

The 9th Annual CCNM Research Day: Student Research & Innovation in Naturopathic Medicine



Madison Arnold, MSc [1], Nour Nafisa, BMSc [2], Monique Aucoin, ND, MSc [2,3],
Jensen Pletch, BA [2], Hakam Lakhan, BSc [1], Kieran Cooley, ND (non-clinical) [2,4-6]*

- [1] Canadian College of Naturopathic Medicine, New Westminster, British Columbia, Canada
- [2] Canadian College of Naturopathic Medicine, Toronto, Ontario, Canada
- [3] University of Guelph, Guelph, Ontario, Canada
- [4] University Technology Sydney, Ultimo, Australia
- [5] Southern Cross University, Lismore, Australia
- [6] University of Toronto, Toronto, Ontario, Canada



*Corresponding Author Details: kcooley@ccnm.edu

Abstract

The following are abstracts from the research competition at the 9th annual CCNM Research Day hosted by the Canadian College of Naturopathic Medicine in New Westminster, British Columbia, Canada and Toronto, Ontario, Canada. The conference celebrates high quality student-faculty research collaborations, showcased as poster presentations.

Keywords: naturopathy; research; naturopathic medicine; complementary medicine; dietary supplements; integrative medicine; natural health products; nutrition; undergraduate research competition; innovation; mentors

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Conference Abstracts

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Building Capacity for Evidence Synthesis Among Complementary and Integrative Medicine Learners: The Neurotrauma Evidence Synthesis Training (NEST) Program

Monique Aucoin, ND, MSc [1,2], Joshua Goldenberg, ND [3]
[1] Canadian College of Naturopathic Medicine, Toronto, Ontario, Canada
[2] University of Guelph, Guelph, Ontario, Canada
[3] National University of Natural Medicine, Portland, Oregon, USA

Background: Traumatic brain injury (TBI) presents a significant global health burden, with 69 million cases annually. The Neurotrauma Evidence Synthesis Training (NEST) program seeks to address this by building research capacity in evidence synthesis, particularly within complementary and integrative medicine (CIM) environments. Led by evidence-based health care advocates at the National University of Natural Medicine and the Canadian College of Naturopathic Medicine and supported by pilot funding from the RAND Corporation through the National Center for Complementary and Integrative Health, NEST equips trainees with the skills to conduct high-quality systematic reviews in neurotrauma.

Methods: NEST employs a “train-the-trainer” model to provide structured mentorship in evidence synthesis and TBI-specific content. Trainees work in pairs, progressing from protocol development to publication. Learning is delivered through synchronous and asynchronous digitally delivered content and hands-on research training, utilizing evidence synthesis software and incorporating regular feedback. Evaluation includes both quantitative and qualitative measures to assess skill development, confidence in research methods, and competency in research ethics.

Results: The initial phase of NEST involved 24 trainees, 52 participants, and led to ten systematic review projects. Early assessments suggest a relatively strong level of skill in research design, critical appraisal, and systematic review methodology as well as opportunity for improvement. Additionally, the program has fostered a strong collaborative community, enhancing knowledge sharing and skill-building in evidence-based medicine within the complementary and integrative medicine environment.

Discussion/Conclusions: NEST addresses a critical gap in the field of neurotrauma research and provides a replicable model for building capacity in evidence synthesis. By training future leaders and fostering collaboration, NEST strengthens the integration of high-quality, evidence-based research into the CIM community, building research capacity in CIH institutions and ultimately improving interventions and care for individuals affected by TBI.

Funding: Research reported in this publication was supported by the National Center for Complementary & Integrative Health of the National Institutes of Health under Award Number U24AT012549 through the RAND REACH Center. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Conflicts of Interest: The authors declare no conflicts of interest.

Mind, Mood, and Motherhood - Investigating CBT, Omega-3, and Yoga for Perinatal Depression: A Narrative Review

Nicholas Stanley, CCNM Student [1], Adam Gratton, MSc, ND [1]
[1] Canadian College of Naturopathic Medicine, Toronto, Ontario, Canada

Background: Perinatal depression (PND), a mood disorder affecting women during pregnancy and up to one year postpartum, is associated with the risk of preterm birth, low birth weight, and impaired fetal development. Safety concerns often restrict pharmacological treatments during pregnancy. This review examines three non-pharmacological interventions for PND.

Methods: PICO criteria were established before the literature search: 1) perinatal adult women with depressive symptoms, 2) interventions of yoga, omega-3 supplementation, or CBT, 3) a placebo control group, and 4) outcomes measured using the

Edinburgh Postnatal Depression Scale (EPDS) or Beck's Depression Inventory (BDI). Only randomized controlled trials (RCT) and meta-analyses from PubMed, Cochrane Library, and ScienceDirect were included. Non-randomized trials, those with incomplete data, and RCTs included in meta-analyses were excluded.

Results: The literature search identified 174 studies: 29 on perinatal depression and yoga, 82 on Omega-3, and 63 on CBT. CBT consistently reduced perinatal depression with significant effects across studies. Yoga showed positive results for stress and mood regulation, though significance varied. Omega-3 supplementation had mixed outcomes, benefiting mild-to-moderate cases but lacking consistency in severe depression. Limitations included small sample sizes, inconsistent intervention durations, and adherence issues, especially in omega-3 trials.

Conclusion: The review findings suggest that CBT and yoga demonstrate consistent effectiveness for perinatal depression, while Omega-3 supplementation shows mixed results. Given study limitations, including variability in methodology and adherence challenges, further research is needed to refine treatment protocols and assess long-term efficacy.

Funding Sources: No funding was obtained for the conduct of this review.

Conflict of Interest: The authors declare no conflict of interest.

The Teaching Kitchen Landscape in Canada and the United States: A Scoping Review

Gina Brown, ND [1], Tiffany Turner, ND [2], Elise Fair, CCNM Student [2], Neda Ebrahimi PhD [1], Kieran Cooley, ND [1,3,4], Nour Nafisa, CCNM Student [1]

[1] Canadian College of Naturopathic Medicine, Toronto, Ontario, Canada

[2] Canadian College of Naturopathic Medicine, New Westminster, British Columbia, Canada

[3] University of Toronto, Toronto, Ontario, Canada

[4] National Centre for Naturopathic Medicine, Southern Cross University, Lismore, Australia

Background: The role of diet and nutrition in the prevention and management of disease is concretely established across all population levels. While many programs exist to enhance the nutrition literacy of participants, there may be an opportunity to promote programs that seek to translate nutritional knowledge on a practical level with the use of teaching kitchens. For this review, teaching kitchens (TK) were defined as programs that offer hands-on culinary instruction with concurrent health promoting education in other domains, or as culinary education involving taste-testing if participants were under 18 years of age. The breadth of research on the use of such programs has not been well documented; this scoping review was undertaken to reduce this gap.

