Study Designs

TITLE: Effects of a Fasting Mimicking Diet on Thyroid Peroxidase and Thyroglobulin Antibodies: A Quasi-experimental Design

AUTHORS: Ama, S., Stevens, S.

BACKGROUND: Autoimmune hypothyroidism, also known as Hashimoto's thyroiditis (HT), is the most common autoimmune disorder in the United States. Medical treatment consists of hormone replacement therapy. Nutritional interventions target immunologic food reactions, reduction of inflammation, and supply of enzyme cofactors. Autoimmune disease is predominantly thought to be a permanent condition, with immune cell reactivity toward self-tissue being lifelong, once activated. Fasting, or a low-calorie ketogenic diet that mimics fasting, upregulates autophagy, and has been found to improve outcomes in several autoimmune diseases. However, the effects of fasting on thyroid antibody levels with HT has not been investigated.

RESEARCH OBJECTIVES: This study's objective is to measure the effect of six-monthly cycles of a five-day fasting mimicking diet (FMD) on thyroid peroxidase (TPO) and thyroglobulin (Tg) antibodies.

METHODS: This study proposes a quasi-experimental design, which uses a patient's baseline assessments as the control, to assess therapeutic effects of a FMD on thyroid antibody levels in HT. Participants with a history of HT are recruited from clinical practice. It is explained that a quasi-experimental design is uniquely suited to objectively observe an individual's response to a treatment. Exclusion criteria include comorbidities, pregnancy, or underweight. This study design can be conducted with a single client, multiple clients, or among multiple clinical practices. Participants are tested for food sensitivities and reactive foods are eliminated from the diet three months prior to and during the study. Tg and TPO antibody levels are assessed at baseline and once per month for the duration of the study. The intervention is a five-day low calorie, ketogenic FMD that is administered at the beginning of each month for six months. Adherence is monitored by food diary entries. In the period following the FMD (days 6-30), participants resume their elimination diet, abstaining from reactive foods. At the end of each month, Tg and TPO antibody levels are assessed, with the final analysis at six months compared to baseline measures, which serve as control values.

DISCUSSION: Autophagy has been shown to decrease excess, mutated, misfolded, and damaged proteins. An absence or decrease in autophagy has been linked to many diseases, including autoimmune diseases. Upregulating autophagy through FMD may help to reduce auto-reactive cells, decreasing, and possibly reversing autoimmunity. The authors are unaware of any other studies that have specifically assessed autophagy on HT patients. This therapy could potentially give nutritionists another option for supporting clients with HT or lead to future research.

TITLE: The Effects of Postpartum Placentophagy on Human Lactation: A Pilot Cohort Study Design and Research Rationale

AUTHORS: Burkholder, A., Freeman, C.

BACKGROUND: Maternal consumption of the placenta postpartum is a rare but growing practice; the placenta is typically steamed, dried and encapsulated. Other mammals consume their placentas, but there is little evidence that humans have done so historically. Reasons cited for placentophagy include improved mood, energy, and iron levels as well as increased milk supply, however, evidence to support these claims is lacking. Some clinicians report a possible association between placentophagy and reductions in milk supply, resulting in slowed growth for infants.

Encapsulated placenta contains measurable levels of hormones including estrogen and progesterone; progesterone inhibits prolactin. Therefore, consuming placenta pills might suppress lactation, rather than increase milk supply.

RESEARCH OBJECTIVES: This preliminary study will evaluate the association between placentophagy and maternal milk supply, using infant growth and maternal supplementation with infant formula as proxy measures.

METHODS: This prospective cohort study will recruit people in their third trimesters of pregnancy from a midwifery practice on a rolling basis. Inclusion criteria will be measured via screening questionnaire and includes plan to breastfeed exclusively, primigravida status, and low-risk pregnancy. Twenty-five participants who plan to consume their placentas postpartum will be enrolled after preliminary screening during maternal well-visits, as well as 25 who do not plan to consume their placentas. Follow-up questionnaires will be administered by phone at weeks 1, 6, and 12 postpartum.

Participants will report birth interventions, gestational age, breastfeeding or formula feeding status, infant weight, and consumption of placenta capsules. Primary outcomes are failure to thrive in exclusively breastfed infants as measured by WHO based on infant weight, exclusive breastfeeding at 12 weeks, and maternal perception of milk supply. Relative risk will be used to compare outcomes between groups at 1, 3, and 6 weeks postpartum.

DISCUSSION: This prospective cohort study intends to provide insights into the growing trend in placentophagy, paving the way for additional studies that may inform evidence-based practice recommendations.

TITLE: Positive Psychology Intervention Supporting Coaches During COVID-19

AUTHORS: E. Ahmann, M. Saviet, S. Leikin, M. Otto, M. Missenda

BACKGROUND: A recent International Coaching Federation survey found that some two-thirds of coaches have experienced a negative impact of the COVID-19 pandemic on their businesses, in reduced work hours and/or reduced income. This is aside from any personal stress they may be experiencing. Coaches are also not exempt from the increased rates of anxiety and depression found in the U.S. since the pandemic began. Yet, coaches, like other helping professionals, are called on to support others during this challenging time. To date, no study has explored how to support coaches during the COVID-19 pandemic.

RESEARCH OBJECTIVES: This study will explore the feasibility of a multi-faceted, self-guided, positive psychology intervention on the wellbeing of coaches during the COVID-19 pandemic.

METHODS: This is an exploratory pre-post intervention feasibility study design using a multi-pronged, self-guided, positive psychology intervention (PPI) to support coaches' wellbeing. A minimum sample size of 360 coaches will be recruited through the National Board for Health and Wellness Coaching. U.S. coaches will complete an online informed consent and pre-intervention online surveys, including one gathering demographic data and several validated measures to explore aspects of wellbeing: a 2-item anxiety screener (the GAD-2), a 2-item depression screener (the PHQ-2), and the 5-item Satisfaction with Life Scale. Participants will then be invited to read an article about and then engage in five self-guided PPIs on a daily basis for six weeks. These PPIs are: acknowledging gratitude, moving one's body, spending time outside, appreciating beauty, and connecting with others. Daily email prompts will ask whether participants engaged in each of the five aspects of the intervention. The wellbeing measures will be repeated online at week 3 and at week 6. A follow-up survey will be sent 4 weeks after the intervention. Data will be stored in a HIPAA-protected online database and will be deidentified before analysis in R. ANOVAs will be used to examine the impact of the number of PPIs engaged in (5 possible per day) on changes from baseline in each of the wellbeing measures at both 3 and 6 weeks and to explore maintenance of gains at 4 weeks post-intervention.

DISCUSSION: This study may benefit coaches who participate and, if feasible and effective, may also suggest positive psychology intervention(s) that can benefit others in varied helping professions, as well as the general public, during this pandemic or in facing future challenges.

TITLE: Survey of East Asian Medicine (EAM) Students' Attitudes Towards Research: Study Design

AUTHORS: H. Most, L. Conboy, R. Ostrick

BACKGROUND: Research literacy and the practice of evidence-based medicine (EBM) are important initiatives in complementary and integrative medicine (CIM), which requires cultural change within educational institutions for successful implementation. This research project builds on a past survey administered to students at Pacific College of Oriental Medicine in 2012. Results of the survey were published in 2016. Authors of the paper gave their permission to use their survey as the basis for this current survey. This survey seeks to update the findings from the 2012 survey and expand it to students of EAM schools across the US. It will help gauge the degree of interest and support for research, EBM, and institutional participation in research activities.

RESEARCH OBJECTIVES: To collect the self-assessed research and evidence-based medicine perspectives of East Asian Medicine (EAM) Masters and Doctorate degree students at EAM schools in the United States, in order to identify barriers to teaching acupuncture research and opportunities to engage and excite students to studying acupuncture research.

METHODS: The survey consists of 37 closed and open-ended questions administered once through Survey Monkey®, which include basic demographic data, research experience and attitudes towards research. A list of the 56 acupuncture-accredited and pre-accredited programs/institutions and their directors was obtained. A letter to the schools, explaining the purpose of the survey and its importance, and including a link to the survey that they can send to all of their EAM Masters/Doctoral students will be created. The letter will be emailed to all the programs/institutions to request their participation. A cut-off date two months after the original email will be set, when data collection will cease. As of 2018, there were 6,788 students in ACAOM accredited programs. We have a 50% response rate target.

DISCUSSION: This survey was initiated by a national working group of the Society for Acupuncture Research. Results will be shared with administrators of EAM program/institutions, ACAOM and the Council of Colleges of AOM. In addition, a journal article will be written to include the results of the survey and their meaning for EAM education.

TITLE: Comparison of Functional Nutritionist-Developed, Whole-Food Ketogenic and Vegan Diets in Type 2 Diabetes: Study Design

AUTHORS: K. Curry

BACKGROUND: Type 2 diabetes (T2D) is one of the most prominent global health problems, carrying a large economic burden. Being largely lifestyle-driven, many studies have researched effectiveness of different dietary treatments for T2D. Two promising diets for management and reversal of T2D include a high-fat, low-carbohydrate ketogenic diet (KD), and a vegan diet (VD), which excludes animal products. While both diets show benefit in T2D, there hasn't been a study comparing the two diets when they are developed by functional nutritionists.

RESEARCH OBJECTIVES: The aim of this study is to compare the effects of functional nutritionist-developed KDs and VDs on diabetes-related biomarkers, and patient-reported feasibility and satisfaction for patients with T2D.

METHODS: This will be a 6-month pilot clinical trial in which 100 patients (aged 35-60) with a current diagnosis of T2D will be randomized into either the KD or VD group. Those with a history of smoking, type 1 diabetes, cancer, autoimmune or other chronic disease, pregnancy, or significant experience with either a KD or VD will be excluded. All participants will be counseled weekly by a functional nutritionist. Weekly, isocaloric meal plans will be constructed with appropriate proportions based on basal metabolic rate. Physical activity will consist of 150 minutes of brisk walking in heart rate zone 3 (measured by monitor) weekly for each participant. Anthropometric and body composition data, fasting blood glucose and insulin, HbA1c, hs-CRP, salivary cortisol, blood lipids, and vitals will be recorded at baseline, and again every 90 days throughout the study. Weekly diet diaries and meetings will measure adherence and satisfaction, and the 28-item Diet Satisfaction Questionnaire (DSat-28) will be completed every 90 days.

