

Abstracts*

Heather Boon, Ania Kania-Richmond, Marja J. Verhoef, Teresa Tsui, and Elaine Danelesko

2014 IN-CAM Research Symposium: The Next Wave of Complementary and Integrative Medicine and Health Care Research

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Abstract: The following are abstracts of oral and poster research presentations given at the 2014 IN-CAM Research Symposium, The Next Wave of Complementary and Integrative Medicine and Health Care Research, held November 6 to 8, 2014 at the Marriott Hotel, Calgary Alberta, Canada. The abstracts are grouped under the distinct groups and activities, which took place during the Symposium. For more information, please visit: www.incamresearch.ca.

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Heather Boon: University of Toronto

Ania Kania-Richmond: University of Calgary

Marja J. Verhoef: University of Calgary

Teresa Tsui: University of Toronto

Elaine Danelesko: Mount Royal University

[Correction added after online publication 20 March 2015: Regrettably Teresa Tsui and Elaine Danelesko have been omitted in the first online version.]

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Table of Contents

Pre-Symposium Event – Homeopathic Research Forum Abstracts	eA3
Homeopathic Research Forum – Oral Presentations	eA3
Homeopathic Research Forum – Poster Presentations	eA6
PedCAM@IN-CAM Abstracts	eA8
PedCAM – Oral Presentations	eA8
PedCAM – Poster Presentations	eA11
Branch Out Neurological Foundation@IN-CAM Abstracts	eA16
Branch Out Neurological Foundation – Poster Presentations	eA16
Massage Therapy Case Report Abstracts	eA25
Massage Therapy Case Report – Poster Presentations	eA25
Naturopathy SIG Case Report Abstracts	eA29
Naturopathy SIG Case Report – Oral Presentation	eA29
Naturopathy SIG Case Report – Poster Presentation	eA30
IN-CAM Research Symposium General Abstracts	eA31
IN-CAM Research Symposium – Oral Presentations	eA31
IN-CAM Research Symposium – Poster Presentations	eA58

Pre-Symposium Event—Homeopathic Research Forum Abstracts

Homeopathic Research Forum – Oral Presentations

Homeopathy and cancer: Report of multiple cases

PR. Saunders (1)

(1) Canadian College of Naturopathic Medicine, Toronto, Ontario, Canada

Background: Homeopathic treatment of cancer is little known in North America, but a common clinical practice in India. A review of the literature reveals promising cell, animal and human data. Multiple myeloma is a plasma cell cancer, affects about 4 per 100,000, mostly in older individuals, associated with benzene exposure and has a median survival rate of 3-4 years, 5-7 years with aggressive treatment.

Objectives: Examine recent clinical cases where homeopathy was used and assess the clinical effects.

Methods: A series of N of 1 cases were selected from active patients with the same clinical diagnosis. They were analyzed as patient age, sex, conventional treatment course, complementary prescriptions, and clinical outcomes.

Results: In three recent cases of multiple myeloma, the same homeopathic medicine was prescribed. In two cases there was significant reduction in bone pain. The patients reported this affect for several years to nearly a year. In the third case, bone pain was not the presenting symptom, but the patient reported overall better energy from the prescription.

Conclusion: Homeopathy has the potential to help patients deal with clinical symptoms of multiple myeloma. The rationale and clinical out come will be de scribed. Information on this lesser know homeopathic medicine will also be presented.

Healing vs cure: In homeopathic medicine & beyond

R. Levine (1)

(1) Boucher Institute of Naturopathic Medicine (BINM), New Westminster BC, Canada

Background: Homeopathic Medicine is grounded in the context of linguistics and phenomenology. Language is an essential format to the history of homeopathy and how we interpret it today. Philosophy is the foundation of all practices and homeopathy is steeped in a body of work, which precedes Hahnemann's time. It is important to explore the formation of linguistics because we are evaluating texts and looking at the language of illness. What did Hahnemann mean by cure in his writings? Does homeopathy cure underlying causes of disease? Does it heal or does it simply remove the symptom picture?

Objective: To examine the long term effectiveness of homeopathic medicine in chronic disease, specifically in mental health, while examining the differences between healing and cure.

Method : This method of research is an integration of case study analysis, contrasted with a dissection of Hahnemannian philosophy and phenomenology. Two cases have been explored in individuals with suicidal dispositions and severe obsessive compulsive disorder (OCD). Through classical case taking and accurate prescription, a better understanding is achieved in the difference of cure and healing. This solidifies Hahnemann's disparity between his work in *Chronic Diseases* and where he finished at the end of the sixth edition of the *Organon*.

Results: Each of these cases has been managed using subsequent remedies. For the patient with obsessive compulsive disorder, sulphur 200D and higher was the primary remedy used. Over the course of time, the patient was able to get off four daily doses of anti-depressants. In the second case, suicidal thoughts were rampant specifically before menses. Sepia 30ch 3:3:1 was the primary remedy used, which has eliminated the suicidal disposition. These two cases demonstrate homeopathy's ability to cure and will discuss the areas where healing has not been restored.

Conclusion: Through phenomenological examination in homeopathic philosophy and clinical applications, it is clear that homeopathy cures, but further examination to whether it heals, requires ongoing exploration.

An inventory of methods of dispensing homeopathic medicines by Canadian homeopaths

M. Asasi (1)

(1) Private practice, Burlington ON, Canada

Background: The majority of homeopaths in Canada prefer to dispense the homeopathic medicines at their office. However, some homeopaths feel uncertain about how and what to disclose to patients about the prescription.

Objectives:

- To identify different methods of dispensing by homeopaths in Canada in terms of information provided on the prescription, and labeling the name and potency of the medicine.
- To identify homeopaths' reasons for allowing or not allowing their patients to know about the name of the prescribed medicine.

Method: A cross-sectional survey was conducted among homeopaths and naturopaths practicing in Canada. 287 homeopaths and naturopaths were identified and contacted to participate in the survey. A questionnaire consisted of 11 questions on demographic, school of graduating, clinical setting, years of experience, information provided on the prescriptions and label, and homeopath's opinion on potential effects of patients' knowledge on treatment outcomes. Descriptive statistics were used to summarize the data. Differences between various subgroups of respondents were tested using chi-square test.

Results: Our results demonstrated that a considerable proportion of Canadian homeopaths did not believe in openly communicating the prescription details with patients. The majority of the respondents were concerned about the possible negative impact of knowledge of the patient about the homeopathic medicine on treatment outcomes. Homeopath's training background and years of experience were found to be the two important factors affecting the practice of dispensing in homeopathic offices.

Conclusion: Our study results confirm the necessity of developing standards for office-based dispensing of homeopathic medicines. Inclusion of these standards in training of Canadian homeopaths will help them to develop ethical practice styles that promote the interests of patients and their "right to know".

Clinical observations from a study of the homeopathic treatment of fatigue in children and youth receiving chemotherapy

D. Brulé (1), M. Lee (2), A. Alli (2), L. Sung (2)

(1) Leslie Dan Faculty of Pharmacy, University of Toronto, Toronto ON, Canada

(2) Hospital for Sick Children, Toronto ON, Canada

Background: We conducted this study from June 2012 to April 2014 examining the feasibility of a randomized trial of the homeopathic treatment for fatigue in children and youth receiving chemotherapy. Fatigue in this population has been identified as an area of interest due to the lack of effective interventions. Homeopathic medicines were given in either lactose/sucrose pellet form or in 30% alcohol. Participants were followed daily for 14 days. An objective of this study was to describe the effect of the homeopathic intervention and any adverse events.

Objectives: To document clinical observations that may impact on future study and on clinical practice in this population.

Methods: The study clinician identified, through a review of case notes, patterns in homeopathic remedy prescribing as well as any unanticipated events.

Results: At the initial consultation all of the study participants fit the homeopathic remedy picture of Cadmium Sulfuricum and that remedy was prescribed in either 6CH or 15CH potency at the beginning of each case. One participant had what was clinically observed as a homeopathic aggravation when given a "constitutional" remedy based on the overall symptom picture of the patient and not on specific symptoms related to the chemotherapy. The remedy, Calcarea Phosphorica 6CH, was given in pellet form.

Conclusions: Future study may consider a routine use of Cadmium Sulfuricum as part of the protocol. To mitigate unwanted homeopathic aggravation, future study may discourage constitutional prescribing or may suggest the use of techniques such as liquid dosing or water dosing.

Homeopathic Research Forum – Poster Presentations

The effect of disclosing information about prescribed homeopathic medicine to patients on their clinical outcomes: a comparative study

M. Asasi (1)

(1) Private practice, Burlington ON, Canada

Background: Dispensing homeopathic medicines in a homeopathic office setting is very common in Canada. However, some homeopaths feel uncertain about how and what to disclose to patients about the prescription. Based on findings of our previous study most of the homeopaths do not openly communicate the prescription details because they are concerned about possible negative impact of patient's knowledge of homeopathic medicine on the treatment outcomes.

Objectives: Our study aims at finding evidence about negative or positive effects of the current dispensing methods among homeopaths in Canada.

Methods: A comparative study was performed. The study groups consisted of the patients who had received basic information about their medicines and those who had not. Information on actual practice of prescription, dispensing methods and related patient's reactions, and the treatment outcomes was recorded during the course of treatment, and compared between the two study groups.

Results: Based on the results of our study, there was no statistically significant difference between the patients who received a labeled homeopathic medicine and those who did not in terms of expected treatment effects. Our findings showed that a high proportion of patients receiving a non-labeled remedy who asked about their medicine's name became more anxious and concerned about taking the prescribed medicine when the homeopath refused to provide the requested information.

Conclusion: In our study the negative effects of not labeling homeopathic medicines on treatment outcomes dominated its positive effects. It seems to be essential to develop regulations and standards for prescriptions of office-based dispensing of homeopathic medicines, and to include these standards in training of Canadian homeopaths.

To evaluate the safety and efficacy of homeopathic medicine in male infertility

I. Bhadu (1), S. Goyal

(1) Classical Homeopathy Clinic & Research Centre, Bikaner, Rajasthan

Background: Infertility can have an enormous impact on an individual as it relates to their married, social, sexual and financial life. It is a complex disorder that involves genetic and hormonal disturbances. The cause is unknown in most cases.

Objective: To evaluate the safety and effectiveness of homeopathic medicine in male infertility.

Methods: This is a case report analysis. We identified a patient prospectively complaining of infertility, seen in the Classical Homoeopathy Clinic & Research Centre, Bikaner, India. A homeopathic case taking was performed and the case was repertorized based on the totality of symptoms. Total semen fluid analysis was performed to assess sperm concentration, motility and morphology at baseline and after 3 months treatment. The participant was monitored for adverse events at all follow up consultations.

Results: The homeopathic remedy Selenium Metallicum 30CH was prescribed twice daily for 3 months with follow up of every 15 days. After 3 months there was significant improvement in sperm count (3.0 mil/ml to 70 mil/ml), sperm motile form (10% to 60%), sperm motility grade (1 to 3), and percentage normal morphology (25 % to 60 %). The patient reported an 80% improvement in general health (subjective assessment). No adverse events or aggravations were reported.

Conclusion: This case study describes a successful outcome of homeopathic treatment for male infertility. Future, controlled studies of male infertility are warranted.

From oblivion to the first Homeopathic epidemic campaign against *cholera morbus* in Brazil in 1867: pamphlets and treatment

T. Mourad (1)

(1) Institute of Chemistry, University of São Paulo, São Paulo, Brazil

Background: Homeopathy flourished in Brazil during the 19th century due to promising results attained by practitioners working for the Brazilian Court, during the first and second empire (1822-1889). Due to successful endeavors, homeopaths began to serve a political role in establishing parameters for health and hygiene assisting in the establishment public regulations. This research investigates Joaquim Murtinho, who began his political ascension due to his involvement in the fight against *cholera morbus*.

Objectives: Aimed at retrieving information on the successful treatments and clinical approaches undertaken by Joaquim Murtinho, which granted the governmental and health authorities the recognition of Homeopathic Medicine.

Methods: (i) bibliographical and archival investigation of public and private collections, (ii) reconstitution of the network of 19th century homeopaths in Brazil; their libraries, publications, and contacts abroad.

Results: The forgotten pamphlet “Treatment of cholera morbus”, by Joaquim Murtinho was retrieved through research. It was published and distributed by the author—who was still a student—to assist his province in the fight against the disease shedding light to the network of homeopaths he read and knew in Europe and in India, and to the details of the treatment he implemented.

Conclusions: Information was retrieved on the homeopathic treatment of *cholera morbus*, and in the reconstitution of a network of homeopaths in Brazil fighting the epidemic in alignment with the treatment implemented in the cities of Liverpool, London, Edinburgh, Vienna, and Calcutta.

PedCAM@IN-CAM Abstracts

PedCAM@IN-CAM – Oral Presentations

Pediatric Integrative Medicine (PIM) Trial: Pediatric oncology

D. Adams (1), R. Suleman (1), D. Hartfield (1), L. Hartling (1), R. Tsuyuki (1), T. Culbert (2), H. Jou (1), S. Vohra (1)

(1) Department of Pediatrics, Complementary and Alternative Research and Education (CARE) Program, University of Alberta, Edmonton AB, Canada

(2) University of Minnesota, Minneapolis MN, USA

Background: While many hospitals have begun to integrate complementary therapies into conventional care, evidence about the effectiveness and cost-effectiveness of pediatric integrative medicine (PIM) is limited.

Objectives: 1) To characterize the pediatric oncology population with respect to demographics, symptom prevalence, medication use, etc; 2) To compare outcomes between arms of the study.

Methods: A pragmatic comparative effectiveness cluster controlled 2-arm trial for inpatients suffering from pain, nausea/vomiting, and/or anxiety, comparing conventional care (treatment as usual) versus conventional care augmented with PIM to assess feasibility, costs, safety, impact on symptoms and satisfaction with care.

Results: We enrolled 106 participants during the usual care arm (55% Caucasian, 59% male, mean age 9+/-6 years). Participants received their initial cancer diagnosis an average of 8+/-10 months earlier and diagnoses included leukemia (33%), sarcoma (22%) and neuroblastoma (9%). Most (83%) patients were treated with chemotherapy. At baseline symptoms included pain (29%), nausea (30%) and anxiety (46%) and patients were on an average of 6+/-3 medications. One third had previously used CAM, with the most commonly used therapies being massage (13%) and music/music therapy (9%). Median time between admission and discharge was 4.3 days. Of the primary caregivers, 93% were mothers, 83% had at least some post-secondary education, annual gross household income was over \$75,000 for 33% and 67% had previously used CAM. Comparative results are under analysis.

Conclusions: To our knowledge, this study will be the first comparative effectiveness trial in the world to assess the impact of PIM for hospitalized children.

Perceptions of complementary and alternative medicine among healthcare professional trainees

A. Jackman (1), M. Mayan (1), A. Kutt (1), S. Vohra (1)

(1) Department of Pediatrics, Complementary and Alternative Research and Education (CARE) Program, University of Alberta, Edmonton AB, Canada

Background: A worldwide increase in Complementary and Alternative Medicine (CAM) usage has led to a call for its integration into conventional healthcare, as well as healthcare professional training. However, the incorporation of CAM into conventional education is variable among institutions, and often trainees obtain minimal exposure. Moreover, knowledge of trainee perceptions of CAM modalities and practitioners remains limited, restricting curricular development.

Objectives: This study aimed to investigate trainees' perceptions of the strengths and weaknesses of CAM therapies, and to explore perceptions that may be representative of specific disciplines.

Methods: Conventional trainees (medicine, nursing, pharmacy, etc.) in an undergraduate health sciences interprofessional education course submitted reflective assignments regarding their perceptions of CAM. Data were collected after the first class and were qualitatively analyzed.

Results: Trainees identified perceived CAM strengths as safety, efficacy, patient-centered-care, client empowerment, and effective treatment of mental health concerns. Trainees identified perceived weaknesses as threats to safety, a lack of empirical evidence, inaccessibility and a lack of CAM knowledge among conventional practitioners and clients. Trainees of multiple disciplines invoked their profession's lens in their perspectives of CAM.

Conclusions: Trainees of various healthcare professions express values inherent to their discipline early in their education. Trainees hold contradictory views regarding the safety of CAM, however perspectives are generally positive. Weaknesses identified by trainees reflect limitations related to the structure of conventional medicine that contributes to sub-optimal integration. Identified strengths and weaknesses may be applied in integration planning, and trainee perceptions should be addressed in future curricular development to optimize educational value.

The Complementary and Alternative Medicine (CAM) Fair vs. the CAM practices visit - a comparison of two exercises for undergraduate interprofessional health sciences learners

A. Kutt (1), M. Mayan (1), S. Vohra (1)

(1) Department of Pediatrics, Complementary and Alternative Research and Education (CARE) Program, University of Alberta, Edmonton AB, Canada

Background: The need to incorporate complementary and alternative medicine (CAM) learning objectives into curriculum for health sciences students has been recognized by health educators, who are now searching for the most effective exercises. During an interprofessional education course enriched with CAM learning objectives for undergraduate health sciences students, two exercises were developed to teach students about CAM therapies by interacting directly with CAM providers. Both exercises involved teams of 8 interprofessional students discussing a case study. The case was interested in exploring CAM therapies for his/her condition, and to facilitate learning, students were given the following resources: a sample insurance benefits plan, a credentialing document detailing the most common CAM therapies in Alberta, and a list of evidence-based resources. Students chose different CAM therapies and interviewed a CAM provider on behalf of their case. During the following class, students shared what they learned with their teammates. CAM provider interviews were held at two locations: first, at the CAM Fair - a one-day event on campus with information booths for 10 modalities. Second, one-on-one interviews were held at a CAM provider's office. Students were asked to develop a reflective essay comparing these experiences.

Objective: To compare the effectiveness of the CAM Fair vs. the CAM practices visit assignments given to students in 2014.

Methods: Qualitative analysis of reflective essays has been initiated.

Results: Full results will be available at the symposium.

Conclusions: If proven effective, both exercises could easily be incorporated into undergraduate health sciences curriculum to promote student awareness about CAM.

A survey of CAM practitioners' knowledge, attitudes, and behaviour regarding pediatric care

A. Porcino (1), D. Adams (1), A. Kutt (1), L. Solomonian (2), B. Gluvic (3), S. Zylich (4), H. Jou (1), S. Vohra (1)

(1) Department of Pediatrics, Complementary and Alternative Research and Education (CARE) Program, University of Alberta, Edmonton AB, Canada

(2) Canadian College of Naturopathic Medicine (CINIM), Toronto ON, Canada

(3) Boucher Institute of Naturopathic Medicine, (CINM), New Westminster BC, Canada

(4) Canadian Memorial Chiropractic College

Background: Complementary and alternative medicine (CAM) use is common in children. A survey assessing naturopathic physician (ND) and chiropractor (DCs)

pediatric knowledge, attitudes, and behaviours (KAB) was completed in 2004. This poster details results of this year's survey as part of a larger, on-going study to develop cross-profession standardized pediatric education.

Objectives: Compare current survey results with the previous survey, and assess opportunities for improving pediatric education.

Methods: The surveys assess practitioner demographics, pediatric knowledge and training, and attitudes. Three scenarios involving ill children are used for assessing behaviours. The survey includes a new section exploring preferences for pediatric education delivery. A link to on-line surveys was sent to DCs and NDs through national membership organizations. Data collection will be completed by July 31, 2014. Data analysis involves descriptive statistics, chi-squared or t-tests, and comparison with the 2004 survey (n=237).

