

Complementary and Alternative Therapies in Surgical Care

Kristofer Bjerså

Department of Surgery
Institute of Clinical Sciences
Sahlgrenska Academy at University of Gothenburg



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kristofer.bjersa@vgregion.se

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*På livets stig skall jag vandra
som så många före mig
Där ska jag hjälpa alla andra
som på stigen inte klarar sig*
(Ylva Eggehorn)

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Kristofer Bjerså

Department of Surgery, Institute of Clinical Sciences
Sahlgrenska Academy at University of Gothenburg
Göteborg, Sweden

ABSTRACT

International and national use of complementary and alternative medicine (CAM) is high in the general population and among patients. The level of knowledge about CAM among health care professions is low, but an interest in receiving education about this field has been observed. Concerning surgical care, previous studies indicate a wide range of CAM use among patients, but the level of knowledge among health care professions is poorly investigated, both internationally and in Sweden. Concerning CAM therapies in the management of signs and symptoms in surgical care, transcutaneous electric nerve stimulation (TENS) was used with a variety of effectiveness and osteopathic medicine was found to be poorly investigated in this context.

The overall objective of this thesis was to investigate CAM in the surgical context with a focus on health care professions' perceptions and understanding and the usefulness of therapy in symptom management in clinical settings.

Both inductive (paper I; semi structured interviews, n=16) and deductive (paper II; questionnaire, n=737) methods were used to investigate perceptions and understanding of CAM among Swedish health care professions in surgical care. TENS as a pain relieving complement during the transition from epidural analgesia (EDA) to general analgesia after major abdominal surgery was investigated in a randomized controlled trial design (paper III; n=20). Osteopathic intervention in management of chronic signs and symptoms after thoracotomy was investigated with a single-subject research design (paper IV; n=8).

The results reveal that surgical health care professions understand and perceive CAM as a wide range of therapies, remedies and systems. Their self

valued level of knowledge was low, both concerning CAM and CAM research, but a desire was found to gain knowledge about CAM. A majority of the participants would consider learning a CAM therapy. Dialog about and referral to CAM occurred, but to a limited extent. Concerning therapy usability, TENS was not found to significantly relieve pain, promote recovery or reduce consumption of analgesics. In addition, comments from nurses and patients indicated that TENS treatment obstructed postoperative care. A significant improvement was observed in the osteopathic intervention in stiffness and benefits for pain, but not in breathing.

The comprehensive conclusion of the thesis is that Swedish health care professions recognise the concept of CAM and some of its therapies, but their knowledge is in general low. Concerning therapy usability and the effectiveness of CAM in surgical care, the context is essential; TENS after major abdominal surgery in EDA elimination is questionable as concerns pain and its clinical application, while osteopathy may be beneficial in the management of chronic signs and symptoms after thoracotomy.

Keywords: Complementary Medicine, Alternative Medicine, Integrative Care, CAM, Surgery, Surgical Care, Transcutaneous Electric Nerve Stimulation, Osteopathic Medicine, Perceptions, Knowledge, Epidural Analgesia, Post-thoracic symptoms.

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SAMMANFATTNING PÅ SVENSKA

De senaste decennierna har en ökad användning av komplementär och alternativmedicin (KAM) observerats, såväl internationellt som nationellt. Idag betraktas användningen av KAM som omfattande, både inom befolkning och bland patienter generellt. Kunskap om dessa icke konventionella behandlingsformer är låg bland sjukvårdspersonal internationellt, men ett intresse att få sådan kunskap finns. I Skandinavien har fåtal studier undersökt sjukvårdspersonalens uppfattningar och förståelse av KAM.

Även inom den kirurgiska vården har uppfattningar och förståelse hos sjukvårdspersonalen undersökts mycket sparsamt. Tidigare forskning har visat på stor variation i prevalens för användning av KAM bland kirurgiska patienter. Tidigare forskningssammanställningar av KAM-terapi, inom eller angränsande till den kirurgiska vården, visar på varierande effekt och effektivitet och fler och större behandlingsstudier efterlyses. I handläggningen av symtom och tecken inom den kirurgiska vården har två terapiformer fokuserats på i denna avhandling; transkutan elektrisk nervstimulering (TENS) har visat på varierande effektivitet i tidigare studier, medan osteopati inte har undersökts i någon större utsträckning inom den kirurgiska vården.

Det övergripande syftet med denna avhandling har varit att studera komplementär och alternativmedicin inom den kirurgiska vården, med fokus på sjukvårdspersonalens uppfattningar och förståelse, samt användbarheten av terapi i den kliniska vården.

För att undersöka uppfattningar och förståelse hos svensk, legitimerad sjukvårdspersonal inom kirurgisk vård användes både induktiv, hypotesskapande forskningsmetod, med semistrukturerad intervju och fenomenografisk design (paper I), och deduktiv, hypotestestande forskningsmetod med pappersenkäter (paper II).

För att undersöka TENS som smärtlindringskomplement under övergångsperioden mellan epidural och allmän smärtlindringsbehandling efter stor bukkirurgi användes en randomiserad, kontrollerad studiedesign (paper III).

För att undersöka osteopatisk behandling mot kronisk smärta och stelhet i bröstkorgen samt andningsnedsättning efter thorakotomi användes single-subject research design (paper IV).

Resultatet visar att sjukvårdspersonalen uppfattade KAM som ett brett fält, med många olika terapier, kurer, botemedel och system. Den självskattade kunskapen om KAM var låg, både vad gällde KAM och forskning inom KAM, men det fanns också en önskan om att få kunskap om KAM. Mer än hälften av deltagarna skulle kunna tänka sig att lära sig en KAM-terapi. Dialog med patienter om KAM förekom, liksom rekommendation och remittering till KAM-terapeut, men i liten omfattning.

Det gick inte att påvisa att TENS signifikant lindrade smärta, förbättrade återhämtning eller minskade behovet av smärtlindring. Därtill anmärkte och kommenterade sjuksköterskor och patienter att TENS försvårade vården efter operationen.

Resultatet av osteopatisk behandling antydde minskad stelhet och minskad smärtomfattning, men ej förbättrad ventilationsförmåga.

Den sammanfattande konklusionen av denna avhandling är att svensk vårdpersonal känner till begreppet KAM och några av dess delar, men deras kunskap är generellt låg. Sammanhanget är viktigt beträffande användbarhet och effektivitet av KAM-terapi i kirurgisk vård; den kliniska nyttan av TENS som behandlingskomplement mot smärta i övergången från epidural till generell smärtlindring efter stor bukkirurgi är tveksam, medan osteopati som behandlingen av kroniska symtom och tecken efter thorakotomi kan vara fördelaktigt.

Nyckelord: Komplementära terapier, komplementära metoder, komplementär och alternativmedicin, integrativ vård, KAM, kirurgi, kirurgisk vård, transkutan elektrisk nervstimulering, TENS, osteopati, osteopatisk medicin, uppfattningar, kunskap

LIST OF PAPERS

This thesis is based on the following studies, referred to in the text by their Roman numerals.

- I. Bjerså, K. Forsberg, A. Fagevik Olsén, M. Perceptions of complementary therapies among Swedish registered professions in surgical care.
Complementary Therapies in Clinical Practice 2011;17:44-9.
- II. Bjerså, K. Stener Victorin, E. Fagevik Olsén, M. Knowledge about complementary, alternative and integrative medicine (CAM) among registered health care providers in Swedish surgical care: a national survey among university hospitals.
BMC Complementary and Alternative Medicine 2012;12:42.
- III. Bjerså, K. Andersson, T. Stener Victorin, E. Hyltander A. Fagevik Olsén, M. High frequency TENS for pain relief in postoperative transition from epidural to general analgesia after pancreatic resection.
Submitted.
- IV. Bjerså, K. Sachs, C. Hyltander A. Fagevik Olsén, M. Osteopathic intervention for chronic pain, remaining thoracic stiffness and breathing impairment after thoracoabdominal oesophagus resection: A single subject design study.
Accepted for publication in International Journal of Osteopathic Medicine 2012.

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ABBREVIATIONS

AUC	Area Under the Curve
BLT	Balanced Ligamentous Tension
BPI-SF	Brief Pain Inventory, Short Form
CAM	Complementary and Alternative Medicine
EBM	Evidenced Based Medicine
FEV ₁	Forced Expiratory Volume during the first second
FNP	Fisher's non-parametric permutation test
FVC	Forced Vital Capacity
HVLT	High Velocity Low Thrust
MET	Muscle Energy Techniques
n	Number of subjects included
OM	Osteopathic Manipulation
p	Statistical probability
PEF	Peak Expiratory Flow
PRP	Postoperative Recovery Profile
QoR-40	Quality of Recovery-40
RCT	Randomized Clinical Trial
RMMI	Respiratory Movement Measuring Instrument
SD	Standard deviation
TCM	Traditional Chinese Medicine

TENS	Transcutaneous electrical nerve stimulation
VAS	Visual Analog Scale
WHO	World Health Organization

1 INTRODUCTION

The basic assumption behind this thesis is that surgical care needs to consider the extensive use by the public and patients of treatments not included in conventional health care. As patients themselves use these therapies, there is a crucial need to investigate the effectiveness of such interventions in surgical care. Since health care professionals in general not only strive to cure disease but also to promote health, the question is whether there exist therapies that can contribute to health promotion and wellbeing, without risk or side-effects, among surgical patients. However, given that these therapies are considered to be unconventional, several concerns need to be addressed.

All humans strive to experience health, and health care professionals seek to promote health and deliver cure, ease and comfort. When illness or disease occurs, people try to find treatments that can cure them or give relief of their problem. Some turn to the conventional health care, some to practitioners or therapies outside the conventional health care, and many turn to both. Conventional health care workers also cross over to practice therapies outside of their discipline¹. Why people do not solely rely on conventional health care has been disputed in many academic disciplines: medicine, caring sciences, psychology, sociology and anthropology. In Sweden, there is a substantial interest in such matters in the population and in politics².

Another issue is why some therapies or remedies are excluded, or even opposed, in conventional health care or from scientific investigations. Is it just because of the differences in their model of explanation? What perceptions and understandings among the staff in the ruling health care system contribute to this action? Is there a feasible usage of such therapies in symptom management in patients attending conventional care?

This thesis focuses on such matters, called complementary and alternative medicine, in the context of surgical care.

1.1 Complementary and Alternative Medicine (CAM)

A massive body of research reports during the past decades has established that the public use of complementary and alternative medicine (CAM) has increased significantly since the 1980s in industrial countries. This trend has also been recognized in Scandinavia³⁻⁵.

Fønnebø et al.⁶ argue that this increased usage by the public is an indication to commence investigations of these therapies and systems by the research community and not neglect it owing to its belonging to non conventional health care.

In Sweden, CAM has been an issue since the creation of the modern, biomedical oriented physician profession. For well over one hundred years, this area of care, previously called quackery, and from the 1970s alternative medicine, has been a major issue of debate among the Swedish society of physicians⁷⁻⁹. This area was and is therefore perceived as something outside the conventional, conservative biomedical medicine practiced in governmentally funded care and thought in medical schools at Sweden's universities. Sweden, in contrast to other Western countries, has only had a minor integration of CAM therapies in the governmentally funded health care, despite a political positive, pluralistic view of the subject⁷.

1.1.1 What is CAM?

CAM is not easy to define due to the breadth of the area, with an enormous variety of therapies and systems, models of explanation and philosophical stands. Several definitions have been suggested, but a comprehensive, static definition has not reached consensus¹⁰. To this fact, results from research in this area constantly contribute to a revision of definitions. It is also notable that the terms "medicine" and "therapy" are often considered equal in this area. In this thesis, "medicine" and "therapy" also represent the variety of methods or techniques included in each therapy or treatment system with the aim of curing or preventing disease, or maintaining or elevating health and wellbeing. The term "care" is sometimes used instead of therapy or medicine. In this thesis care is defined as the practise of treatments and methods given in a specific area, therapy or medical system.

One of the most often referred to authorities in defining the area of CAM is the National Center for Complementary and Alternative Medicine (NCCAM), which is a part of the United States National Institute of Health (NIH). NCCAM defines CAM as:

*"a group of diverse medical and health care systems, practices, and products that are not generally considered part of conventional medicine."*¹¹

It is however important to define each of the terms constructing CAM, as well as set out definitions of adjacent medical areas or paradigms, such as conventional medicine or traditional medicine.

The term complementary medicine often refers to the same thing as CAM, as the MeSH term indicates:

*“Therapeutic practices which are not currently considered an integral part of conventional allopathic medical practice. They may lack biomedical explanations but as they become better researched some (physical therapy modalities; diet; acupuncture) become widely accepted whereas others (humors, radium therapy) quietly fade away, yet are important historical footnotes. Therapies are termed as Complementary when used in addition to conventional treatments and as Alternative when used instead of conventional treatment”*¹²

As stated in the last sentence of this definition, there are differences between Complementary and Alternative medicine. This distinction is clarified in NCCAM’s definition of complementary and alternative medicine:

*“Complementary refers to use of CAM together with conventional medicine, such as using acupuncture in addition to usual care to help lessen pain.”*¹¹

*“Alternative refers to use of CAM in place of conventional medicine.”*¹¹

In addition to these descriptions, alternative therapies should have a unique model of explanation, different from the biomedical paradigm. Complementary therapies, on the other hand, should have a model of explanation consistent with the biomedical paradigm.

Proposals for dividing CAM therapies into areas, domains or fields have been offered by several researchers^{10, 13}. Descriptions of CAM therapies are given in Appendix 1. NCCAM defines five different domains of CAM. These domains are not formally defined, but provide a good overview of the CAM area, even if some CAM therapies might fit into more than one domain.

Natural products: Examples of products included are herbal medicine, dietary supplements and probiotics.

Mind and body medicine: Focuses on the interaction between brain, mind, body and behavior. As NCCAM states, the intention of therapies in this domain is to affect the mind to gain health benefits in the body. Examples of therapies in this domain are meditation, hypnosis, yoga and tai chi.

Manipulative and body-based practices: Focus on affecting the structures of the body (e.g. joints, circulation, lymphatic system etc.). Examples of therapies in this domain are chiropractic, osteopathy and massage.

Other CAM practices: There are different fields of therapies in this domain, of which the first uses *movement* of the body as a tool to promote health, e.g. Rolfing, Feldenkrais or pilates. Another field in this area, which can and should be included, is the *traditional healers*. These therapies have an origin in a traditional, cultural and historical perspective of treating signs and symptoms. A good example is the medicine man, who is present in many cultures around the world. A third field in this domain is the *energy* therapies which propose the use of different forms of physical, known or unknown, force or energy. Good examples are magnet therapy, reiki and qi gong.

Whole medical systems: Based on tradition and developed outside or before the biomedical paradigm, such as traditional Chinese medicine (TCM) and Ayurveda, which contain treatments for most of the different medical areas present in conventional medicine (e.g. pediatric, cardiology, orthopedics etc.).

In CAM, conventional medicine is an important aspect to define, as this is often, but not always, seen as a counterpart to CAM. Conventional medicine has many names (e.g. conventional care, allopathic medicine, biomedicine, Western medicine and orthodox medicine) and refers to medicine practiced by government registered health care professions such as physicians, nurses and physiotherapists, and regulated by the current political health care system in a specific area. It is however important to consider CAM as therapies and treatments that exist, at a certain time in a certain culture, outside the ruling health care regime. It is therefore possible that what we consider to be CAM today may be conventional medicine tomorrow, and vice versa.

In a historical view, the borders between conventional medicine and CAM are not very clear. Some CAM therapies or systems have been part of the recognized health care system for a long time, and sometimes even today exist side by side with the conventional, such as the cases of TCM and Ayurveda. Therefore the term Traditional Medicine is often used. The World Health Organization (WHO) defines Traditional Medicine as:

“health practices, approaches, knowledge and beliefs incorporating plant, animal and mineral based medicines, spiritual therapies, manual techniques and exercises, applied singularly or in combination to treat, diagnose and prevent illnesses or maintain well-being.”¹⁴

“the sum total of knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures that are used to maintain health, as well as to prevent, diagnose, improve or treat physical and mental illnesses.”¹⁵

The use of such traditional therapies and systems remains strong and constant in developing countries due to the poor access to conventional, biomedical health care^{15, 16}. As stated above, while traditional medicine has spread to industrial countries, it is then considered to be complementary or alternative therapies.

Another aspect of this area is the term integrative medicine, integrated medicine or integrative care. This aspect of CAM has emerged since the 1990s¹⁷. NCCAM defines it as:

“Integrative medicine combines treatments from conventional medicine and CAM for which there is some high-quality evidence of safety and effectiveness.”¹¹

The MeSH term used by the database PubMed defines integrative medicine as:

“The discipline concerned with using the combination of conventional (allopathic) medicine and alternative medicine to address the biological, psychological, social, and spiritual aspects of health and illness.”¹²

Simplified, integrative medicine is the use of scientifically proven CAM therapy, where a dialog and common goals are constructed between the conventional and non-conventional/CAM treatment. However, it is important to broaden the meaning of integrative medicine. As the core comprises both the health care professionals’ perspective and the patients’ perspective, evidence in this area includes both inductive, e.g. qualitative, hypothesis generating research methodologies as well as deductive, e.g. quantitative, generalized hypothesis testing research methodologies¹⁸. The way of practicing integrative medicine does not follow a predetermined course of treatment, but rather is a collaboration between conventional care and complementary therapies with evidential indications for usage. Treatment is evaluated both from a biomedical perspective as well as from the patient’s subjective perspective.

Because of the differences in definitions of the terms used in this area of research, an adoption to the Swedish health care system has been created for

this thesis and is presented in Table 1. There are however differences between the definitions of these terms in the papers presented in this thesis. In view of this, these general definitions are proposed to give the reader a perspective of the subjects surrounding CAM research.

Table 1. Definitions of conventional, complementary, alternative and integrative medicine/therapy adjusted to the Swedish context

Alternative Medicine	Treatments given with the aim of curing or preventing, promoting or maintaining health and wellbeing, or as symptom management <u>instead of</u> conventional medicine
Complementary and Alternative Medicine (CAM)	Generic term for all therapies and medical systems not included, or not perceived, as a standardized part of the conventional medicine
Complementary Medicine	Treatments given with the aim of curing or preventing, promoting or maintaining health and wellbeing, or as symptom management <u>parallel with conventional medicine</u>
Conventional Medicine	Treatment regulated by the current governmental, political health care system and given by registered health care professions in public hospitals, district health care centres, home nursing and nursing homes
Integrative Medicine	Evidence-based treatments given in collaboration and dialog between conventional medicine and alternative and complementary medicine
Traditional Medicine	Historically, locally used medical treatments in a specific area, culture, time and political system that often differs from the biomedical paradigm

1.1.2 The Swedish health care and CAM

Swedish public health care is politically regulated by the government and regional political boards and is accessible to all citizens. Funding consists of taxes and a patient fee at each health care contact with a citizen high-cost safety protocol, which protects the patient from loss of treatment due to limited personal finances. The majority of the public health care is given by county councils, such as hospitals and district health care centers, and communities, which are responsible for home care and nursing homes. There is an additional private sector offering conventional health care, which is mainly engaged by the governmental health care but can also be funded by full cost patient fees.

The National Board of Health and Welfare is responsible for supervision of the staff and performance of the public health care, as well as issuing registration to health care professions. Current health care professions that hold a registration in Sweden are physicians, nurses, physiotherapists, occupational therapists, biomedical analysts, dieticians, opticians, pharmacists, audiologists, midwives, chiropractors, speech therapists, naprapaths, orthotists, psychologists, psychotherapists, radiology nurses/radiographers, prescriptionists, dental hygienists and dentists. All of the registered health care professionals are educated at governmentally funded and controlled universities or colleges, except for chiropractors and naprapaths, who are trained at two private colleges.

Except for chiropractors and naprapaths, therapists internationally commonly included in the CAM field do not hold registration in Sweden. Instead, CAM therapies are commonly given at small private practices/clinics with one or a few therapists. There are however exceptions. The hospital in Järna is anthroposophically oriented and provides health care as a governmental hospital. Also some therapies, such as meditation, body balancing and manual therapies, are included sporadically in public health care but are not regulated or standardised with the exception of acupuncture.

Sweden does not, unlike other countries, have a national policy on traditional, complementary and alternative medicine, despite recommendations made by the World Health Organisation¹⁶. Knox et al.¹⁹ reviewed Swedish policy towards CAM. As described above, only people with a protected occupational title and registration are considered to be authorized health care personnel. Practicing CAM therapies by health care personnel is prohibited by the Professional Activity in Health Service Act (1998:531), and all care given by these persons should be conducted according to the Swedish

definition of evidence: “science and experiential knowledge”. This restriction in practising CAM is not only limited to hours of active work but covers all hours of the day, as the registration is always active. However, use of CAM therapies, both evidenced based and non evidenced based, has been reported in the Swedish health care system^{19, 20}.

On the other hand, CAM practitioners are not legislated or regulated by the government or by a demand of evidence based practise, but they are restricted in their practice. People not considered health care personnel are not allowed to treat people under the age of eight years, people with cancer or other malignancy, diabetes, pregnancy or delivery related disease, epilepsy, infectious and contagious disease, or during anaesthesia, and with any radiological treatment. There is currently no national registry of CAM practitioners. However, a commission was announced by the Ministry of Health and Social Affairs in 2009 to investigate, e.g. the issues of registry, restrictions to treatment, and the extent of current supervision of medical treatments given outside the conventional medicine. The commission did not find support to propose further supervision in this area because of the extent of different therapies and products that lack scientific evaluation. However, it suggested a law for alternative methods of medical treatment, which should specify restrictions in the right to treat by non health care personnel, elaborated by the National Board of Health and Welfare, and also a set of regulations for a proposed registry for such personnel. Further suggestions are an information portal as well as a national information campaign of CAM therapies, connected to the launch of registering practitioners administered by the Swedish Consumer Agency.

Currently, the commission’s report and suggestions are being sent out for consideration to several Swedish institutes, and no political decision has yet been taken.

1.1.3 Surgical care

general definitions of the terms are hard to find. Hence, in thesis, surgery is defined as the procedure performed by penetrating the body’s natural barrier, causing harm with the objective to cure disease or relieve signs and symptoms.

The definition of surgical care on the other hand is more complex. The general definition in this thesis is the care that is given by all health care professions during the total time of care to patients seeking help for a surgical

disease or injury or suspicions in signs and symptoms of such. A simplified picture of surgical care is presented in Figure 1.

The Swedish surgical field comprises different specialist areas of care. To become a surgeon, a physician must be registered and pass a five year program in general or specific surgery. Nurses are commonly not specialists, except in particular areas such as anaesthesiology, intensive care and the operation theatre. These nurses are called specialist nurses and have done an additional year of fulltime university studies at the advanced level and hold a title protected by the National Board of Health and Welfare. A Swedish protected specialist nurse program in surgical care has existed since 2002. Currently, approximately 150 specialist nurses hold this title.

Physiotherapists are not specifically specialists in surgical care but are specialists in areas of it, such as intensive care and lung medicine, which are regulated by the physiotherapist association, although there is discussion about a specialist title in respiration.

This is also the case for dieticians, who do not yet have a specialist title in surgical care but do in such areas of surgical care as obesity, sport nutrition and oncology. All specialist dieticians are regulated by the Swedish Society of Dieticians.

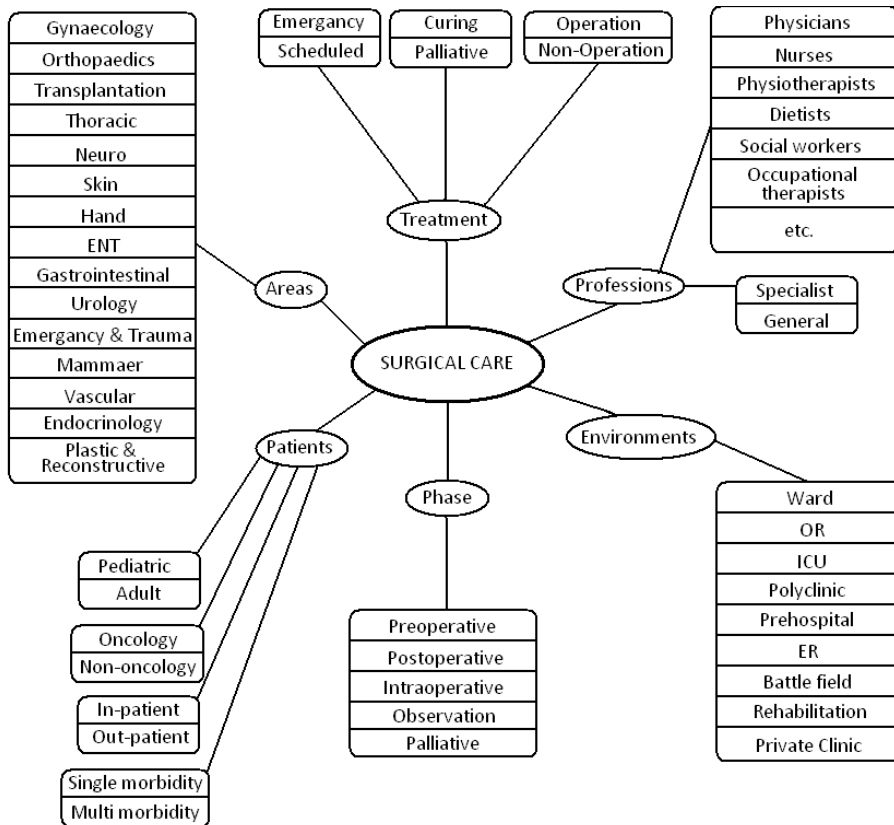


Figure 1. Factors of Surgical Care.