DISCUSSION: There are many different diets claiming to aid in T2D, and both KDs and VDs have yielded positive results in medical literature. Even within a standard KD or VD, food choices can vary significantly, and the two diets haven't been definitively compared when they are well-developed by functional nutritionists to ensure sufficient intakes of micronutrients, and appropriately balanced macronutrients, emphasizing whole foods. Additionally, these diets often seem unachievable for certain people. If a patient prefers animal products, a ketogenic diet might be best; whereas a patient preferring carbohydrate-based meals would better maintain a vegan diet. Knowing the comparable effectiveness and feasibility of each can help both practitioners and patients decide which diet suits their medical needs and lifestyle.

TITLE: Validation of the PINCOM-Questionnaire to Understand Interprofessional Collaboration in Community Herbal Practitioners: A Study Design

AUTHORS: Missenda, M., Deits,C., Magruder, L., Koczaja, D., Bhatnagar, K.

BACKGROUND: Interprofessional collaboration (IPC) both within conventional and integrative healthcare has been the focus of a growing field of study for academia and clinical practice. Collaboration between practitioners is becoming more relevant as patients are utilizing multiple treatment approaches including botanical products and pharmaceuticals in combination. Herbalists in the US are a heterogenous group that represents a spectrum of practice from tradition-based to evidence-based knowledge, with diverse approaches to care that offer expertise on botanical medicines. They are sometimes under-utilized in IPC within integrative care models. How both licensed and unlicensed practitioners of herbal medicine collaborate with other practitioners has not been studied in the US. The Perception of Interprofessional Collaboration Model Questionnaire (PINCOM-Q) was developed to measure perceptions and behaviors of practitioners for IPC. This questionnaire has only been validated with conventional healthcare practitioners at this time. Because of the complexity of IPC, it is necessary to validate the generalizability of this tool before using it with herbalists.

RESEARCH OBJECTIVES: The objective of this study is to validate the PINCOM-Q questionnaire for content validity and reliability for practicing herbalist in the US.

METHODS: Since the PINCOM-Q has already been validated for other healthcare practitioners, the first phase will evaluate content validity of the questionnaire with an expert panel of six registered herbalists with clinical experience using a secured MS Form. Three independent evaluators will review the results with consensus for adaptations to the PINCOM-Q for the target population. Phase two will pilot the adapted PINCOM-Q in a representative sample of herbalists with and without co-licensure. Internal consistency will be tested using Cronbach's Alpha. Reliability analyses for the subscales will be completed in alignment with the original validation study methods. A comparison will be done between the expert panel scores and the pilot scores using a t-test to establish construct validity. A secondary comparison will also be made between the two herbalist designations (unlicensed and co-licensed), to identify any differences in construct validity.

DISCUSSION: The goal of this research is a validated tool to identify barriers and facilitators for herbalists related to the range of meaning and relevance that IPC conveys within their practice. IPC is a complex and multifaceted phenomenon that has in other disciplinary domains shown value in improving patient-centered care that provides greater levels of safety. This research will provide opportunities to explore the roles of the herbalist on the integrative health team.

TITLE: Designing a Model Acupuncture Research Curriculum for EAM schools: A Research Design

AUTHORS: Most, H., L. Conboy, R. Ostrick

BACKGROUND: Acupuncture is moving toward integration into Western medical settings. In order to be accepted, acupuncturists need to be well grounded in evidence-based medicine and specifically the evidence base of acupuncture. Additionally, the accrediting commission for East Asian Medicine (EAM) schools requires that students be able to appraise and apply evidence in their treatments. There are no existing guidelines or resources to enable EAM schools to meet this requirement. A model Acupuncture Research curriculum to meet this need must include: (1) existing basic science and clinical evidence, its strengths and shortcomings, (2) acupuncture research challenges, and (3) an experiential component to give students a sense of research activities. This study will detail the process used to create this curriculum and other resources and provide the content to date.

RESEARCH OBJECTIVES: Our aim is to develop a model Acupuncture Research curriculum using a collaborative approach among EAM educators.

METHODS: The Society of Acupuncture Research (SAR) is an international group of researchers from major medical and research institutions dedicated to improving the quality and increasing the awareness of research in acupuncture. At the June 2019 SAR conference for EAM educators, a seminar was organized to advance acupuncture research education. Out of that conference, SAR participants formed a special interest group on education. Fourteen members from EAM schools across the US and Brazil have been collaboratively contributing to this model curriculum and coordinating through bi-monthly meetings. To date, a six page detailed curriculum and introductory slide show have been created.

DISCUSSION: Creating a detailed curriculum and resources that are available to all EAM schools would improve students' knowledge of the evidence base that exists for acupuncture. An enhanced knowledge base enables them to be valued members of an integrative medicine team as more informed practitioners who incorporate evidence into their treatments. The affiliation with SAR lends legitimacy to the practice of acupuncture and may be of further interest to international EAM schools as well.

TITLE: Study Design to Validate an Evidence-Based Medicine Skills Assessment for Integrative Health

AUTHORS: Nault, D., Missenda, M., Abatemarco, A., Cherpak-Castagna, C., Moonaz, S.

BACKGROUND: Critics of Integrative Health have faulted the field for a lack of evidence-based medicine (EBM), despite the presence of EBM courses within many curricula. The inclusion of a validated evidence-based skills assessment may be useful in disproving this notion and may even provide the field with a means to assess future students and practitioners. The Fresno EBM Assessment tool was developed as a 12-question performance-based evaluation to be used in medical education settings. This tool measures a range of EBM skills using open-ended questions that are scored via standardized grading rubrics. The Fresno EBM Assessment tool has been validated in a US sample and has shown to have good inter-rater reliability, internal reliability, and construct validity when used to evaluate a general understanding of EBM.

RESEARCH OBJECTIVES: This study seeks to adapt a currently valid EBM assessment tool (The Fresno EBM) with scenarios specific to an Integrative Health audience and re-validate it for use in this population.

METHODS: The Fresno EBM assessment has been adapted and validated for other specific medical fields, and validity has held through these adaptations. Earlier validation procedures informed the methods proposed for validation in this study. To maintain as much of the original validity as possible, we will be adapting the Fresno EBM, only as necessary, to suit the Integrative Health population and practices. To establish content validity, an expert panel (n=3) of Maryland University of Integrative Health faculty will review and inform the test before its administration. The assessment will then be offered to select MUIH faculty and students in the Introduction to Research Literacy in Integrative Health (RSCH 601) course. To establish construct validity, mean overall scores of respondents will be compared using a t-test to establish whether there is a difference between expert and novice scores. Two evaluators will independently score the adapted EBM tests and their scoring agreement compared to assess inter-rater reliability. Item difficulty will be assessed according to pass rates.

DISCUSSION: Demonstrating that EBM is not just taught but considered important enough to evaluate shows that the Integrative Health community takes it seriously. As with anything in integrative health, we must ensure that our modalities and values are reflected in the validation of our research tools. This cross-sectional validation study design will aid in filling a gap that exists in the integrative health field that is present elsewhere: a validated scale for assessing EBM skills specific to the population of present and future practitioners.

TITLE: An Herbal Formula to Support Patients with Anorexia Nervosa: Pre-Post Study Design

AUTHORS: Schaefer, K., Missenda, M.

BACKGROUND: Current treatment for anorexia nervosa (AN) predominantly centers around increasing caloric intake. There are multiple challenges with increasing caloric intake in these patients including anxiety and risk of refeeding syndrome. The risk of relapse in this population is currently between 35-41%. AN profoundly affects the endocrine system since patients adapt to a stressful and reactive environment both psychological and physiologically. *Withania somnifera* (Ashwagandha) (WS) is an adaptogen that has been shown to impact the stress response and endocrine system. *Melissa officinalis* (Lemon balm) (MO) is a nervine, which traditionally is used to address anxiety. Currently, a lack of research on the use of herbs for supporting patients with AN exists.

RESEARCH OBJECTIVES: The study aims to determine the effectiveness of an herbal formula combining WS and MO to address psychological and physiological factors that affect patients with AN.

METHODS: This study employs a two-group pre-post design. Sixty women with a diagnosis of AN, who were not hospitalized in the last month, currently receiving treatment from a nutritionist, dietician, and/or psychotherapist will be recruited. Thirty participants will receive 250mg of WS and 300mg of MO dried extracts twice daily. The comparison group (n=30) will receive standard care. This intervention will be 6 weeks and include follow-ups at 1 and 3-months post-intervention, with outcomes measured at baseline, 6 weeks, and two follow-up visits. Primary outcomes monitor psychological changes through validated questionnaires assessing quality of life and anxiety (Eating Disorder Examination-Questionnaire, the State-Trait Anxiety Inventory). Additionally, the Recovery Record Eating Disorder Management app will be used to track caloric intake. Secondary outcomes include thyroid stimulating hormone (TSH), thyroxine (T4), triiodothyronine (T3), homeostatic model assessment (HOMA) and serum electrolytes to monitor physiological changes. Pill counts at 6-weeks will evaluate adherence. Resulting continuous data will be tested for normal distribution before between group comparisons are made.

DISCUSSION: We hypothesize that this treatment will decrease trait anxiety, increase caloric intake, and improve quality of life in this population. These findings may inform current and future complementary treatment plans for AN. Better understanding the role of herbal medicine will allow us to use it in conjunction with psychotherapy and/or nutrition, for a more whole-person, mind-body approach to healing AN.

