CAM practice or methods should be included in the nursing curriculum with positive answers in an interval from 56.2% up to 81% depending on the study (2, 3, 5, 6, 7, 11, 12, 13, 17).

Beliefs about the scientific evidence supporting CAM and, therefore, its effectiveness constitutes the second category. There is a general positive tendency to consider that alternative and complementary methods or procedures with a lack of supporting scientific evidence should be discouraged. The answers about questions regarding this topic are more positive than negative, but far from unanimous as it is evidenced by scores of 59.8% and 64.4% of the sample in some articles; and averages of 3,48 in 5 alternatives Likert like scales and 3,72 points in 7 alternatives Likert like scales, with standard deviation (SD) of 1,064 and 1,73 respectively. Those scores show great variability and there is a non-negligible amount of 18% of students disagreeing on the idea that CAM therapies not tested in a scientific manner should be discouraged. (1, 5, 6, 13). Higher level of agreement is found under the idea that a barrier for the CAM use is the lack of evidence

(12, 14) and on the idea that research is needed to evaluate the effectivity of CAM (4, 7) Some students consider that CAM does not offer important results (13, 14) especially when it is not combined with conventional medicine (3) However, in articles with small samples there can be found a 100% of students considering CAM as very effective or there could be seen some degree of acceptance on the results of specific treatments like natural products (2, 4) in bigger samples it can be found that 47,2% in a study and 54.1% in other of the respondents do not agree with CAM treatments being non-scientific practices before 33,3% and 27.9% respectively in state of agreement (7, 14) Finally, great variability is also found when students are asked whether the effect of CAM is just a placebo effect or not (1, 6) as well as from 38.3% up to 85,4% of students who cannot answer this question in an either positive nor negative manner (5, 16). In some articles, students respond mostly agreeing rather than disagreeing about the topic (5), in other there might be found just a minority of the students agreeing (12, 13), while some study shows how that the level of agreement about CAM effect being placebo is associate with higher level of education in nursing. In this research, there is found that there are more first-year students disagreeing than agreeing about CAM effect being placebo, however progressively scoring in a different direction as they move forward in their nursing studies until showing that among fourth year students there are more of those who agree that CAM is mostly placebo rather than disagreeing (16). As a final note for this category, it has been found respondents that believe that CAM therapies should be offered to patients only when no real cause or cure can be found and some students who seem to believe that CAM shows effectivity in cases where conventional medicine has no solution (13).

6.1.2 Attitudes and beliefs

Under this subtheme it falls all the attitudes and believes that would not describe formal aspects about knowledge or education that would belong to the first subcategory. There are five categories under this subtheme.

The first major category is safety and health risks. Nursing students have different kind of attitudes and beliefs toward complementary and alternative medicine. Many articles show that low amount of the students believe or disagree with the statement that CAM is

a danger to public/ patient health (1, 5, 7, 12, 14, 16). Some article indicates that 1st-year students show lower agreement level than 4th-year students (16). However, one study reveals student's agreement to the previous statement, and one study with a small sample shows that students that CAM are not harmful (2). There is also more agreeing than disagreeing from students on the statement that CAM is effective and safe to use (8, 16). Some consider that CAM imply low health risks because it is natural (4). One study shows student positive attitudes on the statement that CAM practices can affect medical treatment because of its side effects (3) but a high amount of the students does not believe that increasing CAM usage is dangerous because of the possibility of negative side effects (13). Finally, there is agreement on the idea that professionals who are not medical staff should not practice CAM (3).

The second major category is relationship between CAM and conventional medicine. Students have a positive attitude about CAM in nursing practice. Many different studies showed the students positive attitude that it is good to integrate CAM to conventional medicine (4, 12, 13, 17), and use it in the clinical settings and nursing practices (5, 7, 9). One study directly indicated that high amount of nursing student's wants to integrate CAM to the nursing practice in the future (3). The reasons for integrating CAM to conventional medicine are that they see CAM as a useful supplement to conventional medicine (13) and CAM includes ideas and methods like from which conventional medicine could benefit (1, 12). However, there is a slightly stronger belief that treating a condition using modern medicine is safer than using CAM. Quite a high amount of the students (61.5%) agree that CAM practices required a multidisciplinary approach (3).