1.1.4 CAM in the Scandinavian population and among patients

There has been a global increase in the usage of CAM in the general population of industrial countries²¹. This is also implied among the Scandinavian countries (Denmark, Finland, Iceland, Norway and Sweden). The summarised reported prevalence of CAM usage in Scandinavia varies between 12% and 49%; in Denmark 14% to 45%^{4, 22}, Finland 28% to 31%^{23, 24}, Iceland 32%²⁵, Norway 12% to 49%^{4, 26-28} and Sweden 28% to 49%^{4, 29, 30}. Predictors for higher CAM usage in the Scandinavian populations were being female^{4, 22, 23, 25-30}, higher education^{4, 23, 29}, lesser perceived personal health^{22, 31} and higher household income^{23, 25}.

These results come from different samples of the population and should not be interpreted as common for the general population but rather as an

overview of current knowledge. In addition, it is difficult to generalise the prevalence of usage in previous publications for two reasons: differences in measuring variables (e.g. “current use”, “during the last weeks” or “ever in your life”) and the focus of CAM (e.g. “natural remedies”, “only acupuncture”, “non-physician prescriptions”). Overall, many of the studies conducted in the Scandinavian populations or patients in these countries focus on herbal or non-herbal remedies^{22, 29, 30, 32, 33}.

Concerning patients, there is a huge body of published international research on the usage of CAM in different medical areas. In Scandinavia, based on publications during the last 15 years, the prevalence of patients using CAM varies between 17% and 72% in general; for Sweden in particular, it varies between 17% and 34% (see Table 2). Most specified therapies that Scandinavian patients use were herbal and non-herbal remedies/supplements, acupuncture, reflexology, homeopathy, massage, manual medicine and spiritual healing and prayer³⁴⁻⁴⁰. Predictors for CAM usage among Scandinavian patients was younger or middle age^{32, 34, 36, 39, 40}, higher education^{32, 37, 39}, lesser self-perceived health^{34, 37, 40} and being female^{34, 36}. Reasons given for using CAM were symptom management (pain, stiffness, tiredness), promoting health and well-being, conquering disease, gaining hope and disappointment over conventional health care^{36, 38, 40}.

Table 2. Prevalence of CAM use among Scandinavian patients

Prevalence of usage	Country	Area of Care	References
40%	Denmark	Breast cancer	39
30%	Denmark	Infertility	35
30%	Finland	Breast and prostate cancer	40
36%	Norway	Pregnancy	33
72%	Norway	Cancer	41
17%	Sweden	Primary care centre	34
22%	Sweden	Primary care centre	32
30%	Sweden	Cancer	42
29%	Sweden	Rheumatology	36
34%	Sweden	Parkinson's disease	37
53%	Sweden	Lung cancer	38

1.1.5 Previous research on health care professionals and CAM

A global perspective

Summarising the research published on understanding, perceptions, attitudes, knowledge, usage, communication and referral of CAM during the last ten years (2002 to 2012), focusing on physicians and nurses, excluding midwives and students, reveals the following:

Due to differences in the cultural and historical definitions, only mutual findings are reported.

A large proportion of the published articles concern oncology staff⁴³⁻⁵². The demography of reviewed articles is given in Table 3.

Table 3. Factors of Surgical Care. Demographic presentation of the publications on physicians' and nurses' approach to CAM between 2002 and 2012.

	Number of referred articles and country		Response rate (if available) in percent: Mean Median Range		References
	Physicians	Nurses	Physicians	Nurses	
North America	12	9	48 47	30 30	44, 49, 52-67
	Canada, USA	Canada, USA	18-92	18-40	
South America	2	1	56 56	94 94	50, 68
	Brazil	Brazil	18-94	94	
Asia	5	3	46 39	79 79	44, 47, 69-74
	China, India, Japan, Korea, Singapore, Taiwan	Korea, Singapore, Taiwan	38-62	62-97	
Australia & New Zealand	5	3	47 49	48 48	45, 51, 75-80
	Australia & New Zealand	Australia & New Zealand	29-60	27-70	
Europe (excluding the Scandinavian countries)	10	4	48 44	33 33	43, 46, 48, 81-91
	Greece, Germany, Ireland, Italy, The Netherlands, Russia, Turkey, United Kingdom	Ireland, Italy, United Kingdom	27-82	9-57	
Africa	0	0	-	-	-
Total	35	21	49 47 18-94	57 48 9-97	

In some studies, the majority of participating physicians and nurses had a positive approach to CAM usage or believed in its efficacy^{61, 64, 77, 83}. It was believed that CAM could be integrated into conventional health care in a majority of the study participants^{44, 45, 48, 55, 72, 85, 89}.

Physicians and nurses were equal in conceiving that CAM could be useful in relieving symptoms (pain/discomfort, headache, fatigue, stress, anxiety, restlessness, insomnia), improving quality of life, enhancing recovery, enhancing personal control, providing hope and decreasing side effects associated with conventional medicine^{49, 50, 54, 63, 66, 77, 78, 80, 84, 85, 88}. This is also supported in a national U.S. survey among health care workers that reported on pain (foremost musculoskeletal) and anxiety⁹².

As perceived by physicians, the most legitimate therapies were acupuncture, massage, chiropractics, homeopathy, meditation, diets, antioxidants and vitamins, psychoanalysis, anthroposophical medicine, and tai chi^{43, 52, 57, 79, 80, 82}. The most legitimate therapies perceived by nurses was relaxation, massage, diet, exercise, counselling/psychotherapy, prayer, music therapy, aroma therapy, acupuncture, meditation and therapeutic touch^{64, 74}. Therapies conceived by both professions as harmful or non-legitimate were megavitamin therapies, homeopathy, diets, herbal remedies, magnetic therapies, chiropractics/osteopathy, mistletoe and shark cartilage^{43, 52, 63-65, 79}.

The most commonly performed CAM therapies in clinical practice among physicians were herbal and non-herbal therapies (i.e. phytotherapy, herbal medicine, naturopathy, vitamins), homeopathy, exercise diets, counselling/psychotherapy, massage, cupping, acupuncture, chiropractics and trigger points^{75, 80, 87, 90, 93}. Most commonly performed CAM therapies in clinical practice among nurses were massage, exercise, diets, music therapy, therapeutic touch, prayer, relaxation, counselling/psychotherapy, meditation and aroma therapy^{63, 64, 78}. Concerning the demand of evidence for clinical therapy practice, nurses rated the demand as being equal for conventional medicine and for CAM^{59, 63, 64}.

Barriers to CAM usage in clinical practise as perceived by physicians were lack of evidence, knowledge, belief in CAM, fear of interaction with conventional care and giving up conventional treatments^{45, 50, 54}. Barriers perceived by nurses were lack of time, organizational policies, knowledge and education about and in CAM^{64, 74, 77}.

Personal use of CAM among nurses and physicians varied between 6.5% and above 75%^{44, 45, 50, 56, 61, 65, 66, 73, 83, 84}. Among health care providers in the U.S.,

approximately 83% declared usage⁹². The most often mentioned examples in the reviewed literature of CAM therapies used by health care personnel were massage, herbal or non-herbal therapy (phytotherapy, vitamin supplement, dietary supplement, herbal medicines), prayer, relaxation, manual therapies including, chiropractics, homeopathy, physiotherapy, yoga and acupuncture, and aromatherapy^{50, 56, 78, 84, 90, 91}.

The overall knowledge about CAM and evidence for CAM usage was perceived as low among both physicians and nurses^{45, 46, 54, 62, 64, 68, 71, 72, 77, 83, 86, 91, 94}. However, a majority of the respondents was interested in receiving education in the area^{44, 45, 62, 64, 66, 68, 72, 77, 83}. Sources for gaining knowledge about CAM among physicians were journals (professional), internet, in clinical practice, personal experience, congresses and dialog with colleagues^{44, 51, 81}. Corresponding sources for nurses were internet, colleges, journals (professional), mass media (TV, radio, newspapers, lay journals), friends, workshops/seminaries, books, nursing education and clinical practice^{48, 60, 67, 77}.

There was great variation, <10% to >90%, between publications on the number of physicians and nurses that routinely asked patients about their use of CAM^{44, 52, 56, 61, 65, 66, 77-79, 84, 86}. Approximately 60% of the physicians reported feeling discomfort in discussing CAM with patients^{54, 65, 75}. Both physicians and nurses had experience of patients asking about CAM use^{47, 48, 66, 67, 79, 91}.

Referral and recommendation of patients to CAM therapists varied equally between 33% and 73% among responding physicians and nurses^{55, 56, 68, 73, 74, 78, 84, 87}. Most therapies referred by physicians were homeopathy, acupuncture, massage, manual therapies, biofeedback and relaxation therapies^{55, 57, 66, 84, 87, 88, 90, 93}. The corresponding referral and recommendation among nurses was relaxation, massage, chiropractics, acupuncture, counselling/psychotherapy and exercise^{60, 63, 77, 78}. Personal use of CAM was an enhancer for referral^{56, 72, 78, 84} and higher age a diminisher for referral^{55, 93}. Reasons most commonly stated for making a referral could be summarised for both professions as patient request and belief in CAM, usefulness for the current condition, personal experience of CAM therapy and the case of failure of conventional treatment^{60, 72, 80, 88}. Corresponding statements as to why a referral was not made could be summarised as a lack of knowledge, evidence and policies, and a belief that CAM is useless and that a referral would cause conflict with other health care professions^{62, 72, 80, 87}.

The major demographic factor in having a positive attitude towards CAM use was gender. Female physicians were more likely to have a positive attitude towards its use, find it more beneficial and be positive to integration of CAM, in comparison to their male colleagues^{45, 52, 57, 66, 82, 87, 90}. No studies were found concerning this factor among nurses, probably due to the difficulties of conducting a trial among male nurses with sufficient statistical power. Personal education about and in CAM was a factor for a positive attitude^{61, 87, 90}. In contrast, higher age and longer clinical experience were factors for a negative attitude to CAM use^{45, 61, 87}.

These findings taken from the past ten years of published work correlate with previous reviews published in the 1990s and 2000s and articles published between 1960 and 2006⁹⁵⁻⁹⁸.

Similarities are the growing interest in CAM among health care professionals and a positive attitude towards integrating CAM into conventional health care⁹⁸. There is also a need and wish for education about and in CAM^{97, 98}. Indications for CAM were similar to those in present studies, e.g. pain, anxiety, insomnia and headache^{96, 98}. CAM therapies most referred to were chiropractics and acupuncture^{95, 96}. Barriers to usage and referral were also comparable, such as lack of evidence for use⁹⁸.

Differences from the previously presented articles were a higher response rate (52% to 89%) among the questionnaire studies⁹⁶. There were also differences in reported indications for CAM, e.g. psychological problems, weight problems and chronic illness^{96, 98}.

It is worth considering that Ernst et al.'s⁹⁵ claim that articles by researchers promoting CAM had higher values of effectiveness of CAM than neutral researchers.

A Scandinavian perspective

Concerning the Scandinavian countries, and Sweden in particular, there is a lack of published research in general, and mainly on the matter of perceptions and understanding of CAM among health care personnel⁹⁹. There are also differences between the Scandinavian countries e.g. differences in law concerning CAM, health care system and education on and about CAM¹⁹. However, there are studies that have a relevance to current findings.

In a thesis written in 1979¹⁰⁰, Nils-Olof Jacobsson found that, in a random sample of Swedish physicians, the majority did not find it valuable to acquire knowledge about CAM, and only one fifth asked their patients about

CAM usage. In a thesis written in 1991¹⁰¹, Niels Lynøe found among Swedish physicians that therapies perceived as CAM were acupuncture, homeopathy, manual therapies, zone therapy/reflexology and herbal/natural remedies. In a questionnaire survey answered by 443 general practitioners in Stockholm, approximately 70% or more of the physicians conceived themselves as having theoretical knowledge about chiropractics, acupuncture, naprapathy, anthroposophical medicine or herbal medicine¹⁰². Therapies that were most commonly defined as CAM were anthroposophical medicine, herbal medicine, massage, zone therapy/reflexology and naprapathy. Less than 10% of the physicians had the skill to practise any CAM therapy. The most recommended therapies for patients were acupuncture, massage, chiropractics and naprapathy; it was also believed that, in the future, these would be funded by taxes. Only 20% of the physicians stated having a negative understanding of CAM.

In a questionnaire study among Finnish oncology physicians¹⁰³, three fourths did not support any integration of CAM into conventional cancer care. The overall perception was critical scepticism against CAM as being therapies that are unsafe and lack evidence. However, they thought that CAM could be used for anxiety and stress. Younger physicians and physicians who themselves used CAM in clinical practices were the most positive in comparison with other factors.

A survey on attitudes and use of CAM among physicians, nurses, clerks and therapeutic radiographers in oncology in Norway was reported in two articles^{104, 105}. The main findings indicate that therapies conceived of as “alternative” were healing, prayer, homeopathy and mistletoe, and of “complementary” were acupuncture, meditation, zone therapy/reflexology, music and art therapy and aromatherapy. Alternatives were also perceived as more negative as compared to complementary. The most personally used CAM therapies were massage and acupuncture. Demographics support that females are more positive towards CAM and consume more CAM compared to men. Age also mattered, where people younger than 35 years were a predictor for higher use of CAM. Concerning profession, physicians had used less CAM in comparison to the other professions.

In a questionnaire study among hospitals in Norway and Denmark about CAM therapy use in conventional care, approximately 50% and 31%, respectively, of the hospitals used it¹⁰⁶. Acupuncture was the dominant therapy offered. Findings also reveal that the number of clinics offering CAM has doubled in Norway and tripled in Denmark before to after the year 2000. Indications for which CAM was given were symptom management (pain,

insomnia, nausea, anxiety, relaxation), signs (oedema, infertility, inadequate lactation) and medical diagnosis (diabetes, arthritis).

Interest in CAM in the health care sector has increased during the past decades in Scandinavia^{105, 106}. In addition to the growing use of CAM in the society, factors that are perceived to contribute to this increased interest have been reported to be a growing body of evidence and personal interest among health care workers¹⁰⁶. However, there is a lack of research in this area.

1.1.6 Previous research on CAM in surgical care

Patients' perspective

Previous trials indicate a prevalence of CAM usage among surgery patients between 3% and 90%, with a mean prevalence of 53%^{76, 107-120}. The use of CAM often occurs in a combination of various therapies, not a single therapy alone¹¹⁸. Current knowledge of CAM use by surgery patients is presented in Table 4.

In previous population studies, surgery patients that use CAM are more often women, younger and more highly educated^{76, 94, 115, 117-119}. However, an Italian study found that elderly (age 70-95) surgery patients used herbal remedies to a greater extent in comparison to the younger group (age 18-47)¹¹².

Surgery patients using CAM have been discussed in terms of ethnicity, but must be connected to the actual population's culture, economics and geography and not be generalized^{94, 119}.

Several studies illustrate the lack of communication about CAM between patients and health care staff and the fact that patients do not revile their use^{76, 110, 111, 115}. These studies also comment on the risks of neglecting this aspect of anamnesis.

Some studies report an interest, mainly in those patients already using CAM, towards an integration and supply of CAM during their surgical care^{108, 117, 118}.

Table 4. Summary of international reports of usage of different CAM therapies among surgical patients from 2000 to 2010.

National context	Most common CAM therapies used by surgical patients (percentage displays proportion of patients who used a specific therapy)	Study design and participation	References (chronological order)
USA (New York, NY)	Vitamins (53.6%) Prayer (36.1%) Nutritional therapy (17.1%) Massage (11.4%) Chiropractics (11.4%) Meditation (11.4%) Herbs (9.9%) Acupuncture (4.2%) Homeopathy (3.0%) Reflexology (3.0%)	Questionnaire study Context: Cardiothoracic surgery patients n=263 RR ¹ = 70% CU ² =75%	Liu et al. ¹¹¹
USA (New Haven, CT)	Massage therapy (15.2%) Herbal therapy (9.7%) Relaxation (8.3%) Acupuncture (6.6%) Aroma therapy (5.7%) Yoga (5.4%) Magnet therapy (4.2%)	Questionnaire study Context: Elective outpatients n=857 RR ¹ =85.7% CU ² =32%	Wang et al. ¹¹⁸
USA (New Haven, CT)	Self- prayer (25.2%) Herbal medicine (6.8%) Mega-vitamins (6.8%) Relaxation techniques (6.6%) Chiropractics (5.4%) Massage and reflexology (5.2%) Spiritual healing (2.5%) Self-help group (2.2%) Aromatherapy (2.1%) Vegetarian/macrobiotic diet (2.1%)	Questionnaire study Context: In- and outpatients n=1235 RR ¹ =71.9% CU ² =57.4%	Wang et al. ¹¹⁷
USA (New York, NY)	Herbal medicine (57%) Chiropractics (18.8%) Acupuncture (14.5%) Hypnosis (10.8%) Homeopathy (8.6%) Spiritual healing (7.4%)	Questionnaire study Context: Comprises 10 surgical specialities n=2186 RR ¹ =65% CU ² =Unknown	Adusumilli et al. ¹⁰⁷
USA (Detroit, MI)	Herbal medications (incl. homeopathy and mega vitamins) (31%) Body/structure interventions (Chiropractic, massage, acupuncture) (17%) Mind/spirit interventions (Yoga, hypnosis) (3%)	Postoperative telephone interview Context: Mostly breast and gastric surgery patients n=151 RR ¹ =Unknown CU ² =40%	Velanovich et al. ¹¹⁹
United kingdom (Scotland)	Herbal treatment (incl. Cod liver) (86.6%) Acupuncture (13.4%) Massage (10.7%) Aromatherapy (9.6%) Chiropractics (9.3%) Reflexology (8.2%) Osteopathy (6.9%) Homeopathy (5.8%) Yoga (4.8%) Spiritual healing (4.8%)	Questionnaire study Context: General, cardiac and vascular surgery wards n=430 RR ¹ =95% CU ² =68%	Shakeel et al. ¹¹⁵
Australia	Non-herbal supplements (60.3%) Massage therapy (45%) Chiropractics (39.7%) Music therapy (39.1%) Herbal/botanic supplements (38.2%) Self-prayer for healing (38.2%) Meditation/relaxation (38.0%) Aromatherapy (28.9%) Acupressure (22.1%) Acupuncture (19.8%)	Questionnaire study Context: Surgical wards n=353 RR ¹ =73.5% CU ² =90.4%	Shorofi et al. ⁷⁶

¹RR=Response rate, ²CU= CAM using rate among the study participants

As seen in Table 4, among the top used therapies are herbal or non-herbal medicines or remedies. Because of this generalized area, a further summarisation of the current knowledge of herbal or non-herbal medicine usage among surgical patients is presented in Table 5. A risk of using several of the medications presented in Table 5 during surgical care has been suggested in scientific publications¹²¹⁻¹²⁴. However, the level of evidence for a risk in combination with surgery is low, and many suggestions for risks of interactions have been put forward.

In terms of CAM therapies in general, Norred et al.^{113, 114} indicate that specific herbs and substances are seldom taken separately but rather in combination. The use of herbal and non-herbal medicine during surgical care is an important aspect of the CAM debate in this context but is not discussed further in this thesis.

Table 5. Summary of the most commonly scientifically reported herbal or non-herbal supplements used by surgery patients

Medicament	References of usage
Purple Coneflower (<i>Echinacea purpurea</i>)	107-110, 112, 113, 115, 116, 119, 125-127
Garlic (<i>Allium sativum</i>)	107-110, 113, 115, 116, 125-128
St. John's wort (<i>Hypericum perforatum</i>)	107, 110, 115, 116, 119, 125-127
Ginseng (<i>Panax ginseng</i>)	107, 110, 112, 113, 115, 116, 119, 126-128
Maidenhair tree (<i>Ginkgo Biloba</i>)	107, 108, 110, 113, 115, 116, 119, 125, 127
Valerian (<i>Valeriana officinalis</i>)	107, 109, 110, 112, 115, 127
Glucosamine ($C_6H_{13}NO_5$)	108, 115, 119, 126, 128
Evening primrose oil (<i>Oenothera biennis</i>)	108, 115, 116, 119, 126
Aloe Vera	107, 112, 115, 125
Saw Palmetto (<i>Serenoa repens</i>)	110, 119, 126, 128
Fish/cod liver oil	108, 115, 126, 128
Kava Kava (<i>Piper methysticum</i>)	107, 109, 110, 127

Only one published article based on Swedish surgery patients was identified, and it investigated pre- and postoperative usage of CAM among surgically treated breast cancer patients in the south of Sweden¹²⁹. The most used biological CAM therapies preoperatively were Omega-3, Echinacea, flaxseed and ginseng. Corresponding therapies for the postoperative three to six months was Omega-3, flaxseed, garlic and apple cider vinegar. Factors for higher CAM use were antidepressive agents and alcohol consumption. No difference was found in survival between CAM users and non-CAM users.

The health care perspective

Research specifically on health care professions in the surgery context is rare. Several published studies on health care professionals' understanding, knowledge and use of CAM include surgical staff, but it is seldom possible to separate them in the results^{53, 65, 74, 90}. There is however a small number of relevant publications that have come out in the past ten years that can be used to access approaches towards CAM in the area of surgery.

The understanding of the usefulness of CAM in surgery varies; German physicians⁸¹ and American nurses⁶² perceive it to be less important to use CAM in the surgical or acute setting and feel that education is unimportant. In contrast, the majority of surveyed Canadian health care professionals⁶⁵ perceived that CAM had an important role in pre- and postoperative care. In addition, Russian⁹⁰ and Japanese physicians⁴⁷ perceived surgeons and surgeons in the oncology setting as being much more likely to use CAM in practice, in comparison to other specialties.

Almost half of the Australian surgical ward nurses included in a study use CAM in the care of surgery patients, and the most practiced therapies were massage, music therapy, non-herbal supplements, relaxation and meditation techniques, and aromatherapy⁷⁶. Among gynecologists in the U.S., CAM therapies perceived to be effective were biofeedback, chiropractics, acupuncture and meditation, and the most harmful CAM therapies were perceived to be herbal medicine and homeopathy⁵⁸.

It is difficult to evaluate the level of knowledge about CAM in the surgical context. One study among Californian and Australian nurses⁵³ reveals that half of the participants had a very low knowledge of CAM.

Because of the low number of publications, there are only indications about demographic predictors, such as females physicians being more likely, compared to male physicians, to be positive towards CAM⁵⁸ and nurses with

a higher perceived level of knowledge about CAM also had a more positive understanding of CAM⁷⁶.

Therapies and treatments

Few articles have discussed the general usability of CAM therapies in the surgical setting. Hart¹³⁰ suggests that there is time to focus on integrating evidence based CAM therapies in the management of surgical pain and anxiety. She recommends such therapies as massage, hypnosis and music therapy. These therapies, as well as prayer, acupuncture, yoga and herbal and non-herbal medicine, have previously been discussed in surgical care^{131, 132}.

The following brief summary will highlight some of the reviews and meta-analyses that concern that context of surgical care. The most common CAM therapies will be reported here, with an awareness of the existence of additional, smaller published reviews of more unfamiliar therapies. The main body of overview articles, reviews, systematic reviews and meta-analyses on CAM therapies with areas adjacent to surgical care deals with cancer, specifically or in general, palliative and supportive cancer care, neck or lower back pain, and relief-in-labour therapies. These reviews will not be discussed in this summary. The following presentation will be according to the NCCAM's domains of CAM described earlier.