TITLE: Developing a Remotely Delivered Yoga Intervention for Chronic Low Back Pain: Implementing an Evidence-based Biopsychosocial-spiritual Approach

AUTHORS: Sullivan, M., Bethel, K., Bethel, M., Adelson, L., Wieland, S.

BACKGROUND: Nonpharmacological biopsychosocial-spiritual interventions are recommended to help manage chronic pain conditions. Yoga includes meditative practices that have not been well characterized in yoga studies for musculoskeletal conditions and may provide added benefit for psychosocial concerns. Remote delivery of yoga may help increase the accessibility for people with chronic pain conditions.

RESEARCH OBJECTIVES: To develop a yoga intervention for people with chronic low back pain, integrating the meditative aspects with safe movement sequences, adapted for remote delivery through a synchronous online platform

METHODS: A literature review on yoga and low back pain was conducted to generate a list of recommended practices. These practices informed a survey sent to an expert panel of yoga researchers, physical therapists, and yoga therapists which primed the discussion for a subsequent focus group. Transcripts were analyzed for themes and points of consensus.

DISCUSSION: Emergent themes included: unique contributions of yoga for people with chronic low back pain, addressing psychoemotional concerns, importance of language to decrease fear of movement, educational topics from both pain science and yoga, postures, and engaging group processes to empower the participants. Safety, relaxation, and ease were identified as essential emphases to be incorporated into the language used by the therapist, the postures chosen, and topics for education. This study revealed important components for a remotely delivered yoga intervention to address biopsychosocial-spiritual concerns in people with chronic low back pain. Yoga's framework for addressing meaning, values, and psychoemotional concerns through education, and physical and mental based practices were highlighted. A process to support active participation by the people in the group to provide greater meaning to the program was discussed.

TITLE: Impact of a Medical Home Dietitian/Nutritionist on Health Outcomes in Adults with Diabetes: Retrospective Cohort Study Design

AUTHORS: Cucinotta, K.

BACKGROUND: The patient-centered medical home (PCMH) is a care delivery model built around patient-centered, team-based care, care coordination and management. Teams can include physicians, nurses, mental health professionals, pharmacists, and allied health professionals such as dietitian/nutritionists. Strong evidence shows that medical nutrition therapy provided by a credentialed nutritionist results in significant improvements in outcomes related to diabetes. Currently, there is minimal evidence that specifically investigates the direct effects of a nutritionist within the PCMH on diabetes-related health outcomes.

OBJECTIVES: The purpose of this study is to compare the diabetes-related health outcomes in adult patients within a single primary care site before and after inclusion of a registered dietitian nutritionist (RDN) in a medical home model.

METHODS: A chart review of 100 randomly selected patients meeting inclusion criteria will be conducted. Inclusion criteria are a hemoglobin A1c (HgbA1c) level of >9% in adults ages 18-75 as well as a referral to a dietitian/nutritionist. This clinical criterion is a PCMH outcome measure that is directly related to nutrition therapy by a dietitian/nutritionist. The two cohorts used for comparison will be determined by the implementation of the RDN within the medical home—the "pre-RDN" cohort will include 50 randomly selected charts meeting inclusion criteria reviewed from the 12 months prior to implementation; the "post-RDN" cohort will include 50 randomly selected charts meeting inclusion criteria reviewed from the 12 months following implementation. Variables collected from the chart review will include the total number of visits to each practitioner within the primary care center; number of visits with a dietitian/nutritionist; all recorded HgbA1c, fasting blood glucose (FBG) and lipid laboratory values, blood pressure (BP) readings, medications, anthropometrics and body composition measurements within the 12-month timeframes. The primary outcome will be changes in HgbA1c. Secondary outcomes will be changes in FBG, lipids, BP, and body measurements. To compare baseline characteristics of the two cohorts, t tests and chi-squared tests will be used. Paired t tests will be calculated to assess the mean change in collected data. Statistical significance will be set at $p < 0.05$.

DISCUSSION: This retrospective cohort study will examine the impact of a dietitian/nutritionist in a PCMH on HgbA1c and secondary metabolic health outcomes in adult patients with diabetes. Adding to the current body of research may encourage other primary care clinics to include a dietitian/nutritionist in a medical home model, which can improve the health of patients and reduce healthcare cost burden.

Case Reports

TITLE: Irritable Bowel Syndrome and Depression: A Case Report Utilizing an Integrative Approach

AUTHORS: Baughman, J., Ambrogio, J., Motevalli, M.

BACKGROUND: Irritable bowel syndrome (IBS) is the most prevalent functional gastrointestinal diagnosis with a worldwide prevalence of 14%. IBS is characterized by bloating, diarrhea, constipation, and abdominal pain, and often presents with depression and anxiety comorbidities. The pathophysiology of IBS is often multifaceted and can involve factors such as psychological stress, intestinal infections, food allergies, and carbohydrate malabsorption, as well as intestinal immune-related inflammation and disruption. Small intestine bacterial overgrowth (SIBO) and IBS share a myriad of symptoms; and a recent meta-analysis found that the prevalence of SIBO in IBS patients was 31%. Evidence suggests that the association of IBS and psychiatric disorders may be related to inflammation present in the GI tract and the relative increase of cytokines which cause oxidative stress that leads to damage in the hippocampus and amygdala. Interleukin 6 (IL-6) and tumor necrosis factor alpha (TNF-a), in particular, have been shown to play a role in the pathophysiology of IBS and depression.

CASE DESCRIPTION: A 26-year-old White woman presented with a two-year history of concomitant depression, anxiety, and irritable bowel syndrome, constipation subtype, gas/bloating (IBS-C). Past evaluations had been limited to one visit to a healthcare clinic in Mexico where a healthcare practitioner clinically diagnosed IBS-C in August of 2015. The patient reported no prior health issues. Between August and November of 2015, the patient developed worsening bowel irregularities, persistent depression and generalized anxiety. The patient opted not to treat with conventional medication and was referred for nutritional care in November of 2017. Nutritional care included a low fermentable oligosaccharides, disaccharides, monosaccharides, and polyols (FODMAP) and Autoimmune Protocol (AIP) diet, multivitamin-mineral, magnesium supplementation, kiwi fruit and probiotic rich sauerkraut. These interventions targeted dysbiosis, SIBO, possible nutrient deficiencies, and aimed to ease constipation and eliminate common food allergens. The patient presented with the predominant pattern of Liver-Spleen disharmony per Traditional Chinese Medicine, treated with Si Ni San and Bao He Wan. Throughout one year of treatment the patient gradually reached full remission of all previous complaints

CASE CONCLUSION: Chinese herbal medicine combined with dietary and nutritional intervention may effectively treat the common comorbidity of IBS, depression and anxiety, in the clinical setting.

TITLE: Utilizing a Functional Nutrition Detoxification Protocol with a 55- year-old Female during Menopause for Weight-loss Resistance: A Case Report

AUTHORS: Dragone, D.

BACKGROUND: Research surrounding specific dietary therapies for weight-loss resistance is limited. Adipose tissue acts as a reservoir for toxins to protect other tissues and organs from toxin exposure; therefore adipocytes are the main site for the accumulation of lipophilic toxins. Resistance to weight-loss is associated with higher toxin burden and inadequate detoxification. Additionally, menopause is associated with hormonal fluctuations which can lead to a redistribution of adipose tissue to the abdominal area, a common site for lipophilic toxin storage. One therapeutic approach is a functional nutrition detoxification protocol that supports biotransformation pathways and elimination of toxins by emphasizing specific micronutrient and macronutrient intake and targeted botanical supplementation. This case report includes the findings of a functional nutrition protocol using The Institute of Functional Medicine Detox Diet (IFMDD) for improved hormone balance and toxin clearance in a 55-year old female during menopause.

CASE DESCRIPTION: A 55-year-old Caucasian female, DD, presented to her functional dietitian with a chief complaint of weight-loss resistance. Her primary goal was to lose the “stubborn 10 pounds” gained during menopause. DD has a history of hypothyroid from a nontoxic multinodular goiter for which she has been prescribed 100mcg Synthroid for the last 6 years. Prior to this consultation DD had never seen a nutritionist or dietitian and was attempting to lose weight through self-prescribed healthy eating, calorie restriction, and increasing her physical activity. DD was monitored by her primary care physician and endocrinologist as well as a chiropractor and massage therapist, regularly. Upon initial evaluation DD was advised to follow the IFMDD and to continue her current exercise protocol. To further support her micronutrient and hormone balance, a standardized extract of Lepidium peruvianum (Maca) was added to her protocol along with a multivitamin. After six weeks DD was able to lower her weight from 142 pounds to 132 pounds achieving 100% of her goal and reducing her BMI from 25.15 to 23.38.

CASE CONCLUSION: There are gaps in the research regarding dietary modifications for weight-loss resistance. However, a functional nutrition approach that supports the body’s biotransformation and elimination pathways may help to reduce lipophilic toxins stored in adipose tissue. This, in turn, may be associated with weight-loss. Nutritional detoxification should be further explored in populations experiencing weight-loss resistance, especially in those where adipose tissue has been redistributed to the abdominal area or those with elevated toxic burden.

TITLE: Targeting Mast Cell Activation in the Treatment of Sjogren's Syndrome: A Case Report

AUTHORS: Francois, N., Ford, J., Hall, R.

BACKGROUND: Background: Mast cells (MCs) are multifunctional immune cells that are implicated in the pathogenesis of inflammatory diseases, allergy and autoimmunity (Shaik et al., 2018). In MCs activation disorder, immune cells called mast cells are over-reactive and they release too many chemical mediators i.e. inflammatory molecules such as histamine, too frequently and too often resulting in a range of chronic disorders such as Sjogren's Syndrome (SS). (SS) is an autoimmune chronic inflammatory disease characterized by the malfunction and ultimate destruction of salivary and lacrimal glands due to the infiltration of immune cells (Mariette et al., 2018).

