

Introduction

- Schizophrenia Spectrum Disorders: group of serious mental illnesses
- Recent evidence that nutrition is a modifiable risk factor in mental disorders
- However, nutrition counselling is used infrequently in psychiatric care
- A recent scoping review identified all of the research related to the relationship between diet and psychotic symptoms

Objectives

Create an evidence-based psychoeducational nutrition tool and clinician guide. Complete an evaluation process involving clinicians and individuals with lived experience (ILE) and improve the tool and clinician guide based on feedback.

Methods

- Tool designed based on scoping review results
- Individual phone calls with 6 ILE
- Focus group with 5 psychiatrists
- Transcription of audio recording, identification of units of analysis, allocation of statements to categories, counting and interpretation
- Revision of tool and clinician guide
- Sharing of final draft with participants for comments

Results

Framework Category	Themes
Content	-appreciated recommendations on the 1 st page -more sample meals
Complexity	-appropriate complexity -make recommendations as specific and easy as possible
Structure	-appreciates interactive components -earlier motivational enhancement
Design	-appreciated overall design and plate image -add cutlery to plate, distinguish action items
Patient Centredness	-recommendations feasible -increase sensitivity to culture and financial barriers
Nutrition as a Blind Spot in Psychiatry	-lack of training, knowledge and use of nutrition counselling in psychiatric practice

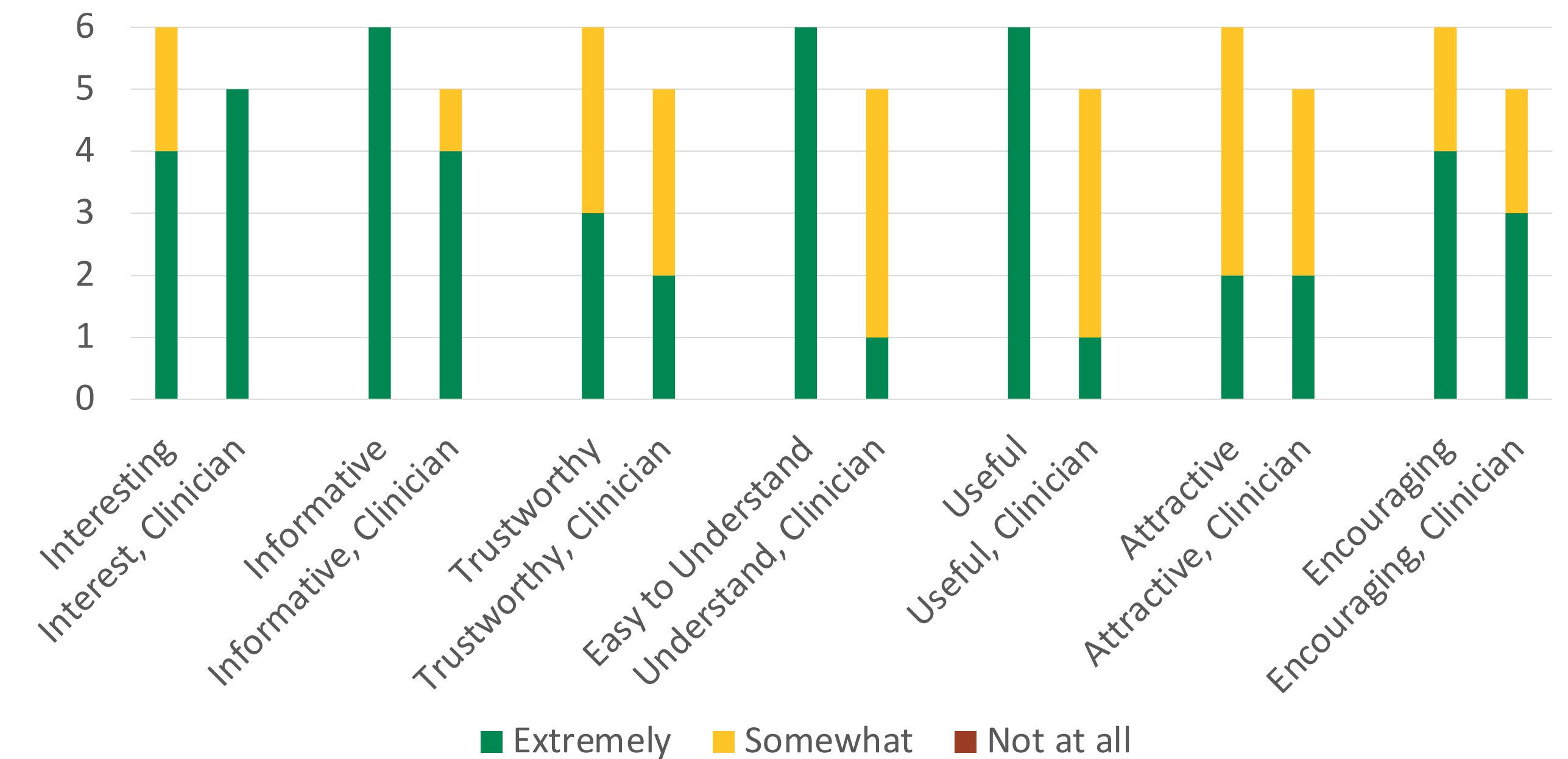



Figure 1: Responses to structured questions about the tool

Eating well for mental health


A tool to support people impacted by severe mental illness

The food we eat affects our body and mind. You can make healthier choices that will improve your health. Circle ideas that appeal to you.


Why is healthy eating important to me? _____

**Choose complex carbs**


- Whole grain bread, pita, tortilla, or pasta instead of white
- Instead of white rice, try brown rice, wild rice, quinoa, oats, millet
- Vegetables like potatoes, sweet potatoes, yams, corn, squash, cassava

**Choose healthy fats like olive oil**


- Eat fish and seafood (oysters, mussels, shrimp) at least 3 times per week
- Add nuts, seeds or avocado to meals, or enjoy as a snack
- Decrease deep fried foods (French fries, fried chicken)

**Reduce highly processed foods and sugar**



- Drink water instead of pop, juice and iced-tea
- Have cookies, cakes, muffins, ice cream, candy as a special treat, not every day

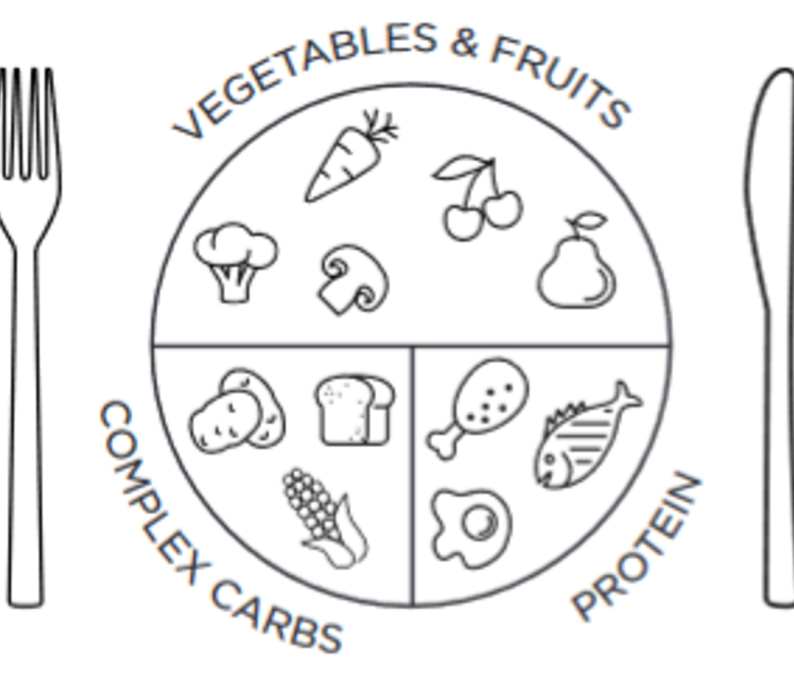
**Include vegetables & fruits with meals and snacks**

- Try to include different colours
- Add salad or veggies and dip to meals. Explore frozen and canned vegetables
- Try fruit that is fresh or frozen as a snack or dessert

**Eat protein-rich foods throughout the day**

- Try eggs, fish, seafood, chicken, turkey, beans, lentils, nuts, seeds, tofu, cheese, meats and wild game






I'm going to try / Personal example / I might like: _____

Two Day Sample Meal Plan:


	Day 1	Day 2
Breakfast	Oatmeal with nuts or seeds and berries	Eggs with whole grain toast or potatoes and fruit
Lunch	Salad with protein-rich food and healthy fat	Turkey sandwich with side of sliced cucumbers and carrots
Dinner	Whole grain pasta with tomato sauce and added ground chicken and vegetables	Brown rice stir-fry with shrimp or tofu and frozen vegetables
Snack or Dessert	Vegetable sticks with hummus or guacamole	Plain yogurt with fruit



Healthy eating doesn't need to cost more:

Tip: Shop at budget grocery stores, look for sales and stock up on non-perishable foods

Frozen vegetables and fruit	\$3-4 per bag (4 or more servings)
Canned fish and seafood (tuna, oysters, salmon, mussels, sardines)	\$1-3 per can (1 serving)
Canned beans and lentils	\$1 per can (2 servings)
Eggs	\$2-3 per dozen (6 servings)
Grains in large packages (brown rice, oats, whole grain pasta)	\$3-5 per bag (5 or more servings)
Tofu	\$3 per package (4 servings)



My goals

Habit I would like to continue: _____

Changes I would like to make: _____

Who can help me achieve these goals? _____

Preparing food for yourself and making healthy dietary choices is self-care. Small changes add up. Share this activity with others as a way to support each other and improve well-being.

Results

Revised Clinician Guide Components:

- Step-by-step guide to using the tool
- Suggestions for referral when needed
- Practical considerations and additional resources
- Supporting Evidence (Level of Evidence) and Mechanism of action for diet recommendations

Discussions

- Limitations: relatively small sample size

Conclusions

Psychiatrists and individuals with lived experience provided overall positive evaluation of a nutrition education tool and actionable suggestions for improvement.

For references or further questions, please email: maucoin@ccnm.edu

Figure 2: Revised version of the tool based on participant feedback

Diet and Anxiety: A Scoping Review

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Introduction

- Anxiety disorders: common, distressing and debilitating.
- Not all patients find adequate relief from current treatments.
- Mounting evidence: important role that nutrition plays in the development and progression of mental illnesses such as depression;
- However, less is known about the relationship between diet and anxiety.

Objectives

Systematically identify and collate all of the scientific literature on the relationship between dietary patterns and constituents, and anxiety disorders in order to identify potentially relevant nutrients, highlight gaps and opportunities for further research in this field.