Results: Results will be analyzed and presented in November. Presentation will highlight current pediatric knowledge, attitudes, and behaviours, and identify differences and potential continuing gaps in KAB through comparison with the previous results. Results will include pediatric education delivery recommendations.

Conclusion: Results from this survey, compared with the previous, will provide strong understanding of the current state of pediatric care for NDs and DCs, and of their pediatric education gaps. Additionally, this survey will identify practitioners' preferred forms of pediatric education for reducing those education gaps at both the undergraduate and post graduate levels.

PedCAM@IN-CAM – Poster Presentations

Mindfulness based stress reduction: A non-pharmacological approach to support youth with mental health concerns

D. Adams (1), J. Van Vliet (1), A. Singhal (1), F. Dolcos (2), S. Vohra (1)

(1) Department of Pediatrics, Complementary and Alternative Research and Education (CARE) Program, University of Alberta, Edmonton AB, Canada

(2) Department of Psychology, University of Illinois, Champaign IL, USA

Background: Mental health disorders are common in youth and treatments include various pharmacological and behavior modification techniques.

Objective: To develop and conduct a pilot mixed-methods RCT, combining clinical outcomes, qualitative interviews and neuroimaging to assess the impact of mindfulness-based stress reduction (MBSR) on high risk youth with mental health disorders.

Methods: This two arm RCT compares usual care versus usual care plus MBSR in residents of CASA House. The primary clinical outcome was change in the student scores of the BASC-2 at 10 weeks. Secondary outcomes include changes BASC-2 at 3 months and changes in stress, mindfulness, and emotion regulation at both time points.

Results: 85 participants enrolled in the study and completion of the primary outcome measure was 80%. Preliminary analysis shows that while our two groups were similar at

baseline and both often showed improvement at 10 weeks, the MBSR group tended to show more improvement than the control group *but the most striking result was that at 3 months, the MBSR group maintained their improvement while the control group scores moved back toward baseline levels*. In further analyses we plan to examine: parent and teacher BASC-2 scores as well as relationship between student, parent and teacher scores; change in clinical category (i.e. mild, moderate, at risk); identifying variables that affect baseline scores as well as response to treatment.

Conclusion: MBSR was well received and demonstrated to be a feasible adjunct treatment program for residents of a youth psychiatric facility.

Systematic review of the safety of mind-body interventions in children

D. Adams (1), M. Lyszczyk (1), S. Vohra (1)

(1) Department of Pediatrics, Complementary and Alternative Research and Education (CARE) Program, University of Alberta, Edmonton AB, Canada

Background: A 2007 US survey reported that mind-body interventions were used by approximately 4.3% of children; however, there is limited understanding of their safety in pediatric populations

Objective: To systematically review adverse events associated with mind-body interventions in children.

Methods: A search strategy was developed and applied in five databases in May 2013: Embase, CINAHL, the Cochrane Database of Systematic Reviews, the Cochrane Central Registry of Controlled Trials, and Medline. Identified references were assessed for inclusion by two reviewers and the data extracted.

Results: 8677 unique references were identified by the search. Screening of titles and abstracts resulted in 1311 potentially included references, of which 19 have been included, 395 excluded, and 897 are pending secondary review. Data extraction is ongoing. Various interventions have been included, such as yoga, imagery, and distraction. Examples of reported harms include dizziness, increased anxiety, moderate asthma exacerbations, blue-tinted vision, and worsening of depression and self-concept. Most papers that list harms do not report on seriousness or duration of adverse event(s) or patient outcome.

Conclusions: Mind-Body interventions are commonly used by children, making the assessment of their safety a priority. Preliminary analysis has shown that the reporting of adverse events is limited. There is a need for improved safety and harms assessment.

Pediatric complementary and alternative medicine (CAM) randomized controlled trials and systematic reviews

S. King-Jones (1) and S. Vohra (1)

(1) Department of Pediatrics, Complementary and Alternative Research and Education (CARE) Program, University of Alberta, Edmonton AB, Canada

Background: Searching for randomized controlled trials of complementary and alternative interventions in pediatrics can be problematic. The Cochrane Collaboration CAM Field has generated a searchable database of clinical trials to facilitate access to the relevant literature. <http://nccam.nih.gov/health/whatiscam>

Objectives: The goal of this study was 4-fold: (1) identifying best resources for pediatric CAM studies, (2) investigate how many pediatric CAM randomized controlled trials (RCTs) have been conducted between 2001 and 2014; (3) determine most frequently studied pediatric CAM therapies and (4) identifying gaps in pediatric CAM research.

Methods: Pediatric CAM RCTs have been retrieved from (a) the Cochrane Central Register of Controlled Trials database using the tag “SR-COMP MED” and (b) through searches in Medline, Embase and CINAHL.

We retrieved pediatric CAM systematic reviews from Cochrane Database of Systematic Reviews, Medline, Embase and CINAHL. All searches were limited to publications between April 2001 and April 2014. Search results were screened and sorted by pediatric health conditions. Studies not matching the NCCAM CAM definition were excluded.

Results: We retrieved a total of 1309 pediatric CAM RCTs and 221 systematic reviews. Most studies were retrieved from the Cochrane database and <10% from other databases. The 10 most highly investigated pediatric conditions are diarrhea, asthma, preterm infants, ADHD, pain, respiratory infections, cerebral palsy, atopic dermatitis, infants with very low birth weight, and autism. Less studied fields include mental health, stress, obesity, and arthritis.

Conclusions: The Cochrane Collaboration Complementary Medicine Field (CAM Field) database is the best available database to date for locating pediatric CAM clinical trials.

The development and qualitative evaluation of an Interprofessional education course for undergraduate health sciences students enriched with CAM learning objectives – a 3 year study

A. Kutt (1), M. Mayan (1), I. Bienko (1), S. Vohra (1)

(1) Department of Pediatrics, Complementary and Alternative Research and Education (CARE) Program, University of Alberta, Edmonton AB, Canada

Background: Future clinicians require both complementary and alternative medicine (CAM) education and interprofessional education (IPE) to provide collaborative, patient-centered care.

Objective: To develop and evaluate shared IPE – CAM curriculum for undergraduate health sciences learners. *Methods:* At our university, “IntD410” is a 10-week, 30-hour IPE course mandatory for all undergraduate health sciences students. The CAM Stream was developed by a team of interdisciplinary faculty educators, who incorporated CAM learning objectives into the standard IntD410 curriculum, such as: increasing comfort discussing CAM with patients, and learning how to evaluating safety and effectiveness of common CAM therapies. The IPE core competencies were maintained: communication, collaboration, role clarification, and reflection. The CAM-stream updated the regular IntD410 curriculum with: i) didactic lectures ; ii) large group learning by CAM providers; (iii) small group work solving discovery-style cases about CAM products and practices; (iv) two field trips (natural health product vendor and CAM provider office); and (v) a CAM Fair with CAM providers answering questions about their therapies (acupuncture, massage therapy, naturopathy, reiki, etc.). Evaluation was done via qualitative assessment of reflective essays and course feedback.

Results: The CAM-stream was offered in 2012 (N=71), 2013 (N=120), and 2014 (N=144). Team reflections revealed that the learning objectives for both CAM and IPE were met. Student feedback showed the CAM Fair was consistently the highlight of the course.

Conclusions: CAM learning objectives can be effectively combined with IPE to teach undergraduate health sciences students’ essential skills, knowledge, and attitudes to promote patient-centered collaborative care in future practice.

Quantitative evaluation of an interprofessional education course enriched with CAM learning objectives for undergraduate health sciences students - a 2 year study

A. Kutt (1), J. Davies (1), S. Vohra (1)

(1) Department of Pediatrics, Complementary and Alternative Research and Education (CARE) Program, University of Alberta, Edmonton AB, Canada

Background: Interprofessional education (IPE) and complementary and alternative medicine (CAM) education both aim to develop clinicians who provide collaborative patient-centered care. *Objectives:* To determine if combined IPE-CAM curriculum changes the attitudes of undergraduate health sciences students towards IPE and CAM. **Methods:** At our university, IntD410 “Interprofessional Health Team Development” is a 10-week, 30-hour course mandatory for all undergraduate health sciences learners. While the course is mandatory, learners have a choice between the “regular” stream or a specialty stream. The CAM-stream incorporated CAM learning objectives into regular IPE curriculum. Students’ change in beliefs about CAM, IPE, and collaboration were evaluated through quantitative assessment (pre-post testing) and qualitative inquiry (reflective essay analysis).

Results: Students in the CAM-Stream (2012 N=71, 2013 N=120), one regular IntD410 section (2012 N=48, 2013 N=48), and the continuing care specialty stream (2012 N=43, 2013 N=47) were tested. The CAM Health Beliefs Questionnaire (2012 and 2013)

showed slight but not meaningful change. The Readiness for Interprofessional Learning Scale (2012 and 2013) and Interprofessional Education Perception Scale (2012) exhibited ceiling effects. The CAM-stream increased significantly on the Health Profession Collaborative Competency Perception Scale (HPCCPS) (2013). Qualitative results indicated the course learning objectives were met. **Conclusions:** The quantitative results did not change for CAM or IPE beliefs, suggesting either a lack of change or a lack of sensitivity on the part of measurement of the instruments. Qualitative research suggests the latter, posing doubt about the adequacy of the instruments used for this purpose. The HPCCPS could be explored for future use.

Visiting natural health product vendors – An undergraduate health sciences student assignment to promote patient-centered care

M. Mayan (1), I. Bienko (1), A. Kutt (1), S. Vohra (1)

(1) Department of Pediatrics, Complementary and Alternative Research and Education (CARE) Program, University of Alberta, Edmonton AB, Canada

Background: Natural health products (NHPs), such as herbal medicines, vitamins, and dietary supplements are used by many Canadians. To guide patient choice, clinicians require awareness of NHP choices available to patients. During an interprofessional education course for undergraduate health sciences students, teams of 8 interprofessional students discussed complex cases together, some of which were focused on NHPs. Students were given a list of evidence-based resources, and each visited a different NHP vendor to seek information on behalf of the case. In a follow up class, students compared experiences.

Objective: To determine if the NHP vendor visit assignment was effective in facilitating student awareness regarding what patients see/hear in these sites, encouraging students to be patient-centered in their approach.

Methods: Reflective essays given as course assignments were analyzed qualitatively.

Results: Eighty-one essays were analyzed: 64% students visited a health food store, 18% visited a grocery store, 9% visited a pharmacy, and 7% visited an alternative health and wellness clinic such as an acupuncturist or herbalist. Most students (83%) reported positive experiences, and 75% spoke with sales people with varying training. Students reported sometimes being overwhelmed by the variety of products and voiced concern about product evidence, and how patients obtained their information. During reflection, students want to be more open minded and better informed about NHPs, as well as patient-centered in their approach.

Conclusions: The NHP vendor visit was effective in promoting awareness of patient perspective regarding NHPs, and encourages learners to take a patient oriented approach in their future practice.

Branch Out Neurological Foundation@IN-CAM Abstracts

Branch Out Neurological Foundation – Poster Presentations

Ambulosono music training program for Autism Spectrum Disorders

M. Au (1), T. Chomiak (2), B. Hu (2)

(1) University of Calgary, Cumming School of Medicine, Calgary AB, Canada

(2) University of Calgary, Department of Clinical Neuroscience, Calgary AB, Canada

Background: Deficits in communicative initiations is a core behavioral manifestation of individuals with autism spectrum disorder (ASD), and accumulating data suggests that reduced long-range functional connectivity is important in impaired social skill development. It is therefore important to explore potential treatment methods that may promote long-range functional connectivity in the brain.

Objectives: To test the feasibility of *Ambulosono* as a training protocol to increase spontaneous communication in ASD.

Intervention: Sensorimotor cueing and contingency learning is important in normal language development and may promote long-range functional connectivity between different brain regions. We have recently developed an iPod App algorithm termed “*Ambulosono*” that creates a contingency between goal-directed action and pleasurable music through which instrumental behaviour in seeking musical reward stimulation is associated with anticipatory motor control. Given the lack of clinical practice guidelines and approved drugs for the treatment of core ASD features, this previously unexplored interventional strategy may provide an alternative approach for the treatment of core ASD features.

Methods: Monitoring: Children with ASD were recruited and music was selected based on participant feedback. Baseline observations were made for 1 week. The child used *Ambulosono* at home for 3 weeks and spontaneous vocalizations (SVs), time duration of attention, and activity were monitored. Parents were also asked to note changes in SVs and general behaviour at home using the device. Data analysis: Determining significant differences in SVs over time will use a repeated-measures analysis of variance. Statistical significance was set at $\alpha < 0.05$.

Anticipated Results: Summarized results of SVs, goal-directed action and pleasurable-music playback data will be analyzed to demonstrate the effectiveness of *Ambulosono* in spontaneous communication in children with ASD, in addition to looking at the influence of *Ambulosono* on divided attention and gait.

Conclusions: The contingency between movement and pleasurable-music playback enabled through *Ambulosono* may promote spontaneous communication in children with ASD.

Quantifying sensory dysfunction in carpal tunnel syndrome

C. Clarke (1), KM Chan (2), M. Mackie (2), A. Dong (2), Y. Okuma (2), S. Kim (2), J. Olson (2), M. Morhart (2), M. Curran (2)

(1) MacEwan University, Edmonton AB, Canada

(2) University of Alberta, Edmonton AB, Canada

Background Carpal tunnel syndrome (CTS) is common. While conventional treatments are effective in milder cases, in severe cases postoperative outcomes remain suboptimal. Acetyl-L-Carnitine is a promising alternative. Because small sensory nerve fibers which subserve the symptoms of tingling and burning pain are affected in CTS, before the efficacy of Acetyl-L-Carnitine as a treatment can be meaningfully evaluated, a diagnostic tool capable of quantifying small nerve fiber function must first be found.

Objective To evaluate the usefulness of quantitative sensory testing (QST) to measure small fiber dysfunction in CTS.

Intervention Assessing if QST can be used to reliably gauge the regenerative capabilities of Acetyl-L-Carnitine on small nerve fibers in CTS. Acetyl-L-Carnitine is a naturally occurring peptide that is vital in energy transport. Although its safety record as a complementary medication in humans is well established and it has shown promise in enhancing nerve regeneration in toxin induced neuropathies, whether Acetyl-L-Carnitine is also useful in complementing standard CTS treatments remains unknown.

Methods Using the CASE IV, a computer controlled system capable of administering finely graded cold and warm stimuli mixed with controls to prevent random guesses, we measured the cold detection threshold (CDT), subserved by A δ fibres, and warm detection thresholds (WDT), subserved by C-fibres, in 44 age matched healthy control subjects and 58 patients with mild, moderate and severe CTS.

Results CDTs of the severe CTS group (mean $\pm$ sd=17.5 $\pm$ 7.7°C) were markedly lower compared to healthy controls (27.2 $\pm$ 2.1°C) ($p<0.05$). Similarly, WDTs in severe CTS patients (41.2 $\pm$ 3.5°C) were significantly elevated compared to the control group (37.2 $\pm$ 2.2°C) ($p<0.05$). Additionally, there was a significant correlation between CTS severity and CDT and WDT dysfunction ($r=-0.55$, $r=0.43$, $p<0.05$).

Conclusion QST is capable of not only quantifying small sensory nerve fibre dysfunction in patients with severe CTS but also in a graduated manner in the mild and moderate cases. This can serve as an important objective tool in evaluating the effects of Acetyl-L-Carnitine.

Memory's smooth criminal: Protein synthesis inhibitor anisomycin on online brain function.

J. Dubue (1), T. Montour-Mckinney (1), C. Dickson (1)

(1) Department of Psychology, University of Alberta, Edmonton AB, Canada

Background: Changes in the hippocampus, the brain region supporting learning and memory, have been associated with numerous disorders (PTSD, depression,

Alzheimer's). Understanding the mechanisms through which these changes happen is necessary for effective treatment of such disorders. Since hippocampal plasticity mediates memory processes, it can be explored through learning paradigms. Memory and neuroplasticity have been traditionally viewed as dependent on the synthesis of new proteins, tested using pharmacological methods. Recent evidence from our lab shows that the drugs used to support this claim also impair neuronal functioning, complicating the interpretation of previous results.

Objective: Based on our lab's previous results, the current study seeks to explore the role of protein synthesis in learning and memory through a more holistic approach.

Methods: Rats were trained on the Morris Water Maze, a spatial memory task, before receiving bilateral intrahippocampal infusions of either anisomycin (a protein synthesis inhibitor; ANI), tetrodotoxin (a blocker of neural activity; TTX), and saline. Rats were also assessed on their ability to recall cued and contextual fear memory.

Results: Rats treated with ANI demonstrated a memory deficit on the Morris Water Maze which resembled the performance of rats treated with TTX. This suggests that ANI inactivates neural activity in a similar manner to TTX, and may elucidate the neurobiological processes underlying their behaviour.

Intervention: Our study demonstrates the problems of using pharmacological means to modulate neurobiological memory processes. Since neuroplasticity is likely to be the mechanism through which holistic mind and body CAM approaches are likely to act, this research acts as a stepping stone to understanding the neural mechanisms by which these interventions operate.

Conclusions: These results demonstrate that there is no simple division between molecular, network and behavioural level processes. A refined focus on modulating neural activity over drug based therapy in disorders such as Post Traumatic Stress Disorder shows potential for more efficacious strategies to heal aberrant behavioural learning with substantially reduced side effects.

The effect of the compression of the fourth ventricle (CV4) on uterine contractions at term – A quasi-experimental study

A-M. Fafard (1) A-J. Morand (2), N. Trottier (3)

(1) British Columbia School of Osteopathic Manual Practice, Vancouver BC, Canada

(2) College Etudes Osteopathiques, Montreal QC, Canada

(3) ConsensioClinic, Canmore AB, Canada

Background: Studies have indicated that it is favorable for pregnant women to be medically induced before 42 weeks. Presently, available labour induction methods all have secondary effects. The manual osteopathy cranial technique: the compression of the fourth ventricle (CV4) has been said to start uterine contractions, but insufficient evidences exist to support it.

Objectives: The study of the effect of the CV4 on uterine contractions on pregnant women at term. This is to assess the potential use and safety of this technique as an induction method on this population.

Methods: Open pilot study. Patient recruitment will be done through interested and consenting pregnant women (40+ weeks pregnant) through Three Sisters Obstetric and Family Medicine Clinic, Canmore, Alberta. Medical and sociodemographic information will be collected. The number of uterine contractions will be measured by a physician or nurse using an external tocography unit for a 20-minute duration before and after the CV4. The CV4 will be applied by a physiotherapist-osteopathic manual therapist.

Results and Conclusion: Primary outcome relates to the change in the number of uterine contractions between baseline and 20 minutes following the CV4. As there will be no control group, this study represents a first step in discussing the short-term effects of the CV4 on uterine contractions and its potential use and safety as an induction method. For women, it may represent an option for labour induction that is non-invasive with less side-effects.

Investigations into stress and endocannabinoid interactions on anxiety

KI. Hassan (1), JM. Gray (1), MN. Hill (1)

(1) Hotchkiss Brain Institute, University of Calgary, Calgary AB, Canada

Background: During psychosocial stress, the amygdala, a brain region critical in generating anxiety behaviour in response to stress, shows decreases in endogenous cannabinoid (endocannabinoids) levels (Hill et al., 2009). The ability of endocannabinoids to modulate anxiety, similar to plant-derived sources of cannabinoids (*cannabis sativa*) is yet to be fully understood. We recently determined that decreases in endocannabinoids are mediated through enzymatic degradation triggered by a stress-regulating neurotransmitter, corticotropin-releasing hormone (CRH) (Gray et al., under review).