CASE DESCRIPTION: Case Description: July 6, 2020, a 30-year-old female patient presented with her Rheumatologist initial 12 year-diagnosis of SS and Raynaud's followed by subsequent Cutaneous Lupus associated with SS diagnosis. Assessment: information gathering, patient's narrative. A medical symptom questionnaire (MSQ) provided markers for client's reported severity. Integrative intake questionnaire findings: low energy levels, low strength, dry skin, dry eyes, fatigue, and extreme photosensitivity. Comprehensive lab test done on July 10, 2020. Diet instructions: strict phase 1 low-histamine diet, and to include animal-based protein in at least 2 meals per day. This case report focuses on the case of a 30-year-old woman with SS and the outcomes associated with Functional Nutrition recommendations, using an evidence-based approach to diet, supplements, and lifestyle modifications.

CASE CONCLUSION: The dietary changes were a success, the reduction in supplementation seems to be well tolerated One limitation: the treatment protocol was multifaceted. The client's symptoms were alleviated, but it is difficult to pinpoint one therapy in particular as being the source of relief. Was her relief due to the implementation of a low- histamine diet, increasing her animal-based proteins, or the nutraceuticals? Or was it due to a combination of treatments? Difficult to say. However, the strength of this case resides in the fact that the low-histamine diet and supplementations appeared to be successful in reducing and eliminating the symptoms experienced by this client. More research needs to be done in people with SS, focusing on antibody normalization, association between MCs hyperactivity and SS, and the implication of a low-histamine diet in the treatment of SS.

TITLE: The Effect of Triiodothyronine Therapy Reducing Persistent Hypothyroid Symptoms and Improving Quality of Life: A Case Study

AUTHORS: Hornaman, A., Shiloah, R.

BACKGROUND: The treatment of hypothyroid patients, when based solely on the Thyroid Stimulating Hormone (TSH) laboratory values and utilizing thyroxine (T4) treatment alone, may result in patients who have a normal TSH, but remain symptomatic. Measurement of a complete thyroid panel to optimize hormonal replacement may be of benefit.

CASE DESCRIPTION: This 45 year female, post-partial throidectomy in 2001, with a normal TSH continued to experience symptoms and a reduced quality of life. In 2008, she was prescribed Triiodothyronine (T3, Cytomel) 2.5 µg and levothyroxine sodium (Synthroid) 25 µg (increased to 50 µg in 2019). Her body mass index (BMI) was 33.8 in August 2020.

At our initial consultation her nutrition status was sufficient in protein and high in processed foods and carbohydrates. We recommended she lower her carbohydrate intake as well as focus on non-processed gluten-free food choices, designed to give her a personalized nutrition plan with choices for low carbohydrate/gluten-free foods.

A nurse practitioner ordered a complete thyroid panel to guide her hormonal therapy. The patient's Reverse T3 was 21, TSH was 1.2 and Free T4 was 1.1; thyroglobulin antibody was < 1.8 IU/ML and thyroid peroxidase AB was < 9.9 IU/ML. Her T4 medication was lowered to 25 µg per day and her T3 medication (Cytomel) was increased to 5 µg twice daily (b.i.d.). After 4 weeks the patient stated that her sleep and digestion had improved, she had lost eight pounds, and also noted an improvement in hair quality. At 6-weeks, a repeat thyroid panel showed Reverse T3 was 12 pg/mL, suggesting that the T4 reduction and increase in T3 was beneficial. Her Free T3, tested the morning of her lab draw was 3.2 pg/mL. At eight weeks, her T3 dose was increased to 7.5 µg total b.i.d. with instructions to increase to 10 µg bid after two weeks based on her quality of life (QOL).

At our follow-up on 12/3/2020 she reported a 20 pounds weight loss, improved energy, improved hair quality, and improved QOL (sleep quality and duration.) While changes in nutritional intake assisted the patient in weight loss, the change in thyroid medication based on laboratory testing and an emphasis on personalized medicine were also useful.

CASE CONCLUSION: This case demonstrates the need for personalized treatment protocols in the treatment of hypothyroidism integrating nutrition hormone replacement therapy guided by complete thyroid testing panels and other relevant laboratory studies.

TITLE: Yoga Therapy for Comorbid, Systemic Conditions of Ulcerative Colitis and Presumed Lyme Disease in 29-Year-Old Female: A Case Report

AUTHORS: J. Bell, M. Boston, M. Walters, L. White

BACKGROUND: Yoga has gained support as safe and effective interventions for conditions, like inflammatory bowel disease, where autonomic dysregulation plays a critical role; yoga-based interventions have been shown to reduce anxiety levels, increase quality of life, and reduce perceived stress levels, which may result in a decrease of disease activity. Dysautonomia can also result from infectious disease processes, as in the case of post-treatment Lyme disease syndrome. Here we report on a case in which yoga therapy is safe and effective for comorbid, systemic conditions involving autonomic dysregulation — in this case, ulcerative colitis (UC) and presumed Lyme disease.

CASE DESCRIPTION: A 29-year-old female client who wanted to "further personal healing" was seen as a yoga therapy client five times between October 2019 and May 2020. Her past medical history included diagnoses of hypothyroidism in 2003 (managed with Levothyroxine), UC in 2015, and Rocky Mountain spotted tick fever with presumed Lyme disease in 2019. Despite trying several medications to manage UC symptoms, the client had ceased all medications except Levothyroxine since May of 2019. The client presented with primary complaints of fatigue, joint pain, anxiety, and a decreased ability to participate in social activities because of diet limitations from ulcerative colitis. During treatment, the client was given various forms of asana (postures), pranayama (breathing practices), and meditation targeting her chronic fatigue, anxiety, and to promote autonomic regulation. The first three sessions focused on a vinyasa flow (moving sequence) to develop proprioceptive awareness and resiliency, specifically targeting a short, right psoas, weak lower trapezius, and weak transverse abdominis. The fourth session was a restorative yoga practice, and the final session was a short vinyasa flow, followed by a guided meditation. Homework assignments like journaling and identifying social activities independent of food were given each session to help the client make positive lifestyle changes to improve sleep and connection to others. The client was adherent to her plan of care and found improvement in her ability to socialize as well as decreased anxiety, fatigue, and joint pain as indicated by her PROMIS-29® scores.

CASE CONCLUSION: This case study supports that yoga therapy may safely and effectively support quality of life concerns in patients experiencing multiple, systemic conditions rooted in autonomic dysregulation. Because this client had complex diagnoses and outcomes were self-reported, future case studies should focus on physiological measurements like heart rate variability to confirm that self-reported improvements reflect underlying physiological changes in autonomic regulation.

TITLE: Personalized Nutrition and Lifestyle Interventions in Systemic Lupus Erythematosus: A Case Report.

AUTHORS: Kielmann, J., Pucci, L., Xydis, A.

BACKGROUND: According to the Lupus Foundation of America, Lupus is a chronic (long-term) disease that can cause inflammation and pain in any part of the body. Estimates are that 1.5 million Americans and at least 5 million people worldwide, have a form of Lupus.

CASE DESCRIPTION: A 63-year-old male with a four year history of Systemic Lupus Erythematosus (SLE) safely and successfully integrated personalized nutrition and lifestyle modifications to improve the symptomatic outcome of his SLE. Our client presented with fatigue, acid reflux, joint pain, brain fog, and skin rashes. A diet with moderate protein and energy content, but rich in vitamins, minerals (especially antioxidants), and mono/polyunsaturated fatty acids can promote a beneficial protective effect against tissue damage and suppression of inflammatory activity, in addition to helping the treatment of those comorbidities" (Klack et al., 2012). Our client safely used a variety of nutritional interventions and supplementation, including dietary improvements, omega-3 fish oils, N-acetyl cysteine (NAC), prebiotics, intermittent fasting and stress reduction. His symptoms decreased significantly or disappeared over four years of nutritional interventions.

CASE CONCLUSION: This case demonstrates the safety and potential usefulness of adjunctive therapies that may prove useful in the treatment of systemic lupus erythematosus (SLE). These include personalized nutrition, nutritional supplementation and lifestyle recommendations; integrating clinical expertise, scientific research and patient preference. Based on these preliminary results, interested healthcare stakeholders should consider further research that incorporates personalized nutrition into a complete healthcare paradigm.

TITLE: Personalized Nutrition Using Amino Acid Therapy for Mood Disorders: A Case Series

AUTHORS: Ross, K., VanNortwick, M.

BACKGROUND: The Office of Disease Prevention and Health Promotion reports that mental health disorders are one of the most "common causes of disability," affecting 18.1% of adults in the United States. Amino acids have been researched for their impact on mood regulation but remain underutilized in clinical settings. This case series examines the use of amino acid therapy for the management of mood disorders as a non-pharmacological treatment option.

CASE DESCRIPTION: Each of the three cases received a personalized amino acid therapy protocol, nutrient cofactor supplementation and diet and lifestyle recommendations. Clinical assessment questionnaires completed by the client at intervals during care were used to determine proper amino acid dosing. The first client is a 65-year-old Caucasian male presenting with elevated stress, anxiety, depression, and sleep disturbances. A marked decrease in symptoms were experienced in three months after strict adherence to the amino acid therapy and moderate adherence to the dietary and lifestyle recommendations. The second client is a 24-year-old Caucasian male presenting with concentration and memory impairment, anxiety and depression, food cravings leading to binge eating of carbohydrates, low sleep quality, and unsustainable energy. Excellent compliance with the amino acid and supplement recommendations resulted in a substantial decrease in symptoms in under four months. The third client is a 23-year-old Caucasian male presenting with depression, easy agitation while ruminating on negative thoughts, difficulty focusing and making decisions, poor memory and concentration, gaming addiction, poor sleep quality and duration, and very low energy and motivation. The client experienced considerable relief from all symptoms in under six months that began with excellent compliance to the amino acid therapy protocol and increasing adherence to the dietary and lifestyle recommendations over the course of care.