Search Methods

- Followed established methods for scoping reviews
- Databases: EMBASE, MEDLINE
- Extensive search strategy
- Abstract screening completed with Abstrackr
- Study Design: human intervention/observational studies, preclinical studies, meta-analyses

Table 1: PICO framework

Population	Intervention	Outcomes
<ul style="list-style-type: none">• Human participants• Animals	<ul style="list-style-type: none">• Assessment or modification of diet pattern or constituent found in the general North American diet• Exclude: herbs, psychoactive substances	<ul style="list-style-type: none">• Incidence, recurrence or treatment of anxiety disorder• Changes in symptoms severity

Results

- Search Results: 55,914 results
- After title and abstract screening: 2,213
- After full text screening: 1,345 (interim analysis)

Figure 1. Number of studies reporting on the association between whole dietary patterns and anxiety

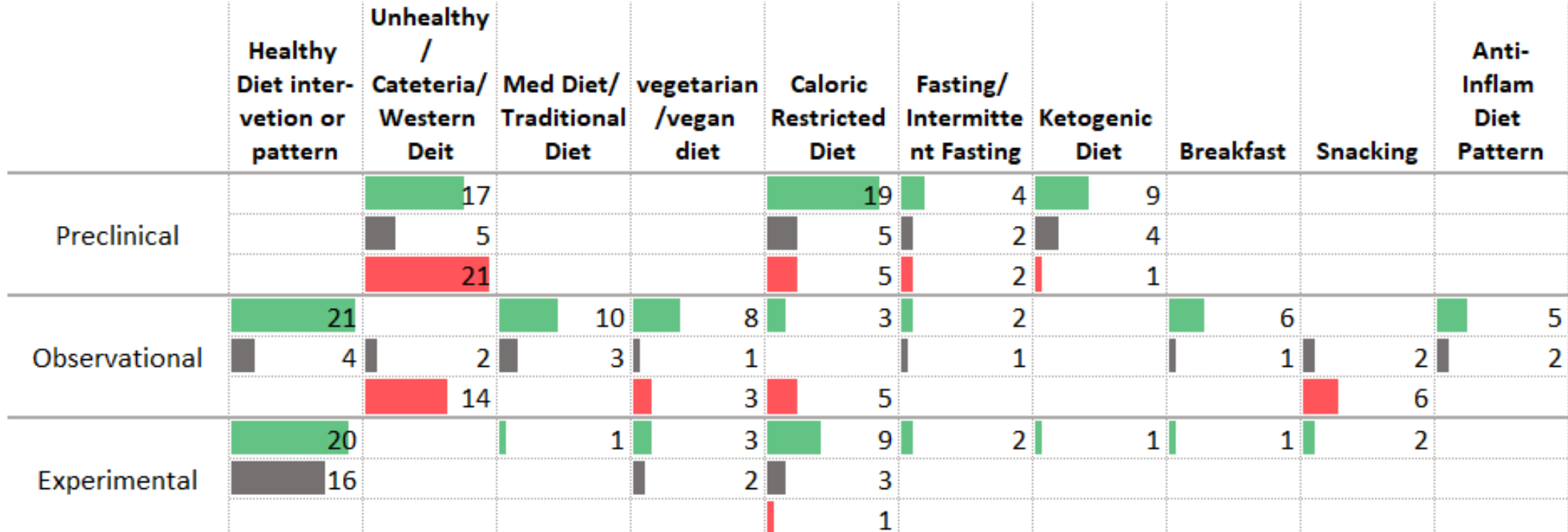


Figure 2. Number of studies reporting on the association between carbohydrates and anxiety



Figure 3. Number of studies reporting on the association between protein and anxiety

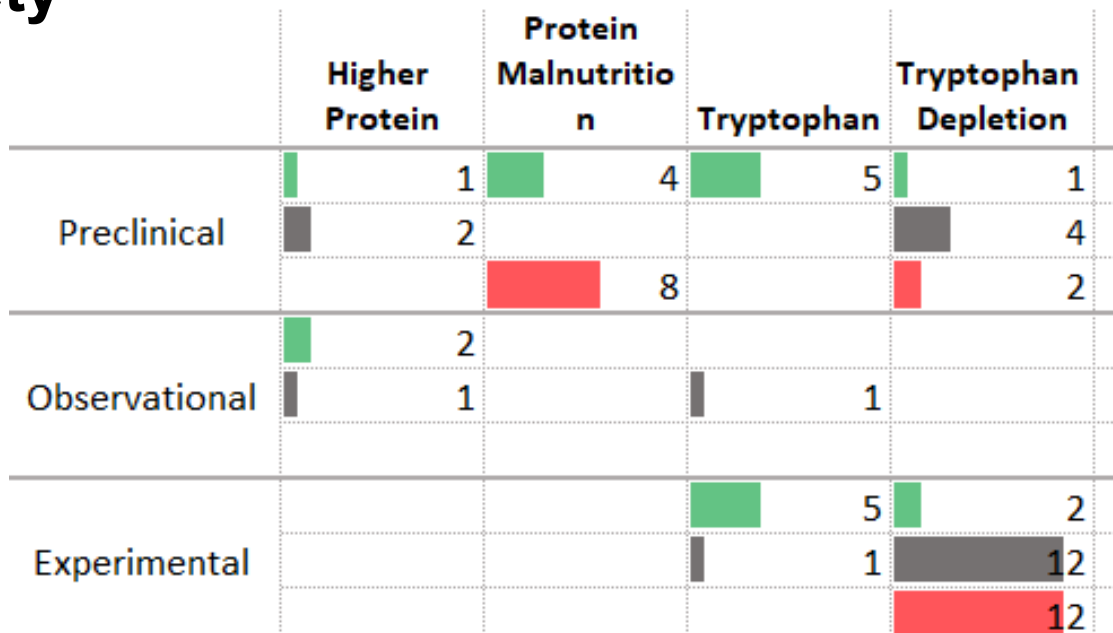
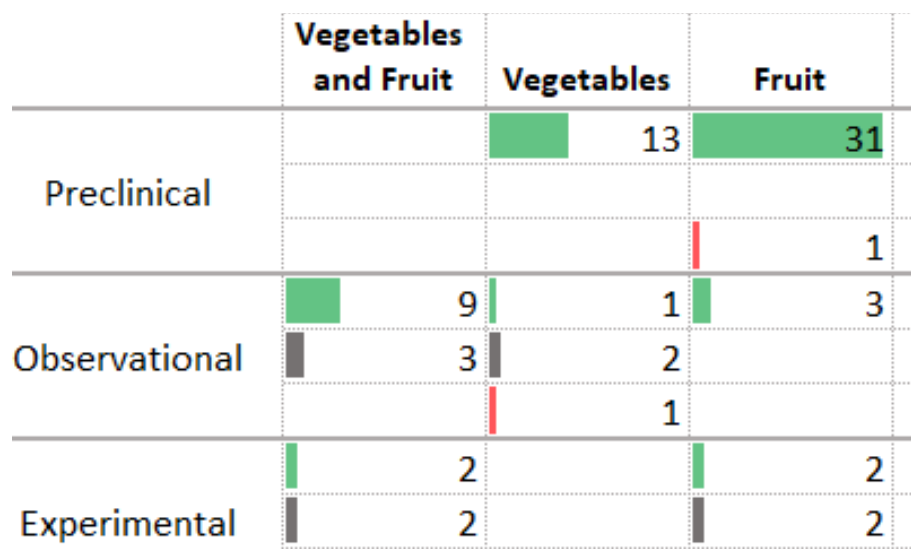


Figure 4. Number of studies reporting on the association between vegetables and fruit and anxiety



Legend:

- Higher intake or levels associated with decreased anxiety
- No association between intake or levels and anxiety
- Higher intake or levels associated with increased anxiety

Figure 5. Number of studies reporting on the association between vitamins and anxiety

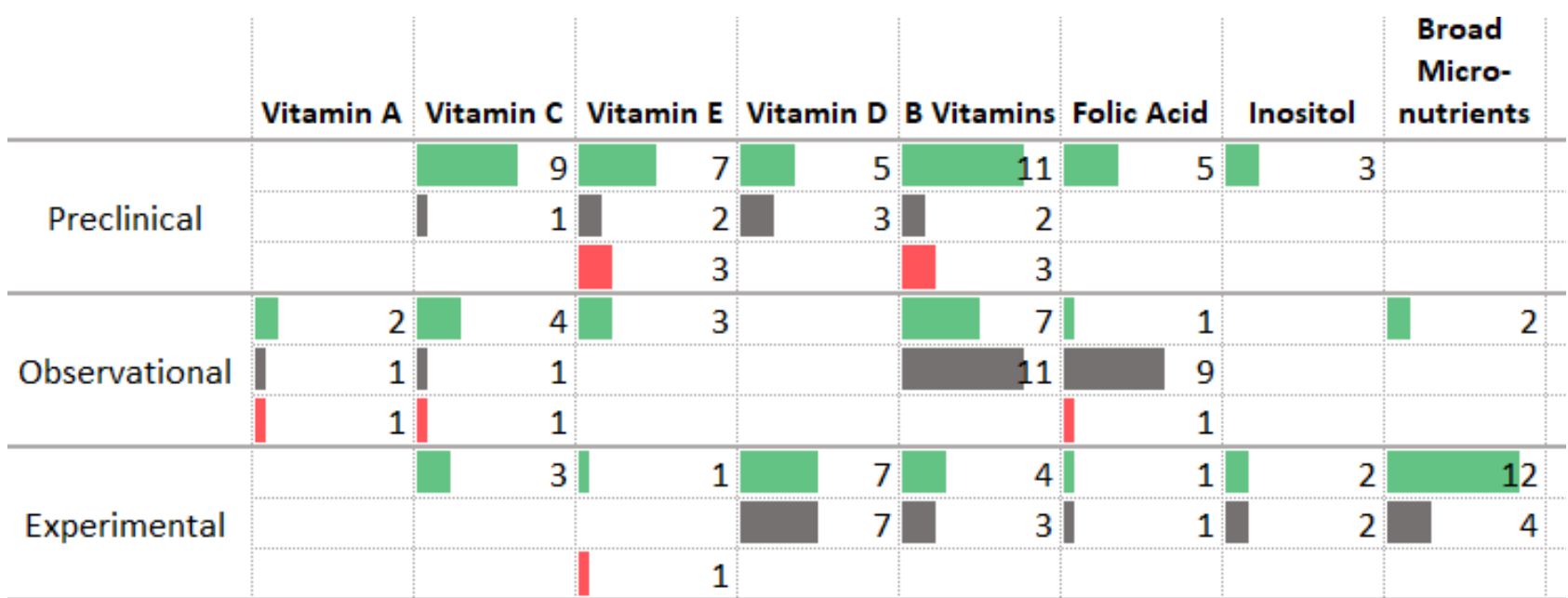


Figure 6. Number of studies reporting on the association between minerals and anxiety