Objective: To determine how CRH increases endocannabinoid enzymatic degradation by examining the extracellular signal-regulated kinase (ERK) signaling pathway.

Intervention: As medicinal cannabis use is increasingly accepted, and sought out within society for its anti-anxiety properties, basic studies providing new knowledge as to how endocannabinoids are regulated are increasingly important. This work suggests that clinical populations historically known to display abnormal increases in central CRH levels (e.g. mood disorders, Griebel & Holsboer, 2012) may be vulnerable to abnormally low endocannabinoid levels, and greatly benefit from external sources of cannabinoids, such as cannabis.

Methods: In experiment 1, thick rat coronal brain slices were exposed to CRH or CRH+ERK inhibitor cocktails for 1 hour. Amygdalas were dissected out to test endocannabinoid levels. In experiment 2, Whole brains of rats exposed to 30 minutes restraint stress were extracted. Immunohistochemistry will be performed on coronal brain tissue slices of the amygdala co-staining for ERK and the enzyme responsible for endocannabinoid degradation.

Results: Expected results for experiment 1) exposure to the CRH+ERK inhibitor cocktail will prevent decreases in endocannabinoids caused by CRH. Experiment 2) 30 min restraint stress will increase the number of cells displaying ERK in the same cells which express the degradation enzyme for endocannabinoids.

Conclusion: These studies will provide new insight on endocannabinoid regulation during stress. This is extremely important as cannabis, which acts on the endocannabinoid system, has been shown to have anxiolytic properties and may therefore have therapeutic benefits for people with anxiety disorders.

Possible predictors of response to repetitive transcranial magnetic stimulation for adolescent depression

Y. Jasoui C. (1), LM. Langevin (1), A. Kirton (1), TC. Wilkes (1), K. Ma (1), FP. MacMaster (1)

(1) Department of Psychiatry, Clinical Neurosciences, University of Calgary, Calgary AB, Canada

Background: Approximately half of youth with major depressive disorder (MDD) do not respond adequately to standard treatment or find the side effects intolerable. Hence, complementary approaches are needed. One promising intervention is repetitive transcranial magnetic stimulation (rTMS), however, there are no known biological predictors of response.

Objectives: We will examine the relationship of baseline dorsolateral prefrontal cortex (DLPFC) neurochemistry to rTMS response (a reduction of depression scores by 50%) in adolescent MDD.

Intervention: rTMS is a non-invasive technique that can target specific brain regions using a magnetic field. rTMS can inhibit or excite areas of the brain that show altered activity in MDD. rTMS development for youth with MDD represents a novel avenue that can complement or even replace pharmacological treatments and improve symptoms, functionality, and overall outcomes for responsive adolescents with depression.

Methods: Seventeen MDD youth and 10 healthy control subjects underwent a baseline magnetic resonance imaging scan. A short echo proton magnetic resonance spectroscopy voxel from the left DLPFC was acquired in all subjects. Compounds include glutamate, glutamine (or together as Glx), and N-acetyl-aspartate (NAA). MDD participants then underwent 3 weeks of rTMS.

Results: We observed a decrease in depressive symptoms with rTMS ($t = 5.66$, $p = 0.00004$). At baseline, a significant group difference was observed ($F = 4.57$, $p = 0.023$), with responders having lower NAA concentrations than controls ($p = 0.036$) and non-responders ($p = 0.044$). Lower NAA concentration was correlated with a greater reduction in depressive symptoms with rTMS ($r = 0.65$, $p = 0.006$). A strong trend for a group difference in baseline Glx was noted ($F = 3.47$, $p = 0.05$), with responders demonstrating lower Glx concentration than non-responders ($p = 0.041$). Lower baseline Glx concentration was correlated with a greater reduction in depressive symptoms with rTMS ($r = 0.50$, $p = 0.036$).

Conclusions: NAA and Glx may be predictive biomarkers for response to rTMS in adolescent MDD.

Funding: Branch Out Neurological Foundation, Children's Hospital Aid Society, Alberta Children's Hospital Foundation, Cuthbertson and Fischer Chair in Paediatric Mental Health.

***Ambulosono* automaticity training and active living initiative:
Development of global link, an international music walking, home-based
de-freezing, and contingent arm-swing step (CASS) training program
for Parkinson's patients**

K. Luan (1), B. Hu (1)

(1) Department of Clinical Neurosciences, University of Calgary, Calgary AB, Canada

Background: Impaired gait is a hallmark of Parkinson's Disease (PD) associated with freezing and reduced coordination. Current treatments are ineffective at treating these deficits and often produce many side-effects¹. Although exercise reduces the severity of functional loss in PD patients², additional motivations are needed to overcome physical/psychological complications that discourage regular physical activity³. Recently, the Hu lab established *Ambulosono*, an intervention program utilizing music through the GaitReminder™ to engage patients in daily brisk-walking and other ambulatory activities.

Objectives: The aim of this project is to establish Global Link: a multifaceted international initiative which engages PD patients in high-calibre *Ambulosono* walking, de-freezing, and CASS training programs, regardless of their location. Global Link currently provides a worldwide naturalistic intervention program to PD patients residing in China, Australia, USA, Singapore, and Canada.

Intervention: *Ambulosono* utilizes the 5th-generation iPod motion-sensor coupled with GaitReminder™ algorithms to compute patient step-length in real-time while controlling music delivery: large stride lengths above a set threshold activate music playback from the GaitReminder™ while shuffling/small steps stop the music playlist. This reminds patients to engage in large-step walking while positively reinforcing the movement. Music and exercise in *Ambulosono* elicits reward-motivational learning, high emotional salience, and enhanced motor awareness, which activate/remodel neural networks in the sensory/motor cortex governing stride-length control in PD patients.

Methods: I: Implementation of exercise, de-shuffling, de-freezing, de-falling and medication control programs at each site. II: Development of bi-weekly and monthly patient walking, alert, and support evaluations for site coordinators, self-tracking, peer-support, and reminder reports for patients, and patient diagnosis, prescription, and prognosis assessments for therapists.

Results: Patients experiencing freezing increased their walking velocity by 50%, step-length by 25%, reduced their cadence by 20%, and total time/number of steps taken to pass between narrow spaces by 70%. Patients with hesitation improved interlimb coordination scores by 2 points after training, step-height by 350%.

Conclusions: GaitReminder™ usage reduced freezing, hesitation, shuffling, falling, and interlimb coordination, and improved gait-kinematics in PD patients.

Distinct patterns of cortical thickness predict rTMS treatment response

K. Ma (1), LM. Langevin (1), A. Kirton (1), TC. Wilkes (1), Y. Jasauri C (1), M. Sembo (1), FP. MacMaster (1)

(1) University of Calgary, Calgary AB, Canada

Background: Repetitive transcranial magnetic stimulation (rTMS) is a promising, non-invasive and effective therapy for adolescents with Major Depressive Disorder (MDD). However, beneficial response to rTMS is not universal. Identifying baseline biomarkers that correlate to treatment response will allow professionals to apply a more personalized and effective treatment program.

Objectives: This project investigated cortical thickness as a baseline structural predictor of rTMS treatment response in MDD. Our aim was to examine regional cortical differences of adolescents undergoing rTMS treatment for common alterations in participants whose depression scores reflected positive or neutral/negative responses to rTMS.

Intervention: Existing pharmacological treatments for MDD in adolescents are lacking in their scope and efficacy. Anti-depressant medications often produce unwanted side effects and are frequently ineffective in alleviating symptoms. rTMS represents a novel avenue for treatment of depression; utilizing magnetic pulses to stimulate specific brain regions thought to underlie MDD. The integration of rTMS in responsive individuals will contribute to personalized treatment programs for MDD, and will complement traditional treatment protocols.

Methods: Fifteen participants with MDD (10 responders and 5 non-responders) underwent an initial assessment, and pre-treatment magnetic resonance imaging (MRI). Participants with MDD then underwent a 3-week rTMS treatment series, followed by a post-treatment assessment. Cortical thickness analysis was performed using FreeSurfer software.

Results: We observed increased thickness in the left Broca's Area ($p < 0.01$), left frontal poles ($p < 0.01$) and right lateral orbitofrontal gyri ($p < 0.01$) in non-responders versus responders. Conversely, the left caudal anterior cingulate cortex ($p < 0.01$) was thicker in responders versus non-responders. Group differences were retained post treatment.

Conclusions: Our current findings match our previous study showing a thicker anterior cingulate in MDD versus controls. Other studies have indicated structural differences in the frontal pole and lateral orbitofrontal gyrus in MDD. This preliminary data suggests that these regions may act as baseline structural biomarkers for rTMS treatment responders, and may influence future MDD treatment protocols.

Sulforaphane exerts dose-dependent neuroprotection independent of hypothermia against neonatal hypoxia-ischemia

A-M. Przyszlupski (1), E. Armstrong (1), KQ. Shen (1), JY. Yager (1)

(1) Department of Pediatrics, University of Alberta, Edmonton AB, Canada

Background: Newborns affected by hypoxic-ischemic brain damage (HIBD), resulting from insufficient cerebral oxygenation and blood-flow, endure lifelong neurological disabilities. The current standard of care, post-ischemic hypothermia ($33.5 \pm 0.5^\circ\text{C}$), is the only protective intervention for HIBD, but does not completely prevent brain damage. Complementary and alternative medicines (CAM) such as Natural Health Products (NHPs) are safe for newborns and may augment hypothermia. We examined a potent anti-inflammatory/anti-oxidant metabolite derived from cruciferous vegetables, sulforaphane (SFN), in combination with hypothermia on moderate HIBD.

Objectives: (1) To determine whether SFN added to hypothermia further reduces HI-induced brain damage, and (2) to elucidate any dose-dependent effects associated with SFN.

Intervention: Cruciferous NHPs, such as broccoli sprouts and kale, are rich sources of SFN, a robust anti-oxidant-inducing/anti-inflammatory agent. Recent studies have demonstrated these NHPs, and pure SFN, to exert neuroprotection against spinal cord injury, neurodegeneration, and mild brain injury. In this study, we examined if a combination of pure SFN (CAM therapy) and hypothermia (standardized treatment) would act complementarily as a neuroCAM rescue therapy for HI-induced brain damage.

Methods: Long-Evans rats (7-days-old) were subjected to right carotid artery ligation followed by hypoxia [8%O₂, 90min] to induce unilateral HIBD. Post-hypoxia, pups received normothermia (37°C) or hypothermia (31°C) for 24h. Subcutaneous injections of SFN (1 or 5mg/kg) or saline were administered at the onset of hypothermia/normothermia and continued every 24h for 7 days. Brains were pathologically assessed on postnatal-day-30 via percent-volume analysis of right-hemisphere damage (%RHD).

Results: Sulforaphane (5mg/kg; $p < 0.01$) and hypothermia ($p < 0.001$) significantly reduced %RHD compared to normothermic saline control. Combining hypothermia and SFN unfortunately did not show an additive effect with the administered doses.

Conclusions: CAM therapy via Natural Health Products may be a safe and efficacious alternative/addition to standardized hypothermia. Our results show SFN (5mg/kg) to be as effective as hypothermia, and suggest that similar cellular mechanisms may be involved. We are currently determining the best timing/dosage of SFN therapy to further enhance hypothermic neuroprotection.

Don't go ZIPing to conclusions: Neural inactivation is a confound of zeta inhibitory peptide for modulating hippocampal activity

TL. McKinney (1), MJ. LeBlancq (2), CT. Dickson (1,2,3)

(1) Department of Psychology, University of Alberta, Edmonton AB, Canada

(2) Centre for Neuroscience, University of Alberta, Edmonton AB, Canada

(3) Department of Physiology, University of Alberta, Edmonton AB, Canada

Background: The hippocampus is a brain structure that generates memories that animals use to adapt to their environment. Neuroplasticity, the process by which the brain changes itself, is extensively utilized in the hippocampus to form new memories. A strong understanding of hippocampal processing is necessary to understand the dysfunctions in not only classic memory disorders (Alzheimer's, post traumatic stress disorder) but other disorders that have been linked to hippocampal plasticity (depression, anxiety, schizophrenia).

Intervention: PKM ζ is a protein that has been implicated to mediate neuroplasticity and long term memory. A "specific" inhibitor (Zeta inhibitory peptide; ZIP) has been proposed to be a cure for aberrant learned behaviour. Recent evidence suggests this pharmacological agent may not be an ideal intervention.

Objectives: To explore the effects of ZIP on brain activity related to learning and memory.

Methodology: Using a rat model of sleep, we infused ZIP, lidocaine (a known inhibitor of neural activity), and saline into the hippocampus.

Findings: ZIP impaired neural activity in a similar fashion as lidocaine, suggesting ZIP is not a good intervention for modulating behaviour or hippocampal processing.

Conclusions: The implications of this are two fold. Firstly, pharmacological interventions (like ZIP) to modulate behaviour are often confounded by side effects. More holistic approaches should be taken to treat dysfunctions related to hippocampal processing. Secondly, these finding give more insight into the nature of neuroplasticity, the mechanism by which holistic CAM interventions (exercise, meditation, psychotherapy, etc) are thought to work by and would allow each of these to be used more effectively.

Massage Therapy Case Report Abstracts

Massage Therapy Case Report – Poster Presentations

Massage therapy treatment and outcomes for a patient with Parkinson's Disease

Y. Casciaro (1)

(1) Massage Therapy Diploma Program, MacEwan University, Edmonton AB, Canada

Background: Parkinson's Disease (PD) is a complex neurological disorder. The root cause is unknown, and while treatment with pharmacotherapy is successful, eventually the effectiveness of the medications wears off. The disease is progressive and eventually results in severe disability. Symptoms are well-documented, with the most recognizable manifestations being resting tremor, bradykinesia, and rigidity.

Objective: To determine if massage therapy can produce favourable outcomes with respect to the severity of rigidity and tremor in a patient with PD.

Methods: A 63-year-old female patient with idiopathic, long-standing, Hoehn-Yahr Stage 4 PD was treated with massage therapy five times over the course of 6 weeks. A SPES/SCOPA Motor Impairments rating scale was used to measure rigidity and tremor pre- and post-treatment, to gauge treatment effectiveness. The massage treatments consisted of deep longitudinal stroking, muscle squeezing techniques, passive range of motion movements, and general relaxation techniques to encourage a soothing environment while promoting a decrease in muscular tone and hyperactivity.

Results: The results obtained indicated that massage therapy treatment had a positive effect on reducing resting and postural tremor in a patient with long-standing PD. The treatment was also effective to temporarily reduce rigidity during treatment, but did not produce a lasting effect.

Conclusion: Further study is required; however, the results of this case were consistent with the limited research available on the subject of massage therapy and Parkinson's Disease, in that positive change with respect to tremor - and to a lesser degree, rigidity - were achieved with focused, intentional treatment.

The effect of massage intervention on autonomic activity in critical ill children with sepsis

L. Guan (1, 2), J-P. Collet (1, 2), A. Ruitenbeek (3), S. Eibensteiner (3), N. Kissoon (1, 4)

(1) Department of Pediatrics, BC Children's Hospital, University of British Columbia, Vancouver BC, Canada

(2) Department of Medicine, University of British Columbia, Vancouver BC, Canada

(3) School of Massage Therapy, Utopia Academy, Vancouver BC, Canada

(4) Division of Critical Care, BC Children's Hospital, University of British Columbia, Vancouver BC, Canada

Background: In critically ill children down regulation of the autonomic nervous system (ANS) manifested as decreased heart rate variability (HRV) is a strong predictor of clinical deterioration and death. Massage intervention was reported to increase in HRV and improve the autonomic function in several diseases.

Objectives: The overall objective of this case report is to describe the effect of a foot and hand (F&H) massage intervention on the ANS activity of 4 children with sepsis/septic shock/leukemia and high Pediatric Logistic Organ Dysfunction (PELOD) severity scores.

Methods: 4 cases with severe sepsis/septic shock and high PELOD scores (one with acute renal failure and two with acute leukemia) were hospitalized in a tertiary care referral pediatric intensive care unit (PICU) in 2012. Twenty to thirty minutes of F&H massage was administered by a registered massage therapist. The changes in ANS parameters during and after the massage intervention were assessed using HRV power spectral analysis; the main metrics included high and low frequency power (HF and LF).

Results: These 4 critically ill patients with high PELOD score had low values of HF power ($<1 \text{ msec}^2/\text{Hz}$). They all showed impressive increases in HRV parameters during massage: up to 300% increase in HF (that represents the parasympathetic activity) and 120% increase in LF.

Conclusions: This case series indicated a positive effect of F&H massage intervention in improving ANS activity among patients with the high clinical severity and stressed state.

The effects of massage on the thighs, buttock, and abdomen to diminish the appearance of cellulite, improving self-esteem

K. Hanemaayer (1)

(1) Vancouver College of Massage Therapy, Vancouver BC, Canada

Background: Little research has been done relating massage and the appearance of cellulite and body image.

Objective: To evaluate the effect of massage, strengthening, and dry skin brushing, on the appearance of cellulite on thighs, buttocks, and abdomen as means of improving self-esteem.

Methods : One female, age 24 with stage 2 cellulite on the Nurnberger-Mueller scale, appearing on the buttocks and thigh, received treatment to the right side of her body,

using the left side as control. Treatment consisted of massage, including myofascial release, Swedish techniques, and passive range of motion. The subject completed daily strengthening exercises to the right adductors and right gluteals, as well as dry brushing to the right lower extremity. 10 massage treatments were performed over 4 weeks. Assessment was performed treatments 1, 4, 7, 10 and consisted of the Rosenberg self esteem scale (RSES) ^{1,2}, circumference of the waist, hips, and thighs, using a single tape measurement, fat thickness measurements using a caliper, over the abdomen, ASIS, and anterior thigh, as well as photographic documentation.

Results: There was an improvement of 7 points on the RSES. Circumference of the right thigh decreased by 0.6cm, and fat thickness over the anterior thigh decreased by 1.0cm. Cellulite appearance remained at stage 2 on the Nurnberger-Muller scale.

Conclusion: Body contouring changed from initial to final assessment. The increased score on the RSES showed improved self-esteem, though more research is needed to determine whether it is due to improved contouring or the association of positive touch and massage.

Massage therapy for essential tremor: Quietening the mind

N. Riou (1)

(1) Massage Therapy Diploma Program, MacEwan University, Edmonton AB, Canada

Background: Essential tremor (ET) is a neurological disorder resulting in rhythmical shaking of part of the body. The condition is known to have an inheritable tendency and can present in more than one family member, known as familial tremor. Treatment of the disorder is commonly by way of prescription medication. ET is progressive and in its mildest form can be sensed internally and/or observed when performing simple motor skills or activities of daily living.

Objective: To evaluate the effects of massage therapy on the severity of ET using an activity-based rating scale pre and post treatment.

Methods: The study period included five consecutive weekly sessions. The subject, a 63-year old female, indicated her hands and head as the primary areas affected by ET. The treatment aim was to reduce sympathetic nervous system firing; therefore the massage techniques implemented were relaxation-based. Methods included Swedish massage, hydrotherapy, myofascial release, diaphragmatic breathing, remedial exercise education and affirmative symptom management recommendations. Comparison drawings of an Archimedes spiral pre and post treatment provided an objective, visual representation of tremor intensity affecting fine motor control. Goniometric measurements were taken to mark changes in cervical range of motion.

Results: Tremor severity decreased after each session; demonstrated by improved fine motor skills. The client also reported an increased functionality in cervical range, which was documented during the first and last visits.