Natural products

Herbal medicine, where the majority of treatments come from traditional Chinese herbal medicine, has been reviewed extensively in the past decade. Review articles suggest possible benefits and promising results in surgical care for patients with pancreatitis¹³³, in treating bleeding haemorrhoids¹³⁴, dysfunctional uterine bleeding¹³⁵, small bowel obstruction¹³⁶, constipation¹³⁷ and functional non-ulcer dyspepsia¹³⁸⁻¹⁴⁰. However, due to poor methodological designs and a low number of subjects, recommendations have not been made. A surgical area in which the use of herbal medicine has not been successful as treatment is Ear-Nose-Throat (ENT)¹⁴¹.

Concerning treating infections, possible benefits from herbal medicine have been suggested when used as a complement to conventional treatment in acute respiratory infections¹⁴² and in fungal infections¹⁴³, both severe postoperative complications after major surgery. However, herbal medicine in the treatment of bacterial infections has not been supported by evidence, including treating helicobacter pylori infections¹⁴⁴.

Although not recommended, promising, findings have been reported in commonly treated cancer diagnoses in surgical care such as hepatocellular cancer^{145, 146}, nasopharyngeal carcinoma¹⁴⁷ and cervical cancer¹⁴⁸.

Another area of natural products is aromatherapy, which has been suggested to be effective as a complement to pharmacological treatment for postoperative nausea and vomiting, with no observed side effects¹⁴⁹⁻¹⁵¹.

Mind and Body medicine

Acupoint stimulation, a branch of mind and body medicine, can be conducted in many ways, such as by pressure or needles. In surgical care, postoperative pain has been widely studied. Some reviews argue that acupuncture can be recommended in pain management in the postoperative phase, based on positive research findings and the absence of serious adverse effects^{152, 153}. Reviews of auricular acupuncture, i.e. acupuncture performed on the ear, have also indicated a reduction in postoperative pain, but there is still a lack evidence to be able to make recommendations¹⁵⁴. Others have not found any support of acupoint stimulation easing postoperative pain and argue that there is too small an effect with no clinical relevance^{155, 156}. Neither has magnet acupuncture been found to be beneficial for postoperative pain¹⁵⁷.

Postoperative nausea and vomiting is another major problem that must be managed in surgical care. Acupoint stimulation on the P6 point, located on the inside of the wrist, has indicated positive effectiveness in the same range as pharmacological treatment for postoperative nausea and vomiting¹⁵⁸⁻¹⁶¹. Holmér Pettersson and Wengström¹⁶² indicate that preoperative acupuncture to P6 may reduce nausea but not vomiting in the postoperative phase.

Acupuncture has also been indicated to be effective in relieving pain and anxiety during medical procedures such as gastrointestinal endoscopy¹⁶³.

A review by Streitberger and Joos¹⁶⁴ evaluated acupuncture in the management of gastrointestinal diseases. They did not find evidential support for specific effects of acupuncture in the broad management of these diseases, but suggest unspecific effects as reasons for higher quality of life among patients treated with acupuncture.

Music therapy in surgical care is now widely used and current reviews of its effectiveness suggest a pain and stress relieving effect, during medical interventions or in the postoperative phase¹⁶⁵⁻¹⁶⁹. Although music therapy reduces pain levels and the need of pharmacological interventions, the

magnitude of that reduction and the actual clinical impact is unknown¹⁶⁸. Music therapy has also been found to lower blood pressure and reduce the need of pharmacological support during invasive procedures such as surgery¹⁷⁰.

Concerning reflexology, no review has investigated the surgical context. However, general reviews of the effectiveness of reflexological intervention have concluded an absence of effectiveness¹⁷¹ while other reviews have identified benefits in symptom management of using reflexology in the care of cancer patients^{172, 173}. However, the number of well designed studies is very low, and Ernst and Köder^{174, 175} argue that perceived or observed efficacy of reflexology probably is due to other, non-specific effects.

Few studies of therapies classified as exercise, such as tai chi or yoga, have been performed in the surgical context. Two conditions are effected by using yoga: depression and risk of cardiovascular disease¹⁷⁶. As concerns pain, a recent meta-analysis indicates that it can be useful, even when given in short interventions¹⁷⁷. Short term benefits have been seen for orthopaedic symptoms such as carpal tunnel syndrome¹⁷⁸.

Cancer survivors, often treated with surgery and therefore suffering from symptoms caused by surgery may also be helped by exercise such as tai chi, qi gong and yoga, to increase their quality of life¹⁷⁹.

Manipulative and Body-Based practices

There are only a few review publications in this domain. Massage has been suggested to be beneficial for chronic constipation¹⁸⁰ and to be relaxing and pain and anxiety relieving in the acute and critical care context¹⁸¹. Based on tradition and clinical experience, chiropractics has also been suggested to be useful in the treatment of gastrointestinal signs and symptoms. However, because of the lack of published reports, recommendations should not be issued¹⁸². Likewise for kinesiology, research has not found it to be of diagnostic or therapeutic benefit in any condition so far¹⁸³.

Other CAM practices

Research relevant to surgical care in this domain has only been identified in the field of energy therapies (healing touch, therapeutic touch, energy healing, Reiki). Hence, there are very few high quality published papers to review. The majority of reviews investigating management of signs and symptoms, including those relevant in the postoperative phase such as

postoperative pain and wound healing, therefore conclude that no recommendations can be made¹⁸⁴⁻¹⁸⁷. However, a Cochrane review including all types of touch therapies indicates a modest relieving effect on any type of pain but claims that hard evidence is still missing¹⁸⁸.

Whole medical system

In the definition of whole medical system lies the possibility to treat diseases, signs and symptoms in a wide spectrum of medical disciplines, including those related to surgical care. Whole medical systems, such as traditional Chinese medicine and Ayurveda, include different types of therapies.

In the case of traditional Chinese medicine, findings presented above under natural products, such as traditional Chinese herbs, and under mind and body medicine, such as acupuncture and acupressure, may be a part of the system. In addition to those findings, Lin et al.¹⁸⁹ have cautiously concluded that traditional Chinese medicine may be useful in treating and managing constipation. Wu et al.¹⁹⁰ also state that current evidence suggests that traditional Chinese medicine as a complement to conventional radio and/or chemotherapy is more effective towards oesophagus cancer than conventional treatment alone. On the other hand, Lin and Huang¹⁹¹ claim that current evidence does not support the use of traditional Chinese medicine for helicobacter pylori infections due to the effectiveness of current conventional treatment (the triple therapy).

Concerning Ayurveda, Biswas and Mukherjee¹⁹² summarised plants used in Ayurvedic medicine in wound healing management, which is an important area of surgical care. Despite the existence of publications on the matter, the authors only state that some plants have proven effective in experimental models. The clinical effectiveness of these plants is unknown.

Homeopathy, which has been a highly debated therapy during the last decade, has not been rigorously reviewed in the area of surgery, despite scientific turbulence. One relevant review done in 1997 by Barnes et al.¹⁹³ found support that homeopathy could reduce time with postoperative ileus. However, a final conclusion and recommendation could not be made, and further recommendations were more randomised controlled trials (RCT) designed studies. Homeopathy has also been found promising in cancer care, according to Milazzo et al.¹⁹⁴, but the lack of rigorously designed and performed research studied makes it difficult to issue any recommendations.

CAM therapy research in conclusion

Review articles have been published on common symptoms in surgical care such as postoperative pain or less severe diagnoses such as constipation or haemorrhoids. A consistent recommendation in all of the reviews and meta-analyses is higher rigour in future trials. The small number of authors of review article can affect conclusions, such as in the case of Professor Edzard Ernst's group which has contributed to a huge body of publications, even in this brief review summary^{143, 144, 154, 156, 174-176, 180, 182, 193, 195}.

As this thesis focuses on therapies in surgical care, two therapies have been selected for further presentation: transcutaneous electric nerve stimulation and osteopathic medicine.

1.2 Transcutaneous electrical nerve stimulation (TENS)

Electricity has been used as an analgesia and anaesthesia since ancient times, often delivered by eels or ray-fish¹⁹⁶. In modern health care, non invasive treatment of pain with electric current also exists in transcutaneous electrical nerve stimulation (TENS). The general principle of TENS is to trigger particular bunches of nerve fibres in order to create specific psycho-physical response¹⁹⁷. This is created by attaching two conducting pads onto the surface of the skin and then delivering a pulsating current. There are different types of TENS treatment depending on the amplitude (i.e. power of stimulation), frequency (i.e. pulse interval), duration of each pulse, and patterns of the pulse. The most commonly used classification types of TENS are conventional and acupuncture or Acu-TENS¹⁹⁷. Since paper II in this thesis focuses on conventional TENS, only this type of TENS will be described further.

The main purpose of conventional TENS treatment is to, by an adjusted amplitude of the current, solely activate the A β nerve fibres, which are relatively large in diameter and located near the surface of the skin, see Figure 2. If the treatment is given correctly, the recipient perceives a strong, painless stimulation. If a higher amplitude is given, deeper lying nerve fibres will be activated, including the nociceptive, (i.e. pain mediated) A δ and C nerve fibres, as well as muscle efferent nerve fibres. The recipient then experiences a painful stimulation with possible muscle contractions.

Different explanatory models have been proposed for the pain relieving effect of conventional TENS and other forms of sensitivity treatment against pain¹⁹⁸. The best known is the gate control theory presented by Melzack and Wall, which in a simplified summary states that stimulation of the A β nerve fibres suppresses mediation from nociceptive nerve fibres at the dorsal horn of the spine¹⁹⁹. This theory is however questioned and as yet not proven. Several alternative hypotheses have been suggested¹⁹⁸, but no common consensus has been reached. The current debate concerns whether it is cerebral mechanisms rather than peripheral in the effect of tactile stimulation on the skin²⁰⁰.

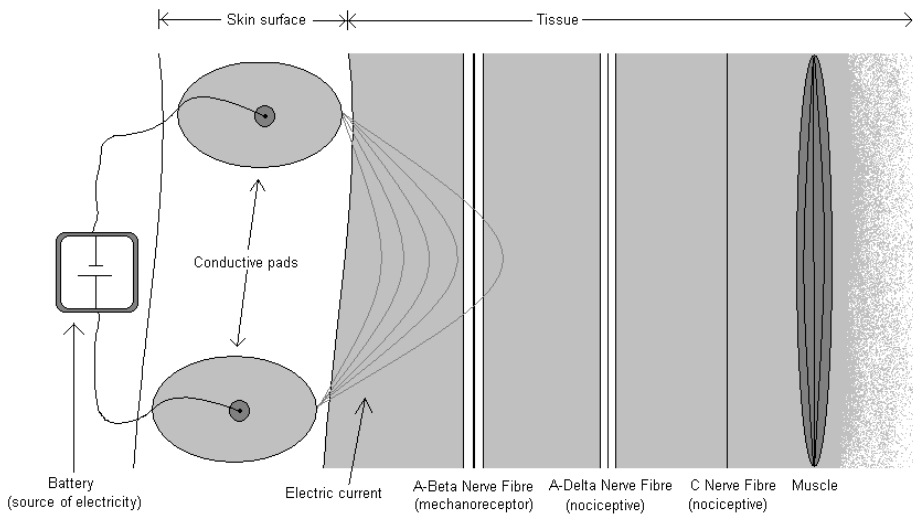


Figure 2. Conventional TENS treatment

Concerning treatment characteristics, high frequency TENS (80Hz) has been considered best for pain management²⁰¹ and for stable pulse during the treatment²⁰². It has also been suggested that daily use of TENS may develop tolerance to its pain relieving effect²⁰³.

Regarding evidence of TENS treatment, a huge number of articles have been published. Several Cochrane reviews have also investigated the effectiveness of TENS at different types of signs and symptoms²⁰⁴⁻²¹⁶. These reviews report a lack of high quality evidence and inconclusive results in current publications investigating TENS. However, a few conclusions concerning its effective usage are drawn from these reviews: high frequency TENS towards dysmenorrhoea²⁰⁷, the effectiveness of TENS over placebo in pain control for

knee osteoarthritis²¹², TENS as pain reducing in labour²¹³ and variance of effects in pain in patients with rheumatoid arthritis²¹⁴.

1.2.1 TENS in surgical care

The clinical use of TENS in the surgical area has been characterized as complementary to the standard care. Evidence of the effectiveness of TENS for postoperative pain is contradictory. While one literature review could not find support for this²¹⁷, smaller studies have reported benefits of TENS in reducing pain in the postoperative setting in gynaecological surgery²¹⁸⁻²²⁰, thoracic surgery²²¹⁻²²³, spinal surgery²²⁴ and abdominal surgery^{225, 226}. In contrast, other trials have not found any significant pain relieving benefits of TENS in abdominal surgery²²⁷⁻²²⁹.

TENS' effectiveness in reducing analgesia consumption has however been concluded in a meta-analysis²³⁰. Recommendations have been made for TENS as a part of the arsenal against postoperative pain in a multimodal setting, since TENS does not give any side effects^{152, 231}.

Despite controversies, TENS may be used in a postoperative setting. Since many patients undergoing major surgery are given some form of invasive, continuous analgesia regime, the role of TENS must be investigated. One of these pain relieving regimes is epidural analgesia.

1.2.2 Epidural analgesia

Managing a postoperative symptom such as pain can be done in multiple ways. A conventional, modern, commonly occurring invasive strategy is administrating analgesia via a catheter, located outside the outer cerebral membrane, dura mater, between the walls in the vertebral canal²³². This analgesia regime is referred to as epidural analgesia (EDA). By administering analgesia as an infusion, the drug is transported over the membrane and into the cerebral spinal fluid and affects the opiate receptors in the spinal tissue for the location in question. EDA can be used against pain occurring from the upper part of the thorax down to the toes. The effect is numbness or loss of sensitivity and painlessness in the dermatome represented by the level of spinal distribution of analgesia. If the analgesia is lipophil, the onset is fast, approximately five minutes²³². EDA is used in cases in which moderate to severe postoperative pain is suspected.

In major abdominal surgery, which is the surgical area of investigation in this thesis, the EDA catheter is placed preoperatively and infusion started intraoperatively. Infusion then continues, sometimes with an adjustment in

rate, for five to ten days postoperatively and is then terminated in favour of a general, per os and intravenous, analgesia. This transition, from EDA to general analgesia, is in clinical knowledge a difficult phase, primarily for the patient with unsuspected pain levels when the numbness fade, but also for the health care personnel, as it is difficult to find optimal levels of analgesia for the patient.

In some clinics, TENS has been sporadically used during this transition but without investigating its effectiveness as a symptom management tool.

In conclusion, the transition from EDA to general analgesia is a difficult postoperative phase in terms of pain, and TENS has been used as a complement to standard analgesia but with a lack of evidence of its effectiveness.

1.3 Osteopathic Medicine

Many CAM therapies are called manual medicine. These therapies give treatment mainly by the use of the therapist's hands and have been documented since Hippocrates²³³. Examples of such known therapies in Sweden are massage, chiropractics and naprapathy²³⁴. Another internationally well-known manual discipline is osteopathic medicine.

1.3.1 History of Osteopathy

During the mid and late 1900th century, an American rural physician and military surgeon, Dr. Andrew Taylor Still (1828-1917; Figure 3), began, on the basis of his criticism of the current medical practice and the personal tragedy of the loss of four children in meningitis and pneumonia, to compose a set of manual techniques with the aim of promoting the body's self-healing capacity²³⁵.



Figure 3. Dr. Andrew Taylor Still, founder of osteopathy (published with permission Museum of Osteopathic MedicineSM, Kirksville, MO [20001.01.04]).

In 1874 he announced this discipline as a new section of medicine, not as a complement or alternative. The first school for osteopathic physicians was opened in Kirksville, Missouri in 1892. Today there are approximately 26 osteopathic colleges in the USA and osteopathic physicians (Doctor of Osteopathy; DO) have a status equal to that of their conventionally trained colleagues (Doctor of Medicine; MD) in all medical fields. There are approximately 70 000 osteopathic physicians in the USA today²³⁶.

Osteopathy has evolved in another way in Europe. A student of Dr. Still, Dr. John Martin Littlejohn was the first trained osteopath to teach osteopathic medicine in Europe (England)²³⁵. However, because of different circumstances, the European osteopaths did not gain acceptance as physicians, and instead developed the manual techniques as an independent treatment discipline, outside of the conventional, physician controlled medical system.

In Sweden, osteopaths have been trained since the 1980s in accordance with the British osteopathic tradition and are not registered in contrast to other manual therapies such as chiropractors or naprapaths. Osteopathy is relatively unknown in Swedish society and there are at present barely 150 osteopaths in

Sweden, in contrast to other well-known manual therapies such as registered chiropractors, of whom there are approximately 650 in Sweden.

1.3.2 Osteopathic interventions and surgical care

The philosophical core of osteopathic medicine is the assumption that a human is not a sum of its parts, but rather an entirety of all its functions including an existential sphere. This unit of the whole is perceived as having a self-regulating and healing capability. The relationship between structure and function is also essential in osteopathic medicine, which implies that a disease or trauma to the body structure, e.g. bones or ligaments, could lead to dysfunctions in the function/physiology of the body, e.g. internal organs, and vice versa. A disease, injury or other form of unnatural body function is referred to as a dysfunction in osteopathic medicine.

Osteopathy techniques, often called osteopathic manipulation (OM), consist of a variety of treatment areas. These can be divided into structural or functional techniques.

Structural treatment techniques are generally performed by directing the force of the technique towards the direction of the limited/dysfunctional range of motion and, by applying a force, affect the barriers of the restricted motion. Examples of structural techniques are High Velocity Low Thrust (HVL) and Muscle Energy Techniques (MET).

In contrast to structural techniques, functional treatment is generally performed by directing the dysfunctional area in the direction of ease, i.e. away from the limited range of motion. These techniques generate a relaxation or release of tension in the dysfunctional area. Examples of functional techniques are Balanced Ligamentous Tension (BLT) and Cranial Osteopathy

A survey among American osteopathic physicians indicates that structural techniques are more often used than functional techniques²³⁷. However, the border between structural and functional techniques in clinical practice is dynamic because of the individual adaption of osteopathic treatment. For example, soft tissue techniques can be both structurally and functionally applied depending on tissue characteristics, tissue response and patient compliance.

There is a wide range of models of explanation for manual therapies, including osteopathic techniques, such as the biomechanical model, the proprioceptive model, the nociceptive model or the afferent reduction model.

It is however not within the scope of this thesis to investigate and report explanations of mechanisms.

Patients are treated with OM for a wide range of signs and symptoms, but research conducted in the last decades has mainly focused on OM against neck and lower back pain. The reason may be that the most common reasons for visiting an osteopath are because of musculoskeletal discomforts²³⁸.

As for the surgical context, surveys among American osteopathic physicians indicate a low usage of OM in general surgical care and in orthopedic care^{239, 240}. This might explain why only some smaller trials have focused on diagnosis, signs and symptoms in this area of care. Concerning non operated, surgical diagnoses, previous trials indicate support for its use against chronic constipation²⁴¹ and to shorten hospital stays in the case of pancreatitis²⁴².

Postoperatively given OM has also been studied in some surgical areas. In an orthopedic setting, a minor, single-blinded RCT (n=38) found a positive postoperative outcome on mobilization, analgesia consumption and length of hospital stay after hip and knee surgery²⁴³. For trials in thoracic surgery, immediate postoperative OM treatment after coronary artery bypass graft surgery was found in a pilot study to be favourable in cardiac/hemodynamic recovery²⁴⁴. OM in gynecological surgical care in a minor, double-blinded RCT by Goldstein et al.²⁴⁵ suggests that OM in combination with morphine can enhance postoperative pain management after abdominal hysterectomy. Crow and Gorodinsky²⁴⁶ investigated, in a retrospective chart review, OM in the case of postoperative ileus. They found that patients who received OM had significantly shorter hospital stays.

In addition to published clinical trials, postoperative intervention approaches have been suggested by Nicholas and Oleski²⁴⁷. In a survey among a variety of postoperative patients, Pomykala et al.²⁴⁸ found that OM given postoperatively was perceived by the majority of the participants to reduce pain, stress and anxiety, and to improve recovery and overall comfort.

In conclusion, there is a gap in the available knowledge about OM in surgical care. However, recent studies show interesting results of OM in this setting that may be investigated further. One of these areas is symptom management after thoracotomy.

1.3.3 Thoracotomy

Surgery in the lungs or the oesophagus requires surgical access by an incision between two ribs, called thoracotomy. It has been found to be among the

most painful procedures for the human body to experience^{249, 250}. Unfortunately, remaining and chronic pain, so-called post-thoracic pain, defined as pain remaining more than two months after surgery²⁵¹, has been observed among patients at a prevalence of 25% to 80%²⁵²⁻²⁵⁶. The pain probably derives from both myofascial and neuropathic elements²⁵⁷. A correlation to genetic characteristics has not been found and the severity of the pain is rather a result of the surgical procedure²⁵⁸. In addition to the pain, long-term follow-ups have identified symptoms such as thoracic stiffness and breathing impairment with dyspnoea after thoracoabdominal oesophagus resection^{259, 260}. Factors that primarily influence the pain are types of pain management, where epidural analgesia seems to be a better choice than intravenous²⁶¹. There is as yet no evidence for effective conventional interventions in treating these symptoms.

In the clinical setting it is known that patients who experience these symptoms turn to other forms of care, such as CAM therapies. In a communication, Minor²⁶² reports on experiences of two cases where patients with severe post-thoracic pain were helped by chiropractic treatment. Concerning evidence for this, only a small pilot study by Hirayama et al.²⁶³ found pain relief benefits in giving manual medical treatment to thoracotomy patients. As regards osteopathy, Jones and Lockwood²⁶⁴ indicated positive effects of osteopathic intervention after thoracotomy in an unpublished case report.

In conclusion, many patients suffer from post-thoracic symptoms and, while there is no current treatment to give or refer to, there are indications of benefits from manual medicine such as osteopathy.

1.4 Introduction in summary

The definition of what CAM is or should be varies. In Sweden, there is a culture and tradition of a sharp border between conventional medicine and therapies not included in the formal medical education of registered health care professions.

A number of articles have addressed health care professions' understanding of CAM, both internationally and in Scandinavia. In summary, the perceived level of knowledge about CAM is low but there are deviations on usage, recommendations and practice. However, a desire for education in the area is commonly reported by health care workers. As concerns health care personnel in the surgical context, only international publications exist and they reveal findings similar to those in the general health care population.

The use of CAM in the general population and among patients in Scandinavia and Sweden is significant. A majority of patients in surgical care use CAM, according to mean values presented in international publications. However, risks of the use of CAM have been suggested, such as interactions with conventional care.

The current knowledge about CAM usage among surgical patients is greater than the knowledge about health care professions' perception and understanding of CAM in a surgical care context.

Evidence-based recommendations of CAM therapies suitable for use in surgical care have not been made in the current review literature, but there are suggestions of possible benefits. Main obstacles to recommendations are the limited published research, poor methodological design and low number of subjects.

Two therapies that are being used in Sweden, TENS by health care staff and osteopathic medicine by patients, were emphasised in the introduction to this thesis. TENS has been widely studied in the area of surgery, while osteopathic intervention in surgical care has been poorly investigated.

2 RATIONALE

Surgical patients use CAM. Perceptions and understandings of CAM and its therapies vary between populations and studies. The understanding of CAM has been explored among health care workers in general, but there is currently a lack of knowledge in the country of Sweden and internationally in the context of surgical care. The level of knowledge about CAM among health care workers is a factor that shows correlations with the interest, use and referral of patients to CAM therapies. The use of CAM remedies by patients may also be a hazard in peri- and postoperative care, carrying with it a risk of unexpected incidents, life threatening events and higher health care costs. It is therefore the first rationale in this thesis to investigate the nature of these matters in Swedish surgical care.

CAM therapies have been investigated and reviewed in areas of surgical care with differing results in terms of efficacy and effectiveness. Parallel with the development of new surgical procedures and new pharmacological treatments comes the adoption of different CAM therapies in new ways in surgical care. TENS is one of these therapies that has been proposed to be of benefit in relieving pain but that has not been investigated as a complement in the transition from epidural to general analgesia. Osteopathy is another CAM discipline, developed in the medical area, that has diverse methods and treatment approaches specified by the relationship between structure and function of the body and for which there are indications of usefulness against chronic, postoperative signs and symptoms. It is therefore the second rationale of this these to investigate effectiveness and feasibility of these two therapies in the management of symptoms after major surgery.

3 AIM

The overall objective of this thesis was to investigate complementary and alternative medicine in the surgical context with a focus on perceptions and understanding among health care professions of complementary and alternative medicine and the usefulness of therapy in managing symptoms in clinical settings.