The third major category is counselling and recommendations. Many studies showed that students would recommend CAM to others (7, 9, 2, 3), except medicinal plants because of lack of knowledge (4). They appear to consider that healthcare professionals should be able to provide advice and information about CAM practices (7, 12, 6, 3) and patients should be able to consult medical staff about CAM (3), ranging agreement level from 60.7% to 93%, depending on the study (7, 12, 6, 3). There is more positive than negative attitude on the statement about CAM practices availability in the future practice (6) but still, a large range of students prefer proper medical care more than CAM (11).

The fourth category encompasses supernatural beliefs. In some cases, during the investigation, the researchers found that nursing students hold beliefs about CAM that are inexplicable by empirical understanding of the laws of nature. In some cases, these beliefs might have roots in religion traditions. An idea that can be commonly found in the discussion about CAM are ideas about a relationship between mind-body-spirit in health and illnesses (8, 9, 12). A similar claim about a holistic perspective in clinical care with a high level of agreement would state that “a patient’s symptoms should be regarded as a manifestation of a general imbalance or dysfunction affecting the whole body” (1). CAM’s ability to produce rejuvenation and restoration is a claim that could also fall under this category (9). Some students seem to maintain the opinion that something described as positive and negative forces or energies have some effect over health and disease. Particularly, there has been found agreement on the statement that “health and disease are a reflection of balance between positive life-enhancing forces and negative destructive Force” and that “the physical and mental health is maintained by an underlying energy or vital force” with, nonetheless high variability in the answers of these statements (1). Lastly, there is also a remarkable level of compliance with the idea that in order to carry out CAM you need to be “gifted” (14).

The fifth category is the health benefits of CAM perceived by the students. The results showed that students believe that there were many beneficial effects of therapies on their personal health. Nursing student also perceived that CAM treatments are good for health problems, stop illness progression, improves the patients’ health and that it can be used as a supplement for conventional treatment. According to nursing students, using CAM empowers them to take care of their health. Complementary and alternative treatments have different beliefs and practices that may benefit to conventional treatment. (1, 7, 9, 12, 13). Other respondents stated that although few CAM practices may have some benefits, they have no true impact on the treatment of symptoms, conditions and/or diseases (6, 12). When discussion about mental health, some students claim benefits against stress, anxiety, depression or psychological problems in general (7, 8, 9).

6.1.3 Experience in use

If the previous categories dealt with attitudes, opinions and knowledge; the third sub-theme collects the personal experience of the students that have personally engaged with CAM therapies or methods for personal use.

The major category is personal used. Based on the results gathered from the literature review, nursing students have personally used one or more CAM therapies. (2, 4, 5, 7, 9, 12, 13). Student nurses stated that they would consider using different CAM therapies if they have enough knowledge about them (11). The most commonly used CAM were spiritual healing, herbal/botanical medicines, massage therapy, relaxation techniques, nutritional supplements, music therapy, imagery, therapeutic touching, and breathing techniques (2, 4, 5, 7, 9, 12, 13). Most common reasons for using CAM were to address health problems and stress relief (4, 7). The belief that these have few side effects since these are generally carried out by natural methods also a reason for its usage (4). However, the study showed significant differences in CAM usage based on age, parent's education (7) and CAM training received by the students (7, 13). Some schools offered CAM courses in their programs, thus gradually influencing personal use and perception among its nursing students (11, 13). The results also showed that CAM's personal used were influenced by their family, accessibility, affordability and familiarity (4).