Conclusions: The results suggest that tremors, symptomatic to ET, can be eased through initiatives that encourage a parasympathetic response. Massage therapy has shown to be a

valuable method of treatment for ET. Tremor severity can present in an irregular pattern due to subjective individual triggers; therefore further controlled research is required to lessen the variability between subjects and to validate these findings.

The effects of massage therapy on blood glucose levels in people with Type 2 Diabetes: A case series

J. Stacey (1), L. Rew (1), A. Baskwill (1)

(1) Massage Therapy Program, Humber Institute of Technology and Advanced Learning,
Toronto ON, Canada

Background: Diabetes mellitus (DM) is characterized by the deficiency of insulin resulting in unstable blood glucose levels (BGLs). Some studies have been conducted to better understand the effect of massage therapy on various manifestations of DM. There are no studies that focus on the safety of massage therapy for patients with Type 2 Diabetes Mellitus (T2DM).

Objectives: The objective of this case series was to explore the BGLs in patients with DM during massage therapy treatment. In particular, the analysis and discussion focus on the safety of any recorded change.

Method: A retrospective chart audit was conducted to determine which patients to include in a case series. The patient files were reviewed for completeness, number of treatments, and type of diabetes. Six patients, who had each received four massage therapy treatments over four weeks, were chosen for this case series.

Results & Conclusions: The results of the study show the differences between the pre-treatment BGLs and the post-treatment BGLs. The combined pre-treatment BGLs, the results showed a mean of $9.01 \text{ mmol/L} \pm 0.56 \text{ mmol/L}$. Results for the combined post-treatment BGLs showed a mean of $7.17 \text{ mmol/L} \pm 0.53 \text{ mmol/L}$. There was a statistically significant difference between pre-treatment and post-treatment BGLs ($p \leq 0.01$). The results suggest that BGLs decrease during a massage therapy treatment; however it is unclear whether the effect is therapeutic. The percent change in BGLs is unpredictable, both between treatments and across patients, suggesting the possibility of having an adverse effect on patients with DM.

Naturopathy SIG Case Reports Abstracts

Naturopathy SIG Case Reports – Oral Presentation

A 41 year old female presenting with shoulder dysfunction postthyroidectomy and radioactive iodine treatments: A Case Report

JS. Clifford (1)

(1) Canadian College of Naturopathic Medicine (CCNM), Toronto ON, Canada

Introduction: Though not often acknowledged as a typical complication of thyroidectomy with cervical node excision, post-operative shoulder dysfunction may be relatively common. However, to the author's knowledge, this case represents the first noted aggravation of such an injury following both thyroidectomy and radioactive iodine ablation.

Objectives: The objective of this case report is to outline this aggravation, and to describe the benefits of an integrated naturopathic acupuncture approach to its treatment.

Case Presentation: A 41 year old female patient of Afghan descent presented to the Robert Schad Naturopathic Clinic for adjunctive cancer care pre- and post-thyroidectomy and radioactive iodine ablation. After each of these treatments, the patient experienced shoulder dysfunction that may be attributable to scar adhesion and fibrosis irritating cervical nerve roots C3 to C6. Treatment of these two incidents included a total of three acupuncture sessions, with substantial improvement in range of motion and an 80% reduction in perceived pain and stiffness.

Conclusions: The pathophysiology of shoulder dysfunction post thyroidectomy and cervical lymph node excision has previously been elucidated, and this case presents a variation on this prior knowledge. However, the pathophysiology of prior injury aggravation post radioactive iodine is less clear. It may have been due to either an increased inflammatory response resulting in greater nerve irritation, or to postural factors during the patient's hospital stay causing increased guarding and trigger-point activation. Regardless of mechanism of injury, an integrated acupuncture approach has been tremendously effective for this patient, and may be useful in similar injuries.

Naturopathy SIG Case Reports – Poster Presentation

Case study: Low dose naltrexone and improved emotional regulation in a 4-year-old child with autism spectrum disorder (ASD)

M. Trevorrow (1)

(1) Private Practice, Calgary AB, Canada

Background: Autism spectrum disorders (ASDs) are neurodevelopmental disorders of childhood with lifelong consequences. Frequently, children on the autism spectrum also exhibit significant emotional irritability that can be highly disruptive to their child's daily functioning. *Low dose naltrexone* (LDN), an opioid antagonist has been studied for behavioral, mood and immune regulation autism spectrum disorders in daily dosing of 2.5 to 5.0mg daily, usually given at bedtime. It has shown beneficial effects on mood and behavior regulation in small trials, and has very few reports of adverse effects.

Objectives: We were looking to improve this patient's mood and behavior regulation with the introduction of topical LDN over a three-month period.

Case presentation: 4-year-old male patient TN presented with a formal diagnosis of ASD with significant irritability and regular 'meltdowns'. After dietary and nutritional interventions had been introduced and assessed, and informed consent obtained, topical LDN was introduced at a dose of 0.5mg daily applied topically at bedtime. Over a four-month period, dosage was gradually increased to a target of 3.0mg daily.

Discussion & Conclusions: After the introduction of topical LDN, the patient experienced considerable behavioral improvement in mood regulation and social interaction according to both his primary caregiver and the Behavior Interventionists at his therapeutic pre-school. During this period, he also demonstrated improvements in receptive language and mastering behavioral skills, including letter recognition, and less rigidity and meltdowns over changes in routine or introduction of new foods. No adverse effects were reported.

IN-CAM Research Symposium General Abstracts

IN-CAM Research Symposium – Oral Presentations

MyChoices©: A computerized decision aid for breast cancer survivors considering complementary therapies for hot flash management

LG. Balneaves (1,7), D. Panagiotoglou (2), J. Voth (3), D. Seely (4,5), C. Van Patten (6), B. Ross (6,7), TLO. Truant (1,7), D. Stacey (8), A. Porcino (7), S. Sagar (9,10), M. Forbes (10), MJ. Verhoef (11)

- (1) School of Nursing, University of British Columbia, Vancouver BC, Canada
- (2) School of Population and Public Health, University of British Columbia, Vancouver BC, Canada
- (3) Intogrey Studios, Abbotsford BC, Canada
- (4) Ottawa Integrative Cancer Centre (OICC) Ottawa ON, Canada
- (5) Canadian College of Naturopathic Medicine (CCNM), Toronto ON, Canada
- (6) British Columbia Cancer Agency, Vancouver BC, Canada
- (7) CAMEO Research Program, University of British Columbia, Vancouver BC, Canada
- (8) School of Nursing, University of Ottawa, Ottawa ON, Canada
- (9) Department of Oncology, McMaster University, Hamilton ON, Canada
- (10) Juravinski Cancer Centre, Hamilton ON, Canada
- (11) Department of Community Health Sciences, University of Calgary, Calgary AB, Canada

Background: Faced with limited conventional treatment options because of their diagnosis, breast cancer (BrCa) survivors often consider complementary therapies (CTs) when faced with the debilitating effects of hot flashes. Contradictory information about the efficacy and safety of CTs for hot flashes has caused uncertainty among survivors and complicated their treatment decisions.

Objectives: The purpose of this study was to develop and evaluate a computerized decision aid (DA) that provides evidence-based and personalized information about CTs for BrCa patients experiencing hot flashes.

Methods: A before/after study design examined the effect of the DA on BrCa survivors' knowledge about three CT options (i.e., soy, black cohosh and acupuncture) for hot flash management, their decision conflict and preparedness for the decision, and their use of CTs and evidence-based resources. Baseline surveys and follow-up surveys at 2-weeks and 3-months were conducted using validated instruments.

Results: 54 BrCa survivors completed all baseline and follow-up surveys. Significant increases in knowledge about hot flash management and treatment options ($p < .0001$) were found at 2 weeks and maintained at the 3-months follow-up. Decision conflict steadily decreased across the study time-points, with a mean reduction of 1.03 ($p < .0001$)

and 1.20 ($p < .0001$) at 2 weeks and 3 months, respectively. A significant increase in intention to use soy products was also observed.

Conclusions: The findings suggest a computerized DA that provides personalized information about CT options may be an effective knowledge translation and decision support strategy for BrCa survivors faced with challenging treatment decisions about hot flash management.

Moving to a new address: Introducing the CAMEO website

LG. Balneaves (1), TLO. Truant (1), A. Porcino (1), BC. Ross (2), MJ. Verhoef (3)

(1) School of Nursing, University of British Columbia, Vancouver BC, Canada

(2) British Columbia Cancer Agency, Vancouver BC, Canada

(3) Department of Community Health Sciences, University of Calgary, Calgary AB, Canada

Background: Since 2007, the Complementary Medicine Education and Outcomes (CAMEO) Program has been developing and evaluating CAM education and decision support interventions for cancer patients and oncology health professionals at the BC Cancer Agency. To support the national expansion of the CAMEO program and dissemination of the evidence-based interventions to a broader audience, an independent website has been developed.

Objectives: The primary objective of this presentation is to introduce the new CAMEO website and the associated evidence-based resources and interventions. A secondary objective is to discuss the evaluation strategies attached to each component of the CAMEO website and the development of a national database focused on CAM and cancer decision-making.

Methods: The development and structure of the CAMEO website will be described, as will the specific education and decision support interventions. Recruitment and data collection and analysis strategies associated with each intervention and resource will be explicated.

Results and Conclusions: The CAMEO website will provide individuals living with cancer and oncology health professionals in Canada with easily accessible, evidence-based resources and intervention aimed at supporting informed decisions about complementary therapies in the context of cancer. The CAMEO website also offers a platform for future national knowledge translation strategies in the area of integrative oncology.

Research awareness of registered massage therapists in Ontario

A. Baskwill (1), K. Dore (1)

(1) Department of Medicine, McMaster University, Hamilton ON, Canada

Background: Evidence-informed practice (EIP) is part of a healthcare ethos, in which practitioners apply evidence together with their expertise and patients' values. Studies about EIP focus on attitudes or confidence related to EIP. Individuals' abilities to assess their own knowledge or performance are low. Therefore, a positive rating of attitude or confidence does not likely portray accurately the EIP knowledge or ability of the practitioner.

Objective: This study sought to understand registered massage therapists' (RMTs) awareness of the current evidence for practice and to identify sources of information that inform that awareness.

Methods: An online questionnaire-based mixed-methods cross-sectional study was conducted. Ontario RMTs were invited to participate.

Results: In total, 1,762 questionnaire were included; a 16.9% response rate. The mean Research Awareness Score was 9.4 ± 7.2 . A multiple regression showed four factors which explained 4% of the variation seen in the research awareness score: membership in the RMTAO, EIP attitude score, post-graduate education, and home-based practice. Of seven sources of information provided, respondents rated cumulative professional experience as most important, followed by recent research studies and education. Cumulative professional experience also rated as most frequently used, followed by other RMTs and education.

Conclusions: This study investigated the level of awareness of research of RMTs. The results showed an average research awareness score, which should be investigated further. Future research should investigate other factors, which may show a better model of predictability of the research awareness score. It is proposed that research awareness might be a better predictor of use of evidence in practice but further research is needed.

Plurivocality and inter professional collaboration: analysis of the articulation of a plurality of voices in a Canadian integrative health care clinic.

M. Bujold (1)

(1) Laval University, Quebec City QC, Canada

Background: In the past decade, North America has witnessed the emergence of integrative healthcare clinics (IHC), in which practitioners of different clinical backgrounds offer "holistic care" in a spirit of cooperation. Despite a growing research interest on this kind of organisation, no study has yet analyzed *in situ* the negotiation of points of view in the IHC process, taking into account the patient's illness representations, and even less to situate this dynamic in its sociocultural context.

Objective: The objective of this study was to do a case study of a Quebec integrative clinic to identify and analyze the factors that favor or impede the negotiation of point of views in a person-centered IHC process.

Methods: During a field study in a Canadian IHC cooperative, grouping together 14 alternative and biomedical practitioners, the therapeutic experiences of 15 patients who suffered from different chronic illnesses were examined to identify and analyze the factors that either foster or impede the collaboration. The conceptual framework, with its innovative dynamic use of individual explanatory models (iEM), made it possible to analyze the interaction between the perceptions of the actors involved in the health care process.

Results: One of the theoretical contributions of this study is that it refines our understanding of the concept of iEM stressing their polymorphic nature. We propose a concept of "plurivocality" to illustrate that patient may use a "plurality of voices" and embody "different characters", according to the clinical encounter in which they "tell the story" of their illness.

Conclusions: The overall analysis of this plurality may illustrate complementarities between discourses, offering a global overview of the patient's needs and their experiences of illness that might be at the base of the IHC process.

Creating a chiropractic practice-based research network: Enhancing the management of musculoskeletal care

A. Bussi res (1), P. C  t   (2), S. French (3), M. Godwin (4), A. Gotlib (5), ID. Graham (6), D. Grondin (7), C. Hawk (8), C. Leboeuf-Yde (9), S. Mior (7), K. Stuber (7)

(1) School of Physical and Occupational Therapy, McGill University, Montreal QC, Canada

(2) Faculty of Health Sciences, University of Ontario Institute of Technology, Oshawa ON, Canada

(3) Queen's University, Kingston ON, Canada

(4) Faculty of Medicine, Memorial University of Newfoundland, St. John's NL, Canada

(5) Canadian Chiropractic Association, Toronto ON, Canada

(6) University of Ottawa, Ottawa ON, Canada

(7) Canadian Memorial Chiropractic College (CMCC), Toronto ON, Canada

(8) Logan University, Chetserfield MO, USA

(9) Institut Franco Europeen de Chiropratique, Ivry-sur-Seine, France

Background: Musculoskeletal conditions pose considerable social and economic burdens on society. Despite available evidence for optimal management of these conditions, low adherence to guidelines and wide variation in services persist across health professions, including chiropractic. To address this, a practice-based research network (PBRN) will be established bringing together researchers and clinicians across multiple disciplines with the aim of improving health services delivery and closing the gap between research and practice.

Objectives: The overall aim is to improve patient care and important health outcomes among individuals with musculoskeletal conditions. This project explores the factors critical to establishing a Canadian chiropractic PBRN.

Methods: A review of optimal procedures for planning and carrying out a PBRN will be conducted and results adapted to the current context. Founded on an integrated knowledge translation framework and a participatory approach, key stakeholders, including academics, elected provincial and national leaders, clinicians, and patient representatives will be assembled in December 2014. Meeting participants will draft the ethics and governance structure of the PBRN.

Results: Indicators to measure success of the PBRN will include organizational, process of care indicators and important patient outcomes. The PBRN is expected to improve information sharing, strengthen research capacity and engage decision-makers more directly. It will also provide a structure to recruit partners, clinicians and their patients, and to identify knowledge-practice gaps and evaluate practice change.

Conclusions: The establishment of a multidisciplinary network of key stakeholders in the chiropractic profession will provide a unique opportunity to engage clinicians in quality improvement activities and improve patient care.

Randomized-controlled multi-site trial of mindfulness-based cancer recovery (MBCR) versus supportive expressive group therapy (SET) among breast cancer survivors (MINDSET)

LE. Carlson (1), R. Tamagawa (2), J. Stephen (3), R. Doll (3), M. Specia (2)

(1) Division of Psychosocial Oncology, University of Calgary, Calgary AB, Canada

(2) Alberta Health Services, Calgary AB, Canada

(3) British Columbia Cancer Agency

Background: MBCR and SET are two well-validated psychosocial oncology interventions. However, no previous studies have directly compared these two interventions, and little is known about long-term efficacy. This study compared the effects of these two interventions on psychological and biological outcomes immediately following the intervention, and one-year thereafter in distressed breast cancer survivors.

Methods: A total of 254 distressed Stage I-III breast cancer survivors in Vancouver and Calgary, Canada were randomized to either MBCR or SET. Patients completed questionnaires addressing mood, stress symptoms, quality of life, social support, and post-traumatic growth, and provided saliva samples for assessing diurnal cortisol slopes before and after the intervention, 6 months and 12 months following the intervention.

Results: Immediately following the intervention, women in MBCR reported greater reduction in mood disturbance and stress symptoms, and improved quality of life, social support, and post-traumatic growth relative to SET. The MBCR group maintained these benefits over the 12 month period. The MBCR group also reported further enhanced post-traumatic growth relative to SET over follow-up

Conclusions: This study was the first and the largest to demonstrate sustained benefits of MBCR in distressed breast cancer survivors, showing that these women gained

efficacious tools to live and cope with cancer through MBCR participation that persisted well beyond treatment completion. Together with growing evidence on health benefits of MBCR in psycho-oncology, the findings of this study suggest that it should be provided as a part of comprehensive cancer care.

The effect of a multi-strain probiotic on the symptoms of severe Irritable Bowel Syndrome (IBS)

K. Cooley (1), M. Aucoin (2), P. Boily (2), D. Seely (1)

(1) Canadian College of Naturopathic Medicine (CCNM), Toronto ON, Canada

(2) Centre for Quantitative Analysis and Decision Support, Carleton University, Ottawa ON, Canada

Background: Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder characterized by persistent abdominal pain, bowel dysfunction, and bloating with no identifiable physical or organic cause. Probiotics are thought to mitigate IBS through a variety of methods including, enhanced enteric barrier function, acidification of the colon, immunomodulation, improved mucosal stress response, and reduced visceral hypersensitivity. Previous clinical trials suggest potential strain-specific variation in the clinical effectiveness of probiotics for IBS, as well as high, and often heterogenous expectation (placebo) effects. This trial sought to quantify the safety and efficacy of a multi-strain probiotic on the severity and quality of life of people experiencing severe IBS symptoms.

Methods: 100 men and women with confirmed severe IBS (ROME III criteria) were enrolled in a 12-week randomized double blind placebo trial comparing the effect of a multi-strain probiotic (1.5×10^9 cfu/day (*L. gasseri* KS-13 (1.2×10^9), *B. bifidum* G9-1 (0.15×10^9) and *B. longum* MM-2 (0.15×10^9)) compared to a visually matched placebo. Central randomization & allocation allowed for stratification based on gender and age. Validated measures (IBS Severity Scale (primary), IQoL, perception of adequate control of symptoms (secondary), compliance and adverse events were collected monthly. Analysis of variance testing examined the statistical significance of differences between groups. The study is designed with a power of 90% to with statistical significance at $p < 0.05$ based on findings from our pilot study using the study product in mild to severe IBS.

Results & Conclusions: Full analysis of the study is not completed at this date. Final data will be available for presentation.

First steps: Involving people with lower limb lymphoedema in evaluating traditional acupuncture for improving wellbeing

B. de Valois (1), T. Young (1), E. Melsome (2)

- (1) Lynda Jackson Macmillan Centre, Mount Vernon Cancer Centre, Uxbridge, United Kingdom
- (2) Mount Vernon Lymphoedema Service, Mount Vernon Hospital, Uxbridge, United Kingdom

Background: Public and patient involvement (PPI) is a prerequisite for applications to major UK research funders. Our aim is to involve patients in developing a research proposal to assess the use of traditional acupuncture (TA) to improve wellbeing of people with lower-limb-lymphoedema (LLL), a neglected condition. Step one was a pre-research project, offering and evaluating “taster sessions” so patients could experience TA.

Objectives: To assess: 1) acceptability of TA to patients with LLL; 2) the potential effect of TA on wellbeing; and 3) practical issues of delivering treatment.

Methods: The lymphoedema nurse referred 6 patients receiving usual care for chronic LLL. Following a meeting explaining TA, they consented to: having up to 7 treatments; completing questionnaires (Measure Yourself Medical Outcomes Profile (MYMOP), LYMQOL-Leg, SF-36, and semi-structured questionnaires at baseline, end-of-treatment (EOT), and 4 and 12 weeks after EOT); participation in a focus group; use of anonymised details for dissemination.