Specific aims

- Paper I: To describe different perceptions of complementary therapies among registered health care professions in Swedish surgical care
- Paper II: To explore perceived knowledge about complementary and alternative medicine among registered health care professions in surgical departments at Swedish university hospitals
- Paper III: To investigate the effect of TENS as a pain relieving complement at the transition from EDA to general analgesia after surgery by horizontal, abdominal incision
- Paper IV: To investigate the effect of osteopathic intervention on chronic pain and remaining limitations to thoracic range of motion and breathing in patients following thoracoabdominal resection of the oesophagus

4 METHODS AND PATIENTS

This thesis is divided into two sections: perceptions among health care staff and the understanding of CAM and clinical use of CAM therapies in the management of postoperative signs and symptoms after major surgery. An overview of the research design for the papers is given in Table 6.

Recent international research on the understanding of CAM among health care workers has indicated an increase in interest, but with a lack of knowledge. The present situation in surgical care in Sweden has not been known. Hence, the investigation of perceptions and understandings of CAM started with an inductive approach, using semi-structured individual interviews among registered health care professionals in Swedish surgical care (paper I). The perception of the experience of the phenomenon of CAM was studied. To test the generalisability of the results of that study, a questionnaire was constructed, tested and distributed to surgery clinics in all university hospitals in Sweden (paper II).

Because of my employment at the department for major upper gastro intestinal surgery and professional experience of problems with postoperative pain during transitions between analgesia regimes and sporadic use of TENS, the work reported in paper III was initiated as a randomized controlled trial (RCT). TENS was considered a complementary therapy to the pharmacological intervention. During this time, a patient consulted the clinic about the safety and benefits of turning to osteopathy for his postoperative thoracic pain. The study reported in paper IV was initiated because of the absence of evidence in this matter. The low number of possible participants directed the study towards the choice of a single-subject research design.

It is wise to understand the differences between efficacy and effectiveness. Efficacy is the causality between a treatment and its effect in optimal conditions (such as in an RCT), but it does not evaluate a treatment's usability and effect in clinical practice. Effectiveness is how well a treatment works in real clinical practice and not in a manipulated environment (e.g. a lab), but it does not evaluate the causality between the treatment and a specific effect or mechanism.

Table 6. Research design overview

Paper	Aim	Study design	Participants	Analysis
I	To describe different perceptions of complementary therapies among registered health care professions in Swedish surgical care	Qualitative interview study	16 registered health care staff; 4 Physicians 4 Nurses 4 Dieticians 4 Physiotherapists	Phenomenography
II	To explore perceived knowledge about complementary and alternative medicine among registered health care professions in surgical departments at Swedish university hospitals	Quantitative questionnaire study	737 registered health care staff; 158 Physicians 519 Nurses 60 Physiotherapists	Chi-2 test Spearman rank correlation coefficient One sample t-test Kruskal-Wallis
III	To investigate benefits of transcutaneous electrical nerve stimulation as an analgesic complement at the transition from epidural analgesia to general analgesia after surgery by horizontal, abdominal incision	Randomized controlled trial (RCT)	20 patients; 9 Active TENS 11 Sham TENS	Area under the curve Fishers non-parametric test
IV	To investigate the effect of osteopathic intervention on chronic pain and remaining limitations to the thoracic range of motion and breathing in patients operated with thoracoabdominal resection of the oesophagus	Single-subject research design	8 patients	Graphical demonstration Two standard deviation band methods

4.1 Paper I

4.1.1 Phenomenography

In the beginning of the 1980s, a group of education researchers at the University of Gothenburg suggested an alternative approach in qualitative research. The group was called the INOM group and their research approach was phenomenography.

Phenomenography is an empirical, descriptive and content-oriented qualitative research design²⁶⁵. It is distinguished from other qualitative designs by focusing on the differences in experiences of perceptions of a phenomenon, i.e. how people describe aspects of the world as they see it. It is when the variety of unique perceptions of a phenomena in a population should be studied that phenomenography is an adoptable research approach²⁶⁶. The results of phenomenographical research can be used in interpretations of how people react and respond to issues, topics, situations or environments²⁶⁷.

Central in phenomenography is the second order perspective. In contrast to the first order perspective, which comprises the general, common conception in a population of how something truly is, the second order perspective turns to each individual for his or her particular perception of a specific phenomenon^{265, 268}. Consequently, there is no right or wrong in a perception as it is never compared or excluded due to any degree of deviation from the common perception in a population. Ference Marton, one of the founders of phenomenography, suggests that there is a quantitative limit to different perceptions of a certain phenomenon experienced by people²⁶⁵.

Other words used in a way synonymous to perception in phenomenographical research are conception, understanding and interpretation. Regardless of which words are used, this always implies a unique standpoint that is taken for granted towards a phenomenon of which one or several persons has experience.

There are several ways of conducting phenomenographical analyses. Common to all approaches is the outcome space, which is the empirical product of descriptions of the particular phenomenon, often coming from semi-structured interviews. It is from the outcome space that deeper analysis is performed. Sjöström and Dahlgren's²⁶⁶ approach was used in paper I, which is adjusted to qualitative research in nursing science. This approach

also comprises a final step in which an essence, resembling that of phenomenology, of different perceptions may be constructed.

4.1.2 Participants

For the study reported in the first paper, a strategic, also known as purposeful or purposive, sampling of 16 clinically active registered health care professions in a Swedish university hospital was recruited. The purpose of using strategic sampling is to control and gain a variation in demographical variables: in paper I, profession, age, sex and work experience in surgical care. Professions included were physicians, nurses, physiotherapists and dieticians. Due to the inductive approach of this work, the purpose of including several professions was to expand knowledge from about how just one profession perceives CAM to gain knowledge of the perceptions in the work team in surgical care departments. Our assumption was that the patient does not interact with a single, isolated profession, but rather with all the members of a care team.

Informants were located through heads of staff of the surgical departments at a Swedish university hospital. The informants worked in different geographical sites and different surgical clinics but within the same hospital. The intention in recruiting informants was to get a broad selection as possible but with as little a connection to the researchers as possible.

In total, four informants from each profession participated: nine women and seven men, mean age 41.2 years, where the youngest was 23 and the oldest 63, and mean work experience in surgical care of 12.8 years with a range from one year to 28 years.

4.1.3 Data collection

As is common in phenomenographical research, data were collected by individual semi-structured interviews with all informants between April and December 2008. The interview was initiated by an open-ended question: “What are your experiences of the expression complementary therapies?” (Swedish: “Hur tänker du kring uttrycket komplementära terapier?”). From the informant’s responses, the interview was formed and further responses to questions resulted in new questions, as is common in phenomenographical practice²⁶⁵.

First, two pilot interviews were conducted to test the initial question and increase the perceptive of obstacles, pitfalls and effects that might influence the data collection. None was found, nor was any adjustment to the entry

question made, but valuable insight was gained in the interview technique in this, sometimes perceived by the informants, uninteresting subject. Data gained in these interviews were not included in the analysis.

All the interviews, including the pilot interviews, were audio taped and lasted between 25 and 50 minutes. A verbatim transcription was then made by a secretary and was checked for accuracy by the first author (Bjerså).

4.1.4 Data analysis

The phenomenographical interview analysis technique described by Sjöström and Dahlgren²⁶⁶ was used in paper I and follows seven steps:

1. *Familiarisation*: The interviews were read in order to gain an introductory overview of the empirical data.
2. *Compilation*: The most significant and important elements of the answers given in the interviews were identified.
3. *Condensation*: A reduction of each individual answer was done to find the central parts of longer responses and dialogues.
4. *Grouping*: A preliminary sorting was done where similar answers were tentatively grouped or classified.
5. *Comparison*: A first evaluation was made to form categories where borders between the grouped answers were established.
6. *Naming*: The categories were given names to emphasize and highlight their essence.
7. *Contrastive comparison*: Finally, the resemblance, uniqueness or essence of each category and the linkage between them were described.

First, all transcripts were read and analysed (steps 1-3) by each author and then compared. Only minor differences occurred, mainly differences in naming. Essential concepts in phenomenographical analysis are “what” and “how”. “What” the informants talked about, e.g. the first order perspective (steps 1-2), was presented as domains. “How” the informants talked about the “what”, e.g. the second order perspective (steps 3-4), comprised the qualitatively presented different variations in perceptions. The categories were formed by descriptions at a further integrated stage of analysis (steps 5-6). Finally, the essence constitutes a description of the unique characteristic in each domain

4.2 Paper II

4.2.1 Questionnaire studies

A survey design in a cross-sectional questionnaire study was used in paper II. This methodology aims at illustrations and calculations in a population sample, using statistics and distributions of the studied factors and, if possible, indicating general conclusions about the total population. Seldom is a primary variable set in this methodology. The goal is rather to explore factors, dimensions or attributes in a specific field or a specific question.

Cross-sectional implies that the data reflect a snapshot of reality, since it is measured at a specific time and that each subject is measured only once.

Questionnaires are a collection of questions and statements to which the study participants respond and are aimed at measuring aspects of the particular field of interest. Response alternatives to the questions can be directed to various data levels: dichotomous (only two possible alternatives), nominal (different categories with no internal hierarchy), ordinal (different categories arranged in a hierarchy), continuous (scale indications) or open (free to formulate the answer in a personal text). Except from unprocessed open questions, statistical calculations are performed to summarise and indicate trends, resemblances or differences.

Questionnaires can be administered in different ways, where the most common are paper questionnaires sent by mail or questionnaires electronically distributed over the internet.

4.2.2 Participants

The participants in the study reported in paper II were 158 physicians/surgeons, 519 nurses and 60 physiotherapists, all clinically active in one of ten different surgical specialties at Swedish university hospitals: upper gastrointestinal, lower gastrointestinal, urology, plastic or reconstructive, cardiothoracic, emergency, trauma, breast/mammae, endocrine or vascular.

Dieticians were initially included in the study aim. However, after all data were collected, only 19 dieticians had been identified. Of these, ten had responded to the questionnaire. Concerning the ethical risks and statistical problems of including dieticians in the analysis, a decision to exclude this registered health care profession was taken.

Further, nurses at the surgical ward at which the first author worked were not included in the study and did not receive the questionnaire.

The total mean age of all participants in paper II was 40.3 years, where physicians comprised the oldest group and nurses the youngest. The majority of the participants were women (77.5%), as was the case for nurses and physiotherapists, and almost 75% of the physicians were men. The physicians had the longest working life experience, both in general and in surgery, whereas nurses had the shortest.

A non-response analysis was conducted. The age, gender and distribution of professions in the total populations of physicians and nurses at the concerned clinics were compared to that of the responding population. The only statistical difference observed was a lower participation among physicians compared to the participation of nurses.

4.2.3 Data collection

Data collection started in March 2010. Initial contact was taken with heads of staff of all surgical units in the seven university hospitals, information about the study was given and approval for participation requested. Among the 71 units, 53 accepted participation and 1757 paper questionnaires, excluding dieticians, were distributed by mail to each head of staff. They or their secretary then distributed each questionnaire to the health care personnel's work place post box. Prepaid return envelopes were attached to the questionnaires. There was a deviation from this with 63 questionnaires to physicians, which were distributed directly to the home address.

Reminders were sent to all heads of staff two and four weeks after the initial distribution in the form of an e-mail, which was forwarded to all personnel, and flyers, which were posted in the units' common areas.

The total response rate was 42%; the physicians had the lowest response rate (29.5%) and the physiotherapists the highest (74.1%). The local distribution and response rates for each hospital are presented in Figure 4.

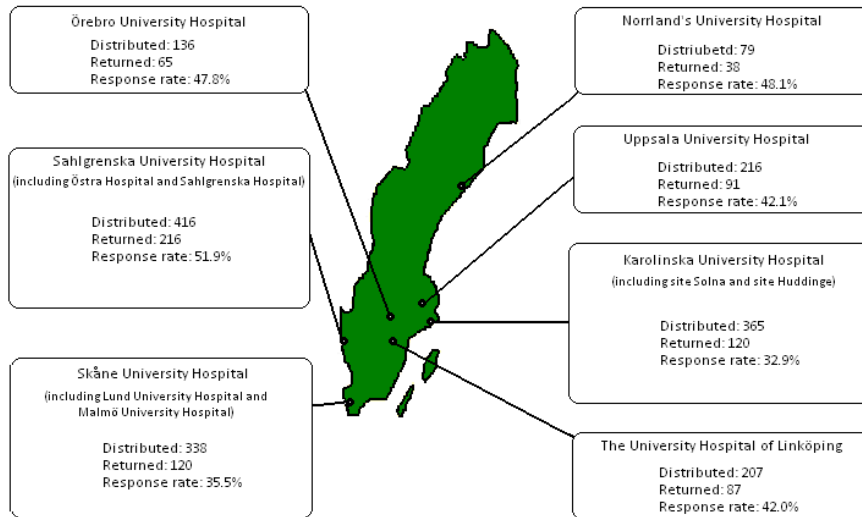


Figure 4. Response rate among the seven Swedish university hospitals in paper II (dieticians excluded).

The Questionnaire

At the time of the study, there was no questionnaire available that was tested and used in Sweden that aimed at studying health care personnel's understanding of CAM. Because of this, a literature review of current international survey protocols and questionnaires was done. No previously used questionnaire in surgical care were identified in the review. Since the purpose was not to create a tested survey instrument but to gain a first insight into the distribution of general and therapy specific knowledge, research knowledge, patient dialog, attitude scoring and personal use of CAM, a decision was taken to combine the results of paper I with influences from internationally used questionnaires^{105, 269-271}.

After testing, adjusting and retesting the questionnaire, the final and distributed version consisted of five pages, see Appendix 2 (Swedish version) and Appendix 3 (English version).

Due to the extent of the retrieved data from the article, the following measurements are not presented in paper II (pages given for the Swedish and English version of the questionnaire presented in Appendix 2 and 3);

- Recommendation of therapies to one's own family (page 1)
- Which specific therapies the participants were interested in learning (page 2)

- Whether CAM therapies were perceived as useful in surgery, hospital, primary care or not at all (page 2)
- All questions on page three
- Personal use of CAM and elements of CAM (page 4)
- Specific therapies that the participants were educated in (page 4)
- Latest personal consumption of health care (page 4)

4.2.4 Data analysis

Statistical calculations made in paper II were both parametric and non-parametric.

In the non-response analysis, Chi square goodness of fit (comparing observed versus expected values) was used for gender comparison, and one sample t-test (comparing population mean to sample mean) for age comparison.

In the analysis of the questionnaire data, four statistical models were used. Pearson Chi square, a cross tabulation test of frequency distribution between two nominal variables, was used for comparison between professions in the interest in taking note of research, believing that CAM research should receive more funding and participation in such research. Owing to the data content of three group variables among the professions (physicians, nurses and physiotherapists), the use of continuous, non-parametric variables, and a low response rate, the Kruskal-Wallis test was used for comparison of recommendations to patients, value of possessing knowledge, wish for more knowledge, education, use of CAM in clinical practice and during time not at work, learning a therapy, knowledge about research, asking about patients' usage, and perceived frequency of patients asking about CAM. The Kruskal-Wallis test is a non-parametric analogue of one-way ANOVA and uses data ranking and median estimation. Because there were more than two groups in the analysis in paper II, a post hoc test was needed to establish where the differences occurred. Hence, the Mann-Whitney U test was used according to an index procedure to establish differences. Correction for multiple statistical testing was done by the Bonferroni correction post hoc test.

The Mann-Whitney U test, a non-parametric test for comparison of a dependent, continuous variable between two independent groups, was also used for analysis of willingness to learn a CAM therapy and level of knowledge.

Spearman's rank correlation coefficient (r_s), which is based on ranks in ordinal data and estimates power and distribution, was used in estimation of

correlation between participants perceiving a high patient enquiry about CAM and participants that asked patients more often about CAM usage. Correlation levels were set to 0.3-0.5 for a weak correlation and >0.6 for a strong correlation. The purpose of setting the levels that high was due to the nature of the measuring instrument, the weak response rate and the reliability of the result.

A decision was made not to make further analyses, such as regression or factor analyses, due to the low response rate and the risk of indicating generalized conclusions. The absence of previous research in surgical care or national Swedish comparative results strengthened the decision to decline from making further analyses.

Regarding the importance of knowledge about CAM, a rescaling was performed, from six to four units, in the final presentation (Paper II; Figure I).

4.3 Paper III

4.3.1 Randomized controlled trials (RCT)

The gold standard of clinical trials according to evidence-based medicine is the randomized controlled trial (RCT). The basis of this study design consists of three different components: the randomization process, control and comparison of the studied intervention, and a quantification procedure²⁷².

Randomization and control refer to the random assignment of study subjects into different study groups. In general, comparison of at least two groups is required: a study group that is given the intervention and a control group that receives no intervention, is given standard treatment or placebo, which, simplified, is a non effective treatment given in the same manner as the intervention and without the study subjects' knowledge of its ineffectiveness. The aim of randomization is to create equal and comparable study groups, with only the specific group protocol (i.e. intervention, no treatment, placebo, etc.) as the distinguishing factor. In paper III, two study groups were used and assignment to the groups was random by distribution of opaque sealed envelopes.

Quantification refers to the possibility to perform statistical calculation in the analysis of the data. It is therefore important for the study groups to be equal in quantity as possible. The number of subjects required is commonly calculated in a power analysis, which could be based on previous, comparable data or estimation and manipulation of a perceived number of subjects.

Blinding is also a part of the RCT design and implies unawareness of study subjects' group belonging. There are different types of blinding. Single blinding implies that the study subjects themselves are unaware of their group belonging. Double blinding implies that the researchers (i.e. people giving or performing the intervention, people doing the measurements, or people doing the data preparation or statistics) are unaware of the study subjects' group belonging. The aim is to eliminate biases occurring due to personal beliefs and subconscious behavior. A single blinding procedure was used in paper III, where patients did not know whether the TENS treatment was effective or not.

4.3.2 Participants

Patients planned for pancreaticoduodenectomy, a common, major surgical operation for patients with pancreatic cancer, were consecutively invited to participate in the study, from October 2008 to June 2011 (summer months excluded).

Inclusion criteria: Pancreatic resection with Peustow incision due to pancreatic cancer, EDA as postoperative analgesia, and TENS naïve.

Exclusion criteria: Pacemaker, not Swedish as the native language, cognitive or psychiatric diagnosis, active abuse of alcohol or drugs, additional or unexpected surgery after the primary operation.

Patients accepting participation were consecutively randomized into one of two groups, active TENS or sham TENS. Each subject was randomized by consecutively taking prepared envelopes. The randomization envelopes were prepared by a person from an independent institution, not involved in the trial. The assistant randomly put information about allocation to the two groups in opaque sealed envelopes.

The patients were blinded to the group to which they were randomized. A total of 55 subjects were included, and 20 of these completed the full study protocol (see Figure 5).

Pancreaticoduodenectomy

Pancreaticoduodenectomy, also referred to as the Whipple procedure (ad modum Whipple), is, together with thoracoabdominal oesophagus resection, one of the major surgical procedures in upper gastrointestinal surgery. In general, the surgical procedure could be summarized as, by an upper abdominal horizontal incision, referred to as a Peustow incision, resection of the mid and lower stomach, the duodenum, bile duct and gallbladder, the pancreas head, and upper parts of ileum. Due to the massive removal of structures, it is essential for function to anatomically reconstruct the stomachic- intestinal canal and, for the patients included in paper III, a roux-en-y anastomosis with pancreatico-jejunostomy. This operation is considered advanced and only performed at centres with a high number of these patients. Postoperative hospital stay is known to be at least two weeks.

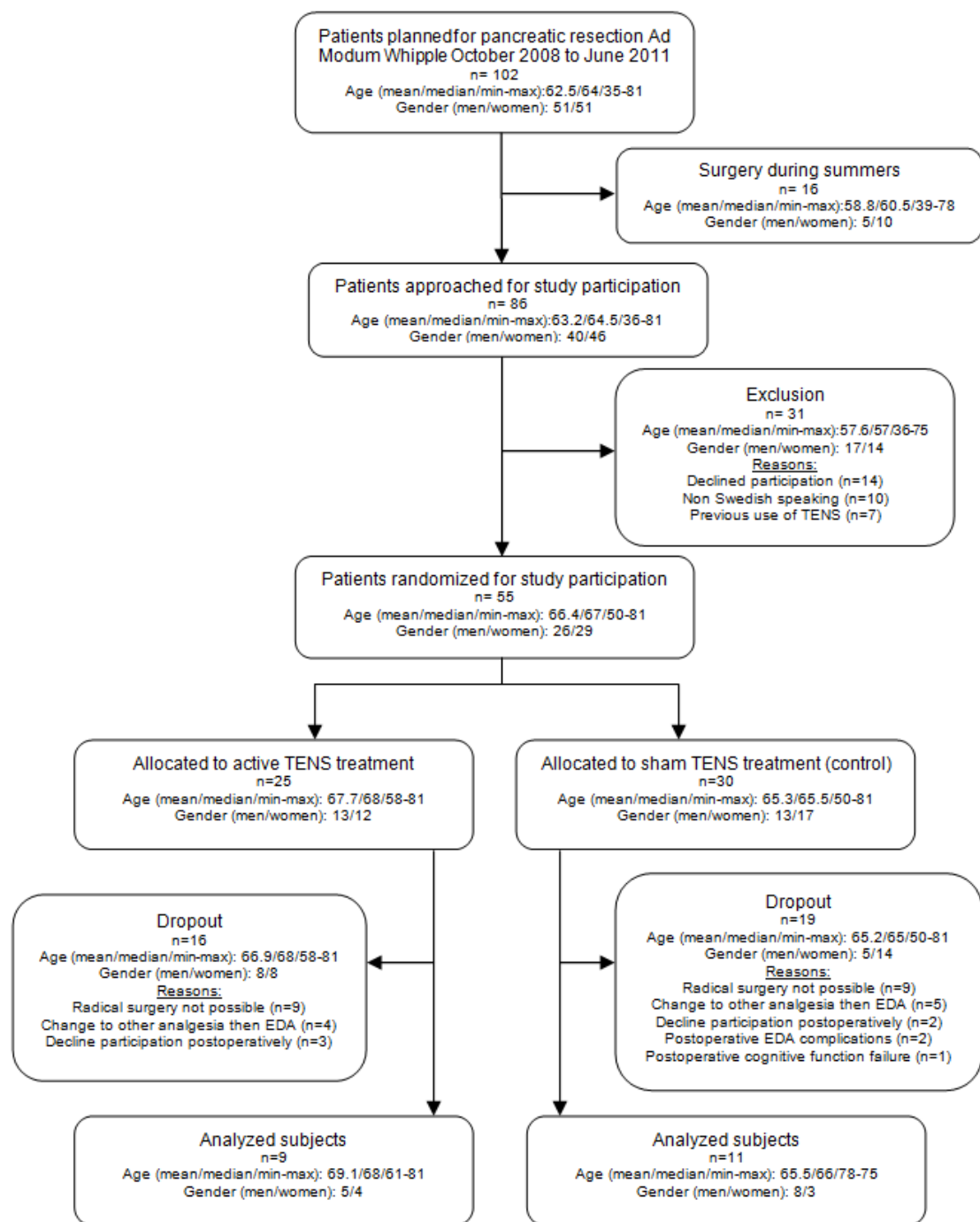


Figure 5. Flow diagram of study subjects in paper III.

4.3.3 Data collection

After participation in the trial was accepted, the preoperative measurement was performed within a week prior to surgery. The next intervention occurred on the day of EDA termination. Measurements were performed prior to TENS application and one, four and 24 hours after EDA termination.

All patients in the study were given postoperative care in the ward according to a standardized, evidence-based Nursing Care Plan. All patients participating in the final data analysis were also given a thoracal EDA preoperative with an infusion of bupivacain 1 mg/ml, fentanyl 2 µg/ml and adrenaline 2 µg/ml, which was functional until termination of the EDA. The general analgesia given at termination was tramadol hydrochloride 400mg/day (capsule), paracetamol 4g/day (tablet) and, when needed or Visual-Analogue Scale (VAS) scoring >40mm, morphine hydrochloride (injection; intravenous).

After two and a half years of data collection, only 20 study subjects had followed the full study protocol because of unexpected drop outs, of the total of only 55 subjects that had been included. The decision was taken to stop data collection before the summer of 2011, due to the influence of time and changes in the surgical procedure, anesthesia technique, and postoperative care with changes in general analgesia regime and the care plan.