Objectives: Identify the scope and nature of research on TK including categorical depictions of objectives, research designs, and outcomes.

1. Characterize these programs by detailing objectives, target populations, key components, and qualifications of program leads.
2. Identify gaps in current research, and recommend areas for further research, particularly in the Canadian context.
3. Provide guidance to improve reporting consistency and quality of nutrition education programs in future research

Methods: A scoping review following the Arksey and O'Malley framework was conducted to examine peer-reviewed literature (2011–present) on TKs as defined by our review. Grey literature, including posters and abstracts, was excluded.

Results: 1862 articles were retrieved, with 343 (18.4%) studies meeting criteria for inclusion. Data extraction is ongoing, gathering details such as location, funding structure, population served, qualifications of those providing intervention, program duration, evaluation method, and process outcomes. Descriptive statistics will be used to interpret and examine data.

Conclusion: Preliminary findings suggest that nutrition education programs integrating hands-on culinary components are utilized in Canada and the United States in a variety of contexts. Improvements in perceived nutrition and culinary knowledge, food literacy and security, and in the management of a variety of health conditions across multiple demographic groups have been documented in the literature. These insights can help inform future initiatives to map teaching kitchen resources in Canada and foster collaboration and advancement in this field.

Funding Sources: This project was supported by CCNM's Student Innovation Fund and by an arms-length donation to research by Fullscript.

Conflict of Interest: The authors declare no conflict of interest.

Investigating the Effect of Nicotinamide Mononucleotide (NMN) Supplementation on Aging Maternal Oocytes: A Narrative Review

*Mariangela Bagnato, MSc, CCNM Student [1], Adam Gratton, MSc, ND [1]
[1] Canadian College of Naturopathic Medicine, Toronto, Ontario, Canada*

Background: The proportion of mothers of 35 years of age or older is increasing yearly in Canada. In 2021, a quarter of all live births were by mothers over the age of 35. The quality of oocytes deteriorates with age, contributing to reproductive challenges in older women. Nicotinamide mononucleotide (NMN), a precursor to nicotinamide adenine dinucleotide (NAD), may enhance mitochondrial function by boosting NAD⁺ levels, improve energy production and reduce oxidative damage. The purpose of this review was to analyze existing evidence on whether NMN is associated with oocyte quality and age-related chromosomal abnormalities in mothers of advanced maternal age.

Methods: PubMed and The Cochrane Library were used to search for available literature with the following inclusion criteria: 1) Female mammals (animals or humans); 2) Treatment of aged oocyte with NMN as a sole intervention; 3) Control group without treatment (placebo or untreated); 4) Analysis of oocyte quality as an outcome; 5) Experimental studies; 6) Peer-reviewed article. The search string “(Nicotinamide mononucleotide OR NMN) AND aging oocytes” was used.

Results: The search yielded 13 studies, of which 8 studies met the inclusion criteria, including 7 experimental animal studies (6 in vivo and 1 in vitro), and 1 in vitro human study. Most studies found improvements in levels of NAD⁺/NADPH, mitochondria/function, meiotic competence, fertilization capacity, oocyte yield, developmental potential of embryo, and ovarian inflammation. Morphological and metabolic properties were also commonly comparable to those of younger counterparts. One study also found NMN-treated mice had increased live births and decreased pregnancy losses.

Conclusion: Exposure to NMN provides favourable improvements to animal oocyte and reproductive quality in preclinical studies. Additional clinical evidence involving humans is needed to strengthen these prospective insights and perhaps assist in addressing fertility challenges in mothers of advanced maternal age.

Funding Sources: No funding was received for the conduct of this research.

Conflicts of Interest: The authors have no conflicts of interest to declare.

Pilot Testing of a Diet Cost Calculation Process for the EASE-GAD (Eating and Supplementation for the Treatment of Generalized Anxiety Disorder) Study

*Nicole Yoannou [1], Monique Aucoin, ND, MSc [1,2], Melissa Murphy [3,4], Hainan Yu [5,6],
Laura LaChance, MD, MSc [1], Kieran Cooley, ND (non-clinical) [1,7,8]
[1] Canadian College of Naturopathic Medicine, Toronto, Ontario, Canada
[2] University of Guelph, Guelph, Ontario, Canada
[3] Bastyr University, Seattle, Washington, USA
[4] California State University, San Bernardino, California, USA
[5] Ontario Tech University, Oshawa, Ontario, Canada
[6] Canadian Memorial Chiropractic College, Toronto, Ontario, Canada
[7] University of Toronto, Toronto, Ontario, Canada
[8] National Centre for Naturopathic Medicine, Southern Cross University, Lismore, Australia*

Background: Dietary counseling is a promising strategy for improving mental health outcomes. Recent findings from the Eating and Supplementation for the treatment of Generalized Anxiety Disorder (EASE-GAD) pilot study suggest that dietary counselling may be useful in the treatment of anxiety disorders. Despite these benefits, a persistent barrier to dietary counseling is the perception that healthy eating is associated with higher costs compared to a person’s usual eating habits. Currently, data is insufficient to confirm if dietary interventions lead to increased food costs, and few studies have employed methods for calculating these costs. The purpose of this study was to develop and test a new diet reporting tool for the collection of information necessary for the calculation of dietary costs. This tool will support future research on the cost impact of dietary intervention.

Methods: A draft of the diet reporting tool and instructions were developed. Fifteen participants from the EASE-GAD study were recruited to record their food intake over 7 consecutive days. Following this, participants participated in semi-structured interviews to share feedback on the tool’s usability and their experience with the data-reporting process. The collected dietary data are currently being analyzed to calculate the cost of each item and the total weekly food expenditure. Feasibility of the tool will be measured based on the percentage of items for which cost data can be determined. Participant feedback is being used to assess acceptability and guide further refinements.

Results: Twelve participants submitted completed diet diaries, and 14 interviews were conducted. Overall, all participants were satisfied with the diet reporting tool, with 100% reporting that it was acceptable or highly acceptable. Participants reported the

instructions to be helpful. They also reported difficulty with the tool format and reporting multi-ingredient foods. In attempting to complete cost calculations for the first five participants, costs were generated for more than 80% of food items.