Results: A heterogeneous group (cancer/non-cancer-related, primary/secondary, unilateral/bilateral lymphoedemas) attended for 35 treatments in total. Patients were not needed below the waist. At EOT, there were significant improvements in scores for MYMOP (all measurement points), Function and Mood (LYMQOL-Leg) and Role-Emotional and Mental Health (SF-36). Patients found acupuncture acceptable, and wished to progress research plans.

Conclusion: A pattern emerging from quantitative and qualitative data suggests links between symptom reduction, enhanced energy and improved motivation to self-manage. TA may help to maximise adherence with the demands of long-term self-management; we will continue working with this patient group to further research.

The journey of the label CAM

I. Gaboury (1), K. Toupin-April (2), M. Verhoef

- (1) Department of Family Medicine, Université de Sherbrooke, Sherbrooke QC, Canada
- (2) Children’s Hospital of Eastern Ontario, Ottawa ON, Canada
- (3) Department of Community Health Sciences, University of Calgary, Calgary AB, Canada

Background: As complementary and alternative medicine (CAM) have developed extensively, uncertainty about the appropriateness of the terms CAM and other CAM-

related terms has grown both in the research and practice communities. Various terms and definitions have been proposed over the last three decades, highlighting how little agreement exists in the field.

Objectives: To discuss contextual use of current terms and reasons why people are comfortable or not to use those terms.

Methods: Relying upon the results of a large international Delphi survey on the adequacy of the term CAM, a focus group of 13 international experts in the field of CAM was held. A forum was also set up for 28 international experts to discuss and refine proposed definitions of both CAM and integrative healthcare (IHC) terms. Audio recordings of the meeting and forum discussion threads were analyzed using interpretive description.

Results: A review of the terms used over the last three decades will be presented. All terms that have so far been introduced are to some extent problematic. However, our study has shown that CAM and IHC remained the most popular and accepted terms by far. Focus group participants clarified the context in which those terms are appropriate. Existing and emergent definitions of both CAM and integrative healthcare terms were discussed.

Conclusion: CAM and other related terms could be used more effectively, provided they are used in the proper context. While umbrella terms such as CAM and IHC are useful in the context of research, policy making and education, relevant stakeholders should limit the use of those terms.

Adverse events in massage therapy: perspectives from a focus group.

D. Gowan-Moody (1), A. Leis (1)

(1) College of Medicine, University of Saskatchewan, Saskatoon SK, Canada

Background: Massage therapy (MT) related adverse events (AEs) ranging from mild discomfort post-treatment to severe injuries like fractures are known to occur. Other professions that utilize manual therapy in patient treatment have sought the opinions of stakeholders including patients and practitioners on issues related to the description and classification of AEs. Little is known however, about views on what constitutes an AE within the field of MT.

Objective: To explore MT regulators' perceptions on the meaning of adverse events in the practice of MT.

Methods: As part of a larger study, a focus group (10 participants) comprised of College of Massage Therapists of British Columbia (CMTBC) Board and staff in attendance at an AGM discussed views on the nature of AE in MT. Thematic content analysis was used to describe emerging themes and sub-themes from the data.

Results: An overarching theme of trust with sub-themes of patient vulnerability and practitioner responsibility was found. Participants stressed the importance of the patient-practitioner relationship and suggested that aspects of the MT practice environment as well as the public, patient and practitioners expectations of MT may pose unique challenges and opportunities for patient safety.

Conclusions: There is a need to more fully understand the views and opinions of regulators, practitioners and patients of MT regarding the nature of MT-related AEs. It

appears that the practitioner's duty to uphold patients' trust is of paramount importance from the perspective of the regulators of MT. The results of this study will be useful to inform further investigation to aid MT practice, education and policy.

The effect of massage intervention on autonomic activity in critically ill children

L. Guan (1,2), J-P. Collet (1,2), N. Yuskiv (1,2), P. Skippen (1,3), R. Brant (1,4), N. Kissoon (1,3)

- (1) Department of Pediatrics, BC Children's Hospital, University of British Columbia, Vancouver BC, Canada
- (2) Department of Medicine, University of British Columbia, Vancouver BC, Canada
- (3) Division of Critical Care, BC Children's Hospital, University of British Columbia, Vancouver BC, Canada
- (4) Department of Statistics, University of British Columbia, Vancouver BC, Canada

Background: Autonomic nervous system (ANS), as a major regulatory system of inflammatory/stress responses, is impaired in stressful situations such as the intensive care unit (ICU). Massage therapy has been shown to improve overall ANS function as measured by increased heart rate variability (HRV).

Objectives: To describe the effect of foot and hand (F&H) massage on improving ANS activity in critically ill children.

Methods: Prospective experimental study conducted in Pediatric ICU. F&H massage (20-30 minutes) was administered either as single or six sessions within one day on 18 subjects. Main metrics included correlation between baseline HRV and Pediatric Logistic Organ Dysfunction (PELOD) score; and changes in HRV parameters regarding high and low frequency (HF and LF) throughout massage intervention. Both parametric and non-parametric statistics were used.

Results: A negative Spearman's correlation ($\rho = -0.77$) between HRV and PELOD score was observed. HF increased significantly ($p = 0.04$) during massage with a mean percentage increase of 75% (95% CI: 20%-130%). LF increased significantly ($p = 0.026$) by 56% (95% CI: 20%-92%). Finally HF+LF increased by 54% (95% CI: 24%-84%, $p = 0.001$). Sickest patients (PELOD > 10) showed a higher increase in all HRV parameters than milder cases; whereas not significant. Repeated sessions of massage was associated with persistent effect on HF and LF which peaked at the second session and remained stable thereafter.

Conclusions: F&H massage can increase HRV in critically ill children and the effect persists when repeated sessions are offered. Further studies are warranted to assess whether this improvement of ANS activity is associated with biological and clinical changes.

Barriers to mindfulness-based cancer recovery participation in cancer patients: A mixed methods exploration

M. Hermann (1), J. White (1), L.E. Carlson (1)

(1) Department of Psychosocial Resources, Tom Baker Cancer Centre, Alberta Health Services, Calgary AB, Canada

Background: Mindfulness-based cancer recovery (MBCR) has proven beneficial for improving anxiety, depression, stress, quality of life, and general well being in cancer patients. However, drop out rates are often as high as 20%, so many participants may miss out on these benefits. This study explored barriers to participation in the MBCR program in an attempt to understand and eventually ameliorate them.

Methods: A convergent mixed methods study. Quantitative surveys were administered pre- and post-MBCR using valid, reliable scales of barriers to practice, personality, spirituality, mood, quality of life, and stress. Qualitative semi-structured interviews explored participants' perception of barriers through individual interviews at drop out or completion of the program. Qualitative analysis involved an inductive thematic approach with constant comparison.

Results: Barriers fell into four categories: life-related, motivation-related, cancer-specific, and meditation-specific barriers. Program completers reported decreased mood disturbance and stress, and increased spirituality. Dropouts experienced a relatively high level of barriers that resulted in termination of practice, but dropouts and completers experienced similar barriers. Qualitative themes included the spectrum of uptake of the mindfulness practice including motivation, maintenance, and commitment and impacting facilitators and barriers.

Conclusions: Successful uptake of mindfulness practice occurred on a spectrum of motivation, maintenance, and commitment. Cancer patients, post-treatment, with space and time in their life are more likely to be successful with maintaining the practice. Increasing instructors' awareness of barriers to home practice through regular, personalized check-ins with participants may help tailor the MBCR program to better meet the needs of the participants.

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Which public, whose interest? Divergent discourses in two Ontario government reports preceding acupuncture regulation

N. Ijaz (1), H. Boon (1), S. Welsh (2)

(1) Leslie Dan Faculty of Pharmacy, University of Toronto, Toronto ON, Canada

(2) Department of Sociology, University of Toronto, Toronto ON, Canada

Background: As a practice rooted in China's indigenous medicine, acupuncture carries both clinical and cultural significance. Various United Nations agencies have advised global implementation of regulations guarding against misappropriation of indigenous medicine systems. In 2013, the Ontario (Canada) government enacted 'public interest' regulations authorizing eleven health professions to perform acupuncture using a globally-unique regulatory definition for the practice. Ontario's acupuncture regulatory process raises significant questions about cultural misappropriation in relation to public interest protection.

Objectives: To investigate the development of Ontario's acupuncture regulatory definition in relation to misappropriation concerns, by examining historical usage of public interest principles through the regulatory process.

Methods: Engaging critical discourse analysis within a postcolonial theoretical framework, textual excerpts from two Ontario government reports on acupuncture regulation (1996 and 2001) were analyzed and contrasted in relation to their respective linguistic engagement with public interest principles.

Results: Despite being authored by the same government body, and apparently informed by a common set of articulated public interest principles, the two reports used contrasting discursive strategies to articulate fundamentally divergent perspectives on issues of safety, equality and equity. Whereas the 1996 report emphasized regulatory preservation of acupuncture's cultural underpinnings, the 2001 report exclusively privileged Western scientific perspectives.

Conclusion: Ontario's enacted acupuncture regulations were supported by complex discursive strategies which arguably promote misappropriation of this indigenous health care practice. This case raises important questions about how health care practices rooted in indigenous health care systems, - carrying both medical and cultural significance - may be governed within liberal democratic regulatory systems.

Inclusion in nature as a complementary therapy for adults with disabilities and their caregivers

SL. Jakubec (1), H. Ray (1), DCD. Hoed (2), A. Krishnamurthy (1)

(1) Department of Physical Education and Recreation Studies, Mount Royal University, Calgary AB, Canada

(2) Alberta Parks

Background: The benefits of experiencing green space and time outside is increasingly being recognized as a useful complementary therapy. Alongside this trend, inclusion of

all people into parks and nature has been an important area of therapeutic practice. Nature inclusion for those with disabilities, youth, seniors and immigrants has become a focus of Alberta Parks in collaboration with the Ministry of Tourism Parks and Recreation in Western Canada.

Objectives: This study was designed to examine the influence of two nature-based interventions, consisting of individual day trips and a more extensive week-end nature experience, on mental well-being outcomes.

Methods: This mixed methods pilot study (N=80) included baseline and post intervention measures including the Mental Health and Mental Well-Being Impact Questionnaire, Beck Depression Inventory (BDI), and Quality of Life Inventory (QOLI) measures.

Results: Qualitative data elicited immediate inclusion experiences through reflective writing and comments provided in the QOLI measure. Three dominant themes of inclusion experiences were found: “Sensory Activation”, “Reimagined Social Relations” and “Reinvented Self”. Quantitative findings, while not statistically significant, show a positive trend towards improved depression markers, greater health satisfaction, improved social relationships (in particular, love and friendship), as well as satisfaction with a sense of community and the experience of helping.

Conclusions: These findings demonstrate promise for nature-based activity as a complementary therapy for both adults with disabilities and their caregivers.

Complementary medical health services: a cross sectional descriptive analysis of a Canadian naturopathic teaching clinic

D. Kennedy (1), B. Bernhardt (1), T. Snyder (1), V. Bancu (1), K. Cooley (1)

(1) Canadian College of Naturopathic Medicine (CCNM), Toronto ON, Canada

Background: Little has been published regarding the observed practice patterns of naturopathic doctors (NDs), the services provided, or the type of conditions for which patients of naturopathic doctors are seeking treatment.

Objectives: A cross-sectional descriptive analysis of the largest Canadian teaching clinic for NDs was undertaken to better understand the services provided to the community and increase knowledge about the naturopathic profession.

Methods: Data was taken from two sources: the Toronto, Ontario clinic’s point-of-sale system and a passive patient satisfaction survey. Data included patient demographics, health services utilization, ICD-10 codes, and therapies employed. Descriptive statistics and Kruskal-Wallis test were used to compare different age-based groups (pediatric, adult, and senior) and examine health services use between years. This study was approved by the Research Ethics Board of the Canadian College of Naturopathic Medicine

Results: There were 13,412 patients treated in 76,386 patient visits across the 2010-2012 clinic years. The clinic draws people from the metropolitan Toronto and surrounding region with health concerns and diagnoses that are consistent with primary care, including acute, chronic and complex multi-morbid conditions. Patient median age was

37; females outnumbered males in all age-based groups except the pediatric population. Health education, health prevention and assistance with chronic health conditions were the primary reasons for use of the ND clinic from the patient survey.

Conclusion: Further explorations into health services delivery from the broader naturopathic profession would expand the understanding of the patients and type of care being provided by naturopathic doctors.

Natural health product adverse event reporting with concurrent benzodiazepine use: A systematic review

BK. Khamba (1), C. Neyck (1), D. Adams (1), S. Vohra (1)

(1) Department of Pediatrics, Complementary and Alternative Research and Education (CARE) Program, University of Alberta, Edmonton AB, Canada

Background: Benzodiazepines promote calming due to their potentiating effect on the inhibitory neurotransmitter GABA, and are widely prescribed to treat a variety of conditions, most notably anxiety and insomnia. Some natural health products (NHPs) can also influence neurotransmitters, including GABA, leading to a potential NHP-drug interaction.

Objective: To investigate interactions between benzodiazepines and natural health products.

Methods: The following databases were searched from their inception for terms related to benzodiazepines, NHPs, adverse events or interactions: Medline, EMBASE, and Cochrane Central Registry of Controlled Trials. Selection criteria included published English language studies, of any design, and in all populations. Studies that reported an interaction between a benzodiazepine and NHP were included. Data about the interaction (including possible CYP interactions), drug, NHP, and study population were systematically extracted.

Results: Forty-eight articles met inclusion criteria. Of the included studies, 11 involved human populations (2 randomized controlled trials, 7 controlled trials and 2 case reports) and 34 articles were controlled trials using animals or in vitro experiments.

Conclusions: Theoretical data suggest multiple potential interactions between NHPs and benzodiazepines. Further clinical data are urgently needed to determine if such interactions are clinically relevant, and to guide patients and health care provider regarding concurrent use.

Assessing the utility of an electronic patient database to capture whole systems practice at two naturopathic outpatient teaching clinics

B. Leung (1), G. Flower (2), K. Cooley (2), C. Habib (2), M. Gowan (2), S. Podgrabinski (3), and D. Seely (2)

(1) Faculty of Health Sciences, University of Lethbridge, Lethbridge AB, Canada

(2) Canadian College of Naturopathic Medicine (CCNM), Toronto ON, Canada

(3) Private Practice - OM Corporation

Background: A challenge to nonconventional health care systems such as naturopathic medicine has been the inability to measure its treatment protocols as a whole practice. To capture the “real-world” of the clinical environment and the efficacy of prescribed treatment protocols requires the collection of a high volume of data over a consistent period of time. The purpose of this study was to determine the feasibility of using an electronic patient database (ePD) to evaluate complex protocols and patient outcome in a clinical setting.

Objectives

1. To describe the implementation of the ePD at two outpatient teaching clinics,
2. To assess the utility of the ePD program in capturing patient care information,
3. To determine the feasibility of using the ePD in a clinical setting for educational and research purposes.

Methods: This observational study used an audit process to evaluate the utility of the ePD. Key stakeholders from two Canadian Naturopathic Medical schools with representatives from academic and clinical departments were consulted. Data were collected using focus groups, surveys, and patient charts. Data included patient demographics, laboratory values, physical measures, treatment protocols, and validated questionnaires.

Results and conclusions: The ePD captured standardized and individualized measures of patient care. Substudies generated by student interns using the database served the ePD’s educational purpose. Research limitations included complexity of application impeded consistent input due to increased workload for student clinicians, and inability for real-time data entry resulted in data quality being problematic. Overall, the ePD allowed comparison of large volumes of data over time that was condition focused.

Extent, effectiveness and safety of neurofeedback for management of long-term symptoms in cancer survivors: Results of a survey of neurofeedback providers

M. Luctkar-Flude (1)

(1) School of Nursing, Queen's University, Kingston ON, Canada

Background: Neurofeedback, a novel complementary and alternative medicine (CAM) therapy, is a non-invasive, drug-free form of brain training reported to help with a variety of conditions including pain, fatigue, depression, anxiety, sleep disorders and

cognitive decline. However, it is unknown to what extent cancer survivors are using neurofeedback for management of long-term symptoms.

Objective: The purpose of this study is to explore current use of neurofeedback by cancer survivors and identify safe and effective neurofeedback modalities for this population.

Methods: This preliminary exploratory study employed a descriptive online survey administered to neurofeedback providers to identify: (1) numbers of cancer survivors trained; (2) types/protocols of neurofeedback used; (3) types of symptoms addressed; (4) success of training; and (5) incidence/nature of side effects.

Preliminary Results: Seventy neurofeedback providers completed an online survey. Of these, 34 (48.6%) have provided neurofeedback to an average of 6.5 cancer survivors (range=1-50). A variety of approaches were used: NeuroOptimal (37), HEG (17), QEEG-based (11), LENS (7), and other (33). Neurofeedback training was reported to eliminate/reduce symptoms including fatigue (16.2%/68.5%), cognitive impairment (23.6%/62.2%), sleep problems (14.1%/72.7%), stress (17.1%/70.7%), anxiety (26.1%/61.82%), depression (35.9%/49.6%), and pain (9.4%/53.2%). Transient side effects reported included fatigue (9.2%), headache (7.6%), spaciness (6.2%), anxiety (3.7%), insomnia (3.0%), and dizziness (2.7%).

Conclusions: Preliminary results suggest neurofeedback may be a safe and effective CAM therapy to reduce long-term symptoms in cancer survivors. This data will inform development of a protocol for a pilot study to evaluate effectiveness in a sample of cancer survivors.

What do we need to ensure viable and productive research activity in the field of massage therapy? An exploration of MT stakeholder perceptions

M. Menard (1,4), A. Kania-Richmond (2,4), B. Barbaree (3,4)

(1) Crocker Institute, Kiawah SC, USA

(2) Department of Community Health Sciences, University of Calgary, Calgary AB, Canada

(3) Private Practice, Calgary AB, Canada

(4) Massage Therapy Special Interest Group, IN-CAM Research Network

Background: Following the *National Research Priority Setting Summit on Massage Therapy and Canadians' Healthcare Needs* at the 2012 IN-CAM symposium, an IN-CAM massage therapy special interest group (MT SIG) was formed. Several areas for immediate exploration were identified by the SIG, one of which was identifying resources for developing productive and viable research infrastructure in the Canadian context.

Objective: To explore and describe perceptions of MT research stakeholders regarding requirements and needs in supporting the development productive and viable infrastructure to enable the conduct of high quality research on MT.

Methods: Semi-structured qualitative interviews were conducted with purposively selected key informants, including academically-based researchers and MT practitioners and educators involved in research. Interviews were audio-recorded and transcribed verbatim. Data was analyzed using descriptive content analytic techniques to identify emergent themes. Key themes were developed by consensus.

Results: A number of components for a viable and productive MT research infrastructure were identified by participants. Four core components were identified by all participants: people with research training, access to funding, development of collaborative relationships, and affiliations with credible research institutions. Two distinct perspectives emerged: Researchers see research as a distinct or separate activity while MT professionals view research more broadly as embedded within profession activities.

Conclusions: The research infrastructure needed to enable and progress MT research is still at an early stage of development. Resulting recommendations for next steps include investing in research training for motivated massage therapists and establishing formal programs of research within established academic institutions.