TENS interventions

TENS treatment was regulated by the patient and given with no time limitations, except that every treatment period started, if it was not continuous, should be at least 30 minutes. All TENS treatment was administered as a biphasic, alternating current with 80Hz stimulation frequency. Electrodes were applied in three pairs, see Figure 6.

TENS device: Cefar rehab x4 (CefarCompex Scandinavia AB)

TENS electrodes: 5x10cm oval, self-adhesive

Additional fixation: self-adhesive, self-ventilating tape (Mepix®)

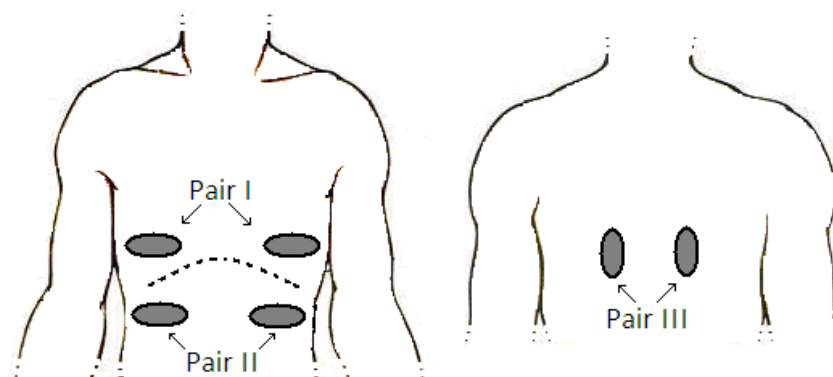


Figure 6. Application position of TENS electrode pads in paper III.

TENS electrodes were applied four hours prior to EDA termination; this was followed by patient education and testing. TENS treatment was initially given in the third electrode pair, because of the anaesthetisation of the abdomen. As the effect of the EDA faded, the patients used all TENS electrode pairs simultaneously.

Participants were instructed to use the TENS as much as possible but to request additional analgesia if necessary. Applying the electrodes and giving instructions took approximately one hour.

Active TENS group

Participants in the active TENS group were instructed to use the TENS with “as high as intensity as possible, but without pain or discomfort”. This is considered high amplitude TENS treatment, i.e. affects the A-beta nerve fibres.

Sham TENS group

Participants in the sham TENS group were instructed to “increase stimulation until sensitivity first occurs and keep the stimulation as low as possible”. At the start of the trial, such gentle TENS treatment was considered ineffective against postoperative pain.

Measurements and Instruments

In addition to the measuring instrument described below, three further measurements were collected: EDA infusion rate at termination, total morphine hydrochloride consumption during the 24 hours after EDA termination and total TENS time usage in minutes on the termination day and the day after.

The Pain-O-Meter (Swedish version) has been developed to assess current pain among clinical patients²⁷³. It is a prospective, and not retrospective, instrument consisting of a VAS for pain intensity rating, physical (sensory) and emotional (affective) words for measurement of the pain, body map for location of the pain, and pain duration. In paper III, only VAS is reported. Measurements were performed:

- Lying prone in bed: Measured preoperatively, before the TENS was applied, and one, four and 24 hours after EDA termination
- Sitting on the bed after a short walk (minimum of ten steps): Measured preoperatively and four and 24 hours after EDA termination
- Sitting in bed after five deep breaths: Measured preoperatively and four and 24 hours after EDA termination

Quality of Recovery 40 (QoR-40; Swedish version) is a questionnaire instrument consisting of 40 items (questions) with the aim of evaluating postoperative recovery. The score can be analysed as a total recovery score, which varies between worst recovery (40 points) and best recovery (200 points). Five dimensions of recovery can be attained and analysed: emotional state, physical comfort, psychological support, physical independence and pain²⁷⁴. In paper III, only the total recovery score was used in the analysis.

The English version of the QoR-40 have been tested for validity and reliability²⁷⁵ and recommended for outcome measurement after surgery and surgical care interventions^{276, 277}. A Swedish modified version of the QoR-40 have been used in previous studies^{278, 279}. However, the translated version used in paper III was retrieved from a unpublished trial, and correlated well with the previously used Swedish versions, but has not been tested psychometrically for Swedish patients.

The QoR-40 was filled in preoperatively, before EDA termination and 24 hours after EDA termination.

4.3.4 Data analysis

VAS was performed to establish sufficient numbers of participants in each group for statistical analysis. A trial on postthoracotomy pain²⁸⁰ was used based on the methodological similarities to paper III. The calculation estimated that there should be 20 subjects in each group. Since it is known in the clinical setting that the incidence of unexpected events in the postoperative phase is high, the decision was made to randomize 30 subjects into each group.

Data from the 20 subjects included, nine in the active TENS group and 11 in the sham TENS group, were analysed. Concerning the primary variable, VAS lying prone, a calculation of the Area Under the Curve (AUC) was used as a summarising of measurements “from prior to EDA termination” until “24 afterwards”. The trapezoidal rule for AUC was used, i.e. splitting the time span between measuring occasions in half, giving greater time spans a greater effect on the calculated value.

Fisher's non-parametric permutation test (FNP) was used for comparison of continuous variables between two groups. This test uses the original values, as compared to other ranking non-parametric tests, and is considered to have the same asymptotic strength as the t-test²⁸¹. A benefit offered by FNP is that the p-value can always be trusted, regardless of the underlying distribution.

4.4 Paper IV

4.4.1 Single–subject research design

This study design is a form of multi case studies and refers to the study of a single individual (or a single group of people). In contrast to RCT, which demands statistically balanced study groups with large numbers of study subjects but only a few measuring occasions (before and after), the single-subject research design does not use many subjects, but instead demands many measuring occasions (before, during and after an intervention). Hence, the single-subject research design is suitable in studies of small patient groups, uncommon diagnoses, and for an indication of whether further, large-scale research would be recommended.

In addition, compared to RCT, which uses standard statistical calculations between groups, the single-subject research design uses a graphical presentation and illustration of each subject as its study results.

There are many different forms of single-subject research design as concerns the study's different phases^{282, 283}. The most basic is an A-B procedure, where A is the baseline and non-treatment phase and B is the intervention phase. An A-B-A procedure is also common, where the last A stands for the non-treatment period after an intervention. Furthermore, A-B-A-C models have been used, where C represents a comparative intervention or placebo treatment. Adjustments to the duration of the different phases between different subjects in a study can also be made, depending on the study aim and design. In this paper, an A-B-A procedure was used.

The graphical presentation of the study results can be complemented by various statistical methods, specially developed for the single-subject research design, such as a split-middle method of trend estimation, the two-standard deviation band method and the C statistic²⁸⁴. In paper IV, the two-standard deviation band method was used. This statistical method is performed by calculating the mean and standard deviation (SD) of the baseline phase (Aa), multiplying that SD by 2 (2SD) and applying a band between a positive 2SD line and a negative 2SD line²⁸⁴. As such a band represents approximately 95% of the confidence interval, two consecutive data values during the treatment (B) or post-treatment phase (Ab) indicate a significant difference from the baseline phase.

4.4.2 Participants

Data charts from patients undergone oesophagusresection at a Swedish surgical center between 2003 and 2010 were scanned for inclusion in the study and 163 patients were identified.

Inclusion criteria: perceived pain or stiffness in the thorax or dyspnoea, starting after the oesophagus resection and never having regressed postoperatively.

Exclusion criteria: known active malignity, failing general health, psychiatric illness/disease or cognitive dysfunction, active alcoholism, dermatological disease, osteoporosis, ongoing infection (except from cold, common virosis, small wounds), hemorrhagic disorder, neurological injury or disease affecting the thorax, preoperative pain in the thorax, previous treatment by an osteopath, living more than 50km away from the intervention clinic.

After excluding deceased patients (n=85) and patients with exclusion criteria (n=59), 19 patients were approached and offered participation in the winter/spring of 2011, see Figure 7. A letter with study information and request for participation was first posted, and the patients were phoned two weeks thereafter. After initial contact, nine patients accepted participation, but one declined after the first measuring occasion, due to heavy reflux not related to the study. Eight subjects followed the whole study protocol.

Oesophagus resection by thoracoabdominal surgery

The surgical procedure performed on subjects in paper IV was thoracoabdominal oesophagus resection, also called Ivor Lewis. The procedure is used to make resections of the middle and lower (distal) parts of the oesophagus due to cancer or stricture.

The procedure is generally performed in two steps. The first steps include an exploration of the abdomen by an upper midline incision and freeing the gastric ventricle, which will be used as a replacement tube for the resected part of the oesophagus. In the second part of the operation, the patient is turned so that the right flank is upwards, and a posterior unilateral thoracotomy is done in the sixth intracostal space to access the oesophagus. Only one lung is ventilated during this part of the surgery. The cancerous tumour and a safety margin to exclude metastasis is resected, the prepared ventricle part is pulled up through the hiatus and a gastro-oesophagus (GE) junction is created, called the gastric tube. During this major operation, several arteries, veins and nerves, including n.Vagus, are resected, which affects future gastric functions.

Clinical experience indicates that the mean postoperative hospital stay is approximately three weeks.

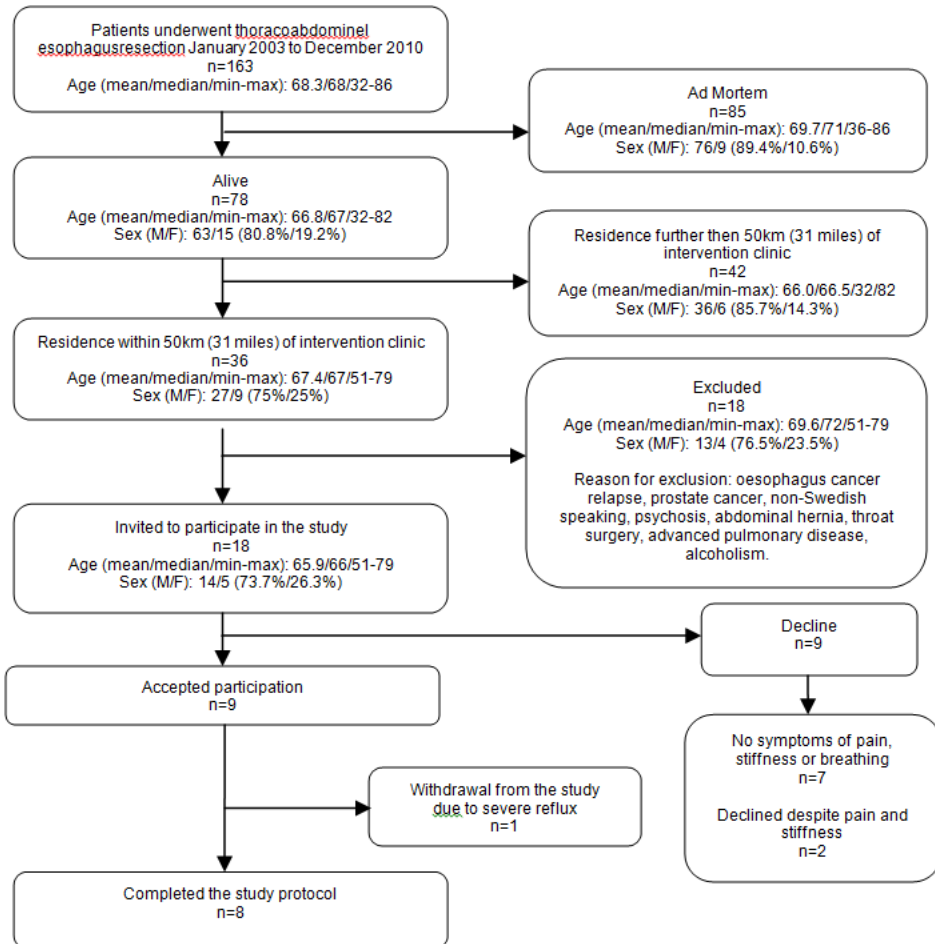


Figure 7. Flow diagram of study subjects in paper IV.

4.4.3 Data collection

As described earlier in this section, an Aa-B-Ab design was used. The Aa phase represented the pre-intervention time, B the intervention time, and Ab the post-intervention time, see Figure 8. The time between the three phases was three, ten and eight weeks. Measurements during phase Aa were performed once a week during the three weeks, during phase B after three to four weeks, six to seven weeks and after the last osteopathic treatment, and during phase Ab two to three weeks, five to six weeks and eight weeks after the last osteopathic treatment. At each measuring occasion, which was performed at a university hospital, physical tests were first performed, after which there was a rest period of a minimum of 60 minutes. The sessions were completed with re-performing the physical tests.

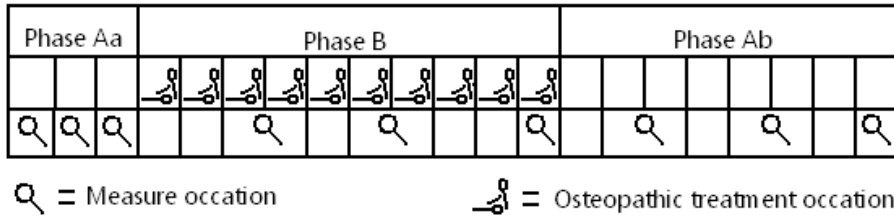


Figure 8. Schematic overview of the data collection and intervention in paper IV.
One column under each phase is one week.

Osteopathic intervention

In collaboration with the Scandinavian College of Osteopathy, Gothenburg, a treatment protocol for an osteopathic intervention was created. The anatomic structure target was costovertebral and transversal joints, intracostal muscles, n. intercostalis, m. serratus anterior, m. latissimus dorsi, m. scalenii, n. phrenicus, anterior and posterior thoracic fascia, and suboccipital muscles. The standardised osteopathic techniques used were OA release, rib raising, diaphragm stretch, soft tissue techniques and thoracic fascia balancing. All treatments were given by two experienced, well-educated osteopaths.

Patients were given a 45-minute osteopathic treatment once a week for ten weeks. In addition to the treatments specified above, the osteopath was free to use osteopathic techniques individually adapted to the patient.

Measurements and Instruments

In addition to the measuring instrument described below, questions related to the experience of the osteopathic intervention were also evaluated.

Breathing measurements

The Easyone ultrasound spirometry (nnd Medidla Technologies Inc. MA, USA) was used to measure such spirometric properties as **forced vital capacity (FVC)** (i.e. the largest volume that can be inhaled or exhaled in a single breath), **forced expiratory volume during the first second (FEV₁)** (i.e. measuring the capacity to exhale during one second after full inspiration) and **peak expiratory flow (PEF)** (i.e. the highest expiratory air flow velocity during expiration). Only FVC is presented in paper IV, but all three measurements are mentioned in the results section of this thesis.

Movement measurements

All measurements of range of motion between inspiration and expiration were performed using the patient instructions described by Fagevik Olsén et

al.²⁸⁵: “Breath in/out and make yourself as big/small as possible”. Except for **Respiratory Movement Measuring Instrument (RMMI)** all movement measurements were made in a prone position. **Thorax flexion and extension** were measured according to Finnsbäck and Mannerkorpi’s²⁸⁶ methodological descriptions: skin marks were made over the seventh cervical spinosis and 30 centimeters below it (caudal). The distance from the 30 cm point was measured in full flexion and extension of the columna. **Thorax excursion** was measured on the level of costae four and xiphoideus, where the difference in circumference was measured in full inspiration and expiration with the subject holding the hands on the head^{286, 287}. **Bilateral flexion of the columna** was measured as the subject was standing with the back against a wall, with full contact of heels, back and head, and with straight legs, bending laterally, without losing contact with the wall, until the end position. The hands were kept on the side of the thighs. The distance in standing from the fingertips on the thighs to the lateral end position was measured. **RMMI** is a mobile device that measures bilateral **thoracic and abdominal movement** at specific points (costae four, costae nine, umbilicus) on subjects in the lying prone position²⁸⁸⁻²⁹⁰. Measurements include normal breathing and maximum inspiration and expiration. Paper IV only reports the maximum inspiration/expiration for the two thoracic measurement points, but the abdominal outcome is included in the results section of this thesis.

Pain measurements

The Pain-O-Meter (Swedish version) has been described in this thesis, under the methods section of paper III. Only VAS is reported in paper IV.

Brief Pain Inventory short form (BPI-SF) Swedish version evaluates pain by nine questions concerning pain type, location, degree, pain during the last 24 hours, average pain, treatment effect on pain, pain effect on mood, walking, work, relationships and sleep²⁹¹. BPI-SF was used as a complement to Pain-O-Meter to investigate the participants’ pain in more than just a “here and now” perspective compared to VAS. Only pain location and pain severity were presented in paper IV; zero is no pain and ten is the worst pain severity.

Physical status

The Physical Activity Questionnaire short version (IPAQ-S) Swedish version is a questionnaire that calculates the total physical activity per week in relation to the metabolic equivalent (MET)^{292, 293}. It includes physical activity in leisure time, domestic and gardening activities, work related activities and transport related activities. Despite its having been stated that

IPAQ is unsuitable for smaller studies, we emphasized it to be a valuable, demographic tool in displaying an assembled score of the patients' physical activity.

4.4.4 Data analysis

The results were reported graphically, as is common in a single-subject research design. The two-standard deviation band method together with mean values for each study phase was compiled and reported for each subject. Since it is important that the change in data from one phase to the next is large so that it is possible to make reliable conclusions from the graphs²⁸², significant differences were accepted only if they occurred on two consecutive different measuring occasions.

4.5 Ethical considerations

All studies in this thesis were approved by the Regional Ethical Review Board in Gothenburg, Sweden. Information about the study and participation has been given both in writing and verbally to all participants in the studies reported in papers I, III and IV before they gave verbal and written consent to participate. Approval for distribution of questionnaires was obtained from all concerned head of staff before distribution in the study reported in paper II. Voluntary participation, confidential data management and a statement that all data would be presented on a group level were given on the front page of the questionnaire in paper II as well as in the written information in papers I and III.

Perceptions and understanding of CAM as a phenomenon and area of practice and research were not valued as a subject for any existential or psychological controversy prior to data collection. It was therefore unlikely that the interviews and questionnaires in Papers I and II should arouse any distress or violation of integrity for the health care professions who participated. In the work reported in paper I, there were no indications of tension or annoyance about the subject. It is however notable during the data collection in paper II that several e-mails were sent back to the researchers by receivers of the questionnaire, questioning the benefit of performing a study on CAM or even doing CAM research at all. It is therefore possible that the emotional impact of this subject might have been underestimated.

As for paper III, performing research among persons with cancer with a poor prognosis, as in this case pancreatic or periampulair malignity, scheduled for surgical treatment with an uncertain outcome, must be carefully considered. In the case of paper III, no adjustments or manipulations of the life saving treatment were made. However, to include patients preoperatively and then exclude them postoperatively due to non curative surgery demanded personal continuity by the researchers and available existential and psychosomatic support.

Concerning the single-subject research design, Zhan and Ottenbacher²⁸² noted that, by using an A-B-A procedure, the removal of a treatment, as in phase B to phase Ab in paper II, can set the subject in an unwanted state if the treatment was effective, since measurements in the Ab phase are rather long (eight weeks) and forbid the subjects from having treatments during that period.

5 RESULTS

Here are presented the two sections of CAM investigated in this thesis. The first section, perception and understanding of CAM, is compiled from papers I and II. The second section, CAM in symptom management after major upper gastrointestinal surgery, is compiled from papers III and IV.

5.1 Perceptions and understanding of CAM

The demography of the participants in papers I and II is presented in table 7.

Health care professions in Swedish surgical care found it vague and broad in terms of understanding therapies that define CAM (Table 8). The perception existed that CAM was something outside conventional health care and outside the demand for evidence, despite low levels of knowledge about CAM and CAM research among the health care professions. What was conventional medicine varied. Physiotherapy, nursing and occupational therapy were, in both papers I and II, perceived by some participants as complementary or integrative therapies, see Table 9. The total understanding of the 21 therapies by each of the three professions is presented in Table 9.

Therapies that were perceived by most of the participants as complementary were massage, manual medical therapies, yoga and acupuncture; alternative medicine were herbal medicine and dietary supplements, homeopathy and healing; integrative were acupuncture, psychotherapy or cognitive behavioral therapy (CBT), physiotherapy and massage. It is however important to note that classification to integrative therapy was overall low, although there was a perception of the importance of collaboration between conventional medicine and CAM.

Table 7. Demographics of participants in papers I and II.

		Physicians	Nurses	Physiotherapists	Dieticians	Total
Mean age (Years)	Paper I	45.5	43.5	40.5	35.5	41.2 (23-60)
	Paper II	47.8	37.9	41.6	Not included	40.3 (23-70)
Gender (Male/Female)	Paper I	M: 50% F: 50%	M: 50% F: 50%	M: 25% F: 75%	M: 50% F: 50%	M: 44% F: 56%
	Paper II	M:74.7% F: 25.3%	M: 8.3% F: 91.7%	M: 11.9% F: 88.1%	Not included	M: 22.5% F: 77.5%

Perceived indications for usage of CAM was for symptom relief such as pain, nausea and anxiety, for decreasing the use of pharmacological medications, as well as promoting and enhancing circulation, the immune system and the patients' general wellbeing. CAM was also perceived as useful in palliative care as a last resource for cure or ease.

Barriers to the use of CAM were that there was no need for other treatments due to the effectiveness of conventional medicine, short hospital stays that limited the time to treat and evaluate CAM therapies, risk of interaction between conventional medicine and CAM, a perceived lack of evidence for clinical use, and a fear that the care learned or care given in the clinic would be pushed out by CAM therapies.

Communication about CAM with patients seldom occurred. It can be emphasized that about 20% of the health care professionals asked once a month or more about patients' use of CAM. Patient referral to CAM was low and, if it occurred, it was due to a relation to and attributes of a certain practitioner of CAM, and not a specific therapy (Table 8).

The level of knowledge about CAM and CAM research was perceived to be very low among the participants in both papers I and II (Table 8). Despite this, the lack of evidence and absence of "state of the art" or "good" research in this area were criticized, and pointed out as a contributing reason for why education about CAM was not included in the current mandatory curriculum for health care students.

Reasons for the low level of knowledge about the field of CAM were lack of time, interest and access to sources of knowledge. However, possessing such knowledge was perceived as important and many of the participants were responsive to gaining and adopting such knowledge.

The economic factor of CAM usage was connected to the desire for evidence of clinical usability. It was believed that more research funding should be directed to CAM research, and that the current lack of such funding was a barrier in the relationship between conventional medicine and CAM.

Table 8. Map of comparable findings in papers I and II.