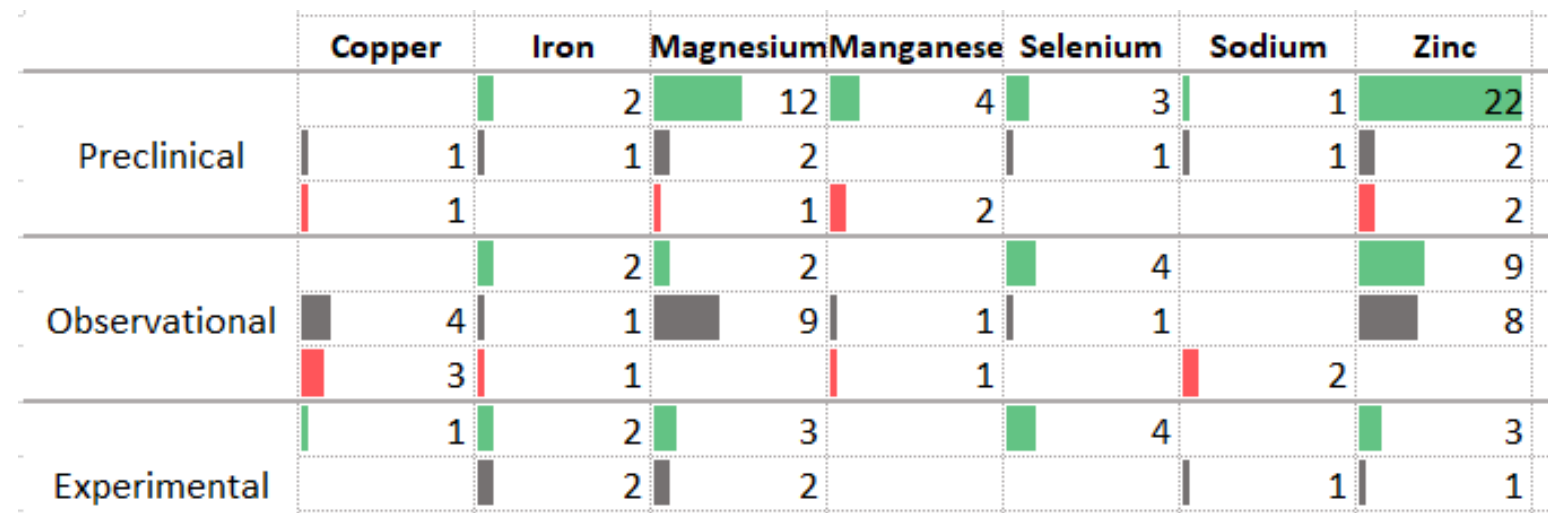
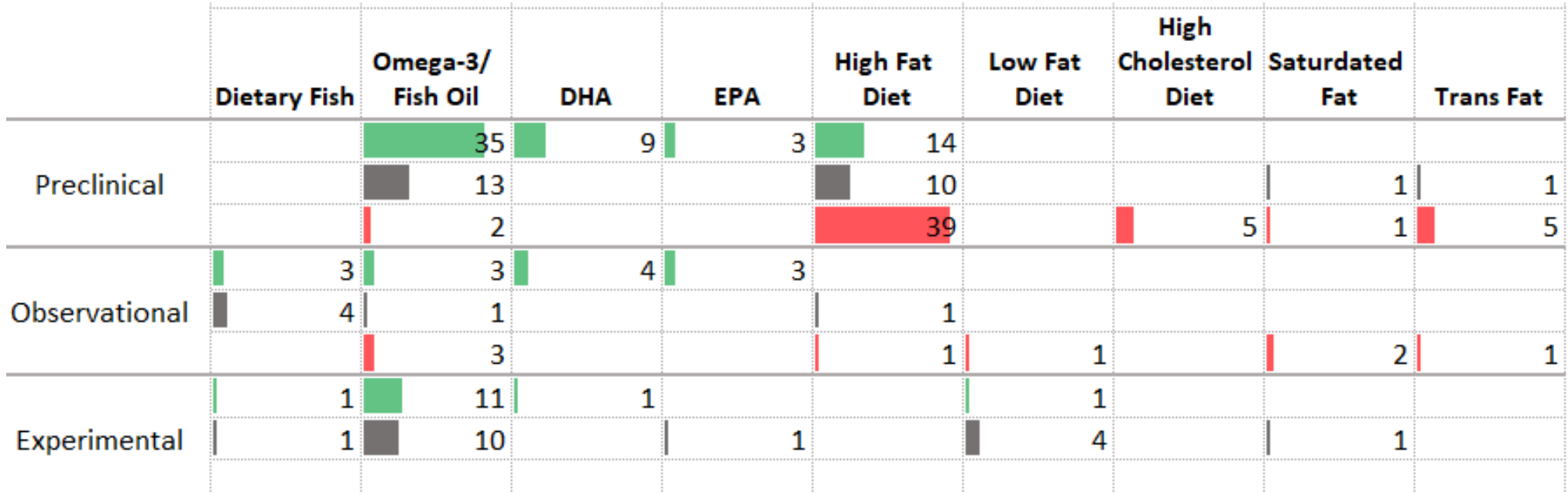


Figure 7. Number of studies reporting on the association between fats and anxiety



Discussion and Conclusions

- Possible protective effect: fruits and vegetables, omega-3 fatty acids, healthy dietary patterns, caloric restriction, breakfast consumption, ketogenic diet, broad spectrum micronutrient supplementation, zinc and selenium.
- Possible harmful effect: high fat diet, inadequate tryptophan and dietary protein, high intake of sugar and refined carbs, and unhealthy dietary patterns.
- Strengths: extensive search strategy, duplicate screening.
- Limitations/gaps: large volume of animal data, few human studies in patients with anxiety disorders.
- Possible mechanisms of action: Inflammation, micro/macronutrient deficiency.
- Next steps: Human intervention studies in patients with anxiety disorders.

For references or further questions, please email: maucoin@ccnm.edu

Naturopathic Therapies as Adjunctive Treatment for Chemotherapy-Induced Nausea and Vomiting: A Narrative Review

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Introduction

- Chemotherapy-induced nausea and vomiting (CINV) is one of the most common and debilitating adverse effects of cancer treatment; affecting up to 80% of patients undergoing chemotherapy.
- Current guidelines recommend a prophylactic polypharmacy approach; despite these well-established protocols, 50-60% of patients continue to experience CINV.
- Adverse effects have been reported from the current antiemetic regimes; constipation, headache and insomnia are the most common.
- Cause for concern:** CINV diminishes QoL, and in some instances, requires treatment delays, or most concerning, discontinuation of life-saving therapies.

Objectives

Investigate the efficacy of naturopathic therapies as adjunctive treatments to the standard pharmaceutical antiemetics, in the treatment of CINV.

Search Methods

- A search of PubMed was conducted. Search terms included a combination of chemotherapy, chemo, nausea, CINV, ginger, *Zingiber officinale*, mistletoe, *Viscum album*, acupuncture.
- Only studies of RCT, systematic reviews and meta-analysis were included.

Table 1: PICO framework

Population	Intervention	Outcomes
<ul style="list-style-type: none">Adults living with cancerUndergoing chemotherapy treatments and experiencing CINVReceiving pharmaceutical antiemetic medication	<ul style="list-style-type: none">Acupuncture involved the penetration of the skin with thin solid metallic needlesSubcutaneous injection of <i>Viscum album</i> preparationsOral <i>Zingiber officinale</i>	<ul style="list-style-type: none">Change in nausea and vomiting severity, incidence or frequency

Results

Table 2: Acupuncture

Authors	Intervention	Control	Results
Garcia et al., 2012	Acupuncture + antiemetics	Sham and/or no treatment + antiemetics	Acupuncture was more effective than antiemetics alone, and often more effective than sham.
Widgren et al., 2017	Acupuncture + antiemetics	1. Sham 2. No treatment + antiemetics	Acupuncture decreased the intensity of nausea and thus the amount of PRN antiemetics needed. Trends towards decreased frequency of CNIV.
Rithirangsriroj et al., 2014	Acupuncture + antiemetics	IV ondansetron + antiemetics	Improved control over delayed CINV. Equivalent control over acute CINV.

Table 3: *Zingiber officinale*

Authors	Intervention	Control	Results
Li et al., 2018	250mg BID + antiemetics	Placebo + antiemetics	No significant difference between groups.
Chang et al., 2019	700mg – 2g/day + antiemetics	Antiemetics +/- placebo	Acute CINV OR 0.60, delayed CINV OR 0.79.
Totmaj et al., 2019	250mg – 1.5g + antiemetics	Antiemetics	Mixed results.

Table 4: *Viscum album*

Authors	Intervention	Control	Results
Freuding et al., 2019	Mistletoe + antiemetics	Antiemetics	Mistletoe improved overall QoL.
Pelzer et al., 2018	Helixor A or Iscador M Spez + antiemetics	Antiemetics	Mistletoe was safe at 5 year follow-up. Trend towards decreased CINV, not significant.
Loef et al., 2020	Mistletoe + antiemetics	Antiemetics	CINV was improved with the use of mistletoe; SMD -0.55 (p=0.02)

Discussions

Acupuncture:

- The 1998 NIH and the 2009 SIO guidelines state acupuncture has sufficient evidence to support its use in the management of CINV.
- Additional benefits beyond CINV for improving the patient’s quality of life.

Zingiber officinale:

- Aprepitant with high dose (2g) ginger increased the severity of acute nausea in two studies but has not been reported in other studies.
- Gingers active constituents act on the same receptors as 5-HT3 receptor antagonists; concurrent use may have impacted the results.

Viscum album:

- Growing research and recognition for the use in integrative oncology; an area for more research as a multi-action complimentary therapy.

Strengths:

- Studies included were RCT, systematic reviews or meta-analysis

Limitation:

- Blinding challenges
- Research methodology flaws
- Exclusion of non-English language studies

Conclusions

There is some evidence to support the use of acupuncture as part of a comprehensive treatment plan for CINV. Ginger and Mistletoe results are inconsistent; further research is needed. Identifying effective and well-tolerated alternative antiemetic’s that may be able to replace standard pharmaceutical approaches could help reduce the adverse effects and overall drug load on people living with cancer. In addition, these therapies have evidence of additional benefits, conferring other improvements to the individual's quality of life.

Investigating Non-Pharmacological Interventions for the Treatment of Fibromyalgia related Pain: A Narrative Review

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Introduction

- Fibromyalgia is a chronic pain syndrome affecting approx., 6% of Canadians. The primary component of the diagnostic criteria is musculoskeletal pain, but other symptoms include fatigue, nonrestorative sleep, cognitive dysfunction and mood disorders.
- Current standards of care encourage non-pharmacological interventions like acupuncture, Transcutaneous Electrical Nerve Stimulation (TENS), and Cognitive Behavioural Therapy (CBT).
- Effective non-pharmacological treatment of chronic pain related to fibromyalgia may improve quality of life (QoL).

Objectives

Discuss the effectiveness of Acupuncture, TENS, and CBT on the reduction and management of chronic pain related to fibromyalgia.

Search Methods

- A search of PubMed and Medline with the terms fibromyalgia AND TENS OR Transcutaneous Electrical Nerve stimulation OR CBT OR Cognitive Behavioural Therapy OR acupuncture yielded 114 results with only 10 meeting inclusion criteria.
- The search was restricted to full text articles, Meta-Analysis with systematic reviews (MA w/ SR), randomized controlled trials (RCT), and reporting on chronic pain reduction.
- RCTs included in selected MA w/ SR and MA w/ SR that included > 50% overlapping RCTs with included MA w/ SR were excluded. Studies were also excluded if they used combination therapies or did not report findings using a point scale.