Discussion: Preliminary analysis suggests that the tool is feasible for collecting data for cost calculation and acceptable to participants. Modifications to instructions and format are in progress. This study will provide templates for future studies assessing food cost implications associated with dietary interventions.

Funding Sources: Research reported in this publication was supported by the National Center for Complementary & Integrative Health of the National Institutes of Health under Award Number U24AT012549 through the RAND REACH Center. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Conflicts of Interest: The authors have no conflicts of interest to declare.

A Narrative Review on the Efficacy of Creatine Monohydrate, Caffeine, and Nitrate on Athletic Performance

Siobhan Egan, CCNM Student [1], Ayshwarya Gauba, ND [1]

[1] Canadian College of Naturopathic Medicine, Toronto, Ontario, Canada

Background: This narrative review was conducted to investigate the efficacy of three of the most common physiological ergogenic aids - creatine, caffeine, and nitrate - in enhancing 1-repetition maximum (1-RM) strength in bench press and squat variations. Ergogenic aids, categorized into mechanical, psychological, physiological, pharmacological, and nutritional types, are widely used to improve athletic performance. With a significant economic impact and history of usage, these aids require informed, evidence-based recommendations by healthcare professionals to ensure appropriate use and maximal impact.

Methods: Articles were selected from PubMed if they investigated these aids, used placebo controls, and focused on isotonic 1-RM outcomes, published between 2018 and 2023. Studies had to meet clinical trial, meta-analysis, randomized controlled trial, or systematic review guidelines.

Results: Search results produced 428 articles on creatine, 185 on caffeine, and 34 on nitrate. Eleven trials met the criteria and were included for review. Studies on creatine (n=74 across 3 trials) indicated significant increases in squat and bench press 1-RM when used alongside resistance training compared to placebo. Caffeine trials (n=263 across 4 studies and 1 meta-analysis) showed that caffeine—particularly in coffee—improved leg press 1-RM; bench press 1-RM results were less consistent across doses and methods of caffeine delivery. Nitrate supplementation (n=121 across 2 trials and 1 meta-analysis) yielded mixed results; one study reported improved lower body performance, while another found no 1-RM increase in back squat following nitrate intake.

Discussion: The existing evidence suggests that creatine enhances ATP production for high-intensity exercise and may reduce delayed-onset muscle soreness (DOMS). Caffeine boosts performance by reducing perceived exertion and mobilizing fatty acids. Studies show liquids may outperform capsules, with potential added benefits from coffee's bioactive compounds. While some ergogenic effects may be placebo-driven, chronic caffeine use could still enhance training volume and strength. Nitrate supplementation may aid in blood flow and oxygen delivery to muscles, however its efficacy as an ergogenic aid may be inferior to that of creatine or caffeine.

Conclusion: Creatine and caffeine have strong evidence for improving athletic performance, while nitrate supplementation may be a secondary consideration.

Funding Sources: No funding was obtained for the conduct of this review.

Conflicts of Interest: The authors have no conflicts of interest to declare.

The Effects of Supplemental Curcumin on Anxiety Symptoms in Adults: A Systematic Review and Meta-analysis

Katherine Kartusch, MSc Student [1], Zoe Beal, MSc Student [1], Laura LaChance, MD, MSc [2], Joshua Goldenberg, ND [3], Monique Aucoin, ND, MSc [1,2]

[1] University of Guelph, Guelph, Ontario, Canada

[2] Canadian College of Naturopathic Medicine, Toronto, Ontario, Canada

[3] National University of Natural Medicine, Portland, Oregon, USA

Background: Anxiety symptoms and anxiety disorders are growing in prevalence and can have a profound impact on an individual's daily life. Evidence suggests that curcumin, the primary bioactive polyphenol in turmeric, may aid in the alleviation of depression symptoms, due to its antioxidant, anti-inflammatory and neuroprotective properties; however, less is known about its impact on anxiety. The objective of this study was to conduct a systematic review and meta-analysis of the human experimental studies assessing curcumin's impact on anxiety symptoms.

Methodology: PubMed and Web of Science were searched using a comprehensive search string. Eligible studies were human experimental studies that utilized any delivery method of curcumin. Studies must have reported an anxiety symptom outcome.

Article screening, data extraction and risk of bias assessment were completed in duplicate. Study quality was evaluated using the Cochrane Risk of Bias 2.0 or ROBINS-I. Pooled standardized mean differences with corresponding 95% confidence intervals were calculated using random effects meta-analysis. Additionally, we converted the results from each study to one anxiety instrument most familiar to clinicians. Heterogeneity was measured using the I² statistic. A priori subgroup analyses will be completed to assess the impact of baseline anxiety severity, form of curcumin supplement and dose.

Results: Of the 329 articles identified, 14 met the inclusion criteria in the systematic review; 12 randomized controlled trials were included in the meta-analysis. The total sample size was 980. Curcumin supplementation doses ranged from 80mg to 4,500mg and the duration ranged from four to 12 weeks. At the end of the intervention, compared with the control arm, participants in the curcumin treatment arm reported lower anxiety symptom severity scores (SMD -0.32 (95% CI -0.58; -0.07) I² 66%). Most of the included studies had a low risk of bias. Additional analyses are in progress.

Conclusion: The results suggest that supplementation of curcumin may be associated with a reduction in anxiety symptoms.

Funding Sources: Research reported in this publication was supported by the National Center for Complementary & Integrative Health of the National Institutes of Health under Award Number U24AT012549 through the RAND REACH Center. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Conflicts of Interest: The authors have no conflicts of interest to declare.

Case Report on Short-term Fasting During FOLFOX Chemotherapy in a Stage IV Colorectal Cancer Patient

Olga Calderon RN, MN, CCNM Graduate [1], Elise Hoffman ND, FABNO [1]

[1] Canadian College of Naturopathic Medicine, Toronto, Ontario, Canada

Introduction: Colorectal cancer is the fourth most diagnosed malignancy in Canada and tends to have worse outcomes in men despite affecting both sexes evenly. Chemotherapy is often part of the prescribed antineoplastic regimen with FOLFOX being the first line chemotherapeutic combination for advanced stage IV disease. Chemotherapeutic side effects are often the reason for treatment pauses, delays and discontinuation which contribute to poorer outcomes and increased cancer mortality. As a result, there has been great interest in adjunct dietary interventions to help mitigate these events with short term fasting being one of the researched approaches.