	Paper I	Paper II										
<p>Designation of therapies to CAM</p> <p>paper I = extracted from interview text</p> <p>paper II= summarising of percentage of ratings as alternative and complementary with a total score >50%</p>	<p>Acupuncture Anthroposophical medicine Aromatherapy Caring sciences Chiropractics Colonics Diets Feldenkrais therapy Hair analysis Healing Homeopathy Hypnosis Iridology Magnet field therapy</p> <p>Massage Music therapy Naprapathy Naturopathic drugs Nursing science Occupational therapy Osteopathy Physiotherapy Psychotherapy Reflexology Rose method TENS</p>	<p>Herbal and non-herbal supplements/medicines (87.5%) Yoga (86%) Meditation (80%) T'ai chi/Qi Gong (79%) Healing (77%) Homeopathy (75%) Chiropractics, Naprapathy, and Osteopathy) (71%) Massage forms (67%) Reflexology (63%) Sense therapies (62%) Acupuncture/acupressure (57%)</p>										
<p>Level of knowledge about CAM</p>	<p>Perceived as low</p> <p>"Yes, I believe that it is low. I believe we need much more knowledge, but I also think we miss what is called humbleness, and that's what the big problem is."</p> <p>"Researcher: Do you have any knowledge about this area (CAM)? Participant: No, it is an area that I'm have no knowledge about, and I have not tried to gain any either..."</p> <p>"No, I don't feel that I have sufficient knowledge... the shortage is my own fault, not searching for knowledge ..."</p> <p>"I only have knowledge about what is practiced at our speciality. I don't have any knowledge about those other thinks"</p>	<table border="1"> <caption>Level of knowledge about CAM</caption> <thead> <tr> <th>Level</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Full knowledge</td> <td>0.3%</td> </tr> <tr> <td>Good knowledge</td> <td>4.0%</td> </tr> <tr> <td>Minor knowledge</td> <td>82.3%</td> </tr> <tr> <td>No knowledge</td> <td>13.4%</td> </tr> </tbody> </table>	Level	Percentage	Full knowledge	0.3%	Good knowledge	4.0%	Minor knowledge	82.3%	No knowledge	13.4%
Level	Percentage											
Full knowledge	0.3%											
Good knowledge	4.0%											
Minor knowledge	82.3%											
No knowledge	13.4%											
<p>Desire to learn about CAM</p>	<p>Diverse answers, mainly a desire</p> <p>"Researcher: Is there a need for more knowledge? Participant: Absolutely! Researcher: Why? Participant: because it is of benefit for the patients, why shouldn't we use it?"</p> <p>"Yes, I would like to know more and learn more. Currently I don't know whats inside it, and would like to gain an overview..."</p> <p>"... I even believe that I should be a part of the curriculum in any health care education program..."</p> <p>"... as long as it nearly does not exist, and since we base education on evidence based medicine (in University programs), there has no value to gain knowledge about it..."</p> <p>"I would like to have knowledge if there is hard evidence, otherwise no. And since these therapies are not included in conventional health care, there are currently no knowledge. That is my stand"</p>	<p>The majority wanted to learn more about CAM</p> <table border="1"> <caption>Desire to learn more about CAM by profession</caption> <thead> <tr> <th>Profession</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Physiotherapists</td> <td>67.2%</td> </tr> <tr> <td>Nurses</td> <td>67.3%</td> </tr> <tr> <td>Physicians</td> <td>73.9%</td> </tr> </tbody> </table>	Profession	Percentage	Physiotherapists	67.2%	Nurses	67.3%	Physicians	73.9%		
Profession	Percentage											
Physiotherapists	67.2%											
Nurses	67.3%											
Physicians	73.9%											

	Paper I	Paper II
<p>Referral and recommendations</p>	<p>Based on personal experience or Well-known therapist, rather than evidence or suitability of the treatment</p> <p>"...the more alternative it gets, the more unsure I'll get (about referral), if I don't know the treating person or have heard about them."</p> <p>"... to be able to recommend to a non registered, therapist... it has to be something that I or my organisation... has a relation to...or someone who is really famous... as the Järna clinic..."</p> <p>"... well, you like to have some personal experience or a reference... of some kind, so you know who you refer to..."</p> <p>Lack of CAM knowledge barrier for referral</p> <p>"... I know too little about this But I would absolutely never recommend to something that do not know anything about"</p> <p>"... I would like to know more about the therapies, to feel secure, before I recommend or refer..."</p> <p>Uncertainty if right to refer and recommend</p> <p>"... if I could refer patients... I am very dubious about that..."</p> <p>"Well I believe I could recommend, but maybe not... I don't really know"</p>	<p>CAM therapies recommended to patients (conventional therapies excluded)</p> <p>Massage (50%) Acupuncture/acupressure (48%) Chiropractics, Naprapathy, and Osteopathy (38%) Yoga (33%) Meditation (27%) T'ai chi / Qi Gong (22%) Sense therapies (21%) Herbal and non-herbal supplements/medicines (14%) Reflexology (8%) Homeopathy (4%) Kinesiology (4%) Ayurveda (3%) Healing (3%) Rosen method (2%) Iridology (1%) Bowen therapy (0%)</p>

Table 9. Therapy classification by the three professions

		Conventional therapy	Complementary therapy	Alternative therapy	Integrative therapy	Therapy unknown	Would recommend to patients
Ayurveda	Physicians (n=148)	0%	4.7%	27.7%	0.7%	66.9%	1.4%
	Nurses (n=492)	0%	5.9%	23.2%	1.0%	69.9%	3.3%
	Physiotherapists (n=57)	0%	8.8%	35.1%	0%	56.1%	0%
Homeopathy	Physicians (n=147)	0%	8.2%	81.0%	0.7%	10.2%	0.7%
	Nurses (n=486)	0.6%	8.9%	60.1%	2.5%	28.0%	4.7%
	Physiotherapists (n=58)	0%	8.6%	84.5%	1.7%	5.17%	6.9%
Psychotherapy CBT	Physicians (n=145)	60.7%	15.9%	2.1%	15.9%	5.5%	59.3%
	Nurses (n=489)	41.3%	22.3%	4.3%	28.4%	3.7%	63.4%
	Physiotherapists (n=56)	51.8%	12.5%	3.6%	32.1%	0%	78.6%
Meditation therapies	Physicians (n=143)	2.1%	32.2%	37.8%	7.0%	21.0%	18.9%
	Nurses (n=493)	1.4%	39.6%	41.4%	9.1%	8.5%	27.7%
	Physiotherapists (n=56)	1.8%	51.8%	42.9%	1.8%	1.8%	44.6%
Healing therapies	Physicians (n=145)	0%	5.5%	64.1%	0%	30.3%	0%
	Nurses (n=492)	0%	13.0%	64.4%	1.9%	20.7%	4.5%
	Physiotherapists (n=57)	0%	8.8%	80.7%	0%	10.5%	0%
Yoga	Physicians (n=148)	0%	35.8%	48.6%	4.7%	10.8%	18.9%
	Nurses (n=484)	0.6%	43.2%	44.2%	8.7%	3.3%	34.8%
	Physiotherapists (n=58)	3.4%	55.2%	27.6%	12.1%	0%	58.6%
Nursing	Physicians (n=146)	74.4%	8.9%	0%	12.3%	4.1%	60.3%
	Nurses (n=490)	82.9%	2.4%	0.6%	13.3%	0.8%	60.3%
	Physiotherapists (n=58)	89.7%	1.7%	0%	5.2%	3.4%	72.4%
T'ai chi Qi gong	Physicians (n=147)	0%	23.8%	45.6%	2.7%	27.9%	8.2%
	Nurses (n=493)	0.2%	34.3%	47.9%	5.1%	12.6%	20.9%
	Physiotherapists (n=58)	5.2%	56.9%	20.7%	15.5%	0%	60.3%
Acupuncture Acupressure	Physicians (n=144)	15.3%	47.2%	18.1%	17.4%	2.1%	40.3%
	Nurses (n=483)	10.6%	40.4%	17.6%	30%	1.4%	45.7%
	Physiotherapists (n=56)	42.9%	25.0%	3.6%	26.8%	0%	83.9
Orthopaedic manual therapy (OMT/OMI)	Physicians (n=146)	15.1%	30.1%	5.5%	14.4%	34.9%	26.0%
	Nurses (n=494)	15.4%	7.5%	3.6%	5.7%	67.8%	10.7%
	Physiotherapists (n=58)	74.1%	8.6%	1.7%	15.5%	0%	84.5%
Massage therapies	Physicians (n=147)	4.8%	40.8%	30.6%	8.2%	15.6%	29.3%
	Nurses (n=483)	7.9%	49.5%	17.0%	23.8%	1.9%	54.3%
	Physiotherapists (n=54)	22.2%	42.6%	11.1%	22.2%	0%	64.8%
Chiropractic Naprathopathy Osteopathy	Physicians (n=144)	6.3%	45.8%	29.2%	14.6%	4.2%	28.5%
	Nurses (n=484)	11.2%	45.2%	24.8%	16.3%	2.5%	39.0%
	Physiotherapists (n=57)	14.0%	38.6%	26.3%	21.1%	0%	56.1%
Physiotherapy	Physicians (n=147)	73.5%	11.6%	0.7%	13.6%	0.7%	71.4%
	Nurses (n=486)	62.1%	7.4%	2.5%	27.4%	0.6%	63.2%
	Physiotherapists (n=58)	93.1%	1.7%	0%	5.2%	0%	84.5%
Herbal medicine Dietary supplement	Physicians (n=149)	2.0%	17.4%	66.4%	2.7%	11.4%	5.4%
	Nurses (n=491)	0.4%	20.8%	66.6%	5.9%	6.3%	15.7%
	Physiotherapists (n=57)	0%	26.3%	70.2%	3.5%	0%	19.3%
Bowen therapy	Physicians (n=148)	0%	0%	5.4%	0.7%	93.9%	0%
	Nurses (n=498)	0%	0.4%	3.8%	0.2%	95.6%	0%
	Physiotherapists (n=57)	0%	0%	3.5%	0%	96.5%	0%
Iridology	Physicians (n=147)	0%	2.0%	42.2%	0.7%	55.1%	0.7%
	Nurses (n=502)	1.6%	1.0%	15.1%	1.0%	81.3%	1.6%
	Physiotherapists (n=58)	0%	3.4%	22.4%	0	74.1%	0%
Occupational therapy	Physicians (n=148)	73.0%	9.5%	0.7%	15.5%	1.4%	67.6%
	Nurses (n=492)	63.2%	8.5%	2.6%	23.0%	2.6%	57.1%
	Physiotherapists (n=59)	89.8%	0%	0%	10.2%	0%	83.1%
Kinesiology	Physicians (n=148)	2.7%	7.5%	20.9%	1.4%	67.6%	1.4%
	Nurses (n=494)	0.4%	2.8%	24.3%	0.2%	72.3%	3.0%
	Physiotherapists (n=58)	10.3%	19.0%	22.4%	6.9%	41.4%	17.2%
Sense therapies	Physicians (n=148)	2.7%	19.6%	35.1%	9.5%	33.1%	10.1%
	Nurses (n=494)	5.1%	32.0%	32.0%	16.8%	14.2%	24.9%
	Physiotherapists (n=57)	1.8%	36.8%	36.8%	12.3%	12.3%	21.1%
Rosen method	Physicians (n=149)	0%	3.4%	26.2%	1.3%	69.1%	1.3%
	Nurses (n=496)	0.4%	4.4%	19.6%	0.8%	74.8%	2.0%
	Physiotherapists (n=59)	1.7%	16.9%	39.0%	1.7%	40.7%	8.5%
Reflexology/ zone therapy	Physicians (n=148)	0%	7.4%	54.1%	0.7%	37.8%	2.0%
	Nurses (n=491)	0.4%	18.7%	44.2%	4.9%	31.8%	9.6%
	Physiotherapists (n=58)	0%	17.2%	56.9%	3.4%	22.4%	12.1%

5.2 CAM in symptom management after major gastrointestinal surgery

In interventions in patients, two extensive surgical procedures have been studied:

a complementary/conventional therapy (TENS) after pancreatic surgery in the transition from EDA to general analgesia (paper III), and an alternative/complementary therapy (osteopathy) after esophagus resection via thoracotomy (paper IV).

Demographics for papers III and IV are presented in table 10.

Table 10. Demographics of participants in papers III and IV.

		Intervention group	Sham group
Mean age (Years)	Paper III	69.1	65.5
	Paper IV	61.9	
Gender (Male/Female)	Paper III	M: 56% F: 44%	M: 73% F: 27%
	Paper IV	M: 62.5% F: 37.5%	
Mean Body Mass Index (kg/m ²)	Paper III	25	25
	Paper IV	21.1	
Mean time interval between surgery and study intervention	Paper III (Days)	7	7
	Paper IV (Years)	4.6	

5.2.1 TENS during transition from EDA to general analgesia

There were no significant differences in pain estimated by VAS or postoperative recovery between the active and sham TENS groups at the transition from EDA to general analgesia. Nor was there any difference in TENS using time between the two groups. Additional analgesia consumption varied between the two groups, where the active TENS group consumed approximately 60% less of what the sham TENS group consumed. The difference was however not significant ($p=0.163$).

During and after the study, patients and nurses brought up conceptions of and reflections on the TENS treatment. Due to the heavy burden of tubes, drainages, cables and bags, adding further cables resulted in restricting out-of-bed activities. A patient could be ensnared in the equipment, which created

a risk of falling or pulling out a drainage. The nurses commented that TENS treatment added to their work load because of the time spent on snared tubes and cables, both when the patient was in bed and out of bed. Checking and maintaining the TENS pads and device also created additional work.

5.2.2 Osteopathic intervention after thoracotomy

Individual presentations of each subject's response to osteopathic treatment in the measured variables are presented in table 11.

With regard to the breathing measurements' performed (FVC, FEV₁ and PEF), only one significant improvement was observed in one subject, while three indicated significantly decreased breathing in two subjects some time during the study. The remaining breathing measures were unaffected, and all affected subjects returned to baseline values at the end of the Ab phase.

A significant increase in thorax excursion was observed among three subjects for the upper thorax and in four subjects for the lower thorax. Thorax mobility measured by RMMI was found to significantly increase in six subjects in one or both sides for upper thorax, lower thorax or the abdomen. Lateral Range of Motion also indicated improvement in one or both sides among seven subjects. In contrast, thoracic flexion decreased during treatment in one subject and was unaffected for all subjects in extension.

Concerning pain measurements, VAS by the Pain-O-Meter found improvement, i.e. decreased pain, in two subjects. In the BPI-SF questionnaire, all eight subjects had decreased the area of pain, four stated that the severity of pain had decreased, and one subject increased in pain severity by more than 1.0 after the osteopathic intervention.

The subjects' perception of the osteopathic treatment reflected the measured variables well. One of the four subjects who experienced breathing limitation believed that the treatment had been effective in easing breathing. Six of the seven subjects who experienced stiffness in the thorax had perceived the treatment as effective in increasing mobility. Five of five subjects who had experienced pain in the thorax perceived the treatment to be effective in relieving pain.

Table 11. Individual significant outcomes during phase B and Ab in paper IV

	Breathing										Range of Motion						Pain			
	FVC	FEV ₁	PEF	Thorax excursion		RMMI				Lateral flexion		Thoracic vertebrate mobility		VAS			BPI-SF			
				Costae 4	Xiphoidae	Upper Thorax		Lower Thorax		Abdominal		L	R	Flexion	Extension	Lying	Sitting	Standing	Location	Severity*
				L	R	L	R	L	R	L	R									
Subject 1	▲	○	○	▲	▲	▲	▲	○	○	○	○	○	○	▲	○	○	○	▲	○	
Subject 2	▼	○	○	○	○	○	○	▲	○	○	○	○	○	○	○	○	○	▲	○	
Subject 3	○	○	○	○	○	○	○	○	○	▲	▲	○	○	○	○	○	○	▲	▼	
Subject 4	○	○	○	○	○	○	○	○	○	▲	▲	○	○	○	○	○	○	▲	▲	
Subject 5	○	○	○	○	▲	▲	○	○	○	○	○	○	○	○	○	○	○	▲	▲	
Subject 6	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	▲	▲	
Subject 7	○	○	▼	○	▲	▲	○	○	○	○	▲	○	○	○	○	○	○	▲	○	
Subject 8	▼	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	▲	○	
Total	1▲ 2▼	0▲ 1▼	0▲ 1▼	3▲ 0▼	1▲ 0▼	3▲ 0▼	2▲ 0▼	4▲ 0▼	1▲ 0▼	1▲ 0▼	3▲ 0▼	6▲ 0▼	0▲ 1▼	0▲ 0▼	1▲ 0▼	0▲ 0▼	1▲ 0▼	8▲ 0▼	4▲ 1▼	

* Severity score differing more than 1.0 from baseline value was estimated as a change
 ▲ = Improvement sometime during the study protocol
 ▼ = Worsen sometime during the study protocol
 ○ = No change

6 DISCUSSION

6.1 Methodological considerations

This thesis stretches over a broad area of care and research, CAM. Even if a certain context has been focused upon, surgical care, the dimensions of the subject are broad. A weakness in this thesis may therefore be the difficulty to draw a general conclusion from all four papers. However, a thesis is a part of an education, aimed to give the doctoral student tools and experience in planning, performing, communicating and evaluating research, using as broad a range of methodological ways as possible. This, on the other hand, may be the strength in this thesis, which includes both subjective and objective values, prospective and cross sectional times of investigation, inductive and deductive methods, and both patients and health care professions.

6.1.1 Perceptions and understanding of CAM

Studying perceptions and understanding of knowledge, usage, referrals, dialogs, education and interest can be done in many ways. In the thesis the choice of using one inductive, qualitative approach (paper I) and one deductive, quantitative approach (paper II) was made on the basis of the current aims and the suitability in terms of reaching a higher level of knowledge about the subject.

Paper I

perceptions of experiences of complementary therapies. Phenomenography is a suitable approach when variation of the perceived phenomenon is desired^{265, 267}. Use of phenomenography outside the area of educational research has been criticized for being phenomenology²⁹⁴. However, new areas, contexts, theoretical interpretations and ways of adopting research methodologies constantly occur. What is important is not how strictly a method is followed, but how well and true the aim of the study is fulfilled. In addition, phenomenology and phenomenography are related but are not comparable in their methodological philosophy or in the analysis of data. Phenomenology focuses on finding the essence, the core, the main concern to the studied phenomenon, and assumes that the person being interviewed communicates his or her experience of being in the life world, unique to the person. The aim, simplified and generalized, of phenomenology is to find resemblances between experiences of different life worlds concerning a specific phenomenon. The uniqueness of how the world around us is being perceived also exists in the phenomenographical tradition²⁶⁶, but the aim is to

find both similarities and differences in experiences of perceptions of a certain phenomenon in the world.

Strategic selection sampling was used in paper I with the aim of capturing as many different perceptions of the phenomenon “complementary therapies” as possible. Distribution by profession, gender, age and working life experience among the 16 participants was conceived as appropriate and acceptable for phenomenographical analysis.

Data were collected in semi structured interviews, which is common in phenomenographical studies. However, there are known risks in applying this form of data collection²⁶⁶. The two most problematic aspects are reason to participate in the study and the researcher’s interpretation of what is conveyed. Concerning the reason for participation, all 16 participants were willing to participate and communicate about complementary therapies. However, that does not evaluate whether their attitudes towards the phenomenon, the study methodology, or the study itself was positive or negative, which may affect the credibility of what was being expressed. Concerning the researchers’ interpretation, follow-up questions were used throughout the interviews to clarify statements and eliminate misinterpretations. Also, the same questions were used several times during the sessions, but rephrased.

The choice of including an essence of these categories of perceptions may be criticized as applying too extensive a phenomenological approach. However, there are significant differences between each category and also between each essence. I believe that, by extracting both variation and invariance from an extensive data set such as interviews, the researchers must turn over every “stone” – that is, every statement – and in doing so gain a deeper and broader understanding and comprehension of what the real perceptions are. The argument for applying steps 5 to 7 of the analysis described by Sjöström and Dahlberg²⁶⁶ is to gain a deeper understanding, observe and capture more than just perceptions in the interviews in the search for understanding, and give a further dimension to both the first and the second order perspectives. Hence, disagreement concerning this way of carrying out phenomenographical analysis exists.

From the results of paper I we believed that there must be further investigation of the whole population, and a quantitative study design was therefore launched in paper II.

Paper II

The results of paper II gave a perspective on the findings in paper I. There is however a risk in working from an inductive approach, where hypotheses are created and suggested, to a deductive, hypothesis testing design. Firstly, the hypothesis could be wrong. To avoid this, we put the findings from paper I in relation to other similar studies, and even incorporated some of their questions into our questionnaire^{105, 269-271}. Secondly, the risk of creating and asking the wrong questions exists. A further way to verify the results of paper II would thus be to change back to inductive methodology and ask why the participant gave these statements.

The choice of exclusively focusing on surgical care in university hospitals may be questioned. Arguments for this choice are the diversity of surgical areas, the number of purely refined surgical wards and clinics, and the national distribution of hospitals with the same level of care. The fact that it should be possible to compare to findings in paper I was also important.

The decision to exclude dieticians, based on the low number of respondents and the small population of dieticians in Swedish surgical care, was ethically justified. However, this opens a lack of comparison to paper I, where dieticians' perceptions were included.

Non-response or dropout analysis often uses three questions: Were there sufficient reminders and possibilities to fill out the questionnaire? Does the participants' demography correlate significantly with that of the general population? Why did the non-respondents not respond? The first two have been considered and accounted for. Since the questionnaire was distributed anonymously, it was not possible to obtain the reasons for not responding.

As regards increasing the response rate, different feasible strategies have been recommended, e.g. mail or telephone approaches in favour of web or fax, use of stamped return envelopes, and collaborating with a professional association^{295, 296}. In paper II, all but the last recommendation was used, and the response rate was still only 42%. Electronic reminders by e-mail were used, but this has since been proven to be of little value to the response rate²⁹⁷. Further, resubmitted questionnaires to non-respondents were not possible because the participants were anonymous, although this may also have been a strategy to raise the response rate.

The layout and administration of a questionnaire are always discussed as problematic and multidimensional (language, graphics, approvals, length, size, mood of the administrator, respondents, and those approving

distribution etc.)²⁹⁸. It could have been foreseen that the CAM knowledge level was low and the contents of the questionnaire unfamiliar to health care professions. An easier language and more general wording may perhaps have been more suitable. The questionnaire could also have been shortened, and this is recommended for similar trials in the future.

The questionnaire can be criticized for a lack of validity and reliability testing. The purpose of the questionnaire developed in paper II was however not to create a survey instrument for continuous use but to investigate the understanding of matters such as knowledge, referral, communication, and usage of CAM among health care professions in Swedish surgical care.

The data were analysed only with basic statistical methods. Consideration was given to making further analyses, such as logistics regression but, because of the low response rate, findings may be misinterpreted as being valid for the whole population.

6.1.2 Symptom management

There is a debate about the “right way” of studying CAM therapies. The biomedical side, with evidenced based medicine (EBM) approach, argues for exclusively designing studies in the RCT manner. Those who disagree argue that it is undynamic and foremost suitable for pharmaceutical studies, and that it neglects values of subjective experience or perception, relation based interactions, or matters of a cultural nature²⁹⁹. Proposals of a more dynamic advance to CAM research have been suggested³⁰⁰. As stated by Fønnebø et al.⁶, CAM interventions are not only aimed at exclusively giving treatment to bring about a change in the biomedical outcome.

To study the two therapies chosen (TENS and osteopathy) during two specific times span after two different operations (pancreaticoduodenectomy and thoracoabdominal oesophagus resection), two different methodologies was used: a standardised single-blinded randomized trial with sham control (paper III) and a multi case methodology without blinding and randomization (paper IV).

Paper III

It was disappointing that, after nearly three years of intensive work with TENS in the postoperative patients, only 20 patients passed the full study protocol. Major oncology surgery is advanced, risky and demands an extremely individually adaptation to each problem that arises. Hence, it is very difficult to standardise a study protocol that includes the right, narrow population of subjects and sufficiently excludes persons so that too wide an

individual swing is eliminated. The danger is then that the final population included in the study does not represent the population that the study has aimed to investigate.

The power analysis performed on the findings, described in the discussion section of paper III, indicated several years of further investigation to reach a significant number of participants. For this reason and considering the comments given by patients and nurses, we advise against further investigation at a single site surgical center with these small numbers of study-adaptable subjects.

In performing effectiveness trials on therapies such as TENS, it is important to be aware that it is not always the measured variables that are in fact the main findings. In paper III the comments of nurses and patients clearly belonged to a higher aim, the aim of investigating whether this therapy was effective, useful and suitable for the current context.

The TENS treatment given can also be criticized. Concerning sham TENS, i.e. sensory threshold TENS, recent studies have found that this type of sham treatment also contributes to a pain relieving effect, but not to the same extent as strong, non painful TENS³⁰¹. This is of course an important criticism in paper III, and it is therefore strongly advised in future trials to take this into consideration. As stated by Sluka and Walsh¹⁹⁸, TENS treatment in itself has a significant placebo effect as it contributes to adapting to pads, a device and an electrical current. Hence, it is important to use randomization when studying the effects of TENS due to the risk of overestimating treatment effects³⁰².

The use of the QoR-40 must be questioned on the basis of the modification and the untested translation from the English version. A better choice would be the Swedish recovery scale developed by Allvin^{303, 304}, the Postoperative Recovery Profile (PRP). This instrument is not interfered with by the interval of distribution and consists of only 19 items, which could be beneficial to increasing response rates and lowering the burden of questions on study subjects.

Paper IV

A single-subject research design is used when there is not a possibility to collect sufficient numbers of subjects to perform parametric statistics. This was, as seen in figure 7 in the method section, the case in paper IV, which makes the method adoptable. As is clear in the findings reported in paper IV, baseline values varied. Using a single-subject research design is in this case

favourable over other designs such as RCT, where only one baseline is measured and the variation relies instead on a sufficient number of subjects. This variation further confirms the use of the two standard deviation band method, which adjusts for the variation. A further important data collection occasion would have been preoperative measurement of values. That could have given an absolute baseline, since it is not likely that postoperative improvement would excide preoperative values in breathing and range of motion.

It should always be important to correlate objective findings with those of participants' subjective experiences. A good example is given in paper IV, where both measured variables of breathing, stiffness and pain correspond to the experiences given by the participants. For future trials, it is therefore advised that such a mix of methodological design be used.

A limitation in paper IV is however the possibility to generalize the findings. On the other hand, it is not always possible, economically or medically, to carry out trials with only generalisable results. It can be thought to be advisable to do multicentre studies on the impact of manual medicine on post-thoracic symptoms. If this is not possible, further single subject studies are then recommended, preferentially with an A-B-A-C-A design to test for a therapist-patient relation effect in phase C.