Results

Table 1. Acupuncture Results

Authors	Intervention	Comparison	Results
Deare et al. 2013	Manual acupuncture (MA) + Electro-acupuncture (EA)	Placebo or sham or waitlist	MA not significant (p= 0.48) EA significant over MA (p =0.003)
Kim et al. 2019	MA	Sham	MA significant for pain reduction (p = 0.001)and improvement in QoL (p = <0.00001)
Zhang et al. 2019	MA and EA	Sham	MA and EA had significant pain reduction post treatment (p value 0.03 and p = <0.00001) and long term was significant for MA (p = 0.005)
Langhorst et al. 2010	MA	Placebo	MA significant post-treatment (p value 0.04) but not at follow-up (p value 0.71)

Table 2. Transcutaneous Electrical Nerve Stimulation (TENS) Results

Author	Intervention	Comparison	Results
Dailey et al. 2020	Active TENS at Home	Placebo or none	TENS over placebo was significant (p=0.008) TENS over none was significant (p=<0.0001) for 6 Minute walk test improvement No change in the use of rescue pain medications
Dailey et al. 2013	Resting and active TENS	Placebo or none	No difference with Resting TENS but Active TENS was significant (p = < 0.05) Distanced pain pressure sites saw improvement (p = <0.05)
Salazar et al. 2017	Resting TENS	Placebo or none	No significant results (p = 0.17)

Table 3. Cognitive Behavioural Therapy (CBT) Results

Author	Intervention	Comparison	Results
Bernardy et al. 2018	In person or over the phone	No treatment or Usual care	Pain reduction significant post treatment and at follow up (p = 0.003 and p = <0.0001). No study saw improvement greater than 30%.
McCrae et al. 2019	CBT-I (insomnia) or CBT-P (Pain)	No treatment	CBT-I better than CBT-P for morning and evening pain, but both were superior to no treatment post-treatment and a 6 month follow up
Williams et al. 2010	Web CBT program	Standard Care	Web CBT has significant improvement in pain (BPI score drop >1)NNT = 5 to see a pain reduction of 30%

Discussions

Limitations

- Small study size, potential for selection or reporting bias, lack of unanimous long-term follow up, and difficulties of utilizing placebo.

Mechanism of Action:

- Chronic pain - abnormal pain processing, increased sensitivity to pain, or pain centralization
- Acupuncture – Increase local blood flow, the pain-gate theory, release of local endorphins, and/or a mesolimbic loop of analgesia (re-setting of pain pathways).
- TENS - pain-gate theory and/or the mesolimbic loop of analgesia (using cutaneous stimulation).
- CBT - therapy whereby negative or counter-intuitive thought patterns related to a specific parameter like chronic pain and pain catastrophizing are challenged and rewired.

Clinical Application

- Based on the results of the review, all three interventions would be viable for in office use, while CBT and TENS could provide at home care in addition to the clinical setting in order to address the financial and disease related barriers of access to continued in office care.

Conclusions

Larger and longer trials, and improved quality are required for statements of efficacy. Overall, CBT showed the most promise for Fibromyalgia chronic pain relief. However, more specific research on TENS and CBT for at home treatment in order to overcome accessibility barriers is warranted.

For references or further questions, please email: pweatherbee@ndnet.ccnm.edu

Vitamin C for Treating Depression in Cancer Patients: A Literature Review

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Introduction

- One in two Canadians will get a cancer diagnosis in their lifetime and one in four will experience cancer-related depression.
- The cause of depression during cancer could be related to psychological, social, inflammatory or immunological factors.
- Vitamin C may be an effective treatment for cancer patients as increased vitamin C levels may mitigate cancer-related symptoms, such as pain and fatigue.
- Vitamin C has shown to improve oxidative stress levels, adrenal function and immune function and may have a role in the treatment of cancer and depression.

Objectives

identify all studies that assessed changes in depression symptom severity in cancer patients receiving intravenous vitamin C treatment.

Search Methods

- Databases: PubMed, Medline Complete, CINAHL Plus, Web of Science, Cochrane, and PMC.
- Studies were included if they met all three criteria:
 1. Human participants with confirmed cancer (any type and stage)
 2. Intravenous vitamin C (IVC) treatment, with or without conventional treatment and with or without additional oral vitamin C dosing
 3. Assessment of depression
- Studies were excluded if they were:
 1. Preclinical studies (animal, in-vitro)
 2. Non-English publications
 3. Literature reviews and/or opinion articles

Table 1: PICO framework

Population	Intervention	Control
Patients with cancer undergoing treatment	IVC with or without additional oral supplementation	Any other intervention or no intervention

Results

Table 2: Human Studies of High-Dose Vitamin C in the Treatment of Cancer-Associated Depression

Authors, Year	Methodology	Sample size	Cancer Type(s)	Dose of Vitamin C	Outcome for Depression
Yeom 2007	Prospective Observational Study	39	Stage IV terminal cancer (estimated survival <6 months)	IV administration of 10g vitamin C twice with a 3-day interval and an oral intake of 4 g vitamin C daily for a week	Significantly increased scores in emotional function (p>0.005).
Takahashi 2012	Prospective Observational Study	60	Any cancer with malignant tumours	Initial dose 12.5-15 g; 2nd dose 25 g; 3rd dose 50 g; 4th and additional dosing was calculated to maintain serum concentrations of 350-400 mg/dL. As well, vitamin C oral intake of 2-4 g daily	There was a significant improvement in emotional function at four weeks (p>0.05)
Vollbracht 2011	Retrospective Observational Study	125	Breast cancer stages IIa-IIIb	Standard therapy + IVC (7.5 g Pascorbin once weekly)	The IVC treatment group had significantly reduced scores of depression
Bazzan 2018	Retrospective Observational Study	86 (32 IVC only; 54 IVC and chemo)	Variety of different kinds and stages	At least 5 doses of 50-150 g of IVC given over 2-3 hours	6 of the 7 patients in this study that had mood disturbances reported significant improvement and the last patient reported mood stability.

Summary

- This literature review evaluated 152 unique articles
- Four met inclusion criteria
- All four observational studies that were identified reported improvement in mood.
- All four included studies confirmed previous research into IVC reporting improvement in quality of life and improvements in pain and fatigue.



Discussions

Possible Mechanisms of Action:

- Vitamin C is vital for adrenal function, which plays a crucial role in depression via the hypothalamic-pituitary-adrenal (HPA) axis
- Vitamin C plays a role in the conversion of the amino acids tyrosine (into norepinephrine, dopamine) and tryptophan (into serotonin), which are implicated in depression

Strengths and Weaknesses

- + Use of validated questionnaires to quantify symptoms
- Three studies were retrospective; only one was controlled
- Studies lacked an assessment tool designed to capture changes in depression severity

What are the implications of this research?

- The need for future IVC research to explicitly measure depression with validated scales such as the BDI
- The need for prospective RCTs using controls and blinding

Clinical Application

- Further support for the use of IVC in treating depression
- IVC may potentially improve depression symptoms in patients with cancer by:
 - (1) upregulating synaptic serotonin and dopamine concentration
 - (2) reduce pain and fatigue which contribute to depression

Future Considerations

- Prospective clinical trials using validated assessment tools and control groups are needed to further study the potential role of this therapy in the treatment of this highly prevalent and disabling condition

Conclusions

- Cancer and depression share similar pathophysiologic characteristics, such as altered immune and adrenal function, and vitamin C may alleviate both.
- The results presented suggest that IVC could potentially have a beneficial effect on levels of depression in patients with cancer; however, more research is needed.

For references or further questions, please email: jkerner@ndnet.ccnm.edu

Evidence for *Arnica montana*’s Use in Physical Trauma: a Narrative Review

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Introduction

- Arnica montana* (Asteraceae), is commonly prescribed for trauma.
- Since herbalists, naturopaths and homœopaths use and research arnica, evidence is scattered among traditional and biomedical sources, making it difficult to assess the totality, and understand the nuances, of the evidence-base.
 - For example, proving data is not available in databases of medical research such as PubMed, but rather in homoeopathic materia medicas.
 - Case studies from 300-400 years ago are similarly not indexed in databases like PubMed.
- The purpose of this review is to aggregate the available evidence in order to form a complete understanding of the evidence base for Arnica’s use in trauma.

Objectives

- Evaluate the evidence for *Arnica*’s use in trauma
- Compare and contrast the types of data available

Search Methods

Searched PubMed for “Arnica montana”

- Studies included in this review were based on the following:
 - Trauma was studied in some form – surgeries, accidents, wound healing, etc.
 - For in vitro research, the endpoints had to have a direct application to trauma
 - For reviews, the endpoints had to be related to Arnica’s effectiveness in trauma cases
 - Abstracts and full text articles in English
 - Commentaries on previous studies

Total 446
Results

37
Included

409
Excluded

Figure 1. The number of total results in PubMed, and the number that matched the inclusion criteria.

Homoeopathic & Botanical
Materia Medicas:

- 5 materia medicas from each discipline were chosen with the following inclusion criteria:
 - Included an entry on *Arnica montana*
 - The entry had to give indications for *Arnica*
 - Could be either primary or secondary research

Homoeopathic Materia Medicas	Botanical Materia Medicas
Hahnemann’s Materia Medica Pura	King’s American Dispensatory
Hering’s Guiding Symptoms	Woodvilles’ Medical Botany
Allen’s Encyclopedia Pura	Scudder’s Specific Medication and Specific Medicines
Lippe’s Textbook of Materia Medica	Hoffmann’s Medical Herbalism
Vithoulkas’ Materia Medica Viva	Godfrey and Saunders’ Naturopathic Botanical Medicine

Table 1. The materia medicas included in this review.