7 DISCUSSION

In this chapter, authors will assess all the aspects from the findings and its relationship to the theoretical framework. Answering the research questions guides the reader through the chapter. As of the purpose of the study, we can conclude that a large group of students would have a positive attitude about CAM being use in health care, mostly as a complement to conventional medicine.

7.1 What complementary and alternative treatments have been used by nursing students?

In the study, student nurses have personally used one or more CAM treatments. Other studies found that CAM use are very high among nurses (Buchan et al. 2012). It has also been reported that one third of the Americans use complementary and alternative medicine in addition to the conventional medicine they receive (McCaffrey et al. 2007). In the present research, spiritual healing has been found to be nursing students' most frequently used modality, followed by herbal/botanical medicines, massage therapy, relaxation techniques, nutritional supplements, music therapy, imagery, therapeutic touching, and breathing techniques. Most common reasons for using CAM were to address health problems and improve their well-being and that CAM can be integrated with conventional medicine. Despite of the lack of evidence, the student nurses perceived CAM as effective based on their experiences. In this study, the belief that natural methods are safe or have less side effects were very consistent in the literature. Some studies have showed that people who utilize CAM have the same beliefs when it comes to natural medicine (McLennan et al. 1996; Marinac et al. 2007).

In this study, it has been showed significant differences on CAM usage based on the demographic factor. Complementary and alternative treatment differ from one country to another. The present study is based on recent research and includes samples of students from other countries other than the so-called Western Countries, therefore, it shows low use rate of or lack of CAM therapies that are widely use in Western countries such as

homeopathy or acupuncture, likely because these modalities are not easy to access and costly compared to the ones that are mostly use by the common public (Pirincci et al. 2017). Student nurses reported that they would consider using different CAM treatments if they have time and resources. Despite the lack of evidence on the efficacy and safety of most CAM modalities (Smith 2009), the study showed the student nurses are willing to use CAM even though they are encouraged to practice EBC. The study also showed that some nursing students received some CAM courses, thus gradually influencing personal use and their perception. As this study involves nursing students from all over the world, reasons for CAM popularity can be influenced by culture and history. In some countries, CAM like herbal treatments are accessible and affordable, this influence the personal use of CAM (Pirincci et al. 2017). There is a link between CAM usage among students and their parent's education which can be bridge do the parents can afford expensive conventional medicine or not (WHO 2013).

7.2 What opinions and attitudes do nursing students have regarding complementary and alternative treatments in healthcare?

After this investigation, there has been identify some of the opinions and attitudes that students of nursing have regarding CAM. For the purpose of answering this question, the findings about attitudes and opinions of students of nursing are arranged with conducting themes as driving forces of the discussion. Starting with the scientific evidence supporting CAM therapies and methods, there will be explored beliefs about health benefits, safety and risks and the relationship between CAM and conventional medicine. Finally, there are some claims that do not follow this line of thoughts and belong to a category under the title supernatural beliefs.

Students of nursing do not generally consider CAM treatments as being non-scientific methods. Most of the students acknowledge that scientific practices with no support from scientific evidence should be discouraged, this lack of evidence is considered one of the main barriers for the use of CAM in the clinical practice and there is a call for more

research in the evaluation of the effectivity of CAM practices and methods. However, a portion of the students do not agree with this proposition. Although minoritarian, a considerable number of students would accept the use of practices with no support from scientific evidence. The main current state of research in CAM seems to agree with the larger sample of students. Even though evidence regarding CAM should be dealt individually with every method and intervention, in general terms there can be affirmed that there is not enough research available about most of CAM therapies, and the available research lacks rugosity (Smith 2009). Some students consider that CAM does not offer important results especially when it is not combined with conventional medicine, and the majority of the students seems to not know whether the effectivity of CAM is the result of placebo effect or not. When asked about specific health benefits of CAM therapies and methods, there is division among students. While some students state that they do not believe that CAM have no impact in symptoms, conditions or diseases; other students claim health benefits both in physical and mental health, especially in combination with conventional medicine. Students of nursing belief that using CAM empowers them to take care of their own health, stop illness progression and improves the patients' health. In mental health, students believe that CAM has benefits against stress, anxiety, depression or psychological problems in general. The evidence from well-designed studies shows that just few CAM therapies can be proven superior to placebo controls and the claim that CAM therapies enhance placebo effect is still not supported by research (Kaptchuk & Miller 2005).