Case Presentation: RB is a 63-year-old Caucasian male initially diagnosed with early-stage colorectal cancer via colonoscopy in April 2021 which was upgraded to Stage IV in June 2023 when he underwent stoma creation for bowel obstruction. He did not receive any therapies from his initial diagnosis to the bowel obstruction occurrence. RB presented to the Integrated Cancer Center at the Canadian College of Naturopathic Medicine August 2023 prior to starting FOLFOX chemotherapy. At the initial appointment, he was recommended short-term fasting surround his chemotherapy treatments; He was fasting for 24 hours prior to his infusion and for 48 hours afterwards. From August 2023 to February 2024, RB has tolerated chemotherapy with minimal side effects, had exceptional tumor response and has re-gained his weight from 112lbs at first visit to 127lbs which is near his baseline weight of 130lbs before disease onset.

Conclusion: This case report presents a positive outcome of short-term fasting in a stage IV colorectal cancer patient undergoing FOLFOX chemotherapy. The limitation of this study is that it is a single case, and further research is needed before generalizing these findings. Integrative oncology providers must continue to utilize their clinical judgement when discussing fasting with their patient to provide the patient with sufficient information to make informed treatment decisions. However, this case report does add to the body of evidence that short term fasting may be an adjunct dietary intervention to enhance chemotherapeutic tolerance without having a significant impact on the patient's weight.

Funding Sources: No funding was received for the conduct of this research.

Conflicts of Interest: The authors have no conflicts of interest to declare.

Allium Sativum and Mental Health: A Scoping Review

Vanessa Eedy [1], Hisham Al Osh [1], Rudo Duri [2], Laura LaChance [1], Ann Sze [1], Joshua Goldenberg, ND [2], Monique Aucoin, ND, MSc [1,3]

[1] Canadian College of Naturopathic Medicine, Toronto, Ontario, Canada

[2] National University of Natural Medicine, Portland, Oregon, USA

[3] University of Guelph, Guelph, Ontario, Canada

Background: The prevalence of mental illnesses remains high and can negatively impact an individual's emotional well-being and overall quality of life. Recent research has begun to examine the potential of dietary interventions, including the intake of foods and culinary herbs, as approaches for improving mental health outcomes. Current literature on *Allium sativum*

(garlic) supports its use in treating cardiovascular disease, metabolic disease, and cancer. Garlic has been shown to have antioxidant and anti-inflammatory properties, both of which are hypothesized mechanisms involved in the pathogenesis of mental illness. However, the impact of garlic on mental health has not been systematically reviewed.

Methods: This project is a scoping review of the literature on garlic and mental health. PubMed, Embase (Ovid), Web of Science (Core Collection), and CINAHL databases were searched, as well as grey literature, to identify studies investigating the effect of garlic or one of its constituents on mental health outcomes. The following articles were included: human experimental studies, human observational studies, animal studies, systematic reviews, and meta-analyses. Studies that assessed the dietary intake or supplementation of garlic or its constituents at any dose for any duration were included. Studies were eligible if they assessed any mental health outcome in any population. Reviewers independently screened articles in duplicate. Data is currently being extracted using a piloted template and will be qualitatively analyzed. Patterns and trends will be identified as well as gaps in the existing literature.

Results: 5688 articles were identified by the search. Twenty-nine studies met criteria for inclusion in this review including nine experimental, two observational and 18 animal studies. Data extraction is currently in progress.

Discussion: With the increasing prevalence of mental illness there is a need to explore novel adjunctive treatment strategies. Specifically, a greater understanding of how dietary factors influence mental health is needed for guiding the development of future studies using diet change as an approach to supporting mental health.

Funding Sources: Research reported in this publication was supported by the National Center for Complementary & Integrative Health of the National Institutes of Health under Award Number U24AT012549 through the RAND REACH Center. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Conflicts of Interest: The authors have no conflicts of interest to declare.

The Effect of *Rosmarinus officinalis* on Depression, Anxiety and Psychological Stress in Adults: A Systematic Review and Meta-analysis

Nour Nafisa, CCNM Student [1], Maha Ghannoum, CCNM Student [1], Shivangi Maheshwari, CCNM Student [1], Laura LaChance, MD, MSc [1], Ann Sze, MLIS [1], Joshua Goldenberg ND [2], Monique Aucoin, ND, MSc [1,3]
[1] Canadian College of Naturopathic Medicine, Toronto, Ontario, Canada
[2] National University of Natural Medicine, Portland, Oregon, USA
[3] University of Guelph, Guelph, Ontario, Canada

Background: One in eight people live with a mental disorder, with depression and anxiety as the most common. Mental health is crucial for overall well-being as it significantly influences individuals' cognitive processes, emotional states, and interpersonal interactions. *Rosmarinus officinalis* is a medicinal plant from the *Lamiaceae* family native to the Mediterranean regions. Antidepressive and anxiolytic effects of rosemary and its constituents may be explained through its actions on the nervous system via modulation of the noradrenergic, dopaminergic, serotonergic pathways, and reducing sympathetic activations. No previous reviews have systematically assessed the impact of rosemary on mental health disorders or symptoms.

Methods: The aim of this systematic review and meta-analysis is to synthesize the evidence on the effect of rosemary for the treatment of depression, anxiety and psychological stress in adults. Eligible studies were randomized controlled trials that included adult populations, and administered rosemary in any form (essential oil, capsules, tea, aromatherapy, inhalation or topical application) while the control group administered placebo, other active comparison or no treatment. Outcome measures included change in depression, anxiety and psychological stress symptoms severity from baseline to end of study. Medical databases searched included MEDLINE (PubMed), Embase (Ovid), Web of Science (Core Collection), and CINAHL. Search strings were built upon text words and, where relevant, subject heading terms, based on the core search terms of "Depression," "Anxiety," "Stress," and "Rosemary". Studies were screened in duplicate, and data were extracted in duplicate. We will calculate the pooled weighted mean difference and/or standardized mean difference with corresponding 95% confidence intervals to determine if statistically and clinically significant changes were reported. A subgroup analysis will be conducted to assess if baseline symptom severity impacts the impact of the treatment.

Results: The literature search yielded 1564 studies after duplication. Thirteen studies met criteria for inclusion, including a total of 851 participants. Nine of the 13 studies administered rosemary by inhalation, while four studies administered it orally. Some studies involved healthy participants while others included patients with psychiatric conditions. The most common outcomes measured included depression and anxiety, while two studies measured psychological stress. Additional analyses are in progress.