CASE CONCLUSION: The three clients presented in this case series demonstrate the potential value and effectiveness of adding amino acid therapy to dietary and lifestyle choices in the treatment and management of mood disorders. The findings are limited by the multi-intervention approach and potential placebo effect. While amino acid therapy is not widely used in a clinical setting, this therapy has shown effectiveness in our practice. Future research, including clinical trials, is warranted due to the limited current body of literature on the use of amino acid therapy. Additionally, education of health care providers and nutritionists may increase access to amino acid therapy for individuals with mood disorders.

TITLE: Innovative Therapies for Mood Disorders: A Case Report

AUTHORS: Ross, K., VanNortwick, M., Dragone, D.

BACKGROUND: Mood disorders, including depression and anxiety, are complex and multifactorial, impacting the quality of life for those suffering and making them difficult to manage for their providing health care providers. Diet, stress, medication, genetics, and the microbiome have been attributed to playing a role. Currently, prescription drugs are the first course of treatment despite the World Health Organization calling for a need to develop lifestyle interventions to manage these disorders. The use of single amino acids to impact selected neurotransmitters has demonstrated positive outcomes in the literature, however, the use of multiple amino acids, alongside personalized nutritional therapies is not well documented for mood disorders. This case report demonstrates the effective use of amino acids as an innovative therapy for the management of mood disorders.

CASE DESCRIPTION: A 26-year-old Caucasian female presented with anxiety, depression, sleep disturbances, carbohydrate cravings, and low energy. She had been diagnosed with Post Traumatic Stress Disorder (PTSD), bipolar depression II and generalized anxiety. The patient was under the care of a counselor and physician and was prescribed lamotrigine (Lamictal, 200 mg/day). With moderate success with other therapies, the patient sought nutritional counseling. A personalized nutrition intervention was created to include targeted amino acid therapy (tryptophan, glycine, L-glutamine, D-phenylalanine, L-theanine, and L-tyrosine), select nutrients (multi vitamin/mineral, zinc, vitamin C, gamma linolenic acid and magnesium) and a low-glycemic diet to be followed for 12 weeks.

CASE CONCLUSION: This case report demonstrated the use of targeted micronutrient and amino acid therapy, along with a low glycemic diet, resulted in marked improvement in all mood disorder symptoms this patient experienced. It also highlights that a comprehensive integrative approach may be a beneficial option for individuals with mood disorders.

TITLE: Yoga Therapy Intervention for Fibromyalgia: A Case Study Exploring In-person and Telehealth

AUTHORS: Ryabova, E., Alexandrescu, S., Barchine, M., Martinez, C.

BACKGROUND: Fibromyalgia (FM) affects approximately 10 million people in the U.S. and an estimated 3-6% of the world's population, primarily women. FM is a debilitating chronic disease that often coexists with chronic fatigue syndrome, irritable bowel syndrome, and certain chronic conditions such as sleep apnea, anxiety, and depression. The exact cause of this painful condition is unknown. Typical symptoms include widespread pain, fatigue, poor sleep, and tender points on the body. For people with FM, it is thought that pain sensations are abnormally processed in the spinal cord and brain. Additionally, the sympathetic nervous system (SNS) tends to be hyperactive during rest and during stress, contributing to decreased autonomic resilience in chronic pain conditions. Poor, nonrestorative sleep can also exacerbate symptoms such as extreme tiredness and reduce quality of life. Recently, there has been an increased focus on complementary therapy, particularly remote yoga therapy (telehealth), which provides a more accessible form of support to manage chronic pain and fatigue.

CASE DESCRIPTION: This case study investigates the effectiveness of a yoga therapy intervention, in-person and via telehealth, on physical and psychological wellbeing for a 28-year-old female client with FM, presenting with chronic pain in the lower back, neck, and hips. She suffers from frequent, intense migraines secondary to two concussions, digestive issues, anxiety, depression, fatigue, muscle pain and stiffness, feeling weak, and poor memory. She sought yoga therapy as an intervention and was seen for four visits, two in-person and two via telehealth. After in-person exploration of chair yoga, she was given a treatment plan with chair yoga postures to address morning stiffness and breathing practices to decrease fatigue and regulate the autonomic nervous system. During the quarantine, the client canceled appointments twice, and a follow-up revealed an FM flare-up. Meditation practices such as Yoga Nidra and loving-kindness, and restorative practice via telehealth, were provided to increase a feeling of calm, improve sleep quality, and develop self-compassion. After practicing these yoga therapy tools, the client reported a reduction in the duration of morning stiffness with modest improvement in overall wellbeing and motivation, as well as increased effort in self-care.

CASE CONCLUSION: This case study provides promise for the potential benefits of a yoga therapy program for women with fibromyalgia and the added potential of telehealth for managing chronic pain, physical and mental fatigue management during a time of social isolation and elevated stress levels.

TITLE: Laboratory Measurement of Vitamin D Levels in a Woman with Osteopenia: A Case Report

AUTHORS: Taylor, A.

BACKGROUND: Frequently, serum 25(OH) Vitamin D tests are recommended for health screening. However due to Vitamin D transport single-nucleotide polymorphisms (SNPs), serum 25(OH) serum levels may not necessarily reflect intracellular levels of Vitamin D. Intracellular measurement has been proposed because certain individuals may have reduced ability to bring Vitamin D into their cells. This case report describes the divergence in Vitamin D levels between Serum D and intracellular D in a 48-year-old Caucasian woman with osteopenia.

CASE DESCRIPTION: A female with a history of osteopenia on dual energy x-ray absorptiometry (DEXA) scan, was taking 5000 I.U. of Vitamin D3 daily for several months. The patient routinely had labwork to monitor serum Vitamin D levels; however, she was curious to know if this dose was enough for optimal intracellular function. The patient requested blood samples be sent to standard and functional labs - which use different methodologies (serum vs. intracellular). Quest Diagnostics testing showed a serum level of 25(OH)D = 54 ng/mL, considered sufficient according to standard lab ranges (>30 ng/mL). However, functional blood testing from SpectraCell Labs showed a functionally deficient intracellular level of Vitamin D = 49%. (lab range for deficiency is <60%.) 25(OH)D is not the active form of Vitamin D. Rather, 25(OH)D is primarily activated by the kidneys into the principal hormonal form 1,25(OH)2D, which is responsible for most of vitamin D's biologic actions. Through a vitamin D receptor (VDR)-mediated mechanism, 1,25 D enters and acts upon vitamin D target cells at the level of gene transcription. Standard lab tests measure 25(OH)D levels in serum, but SpectraCell's Micronutrient test (MNT) evaluates the absorption of 1,25 D via intracellular Vitamin D sufficiency for lymphocyte proliferation. The two lab measurements are not able to be meaningfully interconverted. For example, people with a cellular uptake issue such as a VDR polymorphism may have higher serum levels because they are challenged to conduct the downstream conversion and absorption. This woman had genomic testing that demonstrated impairment of enzymes associated with conversion and utilization of vitamin D.

CASE CONCLUSION: Optimal Vitamin D status is recognized as a potentially useful biomarker in disease prevention. Intracellular measurements may provide meaningful feedback to patients and clinicians about personalized dietary intake needs of Vitamin D. Additional research is needed to determine whether serum D or intracellular D testing is more useful for people with osteopenia.

Literature Reviews

TITLE: Effect of Meditation and Breathwork on Reduction of Allostatic Load in Subjects with Anxiety: A Literature Review

AUTHORS: Abbott, K.

BACKGROUND: There is growing interest in the impact of breath work and meditation on vagal tone and the potential for reduction of allostatic load in clinical populations with digestive symptoms, depression, post-traumatic stress disorder (PTSD) and anxiety. Most current research considers meditation as a supplementary therapy, or analyzes improved vagal tone across multiple populations. This review examines the neurophysiological processes mobilized during meditation as stand-alone anxiety treatment.

RESEARCH OBJECTIVES: Present an overview of current research on the reduction of allostatic load and improvement in vagal tone via meditation and breathwork in subjects with anxiety. Elucidate neurophysiological mechanisms currently understood to produce homeostasis via breathwork and meditation.

METHODS: The following databases were searched: PubMed, Google Scholar, MUIH's EBSCO and MUIH's Integrated Search. Starting point search terms included: "anxiety" or "GAD (generalizedanxiety disorder)" with "meditation" or "mindfulness." 1228+ articles were found. Subjects with conditions in addition to anxiety and literature that used self-evaluative methods and written surveys were ruled out. Added search terms included: "allostatic load", "homeostasis" and "vagal tone". The final search criteria were: "anxiety or GAD" and "meditation or mindfulness" and "vagal tone, homeostasis or allostatic load." Forty-four articles were found; three met criteria.

RESULTS: Three research papers met inclusion criteria. The first is a randomized controlled trial (RCT) indicating that subjects with GAD who completed mindfulness meditation training had a greater drop in stress-related adrenocorticotropic hormone and proimflammatory cytokines than those who did not complete meditation training. The second illustrated that subjects with GAD in a mindfulness intervention group saw a decrease in adrenocorticotropic hormone, interleukin-6, and tumor necrosis factor-alpha. The third, a literature review, noted decreased cardiac vagal tone and elevated sympathetic activity in anxious patients following meditation.

Six papers fell outside inclusion criteria due to absence of anxiety but are mentioned due to discussion of neurophysiological mechanisms at play in achieving homeostasis, including temporal transcriptome changes in energy metabolism, insulin secretion and inflammatory pathway; improving mitochondrial energy production and utilization through upregulation of ATPase; and alterations in inflammation, cell-mediated immunity, and biological aging markers.

CONCLUSIONS: There is little published research on neurophysiological mechanisms that

reduce anxiety in meditative practices. Anxiety dominates society, along with its propensity to reduce quality of life and health. The relative low cost of meditative practices, and the self-empowering aspects of developing and maintaining mindfulness, create a unique opportunity to foster eudemonic well-being. Basic scientific research and further clinical research on the physiological mechanisms through which meditation works are recommended.