In one hand, most of the students believe that CAM therapies are safe to use, have no negative effects and they imply no danger to neither public health nor patient's health. Some students fall under a naturalistic fallacy by believing that CAM has a lower health risk because they are natural. But on the other hand, students also display the belief that modern conventional medicine is safer than CAM. Although a high level of agreement on the safety of CAM practices, students also favours the idea that professionals who are not medical staff should not practice CAM practices. As mentioned before in this paper, there are numerous risks associated with CAM interventions. Those risks seem to be overlooked in the articles analyzed. In line with this, it has been reported in scientific literature that safety and quality control of most of CAM therapies are either inadequate and/or not efficient (WHO 2013). Therefore, new literature should place the scope of

research under the risks of Complementary and Alternative Therapies and the mechanisms that can be put in place to prevent them.

Students tend to consider that CAM brings benefits to the clinical practice in addition to conventional medicine in a multidisciplinary approach rather than not alone by itself, they also concur that conventional medicine could benefit from ideas and methods from CAM. Students of nursing hold a positive attitude about integrating CAM methods into conventional medicine and they seem to coincide in the will to integrate CAM to nursing practice in the future. As stated in this article, there is no evidence supporting the effectivity of most of the CAM therapies (Kaptchuk & Miller 2005). Under this condition, it is not surprising that those students maintaining positive attitudes towards CAM consider a multidisciplinary approach where therapies with dubious effectivity benefit from a therapeutic alliance with well-founded therapies evidence-supported conventional interventions.

7.3 Do nursing students recommend CAM to the patients?

According to this study, despite students of nursing assessing lack of knowledge about CAM, they would still be prone to recommend most of the CAM practices to patients. Furthermore, they also consider that medical staff should have formation about CAM to be able to give counselling to patients. These results are consistent with previous research on the topic. Nurses are frequently required to provide information and answer questions about CAM while their knowledge remains limited (Smith 2009). It could be recognized that students of nursing are aware of this situation to some extent since they consider that knowledge about CAM is important for their future development as nurses and, also, they claim that instruction about CAM practices or methods should be included in the nursing curriculum.

7.4 Findings related to the theoretical framework

Both theoretical models and students recognize the importance of knowledge for their development as future professionals in the clinical setting. Therefore, there is advocacy for the inclusion of knowledge about CAM therapies in the nursing curriculum. The need for evidence-based knowledge as “know that” it is important for the majority of the research subject of this investigation. However, there is a lack of information about the effectivity of CAM therapies, the prevalence of interventions that do not overmatch placebo effect, health risks or health benefits. Knowledge is important in the development of competent nurses as it is the base from which experience will sculpt the beginner nurse until becoming an expert professional. Flaws in knowledge about CAM could benefit misguided interventions that could also hinder the acquisitions of competence through experience, as it could be suspected when students show a positive attitude about integrating alternative or complementary methods with questionable support from evidence with conventional medicine. Research about the effectivity of specific CAM interventions and about their effectivity in combination with conventional interventions is needed in favour of assessing the quality of personal knowledge, that in turn will impact the publicly expressed practical knowledge. The presence of knowledge and experiences relating non-evidence-based methods or interventions can also interfere with the way how practical knowledge can be identified and extended through the six areas described in Benner’s theoretical model. As it has been found in the present investigation, some students sustain beliefs of a magical or religious entity. Ideas about spirits, energy or forces that interact with the human body and result in health or disease could shape common meanings, assumptions, expectations or maxims that will not be shared by the main group of nurses in a clinical setting who do not seem to express these beliefs. It could be speculated, that an intervention addressed to have an impact in a patient’s condition mediating alleged energies or forces would build up paradigm cases in a manner that defies the principles of evidence-based approaches and, hence, the progression of a nurse towards expertise. In scientific literature, it has been suggested that people might use CAM because they possess beliefs that are consistent with CAM. It is not clear if those beliefs already exist before using CAM or they appear as a result of using CAM. In any case, systematic reviews of literature found associations between CAM use and spirituality, religious beliefs