Conclusion: The findings from this systematic review may provide insight into the potential role of rosemary in the treatment of mood, anxiety and stress disorders.

Funding Sources: Research reported in this publication was supported by the National Center for Complementary & Integrative Health of the National Institutes of Health under Award Number U24AT012549 through the RAND REACH Center. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Conflicts of Interest: The authors have no conflicts of interest to declare.

Medical Comorbidities in Adults With Neurodevelopmental Conditions: A Retrospective Medical Record Review Study

Ece Toprak, BSc [1], Maria Shapoval, ND [1], Kieran Cooley, ND (non-clinical) [1-3]

[1] Canadian College of Naturopathic Medicine, Toronto, Ontario, Canada

[2] Southern Cross University, Lismore, Australia

[3] University of Toronto, Toronto, Ontario, Canada

Background: Neurodevelopmental disorders (NDDs) such as Autism Spectrum Disorder and Attention Deficit/Hyperactivity Disorder are increasingly recognized for their complex, multisystem presentations. This study aims to examine the prevalence of comorbidities across multiple body systems in adults with NDDs at naturopathic teaching clinics, thereby informing more comprehensive screening and management strategies in naturopathic and other primary care settings.

Methods: A retrospective medical record review was conducted at the Schad Naturopathic Clinic (SNC) and affiliated Canadian College of Naturopathic Medicine (CCNM) satellite clinics. Inclusion criteria required (1) a documented NDD diagnosis e.g. (ICD-10 codes F90.9, F84.0) in CCNM's electronic medical records between May 2019 and Dec 2023, (2) patient age ≥ 18 years at first visit, and (3) ≥ 2 appointments recorded. System-based data extraction was employed to capture comorbidities spanning gastrointestinal symptoms/disorders, autoimmune/allergic conditions (e.g., asthma, celiac disease, myalgic encephalomyelitis/chronic fatigue syndrome (MCAS)), dysautonomia-related syndromes (e.g., postural orthostatic tachycardia syndrome (POTS)), connective tissue disorders (e.g., hypermobile Ehler Danlos Syndrome (hEDS)), chronic pain and fatigue syndromes (e.g., fibromyalgia (FM), MCAS), and psychiatric diagnoses (e.g., generalized anxiety disorder (GAD), obsessive compulsive disorder (OCD), post-traumatic stress disorder (PTSD)). Demographics and additional pertinent clinical features were also noted. Approval was granted by the CCNM Research Ethics Board.

Results: Preliminary analyses of 164 eligible charts suggest an increased prevalence of certain comorbidities within this adult population diagnosed with neurodevelopmental disorders (NDDs) compared to national rates. Notably, higher rates were observed for celiac disease, connective tissue disorders like hypermobile Ehlers-Danlos Syndrome (hEDS), and related conditions including Postural Orthostatic Tachycardia Syndrome (POTS) and Mast Cell Activation Syndrome (MCAS). Additionally, chronic pain and fatigue syndromes such as FM and ME/CFS, as well as well-established psychiatric comorbidities including Generalized Anxiety Disorder (GAD), Obsessive Compulsive Disorder (OCD), and Post-traumatic Stress Disorder (PTSD) were more prevalent. These early findings underscore the need for heightened clinical awareness of the multisystemic nature of NDDs, which is commonly overlooked during diagnosis and management.

Conclusion: Significant multisystem comorbidities exist in the NDD patient population at CCNM clinics. By illustrating the multisystemic nature of NDDs, this study aims to highlight the necessity for further research into prevalence and diagnosis to improve whole person care. These efforts can foster greater clinician awareness and pave the way for interventions that integrate systems and address the complex and dynamic presentations frequently observed in adults with NDDs.

Funding Sources: This project received funding from the 2024 Student Innovation Fund, a competitive internal grant distributed by The Canadian College of Naturopathic Medicine. This fund was supported by Advanced Orthomolecular Research (AOR) and AquaOmega.

Conflicts of Interest: The authors have no conflicts of interest to declare.

Investigating the Effect of Nutraceuticals on Incidence and Severity of Chemotherapy-induced Peripheral Neuropathy: A Narrative Review

Abinaa Chandrakumar, CCNM Student [1], Roshni Kohli, CCNM Student [1], Rick Bhim, ND [1]

[1] Canadian College of Naturopathic Medicine, Toronto, Ontario, Canada

Background: This study aims to provide a comprehensive overview of nutraceuticals' efficacy in chemotherapy-induced peripheral neuropathy (CIPN) prevention and management, paving the way for clinical applications and future research into integrative neuropathy therapies. CIPN is a debilitating side effect experienced by cancer patients, often resulting from treatments with platinum and taxane chemotherapy agents like paclitaxel, cisplatin and oxaliplatin. This study aims to assess

various well-researched nutritional supplements, including omega-3 fatty acids, glutamine, and melatonin, to determine their efficacy in preventing and mitigating CIPN symptoms.

Methods: A thorough search was done on PubMed, using key words such as “CIPN”, “nutraceuticals”, “orthomolecular”, “omega-3 fatty acids”, “glutamine”, and “melatonin”. Exclusion criteria included narrative reviews and animal studies. Inclusion criteria include human studies and randomized, double-blind, placebo-controlled trials assessing platinum and taxane chemotherapy induced neuropathy incidence and severity using clinical evaluations and scoring tools. Primary outcomes evaluate the incidence and severity of CIPN. Agents will be compared via parameters such as reductions in incidence in CIPN, neuropathic pain and improvements in nerve conduction, to identify the most promising candidates.

Results: 5 clinical trial studies were investigated. When supplemented with omega-3 fatty acids, 70% of patients on paclitaxel treatment and 47% of patients on oxaliplatin treatment did not develop peripheral neuropathy (PN). This is in comparison to 40.7% and 11% of patients not developing PN when treated with placebo, respectively. However, in those that developed CIPN, the omega-3 group reported reduced symptom severity compared to control. Glutamine supplementation reduced the incidence of grade 3-4 neuropathy to 4.8% in oxaliplatin treated patients compared to an 18.2% incidence in the placebo group. Glutamine during paclitaxel treatment resulted in decreased severity of dysesthesias, numbness in fingers and toes and degree and incidence of motor weakness. Melatonin supplementation during paclitaxel treatment resulted in 55% of patients reporting no neuropathy symptoms.