Results

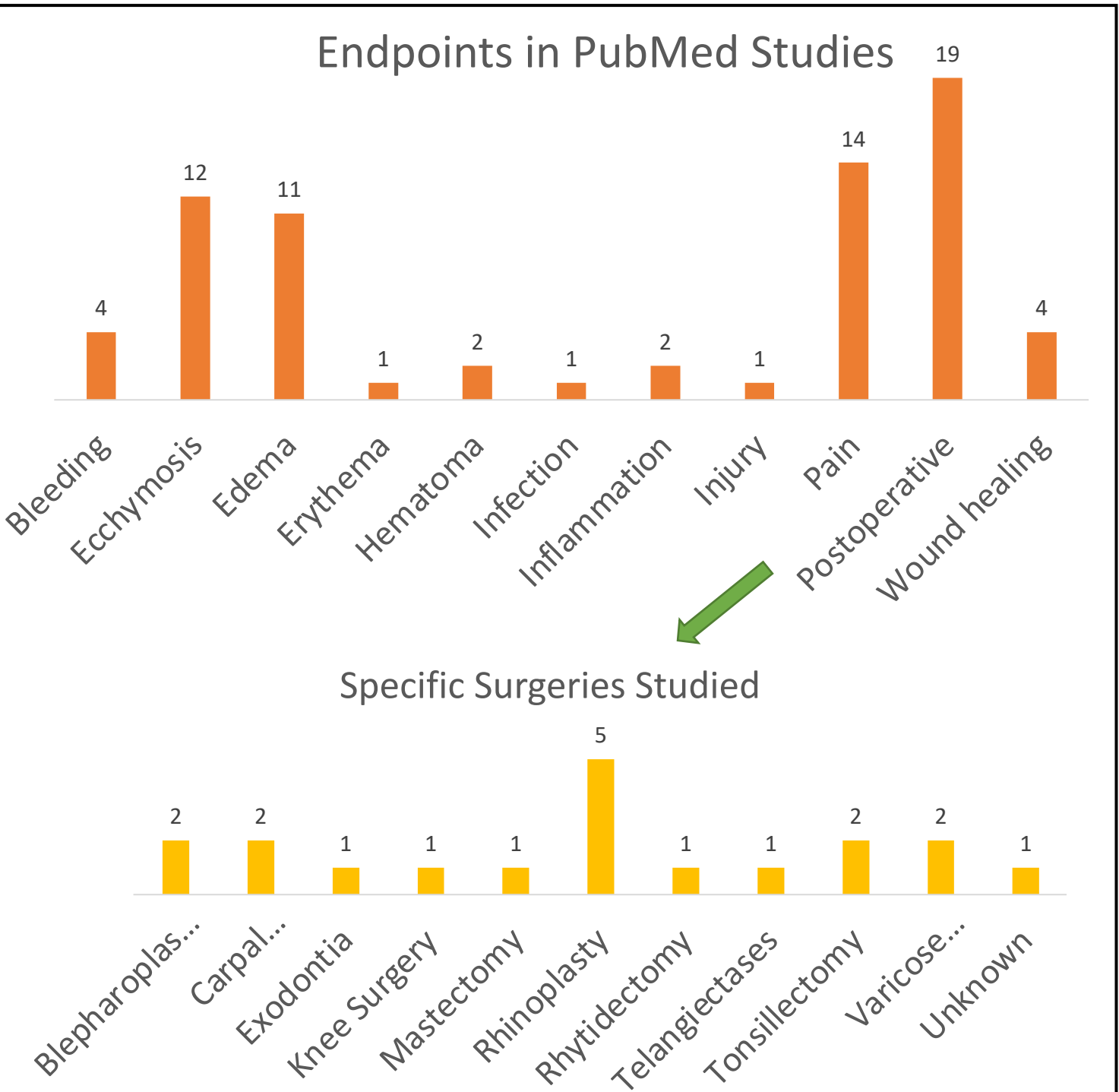


Figure 2. Number of endpoints in the 37 included studies from PubMed. Note that each study generally had multiple endpoints.

Pubmed Endpoints	Materia Medica Search Terms
Bleeding	Bleeding, bled, blood, hemorrhage, haemorrhage
Postoperative, injury, wound healing	Trauma, laceration, lacerated, cut, wound, incision, Injuries, injured, injury
Ecchymosis, hematoma	Bruise, bruising, bruised, hematoma, ecchymosis
Edema	Edema, oedema, swelling
Erythema	Erythema, red
Infection	Infection
Inflammation	Inflammation
Pain	Pain

Table 2. Endpoints from PubMed (derived from figure 1) and the corresponding Materia Medica search terms.

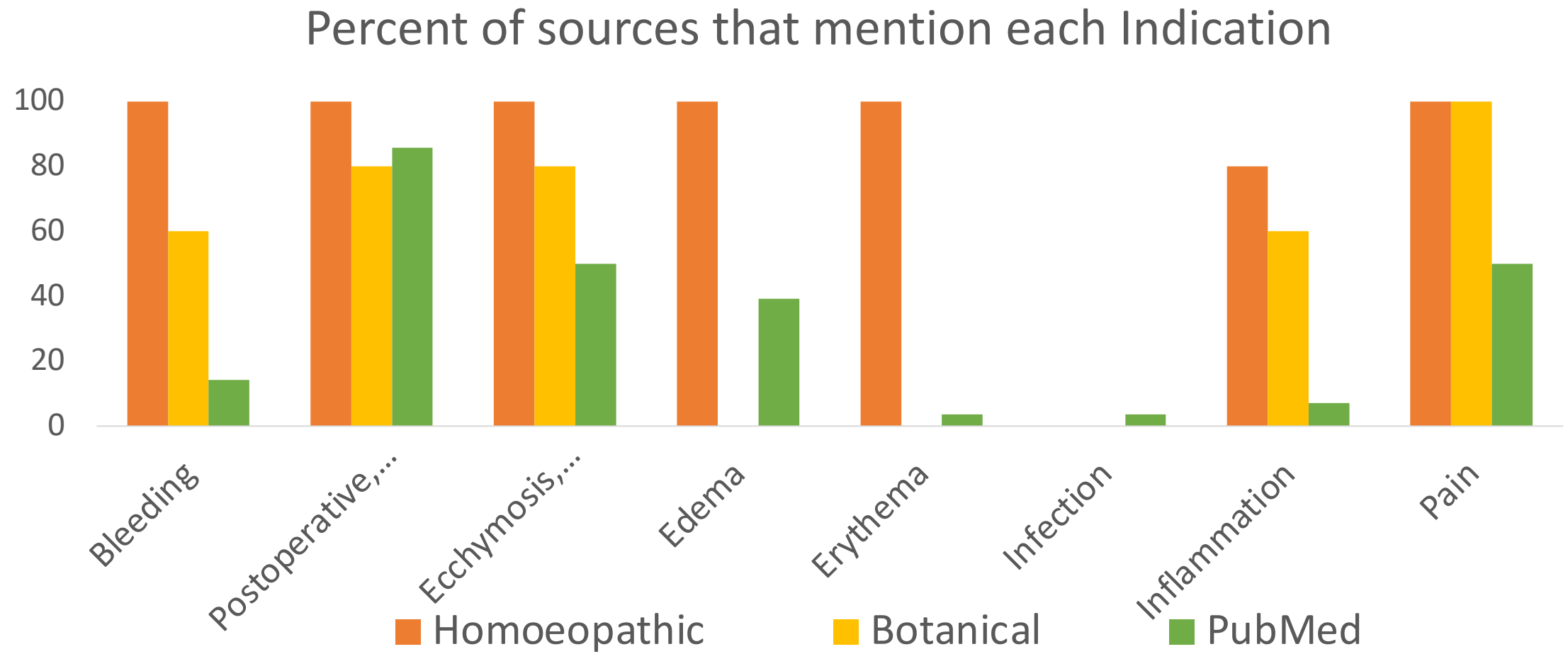


Figure 4. The percent of sources in each discipline that mention each endpoint. For bleeding, less than 20% of the studies in PubMed used bleeding as an endpoint. All homoeopathic materia medicas include it as an indication and 60% of botanical materia medicas do.

In Figure 2, the endpoints in the relevant studies on *Arnica* are compiled. In order to be able to compare these endpoints with what is written about in materia medicas, we adjusted the endpoints to search terms (Table 1). We then searched the materia medica using these terms. The results are in Figure 4. The results of the search show variability of end points in studies, but that they are all common materia medicas.

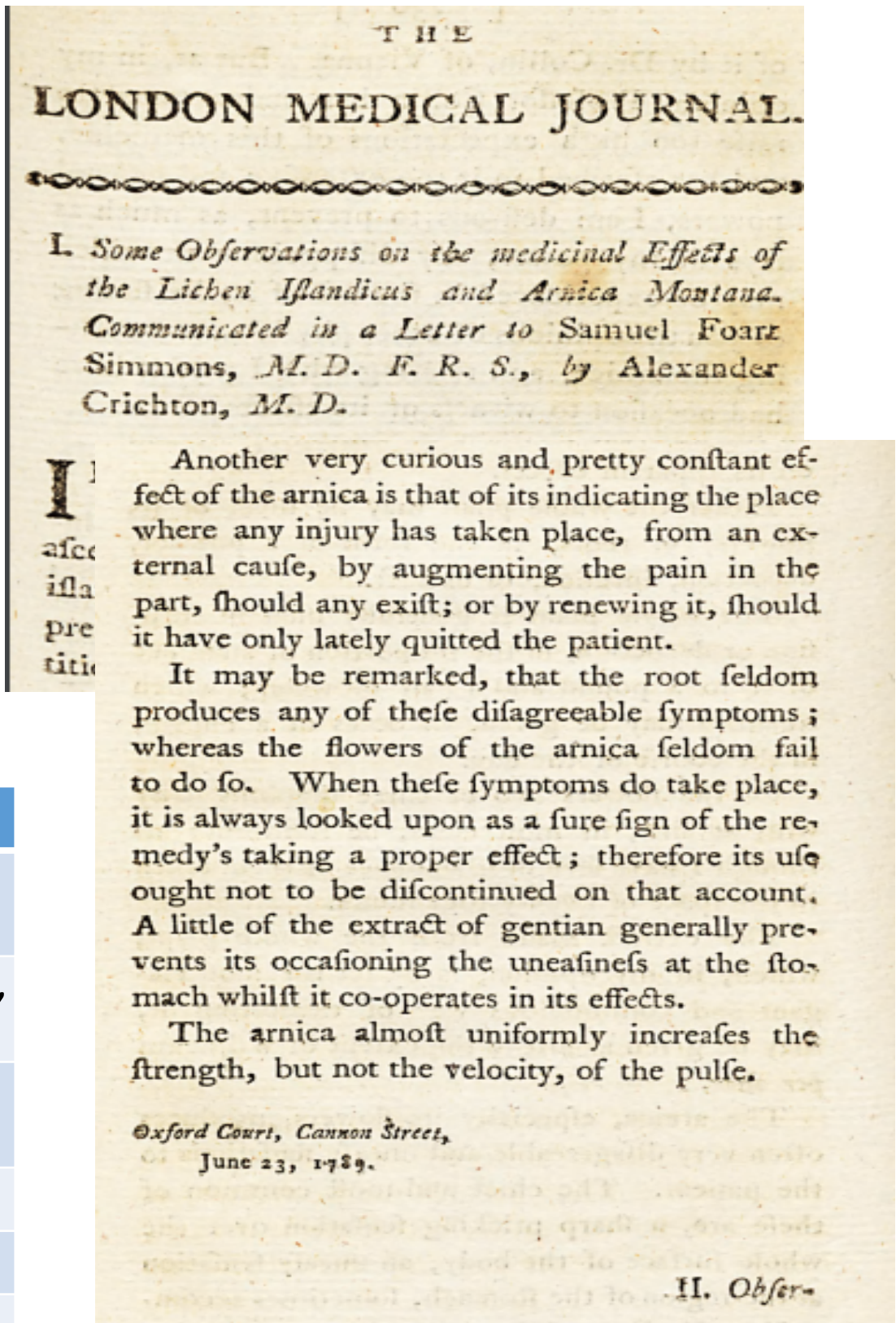


Figure 3. An article on Arnica in 1789 by Crichton. In the top paragraph it is clear that this plant was well known for the after effects of trauma 200 years ago. However earlier in the article he mentions his dose being one drachm of extract a day.

Discussions

Confused Dosing:

- There is a large variety in the dosages used across all sources. Ironically, all of the original botanical and many of the homoeopathic sources use tinctures. The modern RCTs/reviews/case studies use diluted doses (6C, 30C, etc).
- Timing of doses: Case reports from materia medicas are generally cases of Arnica given *after* a trauma. Many of the RCTs gave Arnica *preventatively* before a surgery. Possibly, the preventative dosing evolved over time. However, without reading the original Latin sources, that is unknown. To our knowledge no one has compared these dosing strategies. Arnica before surgery can be risky when the effects aren’t fully known. Indeed, there was a case report of severe intra-operative bleeding after the patient took Arnica.