and the idea that illness is originated by psychological factors rather than physiological ones (Bishop et al. 2007).

The results showed that although most of the students agree that CAM should be based on the evidence before it can be used in the clinical setting, still some group of students who consider that there is no need of support from evidence to use CAM interventions to the patient. It can also be said that there is no authentication in CAM modalities. According to Eriksson (2010) authentication means assuring validity through evidence. Considering a treatment that is not based on evidence, not only disrespecting the dignity of the patient but also cause harm and suffering to the patient. Eriksson has stated that evidence is the truth. As a future healthcare professional, one should endeavour to seek the truth for the good of the patient.

In the present study, it is described lack of knowledge about CAM at the same time as students show positive attitude on using or recommending CAM. However, scientific literature shows that most of CAM treatments lack enough evidence (Kaptchuk & Miller 2005; Smith 2009). As stated before, ethical principles can only be developed through evidence-based care, and ethics is the guideline principle the rules work and decision in the clinical setting. Therefore, as the nurses have the responsibility to implement care, they cannot provide it without EBC. In the present study, it has been found that many students of nursing provided answers that stated disagreement on the idea that treatments with no evidence support should be discouraged; the idea that CAM therapies should be offered to patients only when no real cause or cure can be found or some beliefs about CAM described as supernatural. These ideas could be understood as approaches that could be incompatible with due ethical diligence.

7.5 Credibility and transferability

Research findings should be as trustworthy as possible and that is why credibility and transferability concepts were chosen. These two concepts are linked to the qualitative tradition and are using qualitative content analysis when reporting findings of studies

(Graneheim & Lundman 2004). The authors have tried to answer the research questions in a credible way, using 17 peer-reviewed articles from different scientific databases according pre-established inclusion and exclusion criteria. Chosen articles in the study are relevant for, at least, one research question. To answer a research questions in a credible way, authors used a data analysis method inspired by Graneheim and Lundman (2004). The data analysis process, and how the extraction of data is carried out are carefully explained by the authors which can be found in the data analysis and taxonomy section. To enhance this thesis transferability, clear and distinct description of the context is given, data collection is explained and illustrated with figures and tables, all the relevant information from the articles is submitted in the findings chapter and appropriate quotations are present in the study. The study is done in a manner that can be easily followed and replicate by the readers for future studies. All these mentioned aspects are displayed in pursuit of trustworthiness. It is also worth mentioning in favor of reliability, that the findings of this study are consistent with previous research on the topic.

8 CONCLUSION

In line with previous research, the present study shows that students of nursing are interested in increasing their knowledge about Complementary and Alternative medicines. As mentioned in an earlier section of the paper, there is lack of up-to-date research in nursing student's beliefs about CAM. What is more important, the gap in the research is being filled up by authors and journals from which biases and conflicts of interest could be suspected. As of now, the impact factor for journals researching about this topic is low and their reach limited. But with a lack of better sources, these journals are likely to be common place for those looking for answers on the matter. At the same time, despite claiming deficient education, students still would recommend CAM to the patients. Being so, it could be speculated whether patients would consistently fulfill their right to receive the best possible and safest treatment or, instead, they receive recommendations about treatments with dubious efficacy and with possible unwanted side effects or interference with conventional evidence-based interventions. Moreover, some of the treatments that are mostly used by students themselves (i.e. spiritual healing or herbal/ botanical medicines) are not listed in ANA's Nursing Interventions Classification (Bulechek et al. 2013) and the effectivity of the treatment is only based on student's subjective experience with them.