Conclusion: Omega-3 fatty acids, glutamine and melatonin, when used individually, reduced the incidence and severity of neuropathic pain, while supporting nerve function. These nutraceuticals hold promise for CIPN management. Future research should include large-sample human trials, and further explore supplement safety, efficacy, and underlying mechanisms to establish integrative protocols for neuropathy prevention in cancer patients.

Funding Sources: No funding was received for the conduct of this research.

Conflicts of Interest: The authors have no conflicts of interest to declare.

Effect of Complementary and Alternative Medicine (CAM) Interventions on Post-traumatic Stress Disorder in Veterans and Veteran Family Members: A Rapid Systematic Review and Meta-analysis

Vahid Ashoorion, PhD [1,2], Kieran Cooley, ND (non-clinical) [2-4], H  l  ne Le Scelleur [5,6], Sarah Selvadurai, MSc [1], Abhimanyu Sud, MD [1,2,6]

[1] Humber River Health, Toronto, Ontario, Canada

[2] University of Toronto, Toronto, Ontario, Canada

[3] Canadian College of Naturopathic Medicine, Toronto, Ontario, Canada

[4] National Center for Naturopathic Medicine, Southern Cross University, Lismore, Australia

[5] Faculty of Social Sciences, University of Ottawa, Ottawa, Ontario, Canada

[6] Chronic Pain Centre of Excellence for Canadian Veterans, Hamilton, Ontario, Canada

Background and Objective: Despite growing interest in complementary and alternative medicine (CAM) interventions for treating Veterans with post-traumatic stress disorder (PTSD), comprehensive evidence is lacking. This review aims to synthesize evidence regarding benefits of CAM interventions for improving mental health and quality of life among Veterans with PTSD in Five Eyes countries (Australia, Canada, New Zealand, UK, USA).

Methods: We searched MEDLINE, PsycINFO, and AMED (2013-2024) for studies that enrolled Veterans with PTSD and their families from Five Eyes countries, evaluated any CAM interventions, and assessed changes in mental health outcomes using validated scales or assessed cost-effectiveness. RCTs with at least 10 participants/arm and observational studies with at least 30 participants were included. The search strategy was defined and pilot tested with support from established search language and descriptions of CAM by the NCCIH. Screening took place in duplicate; data extraction and risk of bias (Cochrane RoB 2; ROBINS-I) were assessed by one reviewer and verified by a second reviewer. We pooled estimates of efficacy and effectiveness when reported by more than one study and assessed certainty of evidence using the GRADE approach. Reporting was guided by PRISMA recommendations.

Results: Twenty-six RCTs and 14 observational studies with 3,321 participants (84.4% male, median age 51.4 years) were included from 3,565 unique records identified by our search. Twenty-three (88%) of RCTs and all 14 (100%) of observational studies were assessed as high risk of bias. Moderate-quality evidence suggests meditation (WMD: -10.66, 95% CI: -15.00 to -6.32), Emotional Freedom Technique (EFT) (MD: -27.00, 95% CI: -32.09 to -21.91), and Sudarshan Kriya Yoga (SKY) (MD: -20.50, 95% CI: -28.81 -12.19) reduces PTSD symptoms greater than the minimal important difference (MID). Meditation and EFT improves depression and anxiety, while SKY improves depression greater than one MID. High to moderate-quality evidence suggests that mantram repetition, and moderate-quality evidence supports mindfulness-based stress reduction, result in reductions in PTSD and depression symptoms that are less than one MID, as well as a similarly improvement in quality of life.

Conclusions: Meditation, EFT and SKY may result in clinically meaningful reductions in PTSD, depression and anxiety in Veterans, although there is a dearth of evidence assessing effects in families of Veterans with PTSD or assessment of cost-effectiveness. Further rigorous research appears to be warranted to better understand effectiveness of these, and other CAM interventions for Veterans with PTSD.

Funding Sources: This research was supported by a financial contribution from the Atlas Institute for Veterans and Families.

Conflicts of Interest: The authors have no conflicts of interest to declare.

Utilization of Naturopathic Medicine Amongst People Living With Systemic Sclerosis: Perspectives, Expectations and Factors in Decision-Making

Vanessa Cook [1,2], Monique Aucoin, ND, MSc [2,3], Brett Thombs [4-8], Elsa-Lynn Nassar [1], Claire Adams [1], Marie-Eve Carrier [1]

[1] Lady Davis Institute for Medical Research, Montreal, Quebec, Canada

[2] The Canadian College of Naturopathic Medicine, Toronto, Ontario, Canada

[3] The University of Guelph, Guelph, Ontario, Canada

[4] Department of Psychiatry, McGill University, Montreal, Quebec, Canada

[5] Department of Psychology, McGill University, Montreal, Quebec, Canada

[6] Department of Epidemiology, Biostatistics, and Occupational Health, McGill University, Montreal, Quebec, Canada

[7] Department of Medicine, McGill University, Montreal, Quebec, Canada

[8] Biomedical Ethics Unit, McGill University, Montreal, Quebec, Canada

Background: The utilization of naturopathic medicine in many patient populations is unknown. There is growing evidence to suggest that Complementary Alternative Modalities (CAM), such as naturopathic medicine are of interest to many people living with chronic illness. Some of the documented reasons for CAM use include practitioner accessibility in CAM fields (e.g., greater availability to see a naturopath vs. a medical doctor), the influence of others who have previously seen a CAM practitioner or heard of CAM, and desperation for change in health status. Systemic sclerosis (SSc, also known as scleroderma) is a chronic, multi-organ system rheumatic autoimmune disease characterized by the fibrosis of connective tissue. There is no cure for scleroderma, and the prognosis for individual patients varies greatly. Several evidence-based naturopathic strategies have been used to treat chronic rheumatic diseases such as SSc. No well-designed studies have evaluated the usage, decision-making process, or perceived efficacy of naturopathic medicine in SSc. Bridging this gap in the literature could enhance naturopathic doctors' knowledge of treating chronic disease patients from a psycho-social standpoint to better manage expectations. Thus, we are currently conducting a cross-sectional survey study evaluating the use of naturopathic modalities in SSc patients. Our objectives are to (1) assess if people living with SSc are currently using or have previously used naturopathic medicine, including modalities defined under naturopathic medicine, (2) assess why people with SSc decide to seek out adjunct modalities defined under naturopathic medicine, and (3) evaluate the perceived efficacy of these modalities.