TITLE: Clinical Imbalances of Neuro-Endocrine Communication Within the Eating Disordered Population: A Narrative Review and Implications for Integrative Clinical Practice

AUTHORS: Flores, A., Rothstein, S.

BACKGROUND: Common nutritional interventions for Eating Disorders (ED) focus on changes in body weight and/or Body Mass Index (BMI). Recent studies show that a focus on these measures may not translate to improved treatment efficacy. Additionally, traditional treatments have poor long-term outcomes as shown by low incidence of recovery (30%) and high relapse rates (up to 41%). This supports the relevance of exploring an integrative approach utilizing neurotransmitter and hormonal biomarkers in integrative nutritional practice to improve treatment efficacy and outcomes for ED.

RESEARCH OBJECTIVES: Summarize the current evidence on neuroendocrine imbalances in ED and evaluate hormonal and neurotransmitter dysfunction and imbalances in the ED population to inform nutritional recommendations and to improve patient care and treatment outcomes in nutritional clinical practice.

METHODS: PubMed and EBSCO databases were utilized to identify research exploring the pathophysiology of ED, specifically regarding neuroendocrine function, within the last 10 years. Search terms included "eating disorders and hormone dysfunction," "neurotransmitters and eating disorders," and "neuroendocrine and eating disorders''. The results were filtered to include clinical trials, reviews, in vivo studies and meta-analyses. Research utilizing these modalities in addition to dietary and lifestyle interventions was included. Twenty-five papers were selected for review. Exclusionary criteria included research published before the year 2010 and research with a sole focus on psychological therapies or pharmacological interventions.

RESULTS: The research review revealed clinically relevant evidence of imbalances in estrogen, ghrelin, leptin, testosterone, adiponectin, dopamine, oxytocin, serotonin, and GABA as contributing factors in the etiology and/or pathophysiology of ED. Additionally, modulation of these biomarkers, with integrative nutritional and functional care modalities can reduce ED symptoms, ED behaviors, and/or improve patient quality of life (QOL) in ED.

CONCLUSIONS: Reviewing the research, patterns of hormonal and neurotransmitter dysfunction emerge and can be connected to various signs and symptoms experienced by those with eating disorders. Additionally, clinical research showed that modulation of disrupted neuroendocrine factors through diet and lifestyle interventions improved patient symptoms, ED behavior uses, and/or QOL. Consideration of hormonal and neurotransmitter dysfunction, as well as evaluation of neuroendocrine imbalances in the eating disordered population, could translate to improved patient care and treatment outcomes in integrative nutrition clinical practice. Further research including clinical trials is needed to continue to build our understanding of neuroendocrine imbalances in ED as well as the impact of targeted integrative approaches in the ED population.

TITLE: Effects of a Low Glycemic, High Fat Diet on Female Fertility in Premenopausal Women: A Narrative Review

AUTHORS: Hamilton, L.

BACKGROUND: Infertility is estimated to impact up to 80 million females worldwide. Infertility is commonly treated with pharmaceuticals or in-vitro fertilization. The underlying mechanisms related to the female hormone imbalances that cause infertility are complex and influenced by a multitude of factors including age, lifestyle, diet, stress, body mass index, reproductive organ dysfunction, and medical conditions. There is no standard dietary or lifestyle approach for infertility in general, or infertility related to specific conditions. In some literature, a low carbohydrate, high fat diet has been suggested to improve infertility, but in other works, it is thought to induce infertility. This review seeks to find an understanding of the impact of a low carbohydrate, high fat diet plays on female infertility.

RESEARCH OBJECTIVES: This study summarizes the current literature of the underlying mechanisms related to infertility linked to female hormone imbalances, and the potential impact a low carbohydrate, high fat diet could have on those mechanisms, and ultimately on fertility.

METHODS: This narrative review of primary literature was conducted by searching PubMed and EBSCO. The search terms included “Diet and Infertility,” “Hormone Balance and Diet,” “PCOS and Low Carbohydrate Diet,” “Endometriosis and Diet,” “Hypothyroidism and Infertility”, “Ketogenic Diet and Fertility,” and “Fat Soluble Vitamins and Fertility.” The papers gathered for this review discuss mechanisms of infertility; impact of a low carbohydrate, high fat diet, and the role of fat-soluble vitamins in fertility and female hormone balance. Papers discussing infertility due to age, reproductive organ dysfunction, or male reproductive dysfunction were excluded. Studies prior to 2004 were excluded. No specific comparators to the low carbohydrate, high fat diet were used.

RESULTS: Forty-four total papers were reviewed, including 15 papers on fat-soluble vitamins, 9 papers on polycystic ovarian syndrome (PCOS), 7 papers on endometriosis, 8 papers on hypothyroidism, and 5 papers on high fat diets and fertility in female mice. The overall availability of papers and quality of research specifically relating to diet and fertility was low. However, the pathological mechanisms discussed in studies on PCOS and thyroid dysfunction suggest blood glucose dysregulation and insulin resistance as culprits of infertility.

CONCLUSIONS: The findings suggest that a better understanding of the role a low carbohydrate, high fat diet plays in female fertility would be useful to future research and practice as there is a necessity for a non-pharmacological, non-invasive approach to infertility. Improving insulin action was shown to have a positive impact on fertility, but further research is required.

TITLE: Non-Specific Topical Application of Bitter Herbs: a Narrative Review

AUTHORS: Emery, S.

BACKGROUND: Historically, bitter herbs have been used orally as digestive tonics. This biological action is mediated through the Type 2 Receptor (T2R) and has been identified as the bitter taste receptor. The T2R, however, is not limited to oral and digestive applications. T2Rs can be found in extraoral systems and the interaction with bitter compounds within each system will carry out varying biological functions. With T2Rs being abundant on skin cells throughout the body, an understanding of the clinical uses of topical application of bitters on the skin could provide a basis for novel therapeutic and cosmetic applications for bitter herbs as well as provide a basis for further research to better understand the dermal T2R function.

RESEARCH OBJECTIVES: Summarize the current evidence on dermal T2Rs and the clinical outcomes resulting from topical application of bitters.

METHODS: PubMed was searched; search terms included “extraoral T2R”, “bitter T2R”, "topical bitter herb", “bitter skin”, “herbal bitters skin”. Additional papers were located through reference lists from previously identified articles.

RESULTS: Twenty-nine papers were reviewed (in vitro: 13; narrative reviews: 6; systematic reviews: 2; double-blind RCT: 2; mixed (in vitro/human RCT): 5; observational: 1). Three studies show that T2Rs are abundantly distributed across the skin, with some variance, regardless of age, sex, or location on the skin, and are expressed by bitter constituents. Thirteen of the 29 studies reviewed showed clinically significant results from the topical application of topically applied bitter herbs or constituents: Anti-aging – 10, anti-wrinkle – 8, infections or wound healing – 7, Acne reducing - 2. Proposed mechanisms of actions for these results are varied but include: anti-inflammatory - 14, improvement of the extracellular matrix - 14, antioxidant – 9, antimicrobial: 8

CONCLUSIONS: Topically applied bitter herbs act on skin cells in clinically significant ways to improve the form and function of the skin. These actions could be beneficial in the direct or supportive treatment of various skin disorders to include psoriasis, eczema, and acne vulgaris. Cosmetically, topical bitters could be beneficial in sunscreen, sun damage repair, anti-wrinkle, and anti-aging formulations. Future research should continue to develop a better understanding of the mechanism of action for topically applied bitters, including the action of dermal T2Rs, to better inform the clinical application of topical bitters.

TITLE: Yoga Therapy Practices for Chronic Pain and Mental Health: Literature Review

AUTHORS: Vázquez, L.

BACKGROUND: Chronic pain (CP) and mental health (MH) comorbidities increasingly impact many U.S. adult populations. Yoga therapy (YT) is a budding field, providing a bio-psycho-socio-spiritual (BPSS) perspective and delivering novel ways to address comorbid CP and MH conditions. The effects of YT on the autonomic nervous system (ANS) suggest ways YT may address these inter-related CP and MH conditions. Additionally, YT offers tools for interoceptive learning and existential inquiry to describe and autonomously engage with participants' relationship to their pain, mood, and environment.

RESEARCH OBJECTIVES: Investigating the effects of YT practices through a BPSS lens within adult populations experiencing CP and MH difficulties to 1) explore potential interconnected mechanisms between CP and MH and 2) examine YT as a noteworthy intervention to address these processes and improve these comorbid conditions.

METHODS: PubMed and Google Scholar were searched avoiding redundancy. The search terms were: "yoga", "mindfulness", "fibromyalgia", "chronic pain", "mental health", "mood-regulation", "trauma", and "anxiety". All included papers contained at least two of the 8 search terms (yoga and trauma); no other selection criteria were used except for study length of at least 4 weeks of treatment doing yoga at least once per week for at least one hour.

RESULTS: Eleven papers were included in the review. The study durations ranged from 4 weeks to 15 months. In some cases, the sample size was not stated. Six studies included at least one of the following specific practices: asana, pranayama, meditation, and methods for managing states of awareness. Common mechanisms for helping with CP and MH conditions included: regulation of the ANS, decrease in allostatic load, an effect on neurotransmitters such as GABA, and mood regulation. Yoga includes both top-down and bottom-up processes explaining these effects on the physiological systems and mood. Yoga was found to be a beneficial ancillary treatment option for patients with depressive disorders and individuals with self-reported depression. There is also growing evidence for the benefit of yoga for CP conditions, including fibromyalgia.

CONCLUSIONS: The review of the literature provided connections between the pathophysiological mechanisms involved in CP and MH and the physiological effects of YT. YT is thus useful to study as a beneficial practice for comorbid CP and MH conditions. Better quality research would include clearer and more systematic documentation of practices and long-term follow-up of participants.

TITLE: Exploring the Anti-inflammatory Effects and Potential Therapeutic Implications of Dietary Flavonoids in Respiratory Diseases: A Literature Review

AUTHORS: Vazquez, L.