It is ethically imperative for patient's rights and its safety that any questions regarding clinical interventions are answered from an evidence-based perspective. Current and previous research represent a majority of students following agreement in line with an evidence-based approach. However, in absence on unanimity and with students claiming inadequate education on CAM; more research and information about CAM in nursing curriculum are needed.

8.1 Strengths, Limitations and recommendations

The strength of this study is based on the credibility and transferability of the study. These concepts exist in the study is described under credibility and transferability section and they define the strength of this study.

The limitations of the study are the reduced amount of materials found in the research topic which resulted in a small number of materials used. Despite the increasing popularity of CAM, not so much research has been done to the student's nurses attitudes and knowledge towards CAM. The authors had found 20 articles, however after analyzing the articles, three were left unused because they met the primary searching criteria but when they were carefully read no relevant information was found. Some articles that can be considered relevant to the topic are not accessible since they are not free of charge. Thus they are not included in the study materials. The high rate of female participants in the research and small samples in some of the materials affect the possibility to generalize the results of the research to other samples. Although most of the studies collected for this research were based on surveys or questionnaires, the methodology followed in the different investigations was not the same and, thus, the comparability of the results is limited. The impact factor for the journals of the selected articles goes from 0.59 to 2.106, meaning that those journals are not very important on their field. Finally, because of the area of interest of some of the journals and some of the researchers, there could be suspected to some extent, conflict of interest and biases in the studies analyzed. Future studies could be developed to investigate CAM from a student's perspective in Finland as this study included nursing students from all over the world.

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APPENDICES

APPENDIX 1. Literature research

In every case, the chosen articles have been selected for their relevance to the object of our study, as well the accessibility.

List of Articles

Identifier	Title	Author/s	Year	Journal
1	Knowledge, attitude, influences and use of complementary and alternative medicine (CAM) among chiropractic and nursing students.	Walker, B. Armson, A. Hodgetts, C. Jacques, A. Chin, F. Kow, G. Lee, H. Wong, M. Wright, A	2017	Chiropractic & Manual Therapies. Vol. 25, No 1.
2	Exploring self-use, attitude and interest to study complementary and alternative medicine (CAM) among final year undergraduate medical,	James, P. Bah, A. Kondorvoh, I.	2016	BMC Complementary and Alternative Medicine Vol. 16, No.1

	pharmacy and nursing students in Sierra Leone: a comparative study			
3	Knowledge and Opinions of Nursing Students Regarding Complementary and Alternative Medicine for Cancer Patients.	Topuz, S. Uysal, G. Akman, A.	2015	International Journal of Caring Sciences. Vol. 8 Issue 3, pp. 656-664.
4	Nursing students knowledge on the use of medicinal plants as a supplementary therapy.	Badke, M. Heisler, E. Ceolin, S., Andrade, A. Budó, M. Heck, R.	2017	Revista de Pesquisa: Cuidado é Fundamental Online, Vol. 9, No. 2, p. 459.
5	An analysis of nursing and medical students' attitudes towards and knowledge of complementary and alternative medicine (CAM)	Yildirim, Y. Parlar, S. Eyigor, S. Serto, O. Eyigor, C. Fadiloglu, C. Uyar, M.	2010	Journal of Clinical Nursing, Vol. 19, No. 7-8, pp. 1157-1166.