Methods: In this cross-sectional survey study, we will evaluate the different modalities utilized by scleroderma patients in addition to their perceived efficacy for scleroderma symptoms. We have adapted survey items from the 2012 NHIS Questionnaire – Adult CAM Adult Alternative Health/Complementary and Alternative Medicine. The adapted online survey will be made available to the SPIN cohort, a cohort comprised of approximately 1,200 patients living with scleroderma. After a two-week period and three survey reminders, the survey will close.

Results, Discussion & Conclusion: This survey is in progress. The findings of this study may enhance our understanding of the use of naturopathic medicine among patients living with systemic sclerosis. The information from this survey will help guide future research and provide a nuanced perspective on the importance of naturopathic medicine for SSc patients.

Funding Sources: This study received funding from the Canadian College of Naturopathic Medicine Student Innovation Fund.

Conflicts of Interest: The authors have no conflicts of interest to declare.

Use of Antimicrobial Herbs for Rectal Resection Induced Diarrhea in Patient With Colorectal Cancer: A Case Report

Nour Nafisa, CCNM Student [1], Elise Hoffman, ND [1], Monique Aucoin, ND, MSc [1,2]

[1] Canadian College of Naturopathic Medicine, Toronto, Ontario, Canada

[2] University of Guelph, Guelph, Ontario, Canada

Background: Rectal resection is a commonly performed surgical procedure when tumor cells invade the pelvic peritoneum with sigmoid colon and/or rectum being involved. It is typically performed to treat conditions such as rectal cancer, severe inflammatory bowel diseases, and rectal prolapse. Diarrhea after rectal resection is a common side effect due to altered bowel

motility, changes in gut microbiome, malabsorption of bile and electrolytes. This case report presents a patient who underwent rectal resection for colorectal cancer and developed persistent diarrhea as a complication.

Case Presentation: A 68-year-old female with a history of stage IV rectosigmoid mucinous adenocarcinoma, diagnosed in March 2019, underwent a rectal tumour resection as part of her cancer treatment, therefore has an ostomy bag. Following the rectal resection, she struggled with severe diarrhea causing her to change her bag 8-10 times in the day with no identifiable infection or other complications based on stool testing. Different interventions were given to the patient such as fiber, probiotic, prebiotics, glutamine as well as digestive enzymes, however, all failed to manage diarrhea related symptoms. When all interventions were exhausted, we conducted further testing using the GI Map test which revealed dysbiosis caused by high *Morganella* and *Pseudomonas* opportunistic bacteria. Based on the results of the test, a 3-month protocol using antimicrobial herbs such as oregano, berberine, and garlic was used while simultaneously healing the gut lining using fiber and L-glutamine. The patient reported reduced bowel movement and bulking of the stool to a type 4 on the Bristol stool chart.

Conclusions: In this case, the patient did not respond to typical treatments for diarrhea. Antimicrobial herbs used to treat opportunistic bacteria identified by testing have not been previously studied for the treatment of rectal resection induced diarrhea, however, these findings suggest that research is warranted.

Funding Sources: No funding was obtained for this work.

Conflicts of Interest: The authors declare that they have no conflicts of interest.

Dietary Protein and Anxiety Symptoms and Disorders: A Scoping Review

Kyla Lamb, CCNM Student [1], Jensen Pletch, CCNM Student [1], Jamie Menzel [2], Melissa A Murphy, PhD, RDN [3], Laura LaChance, MD, MSc [1], Ann Sze, MLIS [1], Monique Aucoin, ND, MSc [1,2]

[1] Canadian College of Naturopathic Medicine, Toronto, Ontario, Canada

[2] National University of Natural Medicine, Portland, Oregon, USA

[3] Bastyr University, Seattle, Washington, USA

[4] University of Guelph, Guelph, Ontario, Canada

Background: Anxiety and psychological stress are increasingly prevalent, with dietary factors emerging as potential modifiable risk factors. Protein intake may have an impact on mental health by modulating neurochemical pathways and the microbiota-gut-brain axis. Despite growing interest, there has been no systematic investigation of dietary protein's role in anxiety and stress disorders.

Methods: This scoping review will examine human and animal studies which report on the relationship between dietary protein quantity or quality and anxiety or psychological stress symptoms or disorders. Data was sourced from Medline (PubMed), EMBASE, Web of Science, and CINAHL. A comprehensive search strategy used keywords and subject headings related to anxiety, stress, and dietary protein. There were no restrictions on language or date. Reviewers are currently screening titles and abstracts in duplicate before conducting a full-text review. Data extracted will include study design, sample size, protein type, dosage, and mental health outcomes related to anxiety or stress. Studies involving pharmaceuticals, herbal supplements, modified amino acids, or neurotransmitters will be excluded. Data will be combined qualitatively to assess trends and gaps.

Results: The search yielded 26 904 results; after deduplication, 20 270 remained. Screening is currently in progress. To date, 317 studies have been eligible for inclusion after title and abstract screening. Commonly identified study designs include tryptophan depletion studies and observational studies comparing high and low protein intake with anxiety or stress symptoms. Studies assessing the impact of changing total dietary protein quantity or quality have been identified infrequently.

Conclusions: This review seeks to clarify dietary protein's role in anxiety and psychological stress, addressing a gap in the literature on the role of diet in mental health. Findings will provide foundational insights and identify research opportunities.

Funding Sources: Research reported in this publication was supported by the National Center for Complementary & Integrative Health of the National Institutes of Health under Award Number U24AT012549 through the RAND REACH Center. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Conflicts of Interest: The authors have no conflicts of interest to declare.

Characterizing Lifestyle and Nutritional Habits and Mental Health Outcomes in Students of Complementary and Integrative Health (CIH)

Jensen Pletch, CCNM Student [1], Faith Gallant [2], Ryan Bradley, ND [3,4], Alexandra Adorno Vita, MSc, PhD [3], Kieran Cooley, ND (non-clinical) [1], Neda Ebrahimi, PhD [1]

[1] Canadian College of Naturopathic Medicine, Toronto, Ontario, Canada

[2] NCCO Rehabilitation, Toronto, Ontario, Canada

[3] National University of Natural Medicine, Portland, Oregon, USA

[4] University of California, California, USA

Introduction: Healthcare students, including those in complementary and integrative health (CIH) programs, possess specialized knowledge and skills that influence their health and lifestyle practices. CIH students, in particular, may adopt unique habits shaped by their education, which emphasizes lifestyle medicine, natural health products (NHPs), and mind-body practices. This study examines dietary and self-care practices among CIH students and their well-being outcomes.