Next Steps: Understanding our primary sources:

- Botanical/Proving data are incredibly redundant. Some materia medicas, such as Cullen’s *Materia Medica* and Stoke’s *A Botanical Materia Medica* have entries on Arnica that only refer to other sources (see Figure 5). In the excerpt from Stoke in Figure 4, the circled entries are all listed in Hahnemann’s *Materia Medica Pura* and referred to by many of the other botanical materia medicas. When we tracked these primary sources down, we found they were all in Latin and therefore inaccessible to us. Since these sources seem to have formed the foundation of our understanding of this plant, understanding these primary sources may be vital; there are nuances that could have been lost in the constant re-telling of the information, or inaccuracies that have been perpetuated.

ARNICA. Leopardsbane. Herb. Flower. Root. Pharm. lond.—Alst. i. 438. Berg. ii. 689. Collin obs. iv. 1; v. 1; account from in med. comment. v. 233. Crichton med. journ. x. 237. Cull. ii. 88. Dale 88. Fried diss. Hill 626. Hoven, account from in med. rev. ii. 363. Linn. 221. Meza in act. med. hafa. i. 345; account from in med. comment. dec. II. ii. 380. Monro iii. 23. Murr. 157. Neum. ii. 117. Plies, account from in phys. journ. iv. 87. Ploucq. bibl. i. 33. 202. 232. 345. 368. 408. 467. 481. 500. 505. 514. 518. 572. 604. Quar. anim. 7. 17. 130. 199. 225. 283; febr. 277. Richter, account from in phys. journ. i. 27. Schrod. 538. Schult diss. Spielm. 553. Stoll med. i. 122; ii. 52. 53. 96. 98. 145. 152. 200. 204. 211.



Figure 5. Stoke’s entry on *Arnica montana* in his *A Botanical Materia Medica*. The circled entries are in Hahnemann’s MMP.

Conclusions

Sources across disciplines are consistent in their support for Arnica in trauma. However more research is needed due to the heterogeneity in dosing and primary endpoints, and to better understand potential deviations from primary traditional literature sources.

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A Scoping Review of Botanical Medicine Therapies for First-line Treatment of Polycystic Ovarian Syndrome

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Introduction

- Polycystic Ovarian Syndrome (PCOS) is a complex endocrine disorder affecting 5-10% of reproductive aged women.
- PCOS is diagnosed by the Rotterdam criteria, with presence of at least two symptoms – oligomenorrhea, hyperandrogenism, and polycystic ovaries on ultrasound – and the exclusion of other diagnoses of hyperandrogenism or ovulatory dysfunction.
- First-line management often involves pharmaceuticals and lifestyle intervention, although evidence-based medicine suggests a multi-disciplinary approach.
- Botanical medicines have been used safely for hundreds of years to treat PCOS by addressing the root cause(s) from a whole systems approach.

Objectives

This scoping review aims to update the Arentz et al. 2014 scoping review with a focus on human female subjects to inform best clinical practices for the first-line management of PCOS with botanical medicine.

Search Methods

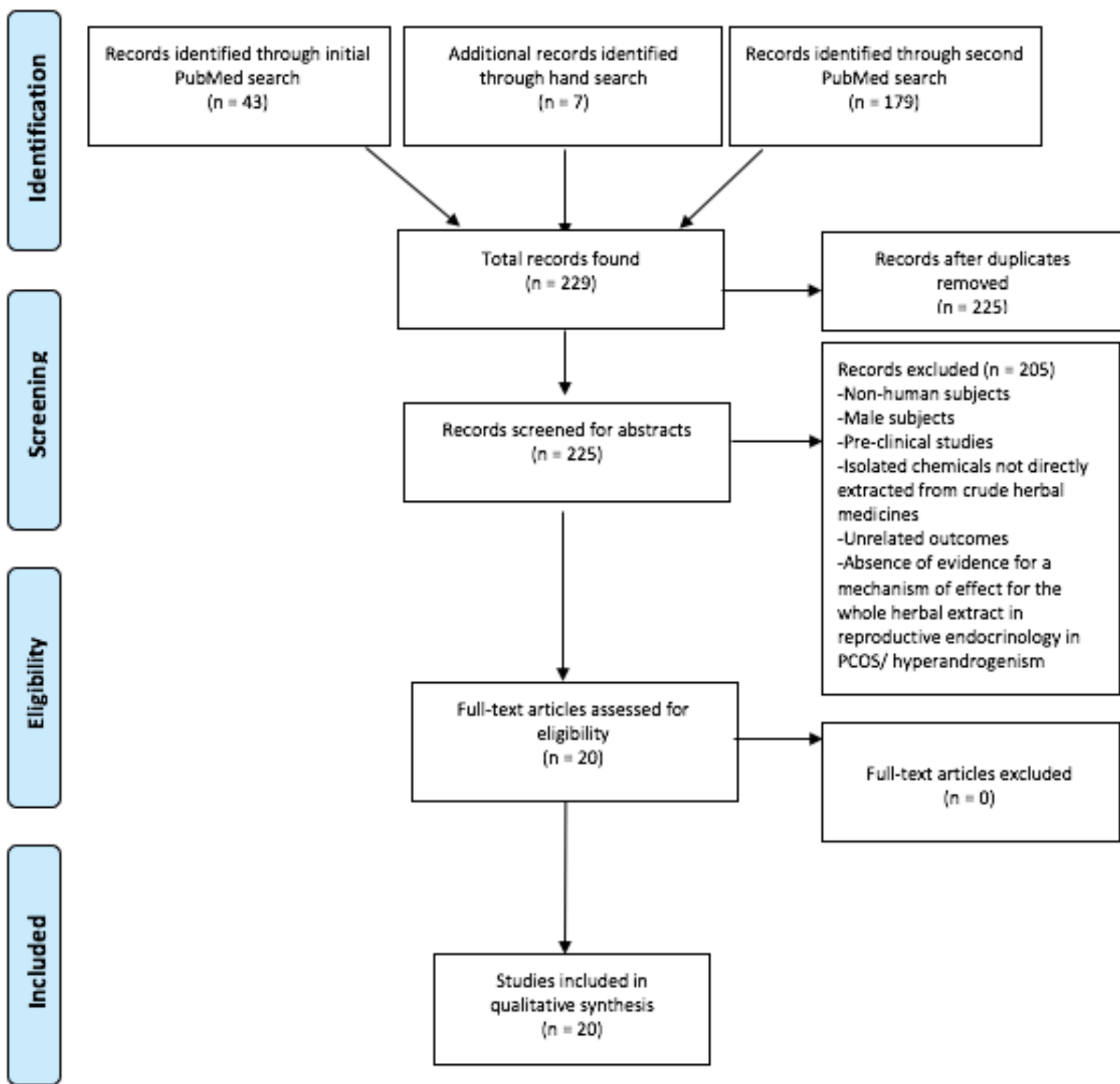
PubMed MeSH terms:

First Search: ("Polycystic Ovary Syndrome"[Mesh]) OR "Hyperandrogenism"[Mesh]) AND ("Therapeutics"[Mesh]) AND ("Complementary Therapies"[Mesh]) NOT ("acupuncture")

Second Search: ("Herbal Medicine"[Mesh] OR "Phytotherapy"[Mesh] OR "Plant Extracts"[Mesh] OR "Plants, Medicinal"[Mesh] OR "Medicine, Traditional"[Mesh] OR "Plant Preparations"[Mesh]) AND ("Polycystic Ovary Syndrome"[Mesh]) OR "Hyperandrogenism"[Mesh]) AND ("Clinical Trial" [Publication Type])

Inclusion Criteria:

- human female subjects
- diagnosis of PCOS
- use of herbal medicine as first-line treatment for PCOS
- herbal medicines with a demonstrated mechanism of reproductive endocrinological effect
- clinical studies investigating commercially available herbal extracts



Results

- Twenty studies were included in this review. All studies reported mechanisms of action, including 3 reviews with a total of 99 studies and 5858 women with PCOS and/or hyperandrogenism.
- Botanical interventions that changed PCOS outcomes are presented in Table 1.
- Common themes:
 - Researchers suggest including weight management and lifestyle as co-treatments.
 - Botanical treatment showed high degree of acceptability amongst participants.
 - Investigated botanicals were outlined as safe alternatives to common first-line pharmaceuticals for PCOS (i.e. oral contraceptive, metformin).

Table 1: Botanical Interventions and Outcomes

Outcome	Botanical Interventions
Lowered prolactin	Vitex agnus-castus
Lowered LH	Cimicifuga racemosa, Celery and Anise, C. racemosa “Klimadynon” natural health product (NHP), Heyan Kuntai TCM formula, Unkei-to (Paeonia lactiflora + Cinnamomum cassia)
Raised FSH	Tribulus terrestris, Mentha spicata, Trigonella foenum-graecum seed “Furocyst” NHP
Reduced ovarian volume and cysts	T. terrestris, T. foenum-graecum seed “Furocyst” NHP, Tian Gui TCM formula, Satapushpa Shatavari powder
Lowered androgens	Glycyrrhiza glabra, (G. glabra and P. lactiflora), M. spicata, Tian Gui, Celery + Anise, Matricaria chamomilla, berberine NHP, Heyan Kuntai, Origanum majorana
Improved insulin sensitivity	(G. glabra, P. lactiflora and Hypericum perforatum), G. glabra, Bushen Huatan TCM formula, Tian Gui, berberine NHP, (M. spicata, Zingiber officinale, Cinnamomum zeylanicum, and Citrus sinensis) herbal mixture, Heyan Kuntai, O. majorana, Dingkun TCM formula
Increased estradiol	G.glabra, Unkei-to, Cinnamomum verum
Menstrual regularity	C. cassia, C. verum, T. foenum-graecum seed “Furocyst” NHP, Satapushpa Shatavari powder, Celery and Anise, (M. spicata, Z. officinale, C. zeylanicum, and C. sinensis) herbal mixture
Reduced depression, prevalent in PCOS	H. perforatum
Anti-inflammatory	G. glabra, Bushen Huatan
Improved mood & cognition	H. perforatum, P. lactiflora
Lowered PCOSQ score	G. glabra, P. lactiflora, C. cassia, H. perforatum, V. agnus-castus
Reduced Dermatology Quality of Life Index (DQLI)	M. spicata
Improved lipid profile (Lowered serum TC and LDL-C, increased HDL-C)	C. zeylanicum, berberine NHP, Heyan Kuntai

Discussions

Clinical Application

- These findings offer clinically researched botanical interventions to utilize in clinical practice, thereby enabling practitioners to make informed decisions regarding their patients’ unique needs.
- Demonstrated mechanisms of action and safety of botanical treatments opens the conversation to include botanical medicine in integrative health care.

Limitations

- Some studies did not mention timing of blood draw relative to indicated day of participant’s menstrual cycle (i.e. day 3 collection of FSH, LH, estradiol).
- Short duration of studies.
- Small sample sizes.
- PubMed indexing did not adequately catalogue all indicated studies.
- Many studies were excluded due to co-treatment interventions (i.e. pharmaceutical and botanical).
- Absence of consistent quality of life and well-being outcomes.
- Most studies used a deductive approach for botanical selection, inconsistent with traditional rationale for botanical selection (i.e. TCM diagnosis and treatment).