6	Complementary and alternative medicine (CAM): A comparative study between nursing and medical students	Hassan, I., Abd Hadi, N. Soon, L.	2012	Education in Medicine Journal, Vol. 4, No 2, pp. 94- 99.
7	Nursing department students' knowledge and use of complementary and alternative medicine methods	Pirincci, E. Kaya, F. Cengizhan, S. Onal, F.,	2017	Journal of Turgut Ozal Medical Center, Vol. 25 Issue 1, pp. 22- 29.
8	Perceptions of complementary health approaches among undergraduate healthcare professional trainees at a Canadian university.	Jackman, A. Mayan, M. Kutt, A. Vohra, S.	2017	European Journal of Integrative Medicine Vol. 9, pp. 120-125
9	Nursing Students' Attitudes and Use of Holistic Therapies for Stress Relief	Kinchen, E., Loerzel, V.	2018	Journal of Holistic Nursing. Vol. 37, No. 1, pp. 6-17

10	Nursing, Midwifery, and Dietetics Students' to Complementary and Integrative Medicine and their Applications	Kavurmaci, M. Tan, M. Kavurmaci Z.	2018	Medical Journal of Baskirkoy, Vol. 14, No. 3, pp. 300- 306.
11	The attitudes of nursing students regarding complementary and alternative medicine	Cinar, N. Akduvan, F. Kose, D.	2016	Revista Eletrônica de Enfermagem, Vol. 18.
12	Knowledge, Attitudes, and Practices of Nursing Faculty and Students Related to Complementary and Alternative Medicine: A Statewide look	Avino, K	2011	Holistic Nursing Practice, Vol. 25, No. 6, pp. 280–288.
13	Student nurses, midwives and health visitors' attitudes, knowledge and experience towards complementary and alternative medicines in Hungary	Sárváry, A. Demcsák, L. Radó, S. Takács, P. Sárváry, A	2016	European Journal of Integrative Medicine, Vol. 8, Issue 4, pp 552- 559.

14	Nursing Students Attitudes and Understanding of Complementary and Alternative Therapies: An Indian perspective	Poreddi, V. Thiyagarajan, S. Swamy, P. Ramachandra, R., Gandhi, S. Thimmaiah, R. Bada Math, S.	2016	Nursing Education Perspectives, Vol. 37, No.1 p.69
15	Self-care Practices of Baccalaureate Nursing Students	Nevins, C. Sherman, J.	2015	Journal of Holistic Nursing, Vol. 34, No.2, pp. 185- 192.
16	Knowledge and Attitudes toward Complementary and Alternative medicine amongst Turkish nursing students	Turker, T. Kilic, S., Kocak, N. Acikel, C. Turk, Y.Z. Kir, T.	2011	Pakistan Journal of Medical Sciences, Vol. 27, No. 2, pp. 379- 383.
17	Investigating Knowledge and Attitude of Nursing Students Towards Iranian Traditional Medicine. Case Study: Universities of Theran in 2012-2013	Khorasgani, S. Moghtadaie, L.	2014	Global Journal of Health Science, Vol. 6, No. 6

APPENDIX 2. Example of inductive analysis

	Article 7	Article 13	Article 5	Article 14	Article 6	Subcategory	Category
Statements from the articles	Nurses have sufficient knowledge about CAM (21,9 yes vs 43,4 no)	50,7% students had no info about CAM		Lack of staff training is a barrier for CAM 87%	All health care professionals should have some knowledge about the most common CAM therapies. 4.39 (0.556)	Assessment of own knowledge	Education about CAM in nursing
	CAM methods should be in nursing education (56.2 vs 13.1)	[64,5%-61,3%] CAM should be included in curriculum	CAM in nursing education 61,3%	CAM practices should be included in my school's Curriculum. 81%	CAM practices should be included in my school's curriculum 3.85 (0.755)	CAM in nursing curriculum	

APPENDIX 3. Acronyms

CAM - Complementary and alternative medicine

CHA - Complementary health approaches

EBP - Evidence-based practice

FDA - Food and Drugs Administration

NNCM- National Center for Complementary and Alternative Medicine

RCR - Responsible conduct of research

TM - Traditional Medicine

T&CM -Traditional and Complementary Medicine

SD - Standard deviation

WHO - World Health Organization