Profile of osteopathic care in Quebec including primary reasons for consultation for men, women and children: Results of a prospective survey

C. Morin (1,2), A. Aubin (1)

(1) Centre ostéopathique du Québec, Montréal QC, Canada

(2) School of Rehabilitation, University of Sherbrooke, Sherbrooke QC, Canada

Background: Osteopathy is an increasingly popular health care modality in Quebec. With the prospect of regulation, there is a need to better understand its practice in Quebec, in particular the most common reasons for consultation.

Objectives: This study aims to investigate profile of osteopathic care including primary reasons for consultations for men, women and children in clinical settings in Quebec.

Methods: A prospective survey of members of the Registre des ostéopathes du Québec was conducted to examine demographics in osteopathic practices, limited patient data (age category, gender) and the primary reason for consultation for each patient.

Results: Initial response rate was 60.1%. Overall, respondents (n=241) treated a total of 14002 patients during the two-week working period, including 8739 women (62.4%), 3826 men (27.3%) and 1437 children (10.3%). Osteopaths spent an average of 55 minutes with each patient. Musculoskeletal pain was the most common reason for consultations (61.9%), with women consulting most commonly for cervical pain and men for lumbar pain. Perinatal/pediatric (11.8%), head (9.1%), visceral (5.0%), general (4.8%), and preventive concerns (0.3%) were other common reasons for consultations. Most common pediatric concerns were head shape and plagiocephaly, torticollis, postnatal check-up, otorhinolaryngologic concerns, reflux, motor or cognitive development, lower limb and pelvis pain, orthodontics, pulmonary concerns as well as colic, headache, posture and sleep concerns.

Conclusions: With the regulation of osteopathic practice pending in Quebec, results of this survey could contribute to informing regulators as well as establishing clinical research priorities and clinical guidelines development.

Specialty Study Of Natural Health Product-Drug Adverse Reactions (SONAR): Active surveillance in patients seeking mental health services

*C. Necyk (1,2), B. Khamba (1), MZ. Hydrie (1), B. Foster (3), M. Murty (4), S. Vohra (1, 5-8) and the SONAR Team**

- (1) Complementary and Alternative Research Program (CARE) for Integrative Health and Healing, Department of Pediatrics, University of Alberta, Edmonton AB, Canada
- (2) Faculty of Pharmacy and Pharmaceutical Sciences, University of Alberta, Edmonton AB, Canada
- (3) Faculty of Medicine, University of Ottawa, Ottawa ON, Canada
- (4) Health Canada, Ottawa ON, Canada
- (5) Department of Medicine, University of Alberta, Edmonton AB, Canada
- (6) School of Public Health, University of Alberta, Edmonton AB, Canada
- (7) Department of Pediatrics, University of Alberta, Edmonton AB, Canada
- (8) Women and Children's Health Research Institute, Edmonton AB, Canada

Background: 73% of Canadians report use of natural health products (NHPs). NHPs are frequently used by mental health patients, who are also more likely to be prescribed conventional medications. Few patients report use of NHP to their health care providers, increasing the challenge of safe NHP and NHP-drug use due to the potential for adverse reactions and product interactions.

Objectives: To investigate the rates of adverse event(s) (AE) associated with NHP use, prescription drug use and concurrent NHP-drug use in individuals seeking mental health services through active surveillance.

Methods: Participating clinicians from mental health clinics in the Edmonton, Alberta and the surrounding area asked individuals seeking mental health services through self-referral or referral by a health care provider about (i) prescription drug use, ii) NHP use and iii) experiences of AEs during a telephone intake process.

Results: Over 48 weeks, a total of 1480 patients were screened across six clinic sites. Overall, 672 patients reported taking prescription drugs only (45.8%; 95% CI: 43.3-48.4), 79 reported taking NHPs only (5.4%; 95% CI: 4.3-6.7), 279 reported taking NHPs and drugs concurrently (19.03%; 95% CI: 17.1-21.1) and 436 (29.7%; 95% CI: 27.46-32.13) reported taking neither. In total, 147 patients reported an AE, representing 10.7% (95% CI: 8.6-13.3), 2.5% (95% CI: 0.6-9.6), 25.5% (95%CI: 20.7-30.9) and 0.46% (95% CI: 0.11-1.81) of each population, respectively. Compared with prescription drug use, patients reporting concurrent prescription NHP- drug use were 2.8 times more likely to experience an AE (OR; 95% CI: 2.0-4.1; $p < 0.001$).

Conclusion: Nearly a fifth of patients seeking mental health services within the community take NHPs and prescription drugs concurrently; these patients are also at a greater risk of experiencing an AE than those taking prescription drugs only. Active

surveillance provides a valuable means of detecting such AEs and can be incorporated into the medical histories obtained by mental health clinicians.

**SONAR Team: Joanne Barnes, Heather Boon, Theresa Charrois, Mark Ware, Pierre Chue, Mark Snaterse and Liana Urichuk*

From Alternative to Integrative: A Textual Analysis of Unconventional Medicine in the Peer-Reviewed Literature

JY. Ng (1), A. Thompson (1), CR. Whitehead (2), HS. Boon (1)

(1) Leslie Dan Faculty of Pharmacy, University of Toronto, Toronto ON, Canada

(2) Department of Family and Community Medicine, University of Toronto, Toronto ON, Canada

Background: Unconventional therapies have been used by the general public throughout the history of the Western world, despite many efforts to relegate the providers of these therapies into an “alternative” category.

Objectives: The objectives of this study are two-fold: to identify changes in the labelling of unconventional practitioners over time and; to explore how these changes occurred and who contributed to them.

Methods: Searches were conducted in September 2014 using the Scopus database to identify English articles coded with unconventional medicine-related keywords. Searches were limited to a time period of 1975-2013. Highly-cited articles published in the years associated with changes in terminology will be assessed using textual analysis to investigate what contributed to these shifts.

Results and Conclusions: The use of “alternative” first appeared in the literature in 1975 and remained the predominant term until 1990, comprising 25% of all 6836 articles identified. The word “unconventional” has been continuously used from 1980 onwards, yet its use comprises less than 2% of all articles. The word “complementary” comprises 26% of all articles, and its use has remained relatively consistent between the early 1990s and 2013. Use of the term “complementary and alternative” increased sharply in 2000, and constitutes 41% of all articles, making it the most commonly used term today. Finally, the words “integrated/integrative” were introduced in the late 1990s, and their use has increased until present day, comprising nearly 7% of all articles.

Dragon boat racing: A holistic activity supporting breast cancer survivorship

H. Ray (1), M. Verhoef (2)

(1) Department of Physical Education and Recreation Studies, Mount Royal University, Calgary AB, Canada

(2) Department of Community Health Sciences, University of Calgary, Calgary AB, Canada

Background: Physical activity (PA) is a complementary therapy that is reported to improve health-related quality of life (HRQOL) of breast cancer survivors. Quantitative research exploring the relationship between the dragon boat racing and HRQOL of breast cancer survivors is, however, limited.

Objectives: The mixed methods study presented was designed to assess whether and how breast cancer survivors' participation in dragon boat racing is related to HRQOL.

Methods: Quantitative data measuring HRQOL were collected at baseline and post-season (N=100); semi-structured qualitative interviews were used to elicit a personal account of the dragon boat experience (N=15).

Results: Statistically significant improvements were shown for HRQOL, physical, functional, emotional and spiritual well-being, breast cancer-specific concerns and cancer-related fatigue. A trend towards significance was shown for social/family well-being. Some qualitative themes include enhanced personal strength, self-awareness and esteem, common bonds, as well as transcendence and hope.

Conclusions: The use of a mixed methods design effectively captured the complex yet positive influence of dragon boating on survivor HRQOL. These findings contribute to a growing body of literature supporting the value of dragon boat racing as a holistic activity that compliments traditional health care for survivors of breast cancer.

Evaluation of a spirituality informed e-mental health tool as an intervention for major depressive disorder in adolescents and young adults – A randomized waitlist controlled pilot trial

B. Rickhi (1), A. Kania-Richmond (2), P. Steel (1), J. Toews (1), J. Cohen (2), P. Paccagnan (1), C. Denise (1), S. Moritz (3), M. Liu (4), S. Malhorta (2)

(1) Canadian Institute of Natural and Integrative Medicine (CINIM), Calgary, Alberta, Canada

(2) Department of Community Health Sciences, University of Calgary, Calgary, Alberta, Canada

(3) Tom Baker Cancer Centre, Alberta Health Services, Calgary AB, Canada

(4) Alberta Health Services, Calgary AB, Canada

Background: Depression in adolescents and young adults is a debilitating mental health condition that requires appropriate interventions for treatment and prevention.

Objective: To evaluate the effectiveness of an 8-week online spirituality informed program (the LEAP Project) on depression severity, spiritual well-being and self-concept, in adolescents and young adults with major depressive disorder of mild to moderate severity.

Design: A randomized, waitlist controlled, assessor blinded clinical trial was conducted in Calgary, Alberta, Canada of 62 youth with major depressive disorder (DSM-IV-TR). The sample was defined by two age subgroups: adolescents (ages 13 to 18 years; n=31) and young adults (ages 19-24 years; n=31). Participants in each age subgroup were randomized into the study arm (the intervention initiated upon enrollment) or the waitlist control arm (intervention initiated after an 8 week wait period). Comparisons were made within each arm at four time points over 24 weeks and between the study and waitlist arms at week 8 (the point where study arm had completed the intervention and the waitlist arm had not).

Results: Severity of depression was significantly reduced for the younger and older participants over time and in the study arm at week 8 when compared to the waitlist arm. Spiritual well-being and self-concept improved in the younger age subgroup over time and at week 8 in the study arm vs the waitlist arm.

Conclusions: The LEAP Project is an effective on-line intervention for youth with mild to moderate major depressive disorder.

The impact of Mindfulness Based Cancer Recovery (MBCR) on insomnia severity and dysfunctional sleep beliefs in cancer patients with co-morbid insomnia

CR. Rouleau (1), SN. Garland (2), TS. Campbell (1), LE. Carlson (3)

(1) Department of Psychology, University of Calgary, Calgary AB, Canada

(2) Department of Family Medicine and Community Health, University of Pennsylvania, Philadelphia PA, USA

(3) Department of Oncology, Cumming School of Medicine, University of Calgary, Calgary AB, Canada

Background: Insomnia is an important but often overlooked side effect of cancer. A greater endorsement of dysfunctional sleep beliefs has been identified as a risk factor for the development, increased severity, and maintenance of insomnia. Mindfulness Based Cancer Recovery (MBCR) has been demonstrated to improve sleep quality but it is unknown whether these effects are related to changes in dysfunctional sleep beliefs.

Objective: This study examined the impact of MBCR on insomnia severity and the association between levels of mindfulness and dysfunctional sleep beliefs in cancer patients with co-morbid insomnia.

Methods: Patients ($n = 32$) were assessed at baseline, post-program (2 months), and follow-up (5 months) using repeated-measures analysis of variance. Associations were performed with residualized change scores to account for pre-treatment severity and potential regression to the mean.

Results: Patients reported statistically significant reductions in insomnia severity ($p < .001$), sleep-related worry ($p < .001$), and overall dysfunctional sleep beliefs ($p = .027$) that were maintained at follow-up. A greater reduction in unrealistic sleep expectations was associated with greater improvements in the mindful attitudes of non-judging ($r = -.470$) and non-reacting ($r = -.395$). Improvement in the tendency to act with awareness was associated with a greater reduction in sleep-related worry ($r = -.398$). Reduced dysfunctional sleep beliefs was associated with greater awareness ($r = -.386$) and an improvement in the tendency to judge experience ($r = -.400$).

Conclusions: This study provides support for the use of MBCR to reduce dysfunctional sleep-related beliefs and overall severity of insomnia.

Initiating the development a chiropractic practice based research network: Evaluating the feasibility of using online software to collect patient information

J. Scholten (1), A. Kania-Richmond (2), L. Weeks (3)

(1) Private Practice - The Vital Posture Clinic - A NUCCA Practice, Calgary AB, Canada

(2) Department of Community Health Sciences, University of Calgary, Calgary AB, Canada

(3) Ottawa Integrative Cancer Centre (OICC), Ottawa ON, Canada

Background: Two Canadian National Upper Cervical Chiropractic Association (NUCCA) practitioners have initiated the development of a practice based research network (PBRN). The function of the NUCCA-PBRN will be to collect and evaluate patient information to inform clinical decision-making and conduct practice-based research.

Purpose: To assess the feasibility of using online software to collect quality patient information for the purposes of the NUCCA-PBRN.

Methods: We conducted a feasibility study with two phases: 1) Assessment of the quality of information provided using online software through a standardized form completed by clinicians and administrative staff; and 2) Exploration of patients' perspectives and experiences regarding online information provision through semi-structured interviews with patients. Data analysis was descriptive, in the first phase using frequencies and means and in the second phase using qualitative content analysis techniques.

Findings: Based on a sample of 36 consecutive new patients at one NUCCA office, online forms were submitted on time 86% of the time and always completed by an appropriate individual. Eighteen errors were identified for 11 participants. We interviewed 22 patients. Overall, patients expressed a preference for using online over paper forms. The majority reported that the forms were easily accessed, clear, and secure. Most felt completing forms online and on their own time was efficient and conducive to providing reliable answers. Problems related to technical difficulties and standardized response options.

Conclusions: Collection of personal and health information using online software is preferred by patients and feasible for the purposes of the NUCCA-PBRN.

Integrative care at the Ottawa Integrative Cancer Centre (OICC): Preliminary outcomes evaluation

D. Seely (1); L. Weeks (1); G. Flower (1); R. Cordell (1)

(1) Ottawa Integrative Cancer Centre (OICC), Ottawa ON, Canada

Background: The mission of the Ottawa Integrative Cancer Centre (OICC) is to provide evidence-informed integrative and preventative cancer care, research, and education across the spectrum of prevention to survivorship. The purpose of this presentation is to describe the population receiving care at the OICC, in addition to their experience receiving care in terms of therapies received and outcomes.

Methods: All patients complete a registration package that documents demographic and disease-related characteristics in addition to quality of life (EORTC-QLQ C30), cancer-related symptom (ESAS) and patient-identified concerns (MYCaW). A follow up assessment is completed after 3 months for continuing patients.

Results: An average of 50 people received care at the OICC every month. Patients are primarily female (72%) with an advanced cancer diagnosis (67%). Most people seek care to improve wellbeing (27%) or to manage side effects (26%), including pain, neuropathy, energy, and digestive concerns. More than 2/3 of people self-identify as under distress for at least one common cancer-related symptom, most commonly fatigue and anxiety. Analysis of 3-month outcomes data suggests that people tend towards improvements in their role, emotional, cognitive and social function (EORTC-QLQ C30) and show mixed symptomatic relief and deterioration of symptoms (EORTC-QLQ C30 and ESAS) as might be expected in this advanced cancer population. Importantly, people consistently identify improvements in the concerns they identified as most wanting help with when they first registered with the OICC (MYCaW).

Conclusions: The results contribute to an understanding of who seeks integrative care as well as the growing literature regarding potential benefits. Results will be used to refine the OICC model of care.

Perspectives of educators, regulators and funders of registered massage therapy on the state of the profession in British Columbia, Canada

FM. Shroff (1)

(1) School of Population and Public Health, University of British Columbia, Vancouver BC, Canada

Background: Registered Massage Therapists (RMTs) are valuable members of the healthcare team who assist in health promotion, disease prevention, treatment, rehabilitation and palliation. RMT visits have increased across Canada over the past decade with the highest increase in British Columbia (BC). Currently, RMTs are private practitioners of healthcare operating within a largely publicly funded system, positioning them outside of the dominant system of healthcare and making them an important case study in private healthcare. In another paper we examined the perspectives of RMTs

themselves. Here, we offer perspectives of regulators, educators and funders of Massage Therapy (MT) on advancement of the profession.

Methods: We interviewed 28 stakeholders of MT in BC – including members of the MT regulatory board, representatives from MT colleges in BC and public and private health insurers.

Results: All three groups identified research, particularly on efficacy of MT, as playing a vital role in enhancing the professional credibility of MT. However, participants noted that presently research is not a large feature of the current MT curricula and we analyze why this may be and how it can improve. Finally, conferral of baccalaureate degree status could assist RMTs in gaining recognition with the general public and other healthcare professionals.

Conclusion: RMTs have potential to ameliorate population health in a cost-effective manner. Their role in British Columbia's healthcare landscape could be expanded if they produce more research and earn degree status.

Harnessing the power of the few: Multilevel modeling for assessing Complementary and Alternative Medicine (CAM) treatment effects in pilot studies

FM. Sirois (1), A. Drumheller (1), A. Lebrun (1),

(1) Department of Psychology, Bishop's University, Sherbrooke QC, Canada

Background: Pilot studies are often a necessary first step in testing the effectiveness of CAM interventions for managing sets of symptoms over time in illness populations. However, common issues with pilot studies can include lack of an appropriate control group, inadequate power to detect effects, and inconsistent participation and attrition.

Objectives: The current paper presents an innovative study design that helps address these issues by permitting three different analytical approaches using a powerful statistical technique, multi-level modeling (MLM).

Methods: A study protocol was developed to test the effectiveness of an 8-week course of Swedish massage for treating the anxiety, pain, and sleep quality of individuals with fibromyalgia.

Results: The study design involved a two-arm, matched treatment (N = 20) and control group (N = 20), cross-over design in which the wait list control group served as both a between and within subjects comparator. Baseline, 8 weekly assessments and a post-test provided 10 Level 1 variables for each of the 40 participants, generating at least 400 potential data points to analyze with MLM, and no lost cases due to missing data. This design permits an analysis of 1) matched treatment versus control group changes over time for each outcome, 2) pre-treatment versus treatment effects for the cross-over group, and 3) unmatched control versus treatment effects for both groups during the treatment arm with uneven observations.

Conclusions: Using MLM as a methodological tool to guide study design provides a powerful and economical way of assessing CAM treatment effects for pilot studies.

“When you have less pain you have more energy”: Preliminary findings from a pilot study on the effects of massage therapy on the functioning and well-being of individuals with fibromyalgia.

FM. Sirois (1), A. Lebrun (2), A. Drumheller (1), H. Cloutier, E. Pepin (1), M. Barlow (3), N. Savard

(1) Department of Psychology, Bishop's University, Sherbrooke QC, Canada

(2) Department of Psychology, University of Sherbrooke, Sherbrooke QC, Canada

(3) Department of Psychology, Concordia University, Montreal QC, Canada

Background: Although many people with fibromyalgia turn to massage therapy (MT) to help manage symptoms, current evidence is limited but promising regarding the effectiveness of MT for fibromyalgia, and the nature and extent of its effects.

Objectives: The aim of this pilot study was to quantitatively and qualitatively examine the effects of an 8-week course of Swedish massage on the general and pain-related quality of life of individuals with fibromyalgia. Preliminary results will be presented.

Methods: The effects of MT for treating fibromyalgia symptoms were investigated in a pilot study with a two-arm (treatment + wait list control) cross-over, mixed methods, repeated measures design. Thirty-seven individuals screened for self-reported diagnosis of fibromyalgia (95% female, M age = 53.64±10.7 years) and randomly assigned to an 8-week wait-list control (N = 16) or treatment group (N = 21), completed baseline, weekly and post-treatment measures of fibromyalgia -related well-being and symptoms. A post-treatment interview assessed participants' perceptions of treatment effects.

Results: Analyses focused on the treatment arm of the study for the control and treatment groups. Multi-level modeling analyses of the effects of weekly MT treatment revealed significant improvements over time in coping with fibromyalgia and fibromyalgia -related well-being, including attenuation of the intensity, difficulty, and impact of fibromyalgia symptoms. Thematic analysis of the post-treatment interviews revealed parallel findings with participants noting general improvements in overall well-being and functioning.