Future research

- Comparative studies with indicated pharmaceuticals.
- Pre-clinical studies to evaluate safety of botanical medicines.

Conclusions

Common botanicals such as V. agnus-castus, C. racemosa, T. terrestris, G. glabra, C. cassia, C. verum and P. lactiflora were found to be safe and effective treatment options for PCOS. Future research should include increased length of study and sample sizes, as well as the inclusion of quality of life and well-being outcome measures to evaluate the whole-systems effects of botanical interventions. This approach supports the inclusion of botanical medicine in integrative care by effectively communicating the complex mechanisms of action each plant has to offer in treating this complex endocrinopathy.

For references or further questions, please email astorozuk@ndnet.ccnm.edu

Natural Interventions for Improving Quality of Life in Those with Multiple Sclerosis: A Narrative Review

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Introduction

- Canada has the highest rates in the world of multiple sclerosis (MS). Currently around 77,000 people are diagnosed with MS in Canada.
- Symptoms can be heterogeneous and progression is divided into relapsing-remitting, primary progressive and secondary progressive.
- Onset typically occurs between 20 and 30 years of age but cases have been reported in people younger and older.
- Higher rates are seen in women than in men.
- Research suggests low vitamin D levels in childhood may increase risk of MS later in life
- The role of nonpharmacological interventions for MS have yet to be fully validated, however improvements to quality of life (QoL) is a valuable goal to therapy

Objectives

To evaluate and summarize the research related to the use of progressive resistance training, mindfulness-based stress reduction (MBSR) and vitamin D supplementation on the QoL in those with MS.

Search Methods

Search databases included PubMed, Cochrane and Google Scholar

- All searches were limited to systematic reviews with meta-analyses and RCTs published 2010-20, humans and English
- Interventions compared to standard care using validated QoL outcomes measures
- **Progressive Resistance Training, or exercise therapy** - 22 papers found; 4 included in review
- **MBSR** - 10 papers found; 4 included
- **Vitamin D** - 9 found; 3 included

PICO Framework

Population	Intervention	Outcomes
<ul style="list-style-type: none">• People with Multiple Sclerosis	<ul style="list-style-type: none">• Progressive Resistance Training• Vitamin D• Mindfulness-Based Stress Reduction	<ul style="list-style-type: none">• QoL Assessment Scores

Results

Progressive Resistance Training

Authors	Intervention	Comparison	Results
Cruickshank et al. 2014	Was a Systematic Review looking at Progressive Resistance training in MS.	Standard Care	Found that strength, functional capacity and QoL were found to improve significantly in most of the RCTs. QoL did not improve in 1 of 3 trial that measured QoL outcomes.
C, akrit et al. 2010	Group 1 supervised bicycle resistance training with balance exercise, group 2 home based lower-limb strengthening and balance exercises.	Standard Care	Both intervention groups showed significant improvement compared to the control group in physical scores as well as Beck depression score in only group 1. Overall group 1 showed significantly more improvement than 2 in everything but the 10m walking test.
Zaenker et al. 2017	12-week personalized training with endurance and resistance training sessions	Initial Scores	Found improvements in strength and in QoL on SEP-59 overall, but when looking at differences in gender only women showed significance, and no improvement was seen in men.
Kjølhede et al. 2012	Systematic review looking at exercise therapy in MS.	Initial and Standard Care	Low reports or drop out and disease exacerbation. Found significant improvement in muscle strength, mixed results with functional capacity, and significant improvement in quality of life and mood where reported.

Mindfulness-Based Stress Reduction

Authors	Intervention	Comparison	Results
Simpson et al., 2014	Systematic review of 3 studies looking at mindfulness- based interventions	Non-active interventions	Found significance across quality of life, mental health and some physical health measures at 3 and 6 month follow ups from intervention.
Grossman et Al, 2013	8-week mindfulness-based training, with 27 hours of in person training plus homework	Standard Care	Amount of practice did correlate with improvement seen in PQQLC, depression and fatigue scores. There a significant improvement in scores compares to control at 6 month follow up.
Kolahkaj et al, 2019	Based on Grossman et Al study protocol, was repeated in women with MS.	Standard Care	Were able to repeat significant improvement in QoL scores at end of intervention and at 6 month follow up.

Vitamin D

Authors	Intervention	Comparison	Results
Berezowska, Coe and Dawes, 2019	Systematic Review: used 10 RCTs to look at vitamin D supplementation in MS.	Standard Care	Found that EDSS scores were more likely to improve in those who had lower Vitamin D serum levels before intervention. Not all the studies included agreed on whether vitamin D was beneficial or not. Further review is needed.
Beckmann et al. 2019	Tested 149, found that 90% were below 30ng/L serum vitamin D and supplemented for 8 weeks at 50,000iu/week to reach 30ng/L then 1500-2000iu/daily in maintenance phase.	Initial Scores	EDSS, Fatigue Severity Scale and MS QoL scales were used to assess. At 1 month no significance was found in scales despite serum levels reaching adequate levels, MSQOLI and FSS improved at 3, 6 and 12 month follow ups with significance.
Ashtari et al. 2016	Intervention of 50,000iu every 5 days for 3 months. All started with less than 85ng/L serum Vitamin D.	Standard Care	Found significant difference in mental health and health change components of EDSS score when data was controlled for age, sex and disease duration.

Discussion

- Resistance training in different forms reliably improved QoL scores across available studies, although some questions remain regarding potential high rates of drop-outs and different outcomes between genders
- Typical resistance training regimens involved 30 minutes per session, 2 sessions/week over 8 – 12 weeks
- MBSR training practiced over an 8 week period with 27 hours of in person training significantly improved QoL outcomes
- Most study participants with MS were deficient in Vitamin D at time of enrollment. Variable outcomes were reported with vitamin D repletion.
- Resistance training and MBSR are promising intervention at improving QoL in people with MS although there is insufficient evidence to determine benefit in specific symptoms or improvements in disease severity

Limitations

- Some smaller studies were included in reviews
- Interventions varied between trials including dosing, frequency and form of the intervention provided
- Outcome measures were inconsistent across included studies
- Resistance training regimens studied are not accessible for all levels of disease severity

Conclusion

- Further research is needed to find which forms of these interventions and dosing would be best suited and further refinement of recommendations for exercise and MBSR are needed to foster clear, reproducible therapy.
- Vitamin D shows some promise in improvement in QoL measures; however, it seems to be most effective in people those who are deficient
- Vitamin D appears to be well tolerated and with low cost for patient although serum level testing is still recommended

For references or further questions, please
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Effectiveness of Naturopathic Care for Anxiety and Depression: A Retrospective Chart Review

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Introduction

Prevalence and Health Behaviours

- About 10% of Canadians seek health services for mood and anxiety disorders annually ¹
- In 2012 only 63% of participants with MDD sought medical care ²
- Some people may be more likely to seek Naturopathic health services due to stigma ³

Evidence for Naturopathic Mental Health Treatments

- Individual therapies and a few whole-systems studies support Naturopathic care for anxiety and depression ⁴⁻⁵
- However a Naturopathic standard of care has not yet been established

Objectives

To describe the characteristics of patients with anxiety and depression on Mental Health Shift (MHS) at the RSNC, summarize their treatments and evaluate the efficacy of care.

Methods

- EMR from the MHC were reviewed for Naturopathic and medical treatments administered, determinants of health, compliance, demographics and response to treatment.
- GAD7 and PHQ9 scores were chosen because they are validated and common screening and assessment tools for anxiety (GAD) and depression (MDD) respectively.
- Reviewers received training and support to achieve consistency
- Charts with an inter-rater variability of > 2 fields were reviewed by the PI; all scores and dates verified by the PI
- The PI selected charts by reviewing every patient to visit the MHS from January 1 2019 to March 6, 2020.

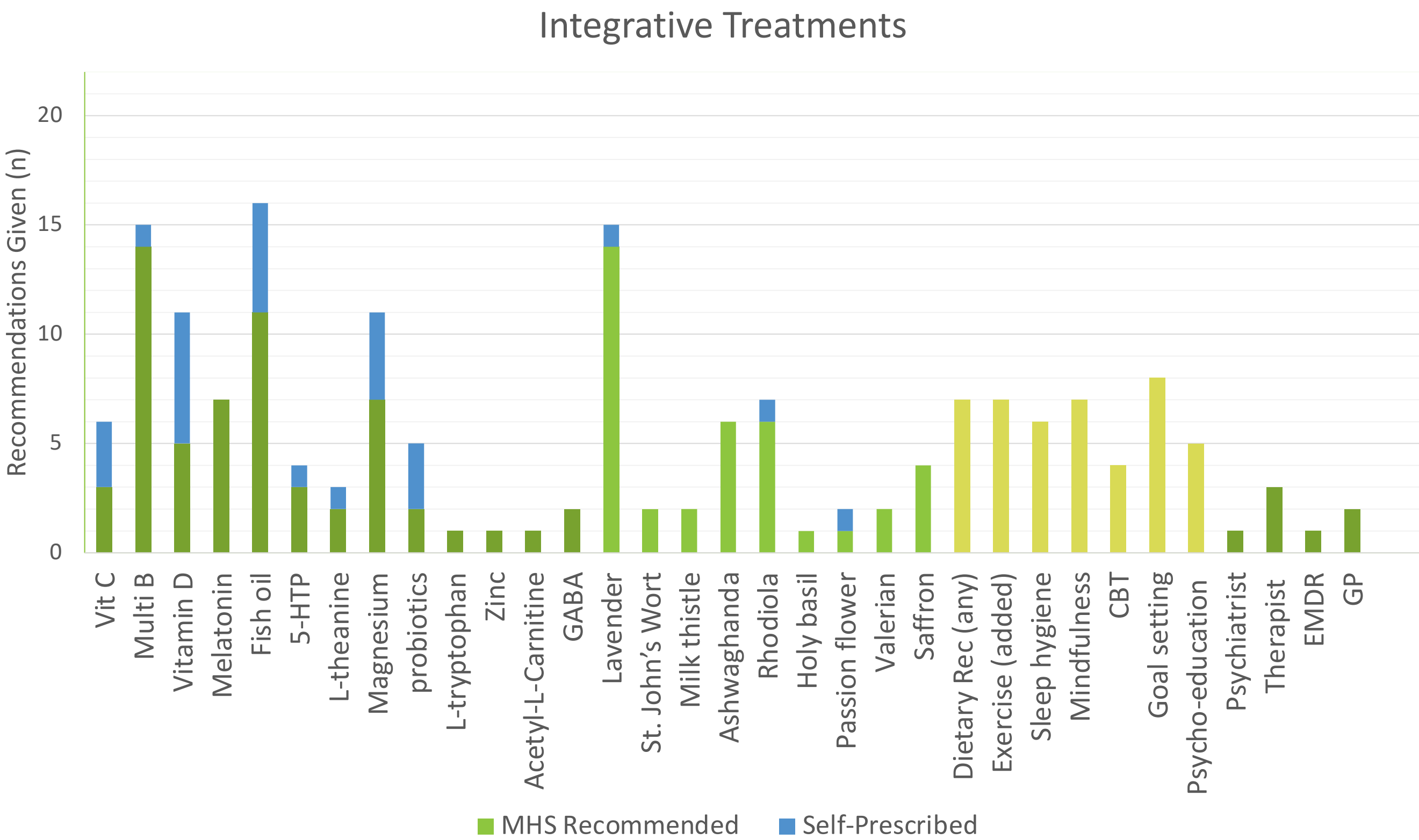
Inclusion	Exclusion
<ul style="list-style-type: none">• ≥ 18 years old• Depressive and/or anxiety dx• Initial GAD7 or PHQ9 ≥ 10• Initial and final GAD7 and PHQ9 min. 4 weeks apart	<ul style="list-style-type: none">• Bipolar, psychotic symptoms, post-partum depression, neurodegenerative dx, borderline personality dx, PMDD, concussion, SAD, current OCD• Current CCNM student or staff