Methods: This is a secondary analysis of data from the prospective longitudinal International Cohort of Lifestyle and Dietary Health (INCLD-Health) Study. Biological, dietary, lifestyle, mental, and physical health measures were collected via validated tools from 190 students registered in CIH programs at the National University of Natural Medicine (NUNM) in Portland, Oregon. For this paper, data pertaining to diet, movement behaviours, NHP and medication intake, mind-body practices and mental health were analyzed. Summarization of the dataset involved descriptive statistical analyses to provide an overview of key findings.

Results: Among CIH students, 86% regularly used NHPs, with vitamin D, B vitamins, and omega-3 fatty acids being most common. While 47% did not follow specific dietary patterns, intermittent fasting and pescatarians were most prevalent. Stress levels among CIH students were generally moderate, with the majority reporting either low (37%) or moderate (58%) perceived stress, as assessed by the Perceived Stress Scale. Additionally, nearly 80% of participants practice meditation, with over 40% doing so 2 to 3 times per week.

Discussion: CIH students appear to engage in higher rates of certain health practices, such as regular use of NHPs, healthy dietary habits, and mindfulness-based activities. This may reflect the emphasis on nutrition, NHP education, and preventative lifestyle modifications within CIH programs. These insights help characterize this student population and offer a foundation for future research into the relationship between integrative healthcare education and student health and well-being. Future research should explore the long-term impact of these practices and consider how integrative health strategies might support student and practitioner well-being across healthcare education.

Funding Sources: No funding was obtained for this work.

Conflicts of Interest: The authors have no conflicts of interest to declare.

Naturopathic Approaches to Atopic Dermatitis: A Cross Sectional Audit of Patient Care at a Naturopathic Teaching Clinic

Brennan Dedecker, ND [1], Kieran Cooley, ND (non-clinical) [1-3], Daria Schaff, CCNM Student [1],

Jenna Greco, CCNM Student [1], Sarah Pearson-Legault, CCNM Student [1]

[1] Canadian College of Naturopathic Medicine, Toronto, Ontario, Canada

[2] Southern Cross University, Lismore, Australia

[3] University of Toronto, Toronto, Ontario, Canada

Background: Up to 17% of Canadians will suffer from atopic dermatitis (AD); 34% of which seek out complementary and alternative medicine (CAM) therapies for treatment of AD. In Ontario specifically, patients with AD have an average of 3.6 publicly funded doctor visits per year to assess and treat their AD. The total cost of AD in Canada is estimated to be \$1.4 billion annually. Given this burden, there is a growing interest in the use of CAM as an adjunct to conventional treatment for AD. However, little is known about the nature of the care that is being provided by CAM professionals, including naturopathic doctors (NDs). Therefore, this study aims to describe the different therapies used by NDs to support patients with AD.

Methods: Electronic medical records (EMRs) from the Schad Naturopathic Clinic (SNC) were reviewed for demographics, treatments, compliance, and response to treatment. Charts were selected by searching the EMR system of the SNC between May 1st, 2019 and Dec 31st, 2022 for patients with atopic dermatitis in their charted assessment (ICD9 Code 691). Records were excluded if they did not have at least 3 visits during the date range specified, or were under 18 years of age at the time of their first appointment. Manual extraction was done by four individuals using a pilot-tested template to describe the nature of the conditions, laboratory investigations and treatments provided. This study was approved by the Canadian College of Naturopathic Medicine's Research Ethics Board.

Results: Of the 372 charts identified and reviewed, 172 met the inclusion criteria. The patients were 81% female (139/172), aged 22 - 80 years old (mean age 39) and visited the SNC an average of 11 visits within the investigation timeframe. Data will be presented that outlines the percent of records that met the inclusion criteria, general information about demographics, the average number of treatments patients came in for, as well as conventional treatments and therapies (including lab assessments, NHPs, lifestyle recommendations, TCM and acupuncture, botanical medicine and homeopathy) prescribed by NDs at the clinic.

Conclusion: This cross-sectional audit will reveal common patterns in assessment, management, and treatment of AD, and may provide a foundation for establishing best practices, guidance or education for treating patients presenting with these concerns that is inclusive of the care being provided by NDs.

Funding Sources: No funding was received for the conduct of this research.

Conflicts of Interest: The authors have no conflicts of interest to declare.

Appendix: [Research Posters](#)

Conflicts of Interest

The authors of this abstract collection declare that they have no conflict of interests.

Authors' Contributions

MA: contributed equally to planning the research competition, assisted in the collection and review of the abstract submissions, as well as support for authors selected for the competition while producing their posters and gave final approval of the version to be published.

NN: contributed equally to planning the research competition, assisted in the collection and review of the abstract submissions, as well as support for authors selected for the competition while producing their posters and gave final approval of the version to be published.

MA: co-founded the first CCNM Research Day, contributed equally to planning the research competition, assisted in the collection and review of the abstract submissions, as well as support for authors selected for the competition while producing their posters, and gave final approval of the version to be published.

JP: contributed equally to planning the research competition, assisted in the collection and review of the abstract submissions, as well as support for authors selected for the competition while producing their posters.

HL: contributed equally to planning the research competition, assisted in the collection and review of the abstract submissions, as well as support for authors selected for the competition while producing their posters.

KC: co-founded the first CCNM Research Day, contributed equally to planning the research competition, assisted in the collection and review of the abstract submissions, as well as support for authors selected for the competition while producing their posters, and gave final approval of the version to be published.

Acknowledgements

Special thanks to Andrew Ihnatowycz, Support Analyst at the Canadian College of Naturopathic Medicine for their contributions to virtual conference hosting and digital media services to support Research Day. We would also like to acknowledge the work of our poster judging panel for their critical appraisal and scientific discussion on the day of the competition.

Funding

Funding for this conference has been supported by AquaOmega and AOR through arms-length donations to the Canadian College of Naturopathic Medicine's Student Innovation Fund as well as by donations to research at the Canadian College of Naturopathic Medicine.

Article Information

Managing Editor: Jeremy Y. Ng

Article Dates: Received Feb 26 25; Published Mar 17 25

Citation

Please cite this article as follows:

Arnold M, Nafisa N, Aucoin M, Pletch J, Lakhan H, Cooley K. The 9th Annual CCNM Research Day: Student Research & Innovation in Naturopathic Medicine. URNCST Journal. 2025 Mar 17: 9(3).

<https://urncst.com/index.php/urncst/article/view/810>

DOI Link: <https://doi.org/10.26685/urncst.810>

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