Conclusions: These preliminary findings suggest that MT is associated with quantitative and qualitative self-reported changes in functioning and well-being in people with fibromyalgia.

Self-awareness and Traditional East Asian Medicine

L. Taylor-Swanson (1)

(1) School of Nursing, University of Washington, Seattle WA, USA

Background: How is it that some individuals experience greater symptom bother? Are there interoceptive (the ability to feel one's body and emotions) processes that affect symptom bother? Two different but related concepts will be explored here: conceptual self awareness and embodied self-awareness. Conceptual self-awareness is **thinking** about our bodies; embodied self-awareness is **feeling** our bodily sensations. The two are

not mutually exclusive, yet they are fundamentally different experiences – somewhat akin to what is described as the “mind” and the “body”.

Is it plausible that Traditional East Asian Medicine (TEAM), which historically has viewed the mind and body as one continuum, might promote enhanced embodied self-awareness?

Objectives: To present theoretical constructs and propose a model of embodied self awareness enhancement by TEAM.

Methods: A review of the literature was performed in the topic areas of acupuncture research, embodied self-awareness and interoception.

Results: This search yielded data that provide evidence linking embodied self-awareness with TEAM care. Possible mechanisms of acupuncture affecting embodied self-awareness include activation of the anterior insular cortex (AIC), an area of the brain associated with emotional processing.

Conclusions: A next step is to examine this model by conducting an interpretive pilot study with patients receiving TEAM care. An open-ended interview would yield substantial narrative data to be analyzed using thematic content analysis. If embodied self-awareness is a mechanism of action for TEAM care, it would be useful to identify this, and perhaps find ways to enhance this in clinical care. Increased embodied self-awareness has been associated with improved clinical outcomes in studies of bodywork.

Integrating research and practice at the Ottawa Integrative Cancer Centre: Challenges and solutions

L. Weeks (1), D. Seely (1), R. Cordell (1), G. Flower (1)

(1) Ottawa Integrative Cancer Centre (OICC), Ottawa ON, Canada

Objectives: The majority of integrative oncology programs incorporate a research component, but balancing the need for rigorous research with the need for patient-centred care is an ongoing challenge. The objective of this presentation is to describe the research program at the Ottawa Integrative Cancer Centre (OICC) and highlight challenges and solutions within its operation.

Methods: The goals of the OICC research program are to: evaluate the model of care; conduct original clinical research; develop evidence-informed information resources; and maintain national and international collaborations. The program is led by the Executive Director and supported by a Senior Research Fellow and part-time Research Associates and volunteers.

Results: New patients complete a baseline outcomes package (EORTC-QLQ C30, ESAS and MYCaW) during the intake process. In subsequent consultations with a Care Coordinator, patients are given evidence-informed resources, introduced to active research studies and their eligibility for participation is assessed. Care Coordinators and the research team jointly manage informed consent. Follow-up data collection is managed by the research team. Ongoing challenges include low recruitment rates, managing participant burden, appropriately timing outcome assessments and ensuring commitment from OICC staff. To help address these challenges several strategies have been

implemented, including integrating research and practice-based data collection, having Care Coordinators introduce research studies and hosting regular team meetings.

Conclusion: Research is fundamental to the OICC model, but the need to balance patient needs with the desire to conduct rigorous research has required a flexible approach. The lessons learned within our program should be of value to other teams wanting to integrate research programs into their clinical practice.

The eCALM Trial: eTherapy for Cancer AppLying Mindfulness. Online mindfulness-based cancer recovery program for underserved individuals living with cancer in Alberta: Feasibility and trial results.

KA. Zernicke (1,2), TS. Campbell (1, 2), M. Specia (1, 2, 3), K. McCabe-Ruff (4), S. Flowers (5), LE. Carlson (6)

(1) Department of Psychology, University of Calgary, Calgary AB, Canada

(2) Department of Psychosocial Resources, Tom Baker Cancer Center, Calgary AB, Canada

(3) Department of Oncology, University of Calgary, Calgary AB, Canada

(4) eMindful Inc., Vero Beach FL, USA

(5) Mindful Living Programs, Chico CA, USA

(6) Division of Psychosocial Oncology, University of Calgary, Calgary AB, Canada

Background: Avenues to increase accessibility of evidence-based psychosocial programs that mitigate cancer related-distress and symptoms are needed, and the internet represents one method garnering research attention. One evidence-based psychosocial program in the oncology field is the Mindfulness-Based Cancer Recovery program (MBCR). A treatment-as-usual randomized wait-list controlled trial was conducted to investigate the feasibility and impact of an online synchronous MBCR program for underserved individuals diagnosed with cancer in Alberta, Canada.

Methods: 62 men and women, exhibiting moderate to high distress, without access to in-person MBCR were randomized to either immediate synchronous online MBCR (n=30) or waitlist control (n=32). Feasibility was tracked through monitoring eligibility and participation through the protocol. Intent-to-Treat mixed model analyses for repeated measures were conducted.

Results: Feasibility targets for recruitment and retention were achieved and participants were highly satisfied and would recommend online MBCR. There were statistically significant improvements in the online MBCR group relative to controls following 8-week MBCR for total scores of mood disturbance ($p = .049$), stress symptoms ($p = .021$), spirituality ($p = .040$), and the mindfulness facet acting with awareness ($p = .026$). Main effects of time were observed for posttraumatic growth and remaining mindfulness facets.

Conclusions: Online MBCR is feasible and effective for reducing mood disturbance and stress symptoms, and increasing spirituality and acting with awareness compared to a TAU wait-list. Future studies employing larger active control RCT designs are warranted.

Trial registration: Clinical Trials.gov: NCT01476891

Funding note: Dr. Linda Carlson holds the Enbridge Research Chair in Psychosocial Oncology, cofunded by the Canadian Cancer Society Alberta/NWT Division and the Alberta Cancer Foundation. Kristin Zernicke holds an Alberta Innovates – Health Solutions Full-Time Studentship, a Canadian Institute of Health Research – Frederick Banting & Charles Best Canada Graduate Scholarship Doctoral Award, a Psychosocial Oncology Research Training Fellowship, and the Mind and Life Francisco J. Varela Research Award.

Association between acupuncture profession regulation and visits to acupuncturists

Q. Zhang (1)

(1) School of Population and Public Health, University of British Columbia, Vancouver BC, Canada

Background: The use of acupuncture is becoming more common in Canada, but regulation of the acupuncture profession has not been widely established across the country. Variation in regulation may lead to safety and quality issues of acupuncture practices. Investigation of the impact of regulation on acupuncture practice is warranted to understand the impact this can have on uptake and acceptance in the general population.

Objectives: This study aimed to examine the association between the acupuncture profession regulation and visits to acupuncturists, where province acts as the surrogate measure of acupuncture profession regulation status.

Methods: Data from the Canadian Community Health Survey Cycle 3.1 were used for the study. Hierarchical logistic regression models were employed to explore the association between acupuncture profession regulation and visits to acupuncturists, by addressing the nested nature of individual acupuncture visits within province, in particular the presence of a provincial regulation.

Results: Among the 111,186 valid respondents, 2.6% had visited acupuncturists in the preceding year. The odds ratio for visiting acupuncturists among those living in provinces with a regulation was 1.36 (95%CI: 0.94-1.96) compared to those living in provinces without a regulation.

Conclusions: Although the variability around the estimate included “1” at 95% confidence level, the effect estimate indicates an effect of regulation on acupuncture visits that would warrant the benefit of regulation in province. Thus, findings suggest that acupuncture profession regulation has a positive effect upon the visits to acupuncturists. Demonstrating this early benefit should encourage other provinces to expedite their implementation of similar regulations.

IN-CAM Research Symposium – Poster Presentations

Mindfulness-based therapies in the treatment of functional gastrointestinal disorders: A meta-analysis

M. Aucoin (1), M-J. Lalonde-Parsi (1), K. Cooley (1)

(1) Canadian College of Naturopathic Medicine (CCNM), Toronto ON, Canada

Background: Functional gastrointestinal disorders are highly prevalent and standard treatments are unsatisfactory to many patients. Mindfulness based therapy is a new treatment tool showing benefit in conditions including chronic pain, mood and somatization disorders.

Objectives: To assess the quality and effectiveness reported in existing literature, we conducted a meta-analysis of mindfulness based therapy in functional gastrointestinal disorders.

Methods: Pubmed, EBSCO and Cochrane databases were searched from inception to May 2014. Study inclusion criteria included randomized, controlled studies of adult populations using mindfulness-based therapy in the treatment of functional gastrointestinal disorders using validated questionnaires for symptom severity and quality of life. Study quality was evaluated using the Cochrane Risk of Bias. Effect sizes (Cohen's d) were calculated and pooled to achieve a summary effect for the intervention on symptom severity and quality of life.

Results: Of 119 records, eight articles, describing seven studies, met inclusion criteria. In six studies, significant improvements were achieved or maintained at the end of intervention or follow-up time points (two to 18 months). The studies had an unclear or high risk of bias due to limitations in blinding and high attrition rates. Pooled effects were statistically significant for IBS severity (0.59, 95% CI 0.33 to 0.86) and quality of life (0.56, 95% CI 0.47 to 0.79).

Conclusion: Studies suggest that mindfulness-based interventions may provide benefit in the treatment of functional gastrointestinal disorders; however, substantial improvements in methodological quality must be implemented in future studies.

Naturopathic care for diabetes: Analysis of an in-hospital community clinic

K. Cooley (1), M. Shapoval (1), J. Tokiwa (1), T. Snyder (1), N. DeGroot (1), B. Bernhardt (1)

(1) Canadian College of Naturopathic Medicine (CCNM), Toronto ON, Canada

Background: The CCNM Brampton Naturopathic Teaching Clinic (BNTC) is the first naturopathic teaching clinic within a hospital setting in Canada. Situated in Brampton Civic Hospital it is part of an initiative co-led by CCNM and the William Osler Health System to ensure greater access to community care options, and address chronic disease

management. To better understand naturopathic care delivery and current collaboration with existing hospital-based services, an analysis of diabetes care was undertaken.

Methods: Patients with diabetes seen at BNCT between January 2013 and May 2014 were identified. A comprehensive audit was performed on patient files with the objective of describing existing capture of patient demographics, collaboration with hospital-based services, assessment, and treatment outcomes of patients receiving naturopathic care.

Results: 79 charts were identified, comprising 393 patient visits (mean: 4.9 ± 4.7) over an average duration of 142 days under care (SD 128.1). 57% of patients were seen for >90 days. Examples of collaborative care were infrequent, though one-way correspondence was evident. 80.0% had 3 or more conditions, many of which were not related to glucose control but were the primary concern of the patient. 11.4 % of charts contained usable follow-up outcome measures (i.e. laboratory tests) for diabetes control. Dietary and lifestyle recommendations were the most frequent treatments provided.

Conclusions: BNCT is providing treatment to diabetic patients with complex chronic care needs. Demographic patient information and treatments are feasible to collect, though the feasibility of evaluating collaboration and outcomes of patients is limited without additional support or resources.

Advancing integrative HIV care: Collective wisdom

K. Cooley (1), T. Campbell (1), M. Bailey (2), B. Ford

(1) Canadian College of Naturopathic Medicine (CCNM), Toronto ON, Canada

(2) The Canadian AIDS Treatment Information Exchange

Background: An integrative approach to care has been suggested as a possible solution to meeting the evolving needs of people living with HIV/AIDS (PHAs). While literature exists on theoretical and practical delivery of integrative care, as well as evaluation and system improvements for integration, no such model exists to describe implementation, delivery and evaluation of integrative care for PHAs.

Methods: CIHR supported a meeting of key stakeholders representing the needs of PHAs, delivery of care to PHAs, knowledge translation in the HIV community, evaluation, and integrative models of care. The objective was to affirm core principles, explore barriers and opportunities, and develop a framework and action plan for a implementing a model of integrative HIV care.

Results: Varied interpretations and visions for integrative HIV care are plausible, indicating the need for an inclusive model. Concepts of integration were expanded as a result of the meeting, suggestive of the need to increase education and awareness, as well as solicit wider stakeholder involvement. In order to succeed, a model must prioritize integration and shared decision-making as well as address disconnect throughout aspects of operations, leadership and governance while being inclusive of the needs of patients, providers, and administration. Innovative service provision, and actualizing the full capacity of both health care providers and peers to address the needs of the community are key. Regional variations in scope of practice of professions will significantly impact planning and implementation of integrative care clinics.

Conclusion: Assessment of both readiness and feasibility are key steps prior to advancing the framework.

“Getting my life back”: A study of how acupuncture treatment improved quality-of-life for one woman with breast cancer-related lymphoedema

B. de Valois (1), T. Young (1), E. Melsome (2)

(1) Lynda Jackson Macmillan Centre, Mount Vernon Cancer Centre, Northwood, Middlesex, United Kingdom

(2) Mount Vernon Lymphoedema Service, Mount Vernon Hospital, Northwood, Middlesex, United Kingdom

Background: Research often focuses on a single symptom, overlooking treatment effects on overall wellbeing. This case study reports “Ann”, a participant in research investigating using acupuncture as an adjunct to usual lymphoedema care to improve quality-of-life.

Objective: To illustrate the wide-ranging benefits of acupuncture treatment.

Methods: Text drafted using data from treatment notes, questionnaires, clinical observation, and communications was sent to “Ann” for feedback and verification. “Ann” consented to disseminating her anonymised details.

Results: “Ann”, age 60, developed lymphoedema in her left arm following breast cancer surgery nine years previously. She reported arm heaviness, pain, restricted grip, as well as frustration, lack of control, loss of confidence, and guilt about surviving cancer. Her treatment priorities were 1) relief of arm pain, and 2) to get back “in balance”. A seamstress, she wanted to resume sewing. Ann received 13 acupuncture treatments over 16 weeks; after three treatments she reported reduced heaviness and pain, improved grip, and completion of a sewing project. Sleep, energy, and bowel habits improved; nightmares and headaches reduced. Seventy pounds overweight, Ann worked with her acupuncturist to improve dietary habits, losing 10 pounds “without dieting”. Emotionally, she reported reduced anxiety and guilt. Her confidence increased, and self-management of lymphoedema improved.

Conclusions: “Ann” illustrates complex ways that acupuncture can facilitate improvements in physical and emotional symptoms and lifestyle habits. Through treatment, Ann processed difficult emotions related to cancer and lymphoedema. She dealt with symptoms in a more positive way, an essential change for managing a chronic condition like lymphoedema.

Assessing the use of the NADA ear acupuncture protocol for enhancing wellbeing of prostate cancer survivors

B. de Valois (1), T. Young (1), P. Thorpe (1)

(1) Lynda Jackson Macmillan Centre, Mount Vernon Cancer Centre, Northwood, Middlesex, United Kingdom

Background: The five-point NADA (National Acupuncture Detoxification Association) protocol has demonstrated benefit for hot flushes experienced by men undergoing hormonal adjuvant treatment for prostate cancer (Beer et al 2010). As cancer survivors present with multiple symptoms, we wished to assess the feasibility of using NADA to manage other troublesome symptoms and enhance overall wellbeing.

Objectives: To: 1) identify symptoms that men diagnosed with non-metastatic prostate cancer find troublesome, 2) assess potential effects of NADA on wellbeing, 3) assess acceptability of NADA treatment.

Methods: Prostate cancer support group members were invited to participate in a project to assess NADA. They consented to: 1) receive 8 NADA treatments, 2) complete questionnaires, 3) use of their anonymised data for dissemination. Measurement included the Measure Yourself Medical Outcome Profile (MYMOP), Symptom Related Daily Interference Scale (SRDIS), SF-36, and semi-structured questionnaires at baseline, end-of-treatment (EOT), and 4 and 12 weeks post-EOT.

Results: Of 20 participants, 19 completed treatment, 16 completed all questionnaires. Early analysis of EOT data shows significant improvement of 1) all MYMOP domains, 2) Work, Social, Sleep and Mood on SRDIS, 3) Vitality on SF-36. Troublesome symptoms included hot flushes, urinary and bowel incontinence, fatigue, pain, decreased libido. Analysis continues, and the men will be invited to a focus group to discuss their experience and perceptions of NADA treatment.

Conclusion: NADA ear acupuncture has the potential to offer standardised low-cost treatment. This pre-research activity has demonstrated potential for improving wellbeing for prostate cancer survivors, and indicates that formal research is warranted.

Evaluating the NADA ear acupuncture protocol to manage breast cancer treatment related hot flushes & night sweats (HF&NS)

B. de Valois (1), T. Young (1), N. Robinson (2), C. McCourt (3), E.J. Maher (1)

(1) Lynda Jackson Macmillan Centre, Mount Vernon Cancer Centre, Northwood, Middlesex, United Kingdom

(2) Department of Traditional Chinese Medicine and Integrated Health, London South Bank University, London, United Kingdom

(3) Department of Midwifery and Child Health, City University London, London, United Kingdom

Background: As part of a series of exploratory studies into using acupuncture to manage breast cancer treatment-related HF&NS, we investigated standardised treatment using the

five-point NADA (National Acupuncture Detoxification Association) ear acupuncture protocol.

Objectives To: 1) assess NADA's effect on HF&NS, 2) assess NADA's effect on emotional and physical wellbeing; 3) compare results of NADA treatment with results of our previous study using traditional acupuncture (TA).

Methods: In a single-arm observational study, 50 women ≥ 6 months post-active cancer treatment self-reporting ≥ 4 HF&NS/24 hours received 8 weekly treatments in a group environment. Measurement included Hot Flush Diaries (frequency, severity); Women's Health Questionnaire (WHQ) (emotional, physical wellbeing), and Problem Rating Score (PRS) (bothersomeness of HF&NS), plus semi-structured questionnaires at baseline, end-of-treatment (EOT), and 4 and 18 weeks post-EOT. Data were used in a historical comparison with our previous TA study data.

Results: Mean % reduction of HF&NS frequency at EOT was 35.9% (95% CI 25.4-45.4, $n=47$), compared with 49.8% (95% CI 40.5-56.5, $n=48$) for TA, a significant difference in favour of TA ($p=0.038$), but with no significant differences at follow-up points.

NADA-treated women showed similar scores and improvements on the WHQ domains Anxiety/Fears, Depressed Mood, Memory/Concentration, Sleep Problems, Somatic Symptoms, and Vasomotor Symptoms to those receiving TA. PRS scores and improvements on the PRS were similar, with no significant differences between groups.

Conclusion: NADA is a low-cost, standardised treatment that may provide a simple non-pharmacological option for managing HF&NS. Further research is warranted; NADA and TA should be compared concurrently.

The effect of head massage therapy on the regulation of the autonomic nervous system: Randomized cross-over trial

MS. Fazeli (1), L. Guan (1), M. Pourrahmat (1), JP. Collet (1)

(5) Department of Pediatrics, BC Children's Hospital, University of British Columbia, Vancouver BC, Canada

Background: The sympathetic and parasympathetic nervous systems (SNS and PNS) of the autonomic nervous system (ANS), keep our body in a homeostatic state, which can be disturbed in situations of uncontrolled stress.

Massage has been shown to decrease SNS and stimulate PNS; but most studies focused on full body massage, with limited assessment of ANS function, and lacked control groups.

Objectives: Our study is aimed at assessing in healthy volunteers the effect of head massage therapy (HMT) on the ANS using recent advanced, non-invasive and highly sensitive technology: Spectral analysis of heart rate variability (HRV) and Impedance cardiography (ICG).