BACKGROUND: Respiratory diseases are among the world's leading causes of mortality. Researchers point to chronic inflammation, often driven by oxidative stress, as a key factor in the development of respiratory conditions (e.g., Chronic obstructive pulmonary disease (COPD), asthma, influenza, and coronaviruses). While pharmacological therapy has emerged to target most symptoms of respiratory illnesses, the literature suggests nutritional interventions could help improve outcomes. Flavonoids, polyphenolic compounds found in fruits, vegetables, teas, red wine, and seeds, have been characterized by their potent anti-inflammatory properties. Quercetin, resveratrol, curcumin, catechins, and sulforaphane are examples of powerful flavonoids with antioxidant and anti-inflammatory functions. This review describes the common mechanisms by which these compounds may reduce inflammation in respiratory diseases.

RESEARCH OBJECTIVES: Review the potential anti-inflammatory therapeutic benefits of dietary flavonoids in respiratory conditions.

METHODS: PubMed and Google Scholar databases were searched; full-text articles were selected (35); studies published within the last 10 years met criteria; animal and human research, in vitro, in vivo, and systematic reviews describing inflammatory biomarkers were chosen; search terms included "flavonoids", "quercetin", "curcumin", "resveratrol", "catechins", "sulforaphane", "respiratory disease", and "coronaviruses". Additional research papers were gathered through the references list from previously identified studies.

RESULTS: Individuals diagnosed with COPD, asthma, influenza, or coronaviruses, show increased levels of inflammatory cytokines. In experimental models, flavonoids appeared to help suppress the activation of pro-inflammatory cytokines like C-reactive protein (CRP), Tumor necrosis factor (TNF-), Interleukin 6 (IL-6), and Interleukin 8 (IL-8). Promising dietary compounds with anti-inflammatory effects include quercetin, resveratrol, curcumin, sulforaphane, and green tea catechins. Although their mechanisms of action vary, there is evidence of each reducing oxidative stress and the expression of inflammatory cytokines in the lung epithelial cells. There is also evidence suggesting flavonoids may help block the Signal transducer and activator of transcription 3 (STAT3) pathway present in Coronavirus disease of 2019 (COVID-19).

CONCLUSIONS: The literature suggests anti-inflammatory mechanisms of action of dietary flavonoids may be due to their role in inhibiting oxidative stress or inducing adaptive cellular stress response pathways. Aside from green tea catechins, there is limited data linking doses of the specific flavonoids to therapeutic outcomes. However, in some cases, the literature indicates dietary flavonoids likely have sufficient bioavailability for statistically significant therapeutic impacts in the inflammatory responses of respiratory diseases. Future research to clarify dosing, bioavailability, and impact of specific flavonoids would be valuable to inform

clinical applicability. With the existing research, the takeaway is that flavonoid-rich diets may have the potential of reducing inflammation in patients with respiratory diseases.

TITLE: Effect of Yoga on the Immune System in a Healthy Population: Literature Review

AUTHORS: Riley, Y.

BACKGROUND: There are many potential physical and mental health stressors that have been brought on by the COVID-19 pandemic environment and are exacerbated by social distancing measures, which can create a sense of social isolation, resulting in negative psychophysiological health effects. In addition to the respiratory and other physiological effects of COVID-19, stress caused by social distancing can perpetuate fear and anxiety, especially for those with compromised immune systems or at high risk for comorbidities. Promoting health of the immune system, through mind-body techniques such as yoga, may be important to address both the physiological and psychosocial stressors brought on by COVID-19 and living in a pandemic-controlled environment.

RESEARCH OBJECTIVES: Explore the potential effects of yoga for helping with the physical, psychological, and social concerns of the COVID-19 pandemic. This includes a review of the literature to examine the potential effects of yoga practices on immune health, inflammation, stress, and anxiety.

METHODS: PubMed was searched using the terms “yoga,” “pranayama,” “breathing,” “meditation,” “mind-body therapies,” “immune,” “inflammation,” and “inflammatory markers” in either title or abstract. The search was filtered with the condition of full-text availability, randomized controlled trial, and publication date of the last ten years, and 44 studies were found. After excluding the studies focusing on active illness or other interventions, such as Tai Chi, 11 studies were found to be relevant and selected.

RESULTS: The studies covered a wide range of interventions, from a single 20-minute session of breathing technique to 12-week long weekly yoga classes integrating asana, pranayama, and meditation. The most commonly measured inflammatory markers were interleukin (IL-) cytokines, tumor necrosis factor receptors (TNF), and C reactive proteins (CRP). Six out of nine studies including interleukin cytokines demonstrated a positive effect on one or more types of interleukins. Likewise, seven studies showed decreased TNF, and one study found the reduced CRP, although eight studies could not identify a significant effect on one or more of these markers.

CONCLUSIONS: The consolidation of data supports the notion that yoga may positively affect inflammatory markers in non-clinical conditions. These practices were found to benefit healthy populations, as well as the populations confronting a significant life stressor, including breast cancer survivors and dementia caregivers. Future research should use larger sample sizes and more diverse populations to explore the intervention’s mechanism of action on the immune system and the particular segment of the intervention (asana, pranayama, or meditation) influencing the outcomes.

TITLE: Role of the Mycobiome in Human Homeostasis: A Review of the Literature

AUTHORS: Titchenal, J.

BACKGROUND: In the past decade, research on the microbiome has demonstrated that it plays a significant role in health and disease. The microbiome is composed of bacteria, fungi, viruses, and parasites. The mycobiome is the fungal community found in the microbiome. The role and diversity of the mycobiome in human health and disease is not yet well understood, but interest is growing in how various fungal strains might influence homeostasis. Research to date has focused mostly on how fungi influence disease states, but little work has been done to understand how fungi interact with other microbes and contribute to health, immune function, metabolism, and the clinical implications and applications.

RESEARCH OBJECTIVES: The objective of the review is to summarize the current research on the role of the mycobiome in human homeostasis.

METHODS: A search of the current research was conducted using EBSCO, PubMed, and Google Scholar. Search terms included “mycobiome”, “mycobiota”, “fungi”, “commensal fungi”, and “homeostasis.” Additional papers were found through reference lists from previously identified articles. Exclusion criteria included research on pathogenic fungi and fungi in soil. Fifty-seven papers were originally considered; 26 papers were included in the final review.

RESULTS: The findings of this review suggest up to 13% of an adult’s gut microbial volume is fungi. There is low diversity and less stability in the mycobiome compared to the microbiome. The mycobiome may be susceptible to environmental and dietary factors such as seasonality, culture, consumption of carbohydrates, and consumption of fats. With advances in technology, researchers can now identify more fungal strains with better consistency; however, data does not yet exist on the function and role of various non-pathogenic fungal strains in the microbiome. Research on the mycobiome is still in its infancy and clinical research on the role of mycobiome on human homeostasis throughout the life cycle is currently lacking.

CONCLUSIONS: Although research on the role of the mycobiome in human homeostasis is still in the early stages, findings suggest the composition of the mycobiome is subject to diet and lifestyle factors. Future research should explore how diet and lifestyle factors can modulate the mycobiome and improve homeostasis, development of diagnostic tools, and identifying the interplay between the mycobiome, microbiome and virome.

TITLE: Effect of Hatha Yoga on Factors that Reduce Fall Risk in Older Adults

AUTHORS: Chiariello, C.

BACKGROUND: Hatha yoga interventions have been reported to improve physical function in older adults. Falls are a serious cause for injury in older adults, and fear of falling affects quality of life. Changes in gait, balance, and mobility are physiological factors that contribute to fall risk.

RESEARCH OBJECTIVES: Summarize research on whether yoga is an effective intervention to improve gait, balance, and mobility in older adults.

METHODS: PubMed and Google scholar databases were searched with the following terms: “Older adults”, “Yoga”, “Balance”, “Mobility”, “Walking program”, “Postural control”, “Gait”, “Mind-Body exercise”, “Aging”. The search terms “yoga”, “older adults”, “mobility” generated the most articles on google scholar (20,700), and on pub med (79). Trials with a control were prioritized. Five articles were selected that answered the relevant components of the research question and used pre- and post-tests of physical function.

RESULTS: The studies varied in sample size, frequency, and duration of the yoga interventions, but yielded similar results. In one study that had a control group, 135 people between the ages of 65-85 participated, and assessors of physical functions and data analysts were blinded to the intervention, control and waitlist groups. All studies reviewed used pre-and post-tests of physical function such as the Berg balance scale; ‘Timed up and go test’, gait speed and stride length, and flexibility tests. On post-tests, the subjects in the yoga intervention groups showed statistically significant improvements in balance, flexibility and gait. One study was found comparing yoga intervention with a walking control group that showed improvements in yoga intervention were greater than in other types of exercise programs. Improvements in balance and flexibility tests appear directly related to the intervention. However, when measuring improvements in gait speed, the interventions were not directly related.

CONCLUSIONS: Hatha yoga, when compared with a walking control group, is safe and appears to be an effective intervention to improve fall risk in older adults by improving balance, mobility, flexibility, and gait. Subjects in the reviewed studies practiced a minimum of 90 minutes a week and logged shorter sessions of at-home practice. There was a positive correlation between those who practiced more frequently with the greatest improvements in balance and gait. More research should be done to compare yoga to active control groups and to compare intervention groups of varying frequency and duration in order to establish guidelines for effectiveness. Additionally, post-study follow up would provide information about whether the effects are sustained over time.

TITLE: Therapeutic Potential of Medicinal Culinary Herbs as Biofilm Disrupters in Lyme Disease: A Literature Review

AUTHORS: Shin, N.