6.1.3 Methodological considerations of the findings in general

As described earlier in this thesis, current evidence based recommendations rely solely on findings in RCT studies. However, other ways of approaching research on CAM can be suggested.

Instead of a hierarchic, efficacy based research approach, with only a RCT design, Walach et al.³⁰⁵ argue for a more circular model for the weight of evidence (Figure 9). In such a model, both deductive and inductive and efficacy and effectiveness studies are accounted for and a mix of methodologies contributes to fulfilling the aim of the investigation, and in the long term creates better evidence. It is not the aim of Walach et al. to discard the use of RCTs but rather to consider RCT as one of many different methodological designs needed to illuminate the area of CAM by good science.

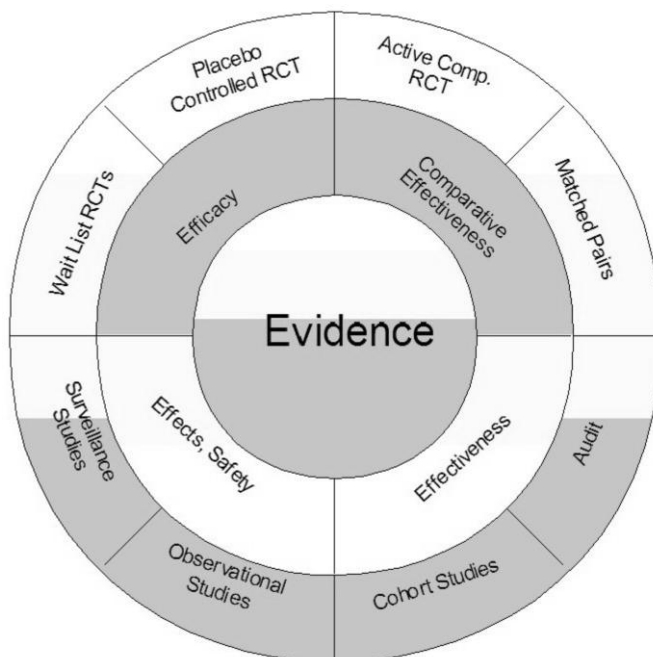


Figure 9. Circle of research methods. Originally published by Walach et al.³⁰⁵. Reprinted with permission from the journal and the first author.

6.2 Discussion of the findings

The main findings in this thesis were the lack of knowledge about CAM among Swedish health care professions in surgical care and a suggestion for further investigation of osteopathic intervention in post-thoracic pain and stiffness, although not for TENS as a pain relieving complement during a transition to analgesia after major abdominal surgery.

The general purpose of this thesis was to investigate CAM in the surgical context, with a focus on health care professions and therapies in clinical settings. The question of definitions of CAM that can be conceived among Swedish surgical professions was first of interest, since they give a framework for later discussions.

6.2.1 Diversity concerning definition

Several definitions of CAM have been suggested in the literature, but none are fully coherent, which reflects the diversity in defining the area even among scientists. This reflects the findings of papers I and II (see table 8) and the NCCAM's definition of CAM that emphasises "diverse" and "systems,

practices, products”. Moreover, the definitions of “complementary” and “alternative” medicine correspond to these results, which can be seen particularly in table 9. Furthermore, some participants in the work reported in both papers I and II perceived conventional disciplines, such as nursing, physiotherapy and occupational therapy, to be CAM. The question of what “conventional” stands for in their view would be most interesting to investigate further. It is possible that they find only the surgical procedure to be conventional, and nothing else.

An important perspective is where the border for CAM and the innovative area of health care lies? Health care robotics, for example, is not a part of conventional medicine but is not considered CAM. Is it because of the involvement of health care professionals in the development phase? That has also been the case in some CAM therapies, however. It is likely, as previously stated, that the definitions of CAM and of conventional medicine have a strong political linkage, as well as historical, social and economical. The results on the classification of therapies (see table 9) would probable have been different if paper II had been conducted in the 1980s, 1990s or at the beginning of the 2000s, as findings from Jacobsson¹⁰⁰ and Lynöe¹⁰¹ indicate. It is known that the perception of what alternative, complementary and integrative is varies over time³⁰⁶. It is therefore likely that integrative medicine, which was difficult to classify into specific therapies in paper II, may have reached a more familiar status among health care professions in the following few years. To reach that status, it will be essential for the health care community to gain a broader understanding of holistic care and to gain knowledge about CAM and CAM research.

6.2.2 Knowledge

The results reported in papers I and II concerning perceived level of knowledge about CAM and CAM research correlate well with internationally reported levels^{45, 46, 54, 62, 64, 68, 71, 72, 77, 83, 86, 91, 94}. The level of knowledge about CAM therapies is, and has historically been, low among health care workers in Sweden. This may be dangerous, specifically in the area of surgical area, where operations and procedures constantly become more and more advanced and dependent on stability during anaesthesia and the postoperative phase. The risk of interaction between the patient’s personal use of CAM remedies or therapies and conventional procedures might jeopardise his or her life. This may happen regardless of whether the patient preoperatively gives information about usage to the health care staff, as the staff does not have proper knowledge to judge the information³⁰⁷. On the other hand, therapies that might positively contribute to intraoperative stability and

improve postoperative recovery may be neglected or wrongly be advised against, also because of deficient knowledge of CAM among the staff.

The problem of current levels of knowledge among health care personal has been mentioned by Falkenberg³⁰⁸. He summarises that fundamental knowledge about CAM is essential to Swedish health care personal, firstly because of the absence of a patient-health care dialog and anamnesis of CAM usage, secondly because of risks of treatment, alone or in interaction to conventional care, and thirdly because of the danger that patients will neglect or decline conventional treatment in favour of alternative therapies as a result of a lack of knowledge or incorrectly given information.

The results of papers I and II show that there is an interest in gaining knowledge in Swedish surgical health care workers, in comparison to previous research^{44, 45, 62, 64, 66, 68, 69, 72, 77, 83}. As concerns this desire to understand and learn about CAM, it might be time to demystify CAM by expanding educational campaigns and starting a broad, general debate on the subject, as previously suggested³⁰⁸. Education has been reported to give positive changes³⁰⁹. As Frass et al.²¹ argue, a joint agreement on the definition of CAM and its areas, in combination with proper levels of knowledge among health care workers and media, could avoid general discussions that polarize CAM and conventional medicine and instead focus on specific therapies.

However, desiring more knowledge is one thing and gaining that knowledge when offered is something else. Although the health care professions stated that they wanted more knowledge about CAM, it is up to future research to determine just how important and prioritised gaining such knowledge is in reality when it is offered.

Concerning perceptions and understanding of CAM among health care professions, Hirschhorn and Bourgeault³¹⁰ argue that, as in papers I and II, it is difficult to assign to the findings among the participants a professional or a personal response. An aspect of the response is the self-concept, e.g. "What are my attributes". As Wilson et al.³¹¹ found, some people answered survey questions according to what they wanted to be and not as they were. For example, a person uses mindfulness, but does not consider himself as being into meditation, and therefore does not say that he uses meditation. Additional factors that have to be considered in terms of the results are previous contact with CAM, sources of evidence about CAM usage and results of trials. These are also a vital part of the perception of this area among health care personal³¹².

6.2.3 Dialog and Referral

It appeared in paper II that the dialog between health care professions and patients about CAM was low in Swedish surgical care and, since previous reported levels vary, it is difficult to draw any general conclusions. What should be investigated in future research is the level of comfort among health care workers in their dialog about CAM with their patients. Given that CAM is outside their own area of care and expertise, it is of great interest to study reactions, perceptions and experiences in these encounters.

Concerning communication, Schofield et al.³¹³ recommend ten steps in communication about CAM with patients in an oncology setting: understand, respect, ask, explore, respond, discuss, advise, summarise, document and monitor. Shelley et al.³¹⁴ highlight communication barriers in discussions of CAM and suggest strategies to avoid them. These steps and strategies may well fit into and be used in communicating about CAM in the surgical context. However, use among Swedish patients in surgical care must first be investigated before considering adopting approaches in communication about CAM.

Referrals to CAM therapies are made by Swedish surgical health care personal, as shown in tables 8 and 9, where acupuncture, massage and manual therapies were among the therapies most referred to, which agrees with a previous study among Swedish general practitioners¹⁰². What should be investigated further is why these therapies are being referred to, and why other therapies are not, with focus on the perceptions, understanding and level of knowledge of those making the referrals. Hence, an improvement could have been made of the question design in paper II; for example, referral and recommendation could have been studied in the manner of "referral had been made to patients at the hospital" and to what extent, as in Wong et al.'s⁷² study.

6.2.4 CAM usage

Perceived indications for feasible usage of CAM were similar to those previously reported in international studies^{49, 50, 54, 63, 66, 77, 78, 80, 84, 85, 88, 92}, and similar to those therapeutic effects investigated of CAM therapies, as described in the introduction to this thesis. This may indicate that research must look outside of what is perceived by health care professions concerning CAM and instead focus research on what patients and CAM therapists perceive about the area in general and specific therapies in particular. Smithson et al.³⁰⁷ emphasise the disadvantages of a biomedical side and a CAM side, where the patient is caught in between, not wanting to interfere

with conventional treatment, but still having a desire for aspects that CAM therapies offer.

Kaptchuk and Miller³¹⁵ present an alternative way of approaching the gap between conventional medicine and CAM: the pluralistic model. Instead of integrating suitable CAM treatments with conventional care, a tolerance and cooperation between CAM and conventional medicine can exist, without a relativistic stance. An awareness of differences and that both offer clinically valuable interventions is important, as is the demand for research and safety. How this model can be utilised in an empirical setting is not known, and problems, reactions and resistance are likely. An example given by Kaptchuk and Miller³¹⁵ is when a life saving surgical procedure is refused by the patient in favour of a non effective CAM treatment. It is therefore, as in Fønnebo⁶, the desire for all patients to have knowledge based treatment, wherever they may choose to get it, that is the important thing in the perspective of public health. It is always the patient, the one with a disease or perceived illness, who chooses to seek help, regardless of what the health care establishment thinks.

Conventional health care should be able to compete with the attraction of CAM: its holistic approach, giving hope, observing and treating even lesser and chronic complaints, and creating a therapeutic relationship with a continuity. In this lies the provision of integrative medicine, which can only be realised by further research on CAM. Problems, such as hierarchic and communicative ones, in incorporating integrative medicine into conventionally clinics has been reported³¹⁶. Barriers to such an integration in a Swedish setting have also been reported³¹⁷. However, the integrative approach was still feasible in conventional Swedish care, but not all patients want to receive CAM treatment in a medical setting, which must be considered as well³⁰⁷. As previously described, a lack in the current body of knowledge is the actual use of CAM by patients during surgical care. Most published studies focus on the “ever used” or “during the last year” usage. What is really interesting for further trials is the use of CAM by the patient in order to influence health during the period before, during and after surgery.

6.2.5 TENS during the transition between pain relieving strategies

Even though Cochrane reviews have requested high quality research, it is obvious that there are several clinical and methodological challenges in achieving this. As shown in paper III, sufficient numbers of participants are a main obstacle. Because of the low number of patients, multicenter studies are

often suggested. However, such studies have limitations due to differences in surgical procedures, anaesthesia and surgical care.

It was not possible to find any significant improvements or deterioration between the two TENS groups investigated in paper III. The choice of the primary variable may be discussed. Rakel and Frantz²²⁶ found a significant pain relieving effect of TENS after abdominal surgery in walking and deep breathing, but not in rest, lying prone. It is important to reflect on the additional burden of tubes and cables that accompany TENS treatment when considering TENS as a treatment option. As noted in the reflections of patients and nurses in paper III, this additional burden was perceived as restricting out of bed activities such as walking and doing breathing exercises. It is therefore important to emphasise the clinical possibilities of motivating patients to be connected to and use TENS, despite the additional cables that must be attached, adding to the already high burden of tubes, see figure 10.

The benefit of TENS in this postoperative phase, at this surgical procedure, and with that treatment protocol, must be questioned. In the perspective of the low support for usage in previous publications, the results of paper III with additional experience of the treatment, indicate that it might not be advisable to finance further trials at this time. This is due to the additional work that TENS treatment in the transition from EDA to general analgesia would generate for the health care personal compared to current pain relieving management with additional injections and tablets of opiates.

Perhaps the previous sporadic use of TENS in surgical clinics at the transition from EDA to general analgesia is a sign of a desire to use other strategies than conventional solutions to sign and symptom management in the postoperative phase. This is interesting, but results in an ineffective, resource wasting and uncomfortable burden for both patients and the health care staff in this case. Hence, it is important and justified to perform studies as paper III to aid clinicians in their choice of action. Despite the fact that the findings in paper III could not lead to a recommendation of TENS as a general pain relieving complement at the transition from EDA to general analgesia after major abdominal surgery, it might be individually evaluated in cases where it is not possible to use sufficient doses of conventional pain relief.

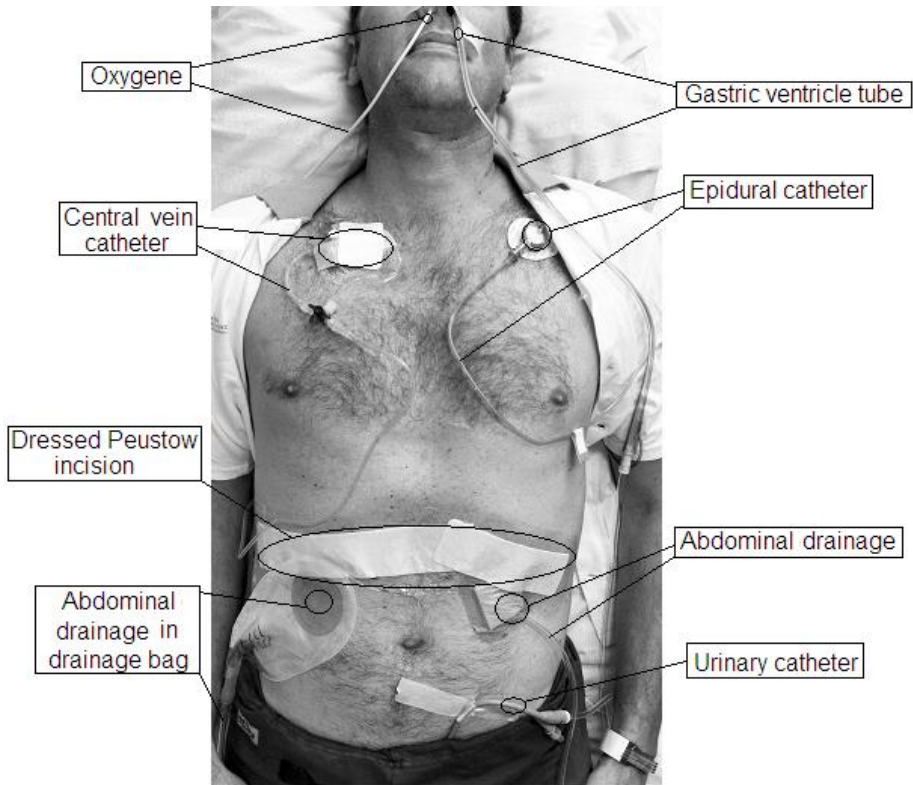


Figure 10. Tube burden in the postoperative phase after pancreatic surgery. Not included, but commonly occurring and used additional tubes and cables: intrapancreatic duct drainage, surveillance ECG, intraurinary thermometer via urinary catheter, pulse oximeter, additional peripheral vein catheters. Arranged photo by Kristofer Bjerså.

6.2.6 Osteopathy towards post-thoracic signs and symptoms

As previously shown, there is a lack in the current body of publications concerning osteopathic trials in the surgical context. It is therefore difficult to relate the findings from paper IV to previous publications. Our findings may be interpreted as a positive sign and indication to design and launch a larger, multicenter, multinational collaboration, where a broader span of post-thoracic symptom patients is included and given osteopathic treatment. As this study was initiated by patient request of advantages in using osteopathy, a general recommendation can not be justified based on the findings. However, osteopathic medicine may be beneficial, both subjectively and objectively, in some patients.

As osteopathic models of explanation might differ from mainstream medicine, and in addition to the lack of research in the surgical context, further investigations are recommended. In such trials, investigating osteopathic intervention for stiffness and pain, international collaboration is preferred, with randomization and a blinding design. It is also important to investigate the risks and effects of the observed decreased variables in breathing during the treatment phase.

6.2.7 On CAM research

Therapies outside conventional care are often criticised for having a low evidence value, as shown in paper I. However, therapies in conventional care also lack evidence, or have weak support in the scientific literature³¹⁸. It is therefore important to dare to perform research, even on therapies that do lack or have a perceived incorrect model of explanation, interpreted from the biomedical perspective. The population and the patients will anyway continue to use and practise these therapies.

It is also worth discussing the gap between conventional medicine and CAM concerning adopting and excluding therapies and knowledge. In conventional care, very few possess knowledge about CAM, but there are many researchers that are able to design and perform studies and trials. On the CAM side, there are therapists with long clinical experience and understanding of the potential of the mastered therapy, but without training or the possibility to test and clarify its effectiveness. How, and if, this gap is to be bridged is unclear. Firstly, should we in conventional health care assist and help other forms of care that have a very different model of explanation, to emphasise and advertise their cause? Secondly, do we have the right methodological research tools to investigate these matters in an appropriate way? As Sweden is a country that bases its health care system on political decisions, it would be undemocratic, since the population uses CAM in such a great extent, to avoid CAM and fail to support CAM research, which has been brought out in the Swedish CAM debate³⁰⁸. However, there is a risk in letting researchers who themselves believe too much in a therapy's, conventional or CAM, efficacy and effectiveness to alone design and perform the studies. This subject has been brought up several times in the Swedish CAM debate, but the question is just as important in any field of research, and may be solved with further dialog and cooperation between all serious caregivers.

7 CONCLUSION

The following specific conclusions are drawn from the studies:

- Health care professions in Swedish surgical care perceive CAM as something known but in its definition vague, in general and concerning specific therapies included in the concepts.
- There is a self conceived lack of knowledge about CAM and CAM research among registered health care professionals in Swedish surgical care.
- A desire for knowledge and education about CAM, aimed at the health care professions, has been emphasised.
- Referral to and recommendation of CAM may occur, but dialogs between patients and health care professions about CAM seldom occur.
- High frequency TENS at the transition from EDA to general analgesia after major abdominal surgery with a horizontal incision should not be recommended.
- Osteopathic intervention may positively affect thoracic impairment and pain among patients with chronic pain and impaired thoracic range of motion after thoracoabdominal resection of the oesophagus.

The comprehensive conclusion of the thesis is that Swedish health care professions recognised the concept CAM and some of its therapies, but their knowledge was in general low. Concerning therapy usability and effectiveness of CAM in surgical care, the context is essential; TENS after major abdominal surgery in EDA elimination is questionable as concerns pain and clinical application, and osteopathy may be beneficial in managing chronic signs and symptoms after thoracotomy.

8 FUTURE PERSPECTIVES

The area and research field of CAM are both broad and multidimensional. The current situation of high CAM usage in the population and among patients makes further research relevant and important. It is essential to supply the public, health care personnel, health care students, CAM practitioners and politicians with research findings in order to ease decision making and make dialogs about CAM relevant.

Concerning perceptions and understanding of CAM, papers I and II give a first glimpse of the Swedish health care professions' point of view. It is possible to proceed in many different ways. One is to verify results by returning to inductive methodology and inquiring why the participants gave the statements that they did in paper II. An example is to further investigate why some therapies are referred to and why other therapies are not, and whether referrals are made to patients at the hospital and to what extent. Another important further investigation is the level of comfort among health care workers in their dialog about CAM with patients. Given that CAM is outside their own area of care and expertise, it is highly interesting to study reactions, perceptions and experiences of these encounters.

Another approach in further research would be to investigate surgical units at other Swedish hospitals and hospitals in Scandinavia with the aim of finding differences and similarities in this context.

An essential step in this quest to give a valid mapping of the current situation around CAM in Sweden is to investigate perceptions, understanding and usage of CAM among Swedish surgical patients.

In such an investigation, it is advised not to focus on the "ever used" or "during the last year" usage among patients, as previous studies have done. What is essential is CAM usage meant to influence health during surgical care.

Due to the lack of research, it is also important to investigate other areas beside surgery concerning health care professionals' and patients' approach to CAM. By doing so, the findings in this thesis can be put into the perspective of Sweden.

It is implied in the work reported in papers I and II that education about CAM is needed in the health care setting. It is not known how this could be

effectively performed and what barriers and motivators there are. What is important is that such education is given about CAM, and not in CAM.

Concerning TENS as a pain relieving complement in the transition from EDA to general analgesia, implications of benefits after major surgery are questionable. As shown in paper III, there are differences between active TENS and sham TENS, but not significant ones. The economic aspect in terms of time and materials also speak against further investigation. However, if this therapy is to be investigated further, a multicenter design with large numbers of surgery patients is absolutely essential to obtain relevant data. It would also be interesting to evaluate the effect after procedures with lesser incisions or surgical trauma, such as lower abdominal surgery.

Concerning osteopathic intervention after thoracotomy, paper IV reports interesting results that imply a usefulness of further investigation that demands a larger population and other research methodology to investigate its role in the recovery phase. It is also possible to broaden the surgical procedures, such as lung resection through thoracotomy. International, multicenter collaboration would be preferable. It is also worth considering measurement and treatment structure in relation to the surgical care.

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APPENDIX

Appendix 1– Short description of therapies mentioned in the thesis

ACUPRESSURE	A mind and body therapy in which different types of pressure are applied by hand over different meridian points. Originates from ancient China.
ACUPUNCTURE	A mind and body therapy where needles are inserted percutaneously into specific meridian points. Ancient (B.C.) Chinese scrolls origin.
ANTHROPOSOPHIC MEDICINE	Medical system in the philosophy of Ita Wegman and Rudolf Steiner. Includes homeopathic and naturopathic medicine. Originates from 1920s Europe.
AROMA THERAPY	Natural products where different smells create different physical and psychological responses. Natural/ethereal oils are often used and combined with massage. Origin in antiquity.
AYURVEDA	Medical system based on the Indian, traditional medicine culture. Includes physical, social and spiritual therapeutic elements. Originates from B.C., India.
BOWEN THERAPY	Soft manipulative and body-based therapy including lifestyle adjustments. Originates from the ideas of Tom Bowen, mid 20 th century Australia.
CHIROPRACTIC CARE	Manipulative and body-based therapy focusing on the function of the spine. Originates from the ideas of P.P. Palmer, late 19 th century USA.
COLONICS	Conventional or CAM therapy. Forcing liquid into the colon via the rectum. Based on ancient Greek and Egyptian medicine, originates from 19 th century auto-intoxicaton theories.
DIETARY SUPPLEMENTS	Conventional or natural products of essential and non-essential additions to regular food e.g. minerals, vitamins, amino acids etc. Global, present time origin.
DIETS	Conventional and CAM therapies based on predetermined and regulated food intake. Global origin, both ancient and present time.
FELDENKRAIS THERAPY	Movement therapy based on the ideas of Moshe Feldenkrais. Founded in Europe during the 1940s.
HAIR ANALYSIS	Non-conventional laboratory testing of sampled hair for diagnostic purposes and determining of metal and mineral levels.