Methods: A pilot prospective cross-over trial with 10 healthy participants was conducted in which each subject was exposed to a 10-minute-long intervention: "HMT" or "simple relaxation", randomly assigned during two consecutive days.

Results: Our preliminary analysis on 4 participants shows that the HMT intervention is associated with a significantly higher rise in PNS activity peaking up to 10 minutes post-intervention compared to “simple relaxation”: Median relative change in HF post-HMT = 38.1%, simple relaxation = -0.5%, $p=0.029$). The trend of the relative change in heart rate (HR) also confirms the higher activity of the PNS in the HT group: Median relative change in HR post-HMT = -4.6%, simple relaxation = -0.7%).

Conclusion: The results of our analysis show that administration of HMT is associated with a better regulation of the ANS by boosting of the PNS component. The final results will be used to plan stress management intervention trials.

The effect of massage therapy to control night shift related stress: Prospective randomized crossover trial (Protocol)

MS. Fazeli (1), A. Sharma (1), M. Pourrahmat (1), G. Massah (1), P. Lavoie (1), JP. Collet (1)

(1) Department of Pediatrics, BC Children’s Hospital, University of British Columbia, Vancouver BC, Canada

Background: The sympathetic and parasympathetic branches (SNS and PNS) of the autonomic nervous system (ANS), keep our body in homeostasis, which can be disturbed in situations of uncontrolled stress such as the case of night shifts.

Increased SNS and decreased PNS activity have been well documented during night shifts. This profile is also associated with increased inflammation which is a risk factor for several conditions: metabolic syndrome, cardiac problems, and cancer. PNS stimulation is known to control the inflammatory reaction, leading research toward interventions such as massage which stimulates PNS.

Objectives: Our study is aimed at assessing the physiologic effects of night shifts on the ANS and biomarkers of inflammation in blood and the effect of massage on reversing such effects via rebalancing the ANS.

Methods: A pilot prospective randomized cross-over trial with 10 healthy hospital staff will be conducted in which participants will be exposed to a 30-minute-long upper body massage or “reading intervention”, randomly assigned at the end of two night shifts. Spectral analysis of heart rate variability (HRV) will be used to assess the activity of ANS. The inflammatory markers in the blood will also be measured using multiplex-ELISA-based kit.

Results: Results will be reported comparing post-shift outcomes for each subject with their baseline as well as the two interventions for the effect of massage. We will also pool data to compare the overall effect of the night shift and massage.

Conclusion: The final results of this study will be used to plan stress management intervention trials.

Educating health care providers about living with lymphedema through ethnodrama

P. Fichtner (1), E. Quinlan (2), R. Thomas (3), S. Ahmed (4), L. McMullen (5), J. Block (6)

(1) Private Practice - Sephira Healing, Saskatoon SK, Canada

(2) Department of Sociology, University of Saskatchewan, Saskatoon SK, Canada

(3) School of Rehabilitation Sciences, University of Ottawa, Ottawa ON, Canada

(4) College of Medicine, University of Saskatchewan, Saskatoon SK, Canada

(5) Department of Psychology, University of Saskatchewan, Saskatoon SK, Canada

(6) Royal University Hospital, Saskatoon SK, Canada

Background: Theatre, with its gestural, sensual, and aesthetic language has become an established educative tool, conveying patients' lived experiences to health practitioners. Our team turned to theatre to educate CAM and non-CAM health care providers about the psychosocial effects of lymphedema among breast cancer survivors, a complication from the treatment that involves swelling and associated abnormal accumulation of observable and palpable protein-rich fluid.

Objective: The overall project objective is to facilitate improvements in care for breast cancer survivors using theatre to disseminate results of our national study of survivors (n=745).

Method: The method of ethnodrama, a form of ethnography that shows as well as tells, was combined with data collected from clinical practitioners in the audience via survey and follow-up in-depth interviews.

Results: Survey and interview results were analyzed for the impact of the ethnodrama on practitioners self-education, screening, and referral practices, with comparisons drawn between CAM versus non-CAM practitioners.

Conclusion: Based on the project analysis, we find theatrical dissemination is a potent educative tool for transformative learning for CAM practitioners because it address both their cognitive and affective capacities and motivates practice changes.

Qualitative findings from piloting the LEAP Project – An online spirituality based depression intervention for young adults

A. Kania-Richmond (1), P. Paccagnan (2), C. Dennis, S. Moritz (3), S. Malhotra, B. Rickhi (2), J. Toews (2)

(1) Department of Community Health Sciences, University of Calgary, Calgary AB, Canada

(2) Canadian Institute of Natural and Integrative Medicine (CINIM), Calgary AB, Canada

(3) Tom Baker Cancer Center, Alberta Health Services, Calgary AB, Canada

Background: Depression in youth is a mental health condition garnering increasing attention. It requires appropriate interventions given the potentially negative

consequences related to interruption in the development process, interpersonal conflicts, academic under-performance, low self-esteem, and suicide.

Purpose: To report on the qualitative findings from a clinical trial that piloted an 8-week, online, spirituality-based depression intervention (the LEAP Project, now renamed The Breathing Room) for youth with depression. A qualitative approach was used in order to gain a more in-depth understanding of the intervention impact from the perspective of the study participants.

Methods: Participants who completed the trial were recruited using a convenience sampling strategy and invited to partake in one in-depth, semi-structured interview. All interviews were digitally recorded and transcribed verbatim. Data were analyzed using a descriptive qualitative content analysis approach.

Results: The impact of the intervention on participants was multi-faceted. Participants reflected that the intervention led to changed perspectives of others, themselves, and their surroundings. Most participants identified learning new coping strategies, experienced a greater sense of control over emotions and sense of connection, and a strong sense that they are not alone. Participants described improvement in: higher energy levels, increased motivation, and reduction in negative feelings such as fear, anger, frustration, and reduced feelings of depression.

Conclusions: From the perspective of the participants LEAP had a positive impact on various facets that defined their well being. Such a program may be a useful and valuable resource in the treatment and prevention of depression in youth.

A systematic review of the safety and effect of neurofeedback on fatigue and cognition

M. Luctkar-Flude (1)

(1) School of Nursing, Queen's University, Kingston ON, Canada

Background: Cancer survivors continue to experience numerous physical and psychological symptoms as a consequence of treatment. Many of these symptoms, particularly cancer fatigue and cognitive impairment (or chemobrain) are poorly managed and have few effective, evidence-based treatment options. EEG biofeedback or neurofeedback is a non-invasive, drug-free form of brain training that promotes a calmer, more focused mental state similar to that achieved through meditation or relaxation therapy. Neurofeedback is an innovative complementary and alternative medicine (CAM) therapy that may alleviate long-term symptoms reported by cancer survivors.

Objective: The purpose of this review was to explore the effectiveness and safety of neurofeedback for managing chronic fatigue and cognitive impairment.

Methods: A systematic review of the literature was conducted to describe the safety and effect of neurofeedback on fatigue and cognition. A comprehensive search of five databases was conducted: Medline, CINAHL, AMED, PsycInfo and Embase. Randomized and non-randomized controlled trials, controlled before and after studies, cohort, case control studies and descriptive studies were included in this review.

Results: The seventeen included studies reported positive results for at least one fatigue or cognitive outcome in a variety of populations including one study with breast cancer survivors. Neurofeedback interventions were well-tolerated with only three studies reporting any side effects.

Conclusions: Despite issues with methodological quality, the overall positive findings and few reported side effects suggest neurofeedback may help to alleviate fatigue and cognitive impairment in cancer survivors. More information about which neurofeedback technologies, approaches and protocols could be successfully used with cancer survivors is needed.

On dosage of herbal medications: retrieving guidelines, formulas and instructions from historical sources

T. Mourad (1)

(1) Institute of Chemistry-University of São Paulo, São Paulo, Brazil

Background: Dosage is pivotal to the prescription of herbal medications, key aspect to their effectiveness, and determining safety guidelines for use. Herbal medications widely used in the mid-19th and early 20th centuries, constitute a significant forgotten stage of the pharmaceutical development.

Objectives: Retrieval of dosage of herbal medications, formulas, safety guidelines— as prescribed according to pharmaceutical repertories, formularies, university textbooks— followed historical analysis made throughout the period analyzed.

Methods: (i) historical investigation of collections found in Brazil, (ii) reconstitution of the mid-19th - 20th century libraries of Brazilian pharmacists.

Results: Dosage of herbal medications changed overtime as illustrated in a Treaty of Therapeutic Pharmacology and Materia Medica (1891), contrasting the Codices: UK 1885, US 1883, France 1880, German until 1891; where herbs, herbal preparations, and dosage varied according to the country's Codex. Belladonna aqueous extract was not present in the American Codex, by 1885, dosage in the UK (0.016-0.05c.c.), (0.05c.c.) in the German Codex (1891). Belladonna alcoholic extract was used in the UK, and US, dosage ranged from (0.004c.c-0.016c.c. in 1885) and (0.016c.c. in 1883) respectively.

Conclusions: Dosage tables for adults and children were retrieved. Prefaces of publications analyzed, explain improvements in formulation and posology; due to mistakes in legal formularies, and wrong assumptions made about the concentration. Different procedures were used to acquire extracts, often named after the pharmacist establishing particular methods of preparation correcting legal sources.

Can acupuncture treat or cause cancer? A review of the literature

D. Rosa (1), J. MacDermid (1)

(1) School of Rehabilitation Science, McMaster University, Hamilton ON, Canada

Background: Acupuncture is widely used to treat cancer-related symptoms, but its oncological properties are sparsely represented in the literature. Despite a scarcity of scientific rationale, many cancer patients use acupuncture to treat or cure their condition.

Objectives: To identify: i) mechanisms of action by which acupuncture may treat or cause cancer, ii) the quantity and type of relevant research evidence, and iii) quality of applicable human trials.

Methods: A scoping review of journal publications written in English was undertaken with no restrictions on article type or length. Research trials examining the impact of acupuncture on mediators of cancer (i.e. immune activity, inflammation) without investigation of their effect on cancer or disease survival were excluded. Quality of human trials was assessed using a modified Jadad score (0=poor quality, 3=acceptable quality, 5=highest quality).

Results: Evidence supporting acupuncture's *anti-cancer* properties was derived from 17 publications, of which 7 were reports of human trials (modified Jadad scores: min=0, max=1). Anti-cancer mechanisms may include tumor necrosis via hyperthermia, electrolysis or ischemia; as well as increases in immune function and changes in tumor cell permeability. Evidence of *pro-cancer* properties was derived from 9 publications, none of which were human trials. Pro-cancer mechanisms may include the introduction of pathogens and needle trauma, tumor spread via needle tract, and increases in hormonal functioning.

Conclusion: There are numerous potential mechanisms by which acupuncture may treat or cause cancer, although applicable research is lacking in sufficient quality to recommend or discourage treatment based on established oncological properties. Future research concerning acupuncture's cancer-related risks and benefits is warranted.

A review of acupuncture's mechanisms of action in the treatment of lymphedema

D. Rosa (1)

(1) School of Rehabilitation Science, McMaster University, Hamilton ON, Canada

Background: Physiological rationale supporting the use of acupuncture in the management of lymphedema is limited, thus it is infrequently considered as a viable complement or alternative to conventional treatment.

Objectives: A review of the literature was undertaken to answer the question: "What is known from the existing evidence about acupuncture's physiological mechanisms of action for the management of edema or lymphedema"?

Methods: A scoping review of English peer-reviewed journal publications was used to characterize existing research, identify and summarize physiological mechanisms of

treatment action, and establish directions for future research. Electronic databases were searched up to the year 2013 including PubMed, AMED, Embase, CINAHL, PEDro, SPORTDiscus and Google Scholar.

Results: Acupuncture's mechanisms of action for lymphedema management were poorly described by studies involving human subjects (n=9) literature reviews (n=3) and systematic reviews (n=3). Studies using animals as research subjects (n=20) have identified a number of therapeutic acupuncture-mediated treatment responses via stimulation of the peripheral nervous system, HYPAA axis, and the endogenous opioid system. 'Anti-edemic' outcomes were attributed to reductions in pro-inflammatory agents, increases in anti-inflammatory mediators, and increased neuro-mediated contractility of lymphatic and vascular smooth muscle.

Conclusion: Results from research conducted on animals raises the possibility that lymphedema may be treated by a number of acupuncture-mediated mechanisms of action. These findings may not necessarily translate to therapeutic outcomes in human subjects. Future clinical trials should include clear physiological rationale for the administration of acupuncture, and employ outcome measures associated with proposed mechanisms of treatment action.

Relationship between cranio-cervical orientation and centre of force of occlusion in adults

J. Scholten (1), C. Westersund (2), R.J. Turner (3)

(1) Private Practice - The Vital Posture Clinic - A NUCCA Practice, Calgary AB, Canada

(2) Private Practice, Calgary AB, Canada

(3) Department of Biological Sciences, University of Calgary, Calgary AB, Canada

Background: The integration of care between chiropractors focused on treating disorders of the cranial cervical junction (CCJ) and dentists treating dysfunction of the temporomandibular joint (TMD) has developed as clinicians seek novel and effective integrative patient management strategies for solutions for patients with TMD. Clinical observation and anecdotal reports suggest changes to the dental occlusion following an adjustment to the CCJ using the procedure developed by The National Upper Cervical Chiropractic Association (NUCCA)

Purpose: To investigate whether there is a change in occlusion that can be measured using a dental force plate following a NUCCA adjustment to the CCJ.

Methods: A pre-post case series wherein patients served as their own controls by being assessed twice prior to and twice following an intervention. Active patients at a private NUCCA clinic, with occlusal imbalances, were invited to participate and eleven volunteered. All eleven patients received one NUCCA intervention. Data were collected twice prior to the NUCCA intervention and twice following the intervention. Measures collected were leg length, postural position, and cervical paraspinal thermographic evaluation (by a NUCCA team member); and occlusion was evaluated with a dental occlusal analysis system, the T-Scan (by the dental team member). Patient outcomes were observed for consistency between pre-pre and post-post measurements as

compared to pre-post measurements. Standard deviations of the mean and t-test of the data is used to compare the measures taken before and after the NUCCA adjustment and between patients.

Results and Conclusions: Findings obtained in this first study of its kind demonstrate that changes in both posture and occlusion can be observed after the NUCCA chiropractic procedure. However, we found that patients tend to have unique responses with some showing a shift in initial occlusal contact and others lending to a more balance contact pattern. Our findings demonstrate further the interconnectivity of the CCJ and an individual's bite and related discomfort.

Canadian universities carrying out holistic health education and research: A case study from British Columbia

FM. Shroff (1)

(1) School of Population and Public Health, University of British Columbia, Vancouver BC, Canada

Background: Despite great interest in holistic practices (HP),¹ BC's publicly-funded post-secondary institutions have been slow to offer curricula and conduct large scale research on them. Some colleges offer programs on yoga, energy healing, massage therapy and so forth. However, the education of most holistic practitioners is carried out in private institutions. Large scale research programs on HP do not exist at any BC university or college but one is just starting in Ontario.

Objectives: (1) To question the potential impact of CAM education and research within publicly- funded Canadian universities on credibility for CAM practices. (2) To explain the process by which one university entered into the discussion of further integrating CAM research and education. (3) To describe the barriers and catalysts to enhancing CAM research and teaching within an allopathic medical school.

Methods: This is a case study that integrates peer-reviewed literature on CAM education and research. It is a work in progress.

Results: Last year, UBC created a task force of faculty members throughout the university to begin an exploration of enhancing education and research on HP. In this presentation, we will discuss this work in the context of the role of universities in HP uptake. National work on CAM in UME will help to inform this project.

Conclusions: As the interest in CAM continues to grow within the Canadian population, universities could have a greater role in research and education and even while in progress, these efforts ought to be analysed.

¹ Holistic Practices is used interchangeably with IN-CAM.

The use of an informational video to improve patient satisfaction

B. Sumpton (1)

(1) Humber College Institute of Technology and Advanced Learning, Toronto ON, Canada

Background: Massage therapy is commonly used in Canada and is changing to meet the healthcare needs of Canadians. Changes to the profession may create a gap between patient expectations and their experience in today's practice. This gap could lead to patient confusion, dissatisfaction, or other negative outcomes.

Objective: This study sought to understand whether patient satisfaction, preparedness, mood and patient empowerment is improved when new patients who attend a student massage therapy clinic watch an informational video when compared to those who receive the standard paper information sheet.

Methods: The study used a convenience sample of new patients who presented for their first massage therapy appointment to the Humber College Student Massage Therapy Clinic. Participants were randomized either to the intervention group (video and paper information) or the comparison group (paper information only). Data was collected using two questionnaires; one before treatment and one after. 108 patients participated in the study (55 comparison group: 53 intervention group). Demographic and clinical characteristics were comparable between the two groups. A statistically significant difference was seen between groups when comparing their responses to the pre-appointment statement, "I know what will happen in my initial massage therapy appointment" ($p < 0.001$). No statistically significant differences were seen for related post-appointment statements ($p = 0.63$).

Results and Conclusions: This study found that an informational video improved perceived knowledge as patients entered the massage therapy treatment but did not have a significant effect on satisfaction, mood, or patient empowerment. Other student clinics should consider the addition of an informational video to their procedures.

Changes in intracranial compliance and quality of life in migraine subjects receiving an atlas intervention

HC. Woodfield (1), WJ. Becker (2), DG. Hasick (3), MS. Rose (2), CB. Beggs (4)

(1) Upper Cervical Research Foundation (UCRF), Minneapolis MN, USA

(2) University of Calgary, Calgary AB, Canada

(3) Private Practice - Britannia Clinic, Calgary AB, Canada

(4) Medical Biophysics Laboratory, University of Bradford, Bradford, United Kingdom

Background: Following a National Upper Cervical Chiropractic Association (NUCCA) atlas vertebrae intervention, previous case study revealed a significant decrease in migraine symptoms with accompanying increased intracranial compliance (ICCI) and venous pulsatility decrease.

Objective: To measure using Phase Contrast Magnetic Resonance Imaging (PC-MRI), changes in ICCI from baseline to week-four, and eight, following a NUCCA intervention of neurologist screened migraine subjects. Secondary outcomes comprised several Health Related Quality of Life (HRQoL) measures used specifically in documenting patient perceived changes in migraine status.

Methods: After screening, candidates signed a consent form, completed baseline migraine-specific quality of life measures, then returned after 30-days with a baseline headache diary. Determining need for NUCCA care confirmed inclusion, allowing subjects to obtain baseline PC-MRI measures. Using a 1.5-Tesla GE 360 Optima MRI scanner to acquire flow data, analyses were completed using proprietary software, MRICP, version 1.4.35. Subjects received eight weeks of NUCCA care.

Results: Eight females, and three males, average age 41 years, met inclusion criteria. At baseline, mean subject ICCI was 6.39(SD = 3.15); 6.25(SD = 1.76), at week-four and 7.32(SD = 3.59) by week-eight. Baseline Headache Impact Test-6 was 64.2, decreasing to 55.2(95% CI 4.7, 13.1) at week-four, to 53.8(95% CI 4.7, 13.1) by week-eight. Migraine Disability Assessment Test at baseline, 46.7(SD=27.7) decreased to 14.6(95% CI 13.2, 51.0) at week-twelve. 24-hours after intervention, ten subjects reported mild neck discomfort.

Conclusion: One study limitation is lack of a control group for comparison of observed changes. HRQoL measures seemed to indicate resolution of many migraine symptoms in conjunction with a slight increase in ICCI.