BACKGROUND: Biofilm formation of Borrelia burgdorferi and Lyme disease (LD) co-pathogens contribute to disease intractability, debility, and antibiotic resistance. LD complementary therapies have used extracts of medicinal culinary herbs and their secondary metabolites (MCHSM); some demonstrating biofilm disruption (BD). The following MCHSM have been linked with BD in LD (BDLD): Cinnamomum spp. (Cinnamon)- cinnamaldehyde; Syzgium aromatica (Clove)- eugenol, carvracrol; Allium sativum (Garlic):-allicin; Zingiber officinale (Ginger)- zingiberenes; Oreganum vulgare (Oregano)- carvracol.
Herbal therapy for LD has a long history, however, applying MCHSM as dietary whole herbs (DWH), therapeutically dosed to treat BDLD has been unexplored. Examples of DHW impacting BD in other infections may provide theoretical precedence. This review will evaluate the existing literature on MCHSM and its potential for DWH applications in BDLD.

RESEARCH OBJECTIVES: To explore if there is potential for dietary consumption of MCHSM to disrupt or prevent biofilm in LD.

METHODS: Preliminary review of the literature in PubMed, EBSCO, Google Scholar, Cochrane was conducted, including in-vivo/in-vitro studies, human/animal, literature reviews, randomized controlled trials, and case reports. Search terms included: B.bugdorferi, Lyme Disease, chronic Lyme Disease, persister cells, antimicrobial, biofilms, biomedical, culinary herbs, medicinal, traditional and Latin names. Studies on MCHSM (Latin binomial identification) demonstrating BD in gram-negative bacteria, including B.burgdorferi were included. Excluded research included studies on co-administered biofilm disrupters and acute/comorbid cases.

RESULTS: Eighty-five out of 658 articles met the criteria on BD of MCHSM. Literature specific to MCHSM for LD, albeit limited, suggests capacity for BD in LD. Some BD mechanisms of action discussed in this review include oxidative stress/bacterial cytosis and inhibiting quorum sensing in eugenol (S.aromatica), gingerol and shagelol (Z.officinale), carvracrol (O.vulgare), cinnamaldehyde (C.spp); inhibiting ATPases, cell division, and motility (C.spp.); growth inhibition (deoxyribonucleic acid), eugenol (S.aromatica); inhibition of DNA and ribonucleic acid synthesis, enzyme activity and cell cycle (A. sativum); pH disruption eugenol (S.aromatica).

CONCLUSIONS: While research precedence exists for applying DWH as BD in infectious disease (e.g., whole herb consumption of Vaccinium marcrocarpon (Cranberry) juice, Allium sativa (Garlic) fresh, and Syzgium aromatica (Clove) bud), considerable research also discusses BD using MCHSM for B.burgdorferi and its co-pathogens. Therefore, MCHSMs containing BD-linked native bio-constituents should be considered, as DWH may potentially have BDLD too. Research investigating therapeutic ingestion of MCHSM (powder or purees of fresh whole herb) is warranted to determine therapeutic potential in BDLD.

TITLE: Sustained Ketosis as a Potential Treatment and Prevention for Alzheimer's Disease: A Literature Review

AUTHORS: McElligott, MM.

BACKGROUND: Alzheimer's disease (AD), a chronic neurodegenerative disease marked by decline in memory and cognition, affects nearly 6 million people in the United States. AD is the leading cause of dementia and is increasing worldwide. A need exists for efficient treatment and preventive methods in AD. Early research indicates that a Ketogenic Diet (KD) may be beneficial in AD. Ketosis can be achieved through a ketogenic diet, modified ketogenic diets, and use of medium chain triglycerides (MCT).

OBJECTIVES: The aim of this literature review is to identify current research for links between sustained ketosis using KD, medium chain triglycerides (MCTs), Beta Hydroxybuterate supplementation and Coconut Oil in the prevention and treatment of AD ranging from 2005 – 2020.

METHODS: A preliminary review of the research conducted in EBSCO and Integrative Search, combining the search terms "Alzheimer's Disease" AND "Beta Amyloid" AND "Ketones" AND "Ketosis" AND "Ketogenic Diet" OR "Low Carbohydrate Diet" AND "Medium Chain Triglyceride" AND "Beta-Hydroxybutyrate" AND "Coconut Oil" identified 230 articles, limited to full text, and peer-reviewed, resulted in 46 articles.

RESULTS: An increasing number of animal studies of short duration with some reports of weight loss, compared to clinical trials in humans are mixed in methodology, MCT oil or supplements, KD, Beta-Hydroxybuterate (BHB) and Coconut Oil. In pre-clinical studies, mice fed a KD reported positive effects of ketones on cognition, insulin levels, and amyloid β deposition. Human studies reported administration of MCT improved cognition and memory, paragraph recall, and cognitive tests when given the MCT supplement AC-1202. Numerous studies connect MCT oil with better memory recall, cognitive functioning and working memory. Studies have shown that BHB is successful as ketogenic agent and induces ketosis with little difficulty. Anecdotal evidence suggests Coconut Oil taken daily resulted in quality years.

CONCLUSIONS: Reducing dietary carbohydrates is a key to KD and could slow progression of insulin resistance in AD. Sustained ketosis achieved through modified KDs was well tolerated but has not been evaluated yet in large, randomized control trials with sufficient follow up. Accordingly, future studies are needed to examine the effectiveness of the KD, explore various KDs to delay decline in cognition and memory, and to determine nutritional adequacy of the KD long-term in AD.

Primary Research

TITLE: Interprofessional Communication in ADHD Coaching: A Qualitative Exploration

AUTHORS: Ahmann,E., Saviet,M., Fouche,R., Missenda,M., Rosier,T.

BACKGROUND: An interdisciplinary treatment approach is considered optimal for many individuals with Attention Deficit/Hyperactivity Disorder (ADHD). ADHD coaching is increasingly recognized as a useful and important component of multimodal and interdisciplinary treatment. Surprisingly, little research has directly explored the topic of interprofessional communication and collaboration in care of this population.

RESEARCH OBJECTIVES: The objective of this qualitative study was to explore ADHD coaches' experiences and perceptions of communication and collaboration with other professionals on behalf of their clients.

METHODS: The Institutional Review Board at Maryland University of Integrative Health approved this focus group study, which used a purposive convenience sample with additional snowball sampling of ADHD coaches. Recruitment occurred at an annual CHADD (Children and Adults with Attention Deficit/Hyperactivity Disorder) conference as well as through social media of the ADHD Coaches Organization. Four 90-minute focus groups were recorded and transcribed. Transcripts were analyzed by three researchers, using thematic analysis, which is an iterative method for identifying, analyzing, and reporting themes and patterns within qualitative data. Three rounds of coding led to identification of key themes.

RESULTS: A total of eighteen coaches participated in the focus groups. All participants had formal coach training as well as specialized training in working with individuals having ADHD. Ninety-five percent of participants completing the demographic survey held a formal coaching credential. Seventy-five percent had been coaching clients with ADHD for four or more years, and 56% for eight or more years. Five key themes identified in the focus group data were: characteristics of client-related communication; communication for networking, marketing, and learning; barriers and challenges impacting interprofessional communication; scope of practice/boundaries; and aspects of an emerging profession. As a related matter, coaches also reported supporting clients in preparing for appointments with other ADHD professionals.

CONCLUSIONS: This initial exploration of the topic among ADHD coaches provides unique insight into how coaches currently communicate with other professionals and factors that impact this communication. As the emerging profession of coaching is increasingly part of the standard approach to care, communication and collaboration between coaches and other professionals holds promise for providing quality, comprehensive, and coordinated multimodal care for individuals having ADHD. Further research is needed to explore approaches that optimize effective interprofessional communication and collaboration to benefit this population.

TITLE: Mixed Methods Study of A Pilot Individualized Worksite Wellness Program at a Small Integrative Health University: 1-Year Follow-Up

AUTHORS: Smith, K., Wingo, C.J., Pille, R., Barrett, C., Breon, A., Davis, K., Nault, D.

BACKGROUND: Studies demonstrate that worksite wellness programs have positive effects on employee health behaviors and can save employers money by reducing health care use and costs. One year ago, the YOU Wellness Program Study expanded upon this topic. For the last 6 months, during the global pandemic, all MUIH employees have been working from home. Of interest is: 1) whether the benefits gained by participation in the YOU Wellness program continued 1-year post-intervention. 2) Whether the YOU Wellness program affected participants' ability to cope with the stress of a pandemic and quarantine.

RESEARCH OBJECTIVES: This mixed methods quasi-experimental pilot intervention explores 1-year post-intervention outcomes of an individually tailored 12-week integrative worksite wellness pilot built around health coaching and health education principles.

METHODS: All former participants, each a healthy MUIH staff member working onsite during the intervention, were eligible to participate in the 1-year follow-up. Participants (n=15) were contacted by email to electronically fill out the same surveys used prior: the 10-item validated Perceived Stress Scale (PSS), 5-item validated World Health Organization – Five Well-being Index (WHO-5) and the 14-item mixed methods YOU Wellness Survey, designed for this study but not validated, which examined overall health and wellness, job satisfaction, productivity, morale, engagement, absenteeism and presenteeism. There was no control group.

RESULTS: Six participants completed the PSS and WHO-5 (40% response rate) and 10 completed the YOU Wellness instrument (66.66% response rate). From post-intervention to 1-year follow-up, the overall scores decreased on the PSS and WHO-5, neither were statistically significant changes. The YOU Wellness Survey showed statistically significant improvements in employment satisfaction at post (M=2.13, SD=.74) vs. 1-year (M=2.8, SD=.42; p=0.017). Participant work morale went up and work stress decreased, but again neither were significant. Ten of fifteen participants filled out the qualitative questions on the YOU Wellness Survey. They reported the program helped them focus on mental and physical health during the COVID-19 pandemic and working from home.

CONCLUSIONS: The low response rate, compared to pre- and post-intervention, may have been due to the fact 4 participants had left the University and the others were not working on site during the pandemic. Respondent burden may have caused the response rate to the PSS and WHO-5 to be lower than to the YOU Wellness Survey as the latter came first in order of filling out surveys on Survey Monkey®. YOU Wellness interventions may improve overall stress and a variety of job-related outcomes, even during stressful circumstances such as a pandemic.