HEALING THERAPY	Other CAM practices in the energy field where therapeutic canalization of a religious or spiritual energy to a recipient for healing purposes is performed. Ancient, global origin.
HERBAL MEDICINE	Natural products with vegetable base such as flowers, leaf, bark or roots, etc. Ancient, global origin.
HOMEOPATHY	A medical system based on the philosophy of Samuel Hahneman; “Similia similibus curentur” (“Like cures like”). Medicament and potions based. Originates from late 18 th century Germany.
HYPNOSIS	A mind and body therapy using psycho-mental states to influence emotions, behavior or memories. Ancient Asian and 1880s European origin.
IRIDOLOGY	Non-conventional diagnostic by which attributes of the eye’s iris represents dysfunctions of the body. European origin, described in 1665 (Philippus Meyeus) and named as a therapy in the late 19 th century.
KINESIOLOGY (applied)	Manipulative and body based therapy and diagnostics where muscle functions represent functions of the body. Originates from the thoughts of George J. Goodheart, USA in the 1960s.
LIGHT THERAPY	Other CAM practice in the energy field that uses light (artificial or natural) to affect natural body reactions and the biological clock. Originates from the 19 th century.
MAGNET FIELD THERAPY	Other CAM practice in the energy field that places magnets on specific locations of the body.
MASSAGE THERAPY	Manipulative and body-based area which consists of a wide variety of therapies. By rubbing, stroking, pressing, etc., muscles and soft tissue are influenced. Global and ancient (B.C.) origin.
MEDITATION THERAPY	Mind and body medicine area consisting of a wide variety of disciplines, including prayer. Intense focus on specific thoughts to gain higher insight and possibility to adjust one’s own behavior. Global, ancient (B.C.) origin.
MINDFULNESS	A Mind and body therapy where meditation is used to be present in the moment, without making judgments. Generally originated from ancient (B.C.) Asian, Buddhist tradition, and specifically as a therapy since the late 1970s, based on the work of Jon Kabat-Zinn, USA.
MUSIC THERAPY	May be included in mind and body medicine. Uses music to help express or interpret emotions. Originates from the Western world in the 1940s.
NAPRAPATHY	Manipulative and body-based therapy, originated from chiropractics with the philosophy of Oakley

	Smith to also focus on soft tissues. Originates from 1907, USA.
NURSING SCIENCE	Practice, research and theories of professional nursing care. Originates from the 19 th century England and 1940s USA.
NATUROPATHY	A whole medical system focusing on gaining, recovering or maintaining the vital force of the body and its processes. Originates from late 19 th century Europe.
OCCUPATIONAL THERAPY	Practice, research and theories of occupational therapists. Originates from the later parts of the 20 th century USA/Canada/Australia/New Zealand.
ORTHOPAEDIC MANUAL THERAPY (OMT/OMI)	Manipulative and body-based therapy originating from the work of James Cyriax. Practiced by physiotherapists or physicians. Originates from mid 20 th century England, and also previous physiotherapists and bone setters.
OSTEOPATHY	A manipulative and body-based therapy based on the work of Andrew Taylor Still. Originates from late 19 th century USA.
PHYSIOTHERAPY	Practice, research and theories of physiotherapists. Originates from early 19 th century Sweden and late 19 th century Britain.
PSYCHOTHERAPY	Psychological treatments aiming to affecting psychological aspects in a person's behavior, relations and existence. Originates from Sigmund Freud's ideas, started in Austria in the late 19 th century.
QI GONG	Other CAM practice in the energy field area, where movements are combined with breathing, meditation and visualization for the purpose of enhancing the flow of life energy (qi). Ancient (B.C.) Chinese origin.
REFLEXOLOGY	A mind and body therapy in which pressure is applied to specific points on the feet, hands or ears, and reactions occur in other parts of the body. Originates from the first half of the 20 th century USA.
REIKI	Other CAM therapy in the energy field where healing is used to help the person to connect to the universal life force. Originates from the philosophy of Mikao Usui, Japan in the 19 th century.
ROSEN METHOD	A manipulative and body-based massage form with a strong psychological focus. Originates from the ideas of Marion Rosen, Germany/Sweden/USA from the mid 20 th century.
SHIATSU	A mind and body energy therapy where pressure points are stimulated to affect energy flow. Originates generally from TCM, but specifically from the work of Tamai Tempaku, Japan in the early 19 th century.

T'AI CHI CHAUN	A mind and body therapy based on self practice movements. Originates from medieval China as a martial art, and the mid 20 th century as a health therapy.
TACTILE MASSAGE	A manipulative and body-based massage, performed by soft and gentle strokes on the skin. Originated as a therapy from late 20 th century Sweden.
TENS (TRANSCUTANEOUS NERVE STIMULATION)	A conventionally used mind and body therapy where an electric current is used to stimulate nerve fibers. Ancient (B.C.) origins, and specifically as a conventional therapy from the mid 20 th century.
YOGA	Mind and body therapies where body positions contribute to bodily, mental and spiritual health. Originates from ancient (B.C.) Hindu and Buddhism scrolls, India.
ZONE THERAPY	See Reflexology.

Appendix 2– Questionnaire used in Paper II (Swedish version; total content)



GÖTEBORGS UNIVERSITET
SAHLGRENSKA AKADEMIN

Nationell enkät om komplementär-, integrativ och alternativmedicin till sjukvårdspersonal inom kirurgisk vård

Användningen av komplementär och alternativmedicin ökar i samhället, både internationellt och i Sverige. Idag saknas kunskap kring hur personal inom hälso- och sjukvården i Sverige uppfattar detta område.

Vi har tidigare gjort en intervjustudie på detta ämne och vill nu verifiera resultatet och se om det är reproducerbart. Därför vänder sig denna enkät till Dig som är legitimerad sjukvårdspersonal och arbetar inom någon form av kirurgisk vård. Syfte är att undersöka kunskap, attityd och uppfattning kring komplementära terapier. Deltagandet i denna undersökning är frivilligt och all information som Du lämnar behandlas konfidentiellt. Alla enkäter är kodade för att påminnelse skall kunna skickas ut. Resultatet från denna enkät kommer sedan att sammanställas och publiceras i passande vetenskaplig tidskrift.

Nedan följer definitioner av medicin och terapibegrepp som berörs i denna enkät:

Konventionell = Den vård som ges inom den statliga sjukvården på sjukhus, vårdcentral eller av hemsjukvård

Komplementär = Används samtidigt som konventionell behandling, men utan att dessa anpassas efter varandra.

Alternativ = Behandling som ges istället för konventionell vård

Integrativ = Behandling som ges samtidigt som konventionell behandling och där dialog och samspel sker mellan dessa.

Kontakt vid frågor:

Kristofer Bjerså

Verksamheten för Kirurgi, Sahlgrenska Universitetssjukhuset, Göteborg

Tel. 031-3428735

E-post: kristofer.bjersa@vgregion.se

1. Nedan finns olika behandlingsformer listade. Vilken sorts vård/terapi anser Du att de hör till? (Sätt ett kryss i ringarna för att markera Ditt svar):

	Konventionell	Komplementär	Alternativ	Integrativ	Känner ej till terapiform	Skulle du rekommendera behandling:	
						Till familjen	Till patient
AYURVEDA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA
HOMEOPATI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA
PSYKOTERAPI KBT	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA
MEDITATION, MINDFULLNESS, ETC	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA
HEALING, REIKI, ETC.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA
YOGA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA
OMVÅRDNAD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA
TAI CHI QI GONG	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA
AKUPUNKTUR AKUPRESSUR	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA
ORTOPEDISK MANUELL TERAPI (OMT/OMI)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA
MASSAGE SHIATSU TAKTILMASSAGE	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA
KIROPRAKTI NAPRAPATI OSTEOPATI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA
FYSIOTERAPI SJUKGYMNASTIK	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA
ÖRTMEDICIN HÄLSOKÖST	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA
BOWEN TERAPI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA
IRISDIAGNOSTIK	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA
ARBETSTERAPI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA
KINESIOLOGI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA
SINNESTERAPIE t.ex. ljusterapi, musikterapi, aromterapi	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA
ROSENMETODEN	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA
ZONTERAPI REFLEXOLOGI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> JA	<input type="radio"/> JA

2. KUNSKAP

2.1 Hur graderar Du Din kunskap inom området Komplementär-, integrativ och alternativmedicin?					
Ingen kunskap	Lite kunskap		Mycket kunskap	Fullt insatt i området	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.2 Skulle Du vilja ha mer kunskap om detta området?					
<input type="radio"/> JA			<input type="radio"/> NEJ		
2.3 Hur viktigt anser Du det är att man som legitimerad vårdpersonal har kunskap om detta område?					
Helt oväsentligt	Mycket oväsentligt	Ganska oväsentligt	Av viss vikt	Av stor vikt	Av största vikt
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.4 Skulle Du vilja lära Dig någon eller några terapier inom detta område?					
<input type="radio"/> JA			<input type="radio"/> NEJ		
Om JA, vilken/vilka:					
2.5 Utifrån Din kunskap anser Du att terapier inom detta område skulle kunna användas inom den konventionella vården?					
<input type="radio"/> JA, inom kirurgisk vård		<input type="radio"/> JA, inom sjukhusvård		<input type="radio"/> JA, inom primärvård	
				<input type="radio"/> NEJ	

3. FORSKNING

3.1 Hur förtrogen är Du med forskning som bedrivs inom komplementär-, integrativ- eller alternativmedicin?			
Aldrig hört om sådan forskning	Lite kunskap	Mycket kunskap	Fullt insatt i sådan forskning
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.2 Skulle Du vilja ta del av resultat från forskning inom detta område?			
<input type="radio"/> JA		<input type="radio"/> NEJ	
3.3 Anser Du generellt att mer forskningsresurser borde läggas på detta område?			
<input type="radio"/> JA		<input type="radio"/> NEJ	
3.4 Skulle Du kunna tänka Dig att delta eller driva ett forsknings- eller utvecklingsprojekt inom detta område?			
<input type="radio"/> JA		<input type="radio"/> NEJ	

4. FÖRFRÅGAN

4.1 Hur ofta har patienter Du träffar frågor om komplementär-, integrativ- eller alternativmedicin?						
Aldrig hänt	<1ggr/år	1-2 ggr/år	1-2 ggr/månad	2-3ggr/veckan	>4ggr/veckan	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.2 Hur ofta frågar Du patienter om användning av någon form av komplementär-, integrativ- eller alternativmedicin?						
Aldrig hänt	<1ggr/år	1-2 ggr/år	1-2 ggr/månad	2-3ggr/veckan	>4ggr/veckan	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. Nedan följer några påståenden som Du skall ta ställning till utifrån Din uppfattning. Sätt ett kryss på skalan där det bäst stämmer med Din uppfattning!

Fysisk och mental hälsa upprätthålls av en bakomliggande energi eller vital kraft	Tar helt avstånd från	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Håller fullständigt med
Kroppen kan i huvudsak hela sig själv och uppgiften för hälso- och sjukvårdspersonal är att assistera till en helande process	Tar helt avstånd från	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Håller fullständigt med
En patients symtom skall betraktas som en yttring av generell obalans eller dysfunktion som påverkar hela kroppen	Tar helt avstånd från	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Håller fullständigt med
En patients förväntningar, hälsoövertygelser och värderingar skall integreras i patientens vård	Tar helt avstånd från	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Håller fullständigt med
Komplementära metoder är ett hot mot hälso- och sjukvården	Tar helt avstånd från	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Håller fullständigt med
Behandlingar som inte genomgått vetenskaplig granskning skulle avrådas från att användas	Tar helt avstånd från	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Håller fullständigt med
Effekten av komplementära terapier är oftast orsakade av placeboeffekten	Tar helt avstånd från	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Håller fullständigt med
Komplementära metoder innehåller idéer och terapier som med fördel skulle kunna gagna den konventionella vården	Tar helt avstånd från	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Håller fullständigt med
De flesta komplementära metoder stimulerar kroppens naturliga läkande egenskaper	Tar helt avstånd från	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Håller fullständigt med
Jag som vårdgivare har klara riktlinjer och direktiv om hur jag skall förhålla mig till komplementär och alternativmedicin	Tar helt avstånd från	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Håller fullständigt med
Böner och spiritism är komplementära terapier	Tar helt avstånd från	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Håller fullständigt med
Behandlingar och terapier inom komplementär- och alternativmedicin borde bekostas av staten, och inte patienten själv	Tar helt avstånd från	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Håller fullständigt med

7. Har Du själv använt någon terapi som Du anser vara komplementär eller alternativ?

Terapinamn (t.ex. Naturläkemedel, healing, kiroprakti, akupunktur, etc.)	Hur många gångar har Du använt terapin?	När fick Du senast terapin?	Vad blev Din totala omkostnad för behandlingen?	Upplevde Du önskad effekt?
	<input type="checkbox"/> 1 gång <input type="checkbox"/> 2-4 ggr <input type="checkbox"/> 5-10 ggr <input type="checkbox"/> Kontinuerligt	<input type="checkbox"/> Senaste veckan <input type="checkbox"/> Senaste månaden <input type="checkbox"/> Senaste året <input type="checkbox"/> Mer än ett år sedan		<input type="checkbox"/> JA <input type="checkbox"/> NEJ
	<input type="checkbox"/> 1 gång <input type="checkbox"/> 2-4 ggr <input type="checkbox"/> 5-10 ggr <input type="checkbox"/> Kontinuerligt	<input type="checkbox"/> Senaste veckan <input type="checkbox"/> Senaste månaden <input type="checkbox"/> Senaste året <input type="checkbox"/> Mer än ett år sedan		<input type="checkbox"/> JA <input type="checkbox"/> NEJ
	<input type="checkbox"/> 1 gång <input type="checkbox"/> 2-4 ggr <input type="checkbox"/> 5-10 ggr <input type="checkbox"/> Kontinuerligt	<input type="checkbox"/> Senaste veckan <input type="checkbox"/> Senaste månaden <input type="checkbox"/> Senaste året <input type="checkbox"/> Mer än ett år sedan		<input type="checkbox"/> JA <input type="checkbox"/> NEJ
	<input type="checkbox"/> 1 gång <input type="checkbox"/> 2-4 ggr <input type="checkbox"/> 5-10 ggr <input type="checkbox"/> Kontinuerligt	<input type="checkbox"/> Senaste veckan <input type="checkbox"/> Senaste månaden <input type="checkbox"/> Senaste året <input type="checkbox"/> Mer än ett år sedan		<input type="checkbox"/> JA <input type="checkbox"/> NEJ

8. Bakgrundsinformation

Vilken yrkeskategori tillhör Du?	<input type="checkbox"/> Läkare <input type="checkbox"/> Dietist	<input type="checkbox"/> Sjuksköterska <input type="checkbox"/> Sjukgymnast
Vilken form av kirurgi har Du Din huvudsyssla inom?	<input type="checkbox"/> Bröstkirurgi <input type="checkbox"/> Övre gastro <input type="checkbox"/> Nedre gastro <input type="checkbox"/> Endokrinkirurgi <input type="checkbox"/> Kärkirurgi	<input type="checkbox"/> Akutkirurgi <input type="checkbox"/> Thoraxkirurgi <input type="checkbox"/> Plastik <input type="checkbox"/> Urologi <input type="checkbox"/> Annan: _____
Hur många års erfarenhet har Du i Din profession?	<input type="checkbox"/> 0-2 år <input type="checkbox"/> 3-5 år <input type="checkbox"/> 6-10 år	<input type="checkbox"/> 11-20 år <input type="checkbox"/> >20 år
Hur många års erfarenhet har Du inom kirurgisk vård?	<input type="checkbox"/> 0-2 år <input type="checkbox"/> 3-5 år <input type="checkbox"/> 6-10 år	<input type="checkbox"/> 11-20 år <input type="checkbox"/> >20 år
Kön	<input type="checkbox"/> MAN	<input type="checkbox"/> KVINNA
Födelse år	19 _____	
När besökte Du som patient senast en vårdcentral eller sjukhus?	<input type="checkbox"/> Senaste veckan <input type="checkbox"/> Senaste månaden <input type="checkbox"/> Senaste halvåret	<input type="checkbox"/> Senaste året <input type="checkbox"/> Senaste 3 åren <input type="checkbox"/> > 3 år sedan
Är Du själv utbildad i någon komplementär eller alternativ metod?	<input type="checkbox"/> Ja, vilken/vilka?: _____ <input type="checkbox"/> Nej	
Utför Du någon komplementär eller alternativ metod?	<input type="checkbox"/> Ja, i mitt arbete <input type="checkbox"/> Ja, som privatperson	<input type="checkbox"/> Nej

TACK FÖR ATT DU TOG DIG TID OCH FYLLDE I ENKÄTEN!

Appendix 2 – Questionnaire used in Paper II (English version; total content)



GÖTEBORGS UNIVERSITET
SAHLGRENSKA AKADEMIN

National questionnaire concerning Complementary, Integrative and Alternative Medicine, aimed for health care professions in surgical care

The use of complementary and alternative medicine (CAM) is increasing in society, both internationally and in Sweden. There is a lack of knowledge about how health care professions in Sweden perceive of this area.

We have conducted an interview study on this topic and are now trying to verify the results and investigate whether they are reproducible. Consequently, this questionnaire addresses you who are registered health care personnel and work in any area of surgical care. The aim is to investigate knowledge, attitudes and perceptions of CAM.

Participation in this study is voluntary and all information you state will be managed confidentially. All questionnaires are coded with the purpose of sending reminders.

The findings from this questionnaire will be published in a suitable, peer-reviewed, scientific journal.

Definitions of medical and therapeutic concepts that are relevant to the questions in this survey are:

Conventional = Health care given in governmentally funded and controlled hospitals, primary care, nursing homes or the like

Complementary = Treatments used simultaneously with conventional health care, but without dialog or adaptation between them

Alternative = Treatment chosen instead of conventional health care

Integrative = Care given simultaneously with conventional health care and where a dialog, cooperation and interplay exist between the two

For questions, contact:

Kristofer Bjerså

Department of Surgery, Sahlgrenska University Hospital

Phone: +46-(0)31-3428735

E-mail: kristofer.bjersa@vgregion.se

1. Different therapies are listed below. Which area do you perceive the therapies to belong to? (Mark your answer with an X in the circle):

	Conventional	Complementary	Alternative	Integrative	<i>Do not recognise the therapy</i>	Would recommend this therapy to:	
						my family	my patients
AYURVEDA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES
HOMEOPATHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES
PSYCHOTHERAPY CBT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES
MEDITATION, MINDFULNESS ETC.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES
HEALING, REIKI ETC.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES
YOGA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES
NURSING CARE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES
TAI CHI QI GONG	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES
ACUPUNCTURE ACUPRESSURE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES
ORTHOPAEDIC MANUEL THERAPY (OMT,OMI)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES
MASSAGE SHIATSU TACTILE MASSAGE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES
CHIROPRACTICS NAPRAPATHY OSTEOPATHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES
PHYSIOTHERAPY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES
HERBAL AND NON-HERBAL MEDICINE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES
BOWEN THERAPY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES
IRIDODOLOGY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES
OCCUPATIONAL THERAPYI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES
KINESIOLOGY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES
SENSE THERAPIES e.g. light therapy, music therapy, aroma therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES
ROSEN METHOD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES
REFLEXOLOGY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> YES

2. KNOWLEDGE

2.1 How do you grade your level of knowledge in the area of complementary, alternative and integrative medicine?					
No knowledge	Minor knowledge	Good knowledge	Full knowledge		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
2.2 Would you like to have further knowledge about this area?					
<input type="radio"/> YES	<input type="radio"/> NO				
2.3 What is your perception of the importance for registered health care personal to possess knowledge about this area of care?					
Totally unessential	Very unessential	Rather unessential	Of some importance	Very important	Totally essential
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.4 Would you like to learn to practice a therapy in this area?					
<input type="radio"/> YES	<input type="radio"/> NO	If YES, what therapy/ies?			
2.5 By your current knowledge, do you perceive that therapies in this area could be beneficially used in conventional care?					
<input type="radio"/> YES, in surgical care	<input type="radio"/> YES, in hospital care	<input type="radio"/> YES, in primary care	<input type="radio"/> NO		

3. RESEARCH

3.1 How familiar are you with research conducted in complementary, integrative or alternative medicine?			
No knowledge	Minor knowledge	Good knowledge	Full knowledge
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.2 Would you like to find out more about findings from research in this area?			
<input type="radio"/> YES	<input type="radio"/> NO		
3.3 Do you in general perceive that more research funding should be addressed to this area?			
<input type="radio"/> YES	<input type="radio"/> NO		
3.4 Would you consider attending or running a research or development project in this area?			
<input type="radio"/> YES	<input type="radio"/> NO		

4. DIALOG

4.1 How often do your patients ask you about complementary, integrative or alternative medicine?					
Never	Less the once a year	1-2 times/year	1-2 times a month	2-3 times a week	More then 4 times a week
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.2 How often do you ask your patients about complementary, integrative or alternative medicine?					
Never	Less the once a year	1-2 times/year	1-2 times a month	2-3 times a week	More then 4 times a week
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. Please consider the statements below and answer them according to your understanding. Mark with an X the alternative responding best to your perception.

Physical and mental health are maintained by an underlying energy or vital force							
Absolutely Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Absolutely Agree
The body is essentially self-healing and the task of a health care provider is to assist in the healing process							
Absolutely Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Absolutely Agree
A patient's symptoms should be regarded as a manifestation of a general imbalance or dysfunction affecting the whole body							
Absolutely Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Absolutely Agree
A patient's expectations, health beliefs and values should be integrated into the patient care process							
Absolutely Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Absolutely Agree
Complementary therapies are a threat to public health							
Absolutely Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Absolutely Agree
Treatments not tested in a scientifically recognized manner should be discouraged							
Absolutely Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Absolutely Agree
Effects of complementary therapies are usually the result of placebo effect							
Absolutely Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Absolutely Agree
Complementary therapies include ideas and methods from which conventional medicine could benefit							
Absolutely Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Absolutely Agree
Most complementary therapies stimulate the body's natural therapeutic powers							
Absolutely Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Absolutely Agree
I, as a health care provider, have distinct guidelines and directives for how to approach complementary and alternative medicine							
Absolutely Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Absolutely Agree
Prayer and spiritualism are complementary therapies							
Absolutely Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Absolutely Agree
Treatments and therapies perceived as complementary and alternative medicine should be funded by the government, and not by the patients themselves							
Absolutely Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Absolutely Agree

7. Have you yourself used any therapy that you perceive as complementary or alternative?

Name of therapy (e.g. herbal medicine, healing, chiropractics, acupuncture, etc.)	How many times have you used the therapy?	When was the last time you used the therapy?	What was the total expenditure for the treatment?	Did you perceive the effect you desired?
	<input type="radio"/> Once <input type="radio"/> 2-4 times <input type="radio"/> 5-10 times <input type="radio"/> Continuous	<input type="radio"/> Last week <input type="radio"/> Last month <input type="radio"/> Last year <input type="radio"/> More than a year ago		<input type="radio"/> YES <input type="radio"/> NO
	<input type="radio"/> Once <input type="radio"/> 2-4 times <input type="radio"/> 5-10 times <input type="radio"/> Continuous	<input type="radio"/> Last week <input type="radio"/> Last month <input type="radio"/> Last year <input type="radio"/> More than a year ago		<input type="radio"/> YES <input type="radio"/> NO
	<input type="radio"/> Once <input type="radio"/> 2-4 times <input type="radio"/> 5-10 times <input type="radio"/> Continuous	<input type="radio"/> Last week <input type="radio"/> Last month <input type="radio"/> Last year <input type="radio"/> More than a year ago		<input type="radio"/> YES <input type="radio"/> NO
	<input type="radio"/> Once <input type="radio"/> 2-4 times <input type="radio"/> 5-10 times <input type="radio"/> Continuous	<input type="radio"/> Last week <input type="radio"/> Last month <input type="radio"/> Last year <input type="radio"/> More than a year ago		<input type="radio"/> YES <input type="radio"/> NO

8. Background Information

What is your profession?	<input type="radio"/> Physician <input type="radio"/> Dietician	<input type="radio"/> Registered Nurse <input type="radio"/> Physiotherapist
In what area of surgical care do you mainly practice?	<input type="radio"/> Breast/mammae <input type="radio"/> Upper gastrointestinal <input type="radio"/> Colorectal surgery <input type="radio"/> Endocrinological <input type="radio"/> Vascular	<input type="radio"/> Emergency/Trauma <input type="radio"/> Cardiothoracic <input type="radio"/> Plastic/reconstructive <input type="radio"/> Urology <input type="radio"/> Other: _____
How many years of experiences do you have in your profession?	<input type="radio"/> 0-2 years <input type="radio"/> 3-5 years <input type="radio"/> 6-10 years	<input type="radio"/> 11-20 years <input type="radio"/> >20 years
How many years of experience do you have in surgical care?	<input type="radio"/> 0-2 years <input type="radio"/> 3-5 years <input type="radio"/> 6-10 years	<input type="radio"/> 11-20 years <input type="radio"/> >20 years
Sex	<input type="radio"/> Male	<input type="radio"/> Female
Year of birth	19 ____	
When did you last visit a primary health care center or a hospital?	<input type="radio"/> Last week <input type="radio"/> Last month <input type="radio"/> Last six-month period	<input type="radio"/> Last year <input type="radio"/> Last three years <input type="radio"/> More than three years
Are you educated in any complementary or alternative therapy?	<input type="radio"/> YES	<input type="radio"/> NO
Do you perform/practice any complementary or alternative therapy?	<input type="radio"/> Yes, in clinical work <input type="radio"/> Yes, outside of work <input type="radio"/> NO	

Thank you for taking the time to answer this questionnaire!