Results

- Of the 192 charts reviewed, 22 met the inclusion criteria

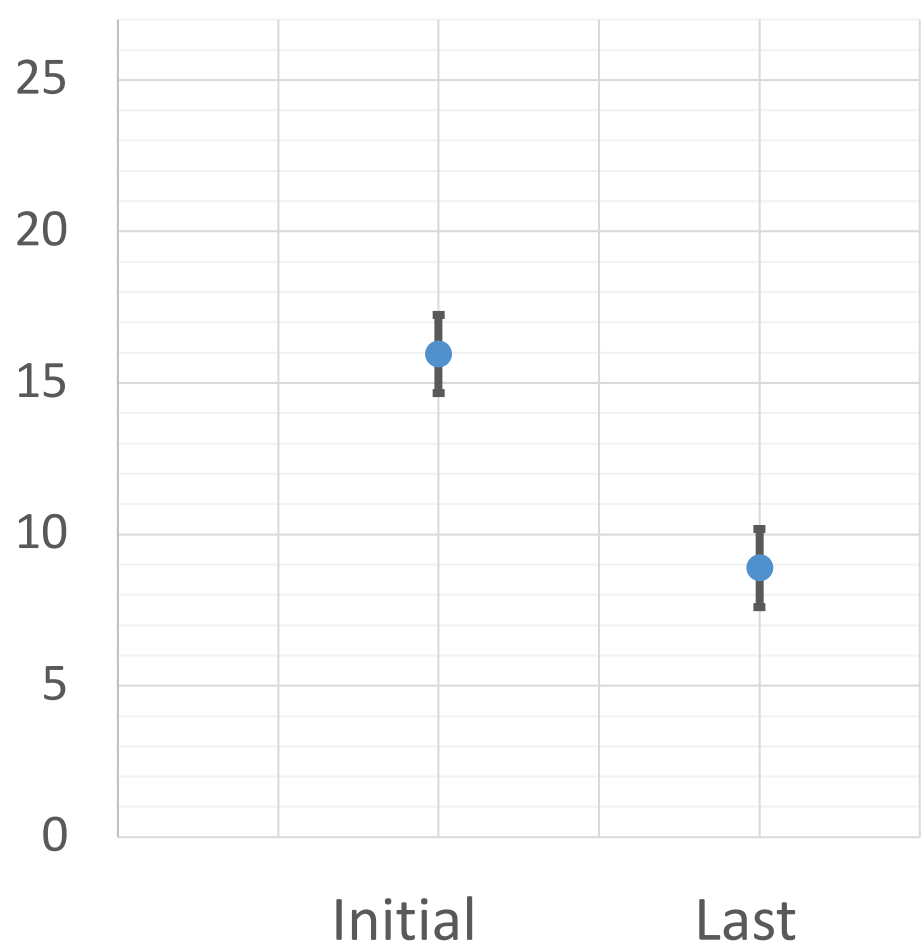
Subject Characteristics (N=22)

	Mean Age (min, max)	Female	Mean Visits /month	Hx of Self Harm	Employed/ Studying	Insomnia	Has MD	On Psych Rx	Has Therapist
n	37 (20, 68)	14	1.8	4	10	12	16	11	15
%	--	64%	--	18%	45%	55%	72%	50%	68%

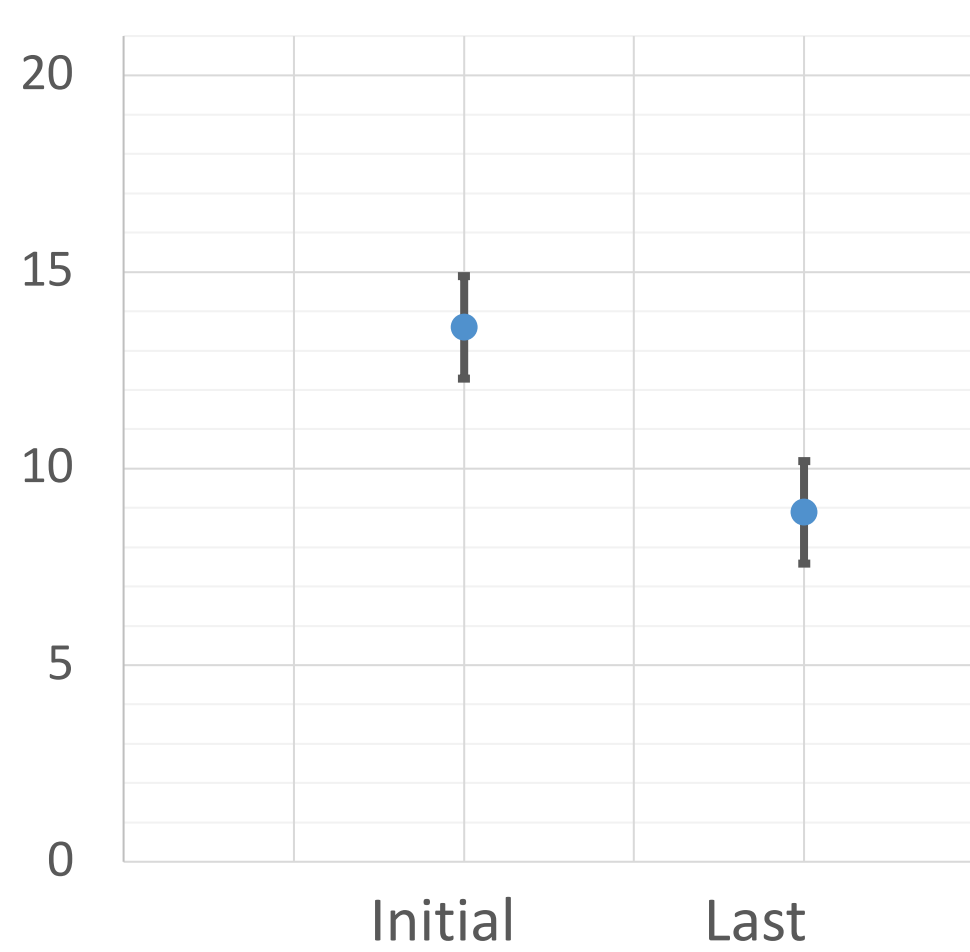


- Mean changes of PHQ9 and GAD7 were 7 (p<0.0001) and 5 (p<0.001) respectively

Mean PHQ9 scores



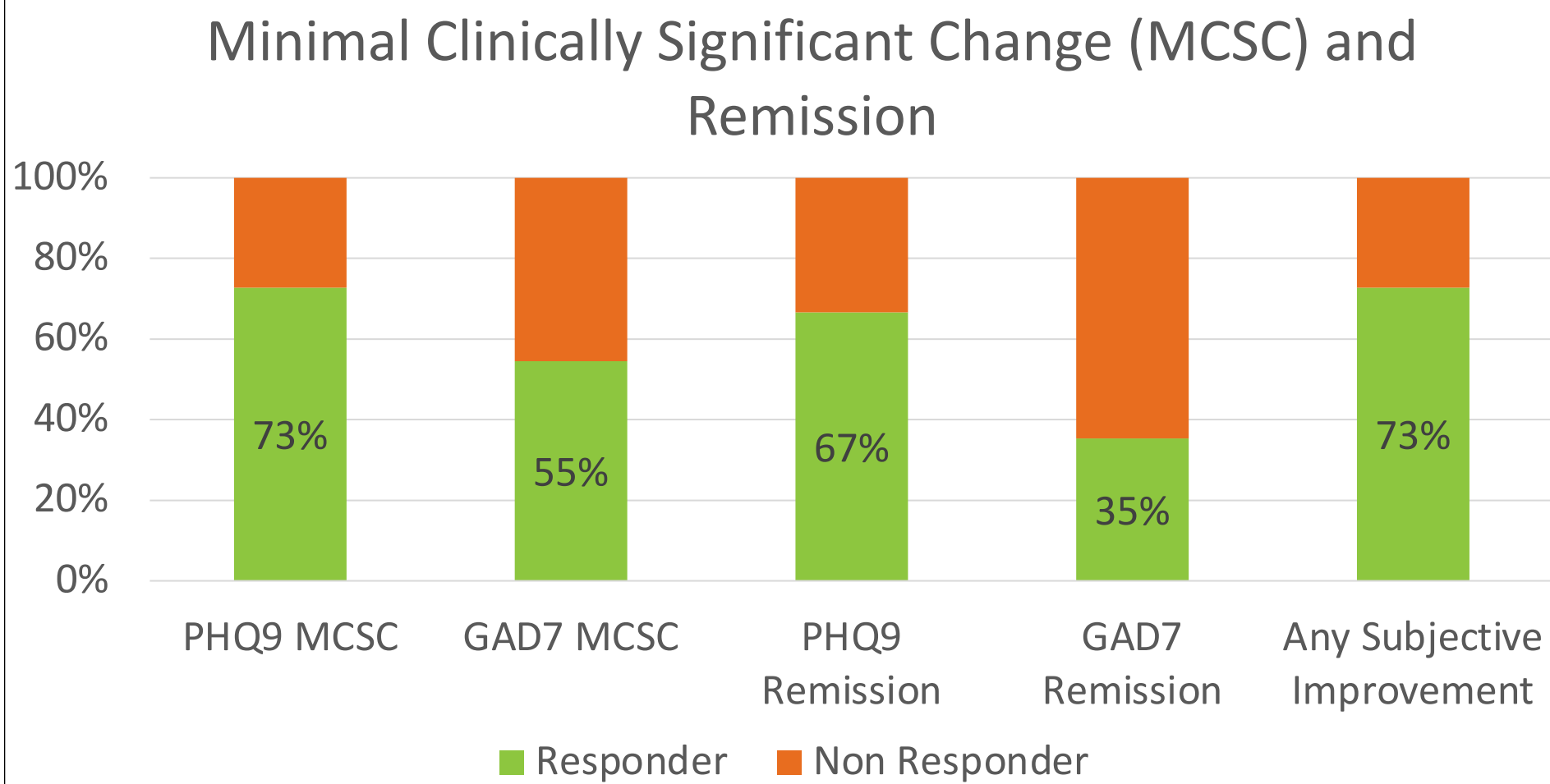
Mean GAD7 scores



Discussion

Change in Primary Outcome

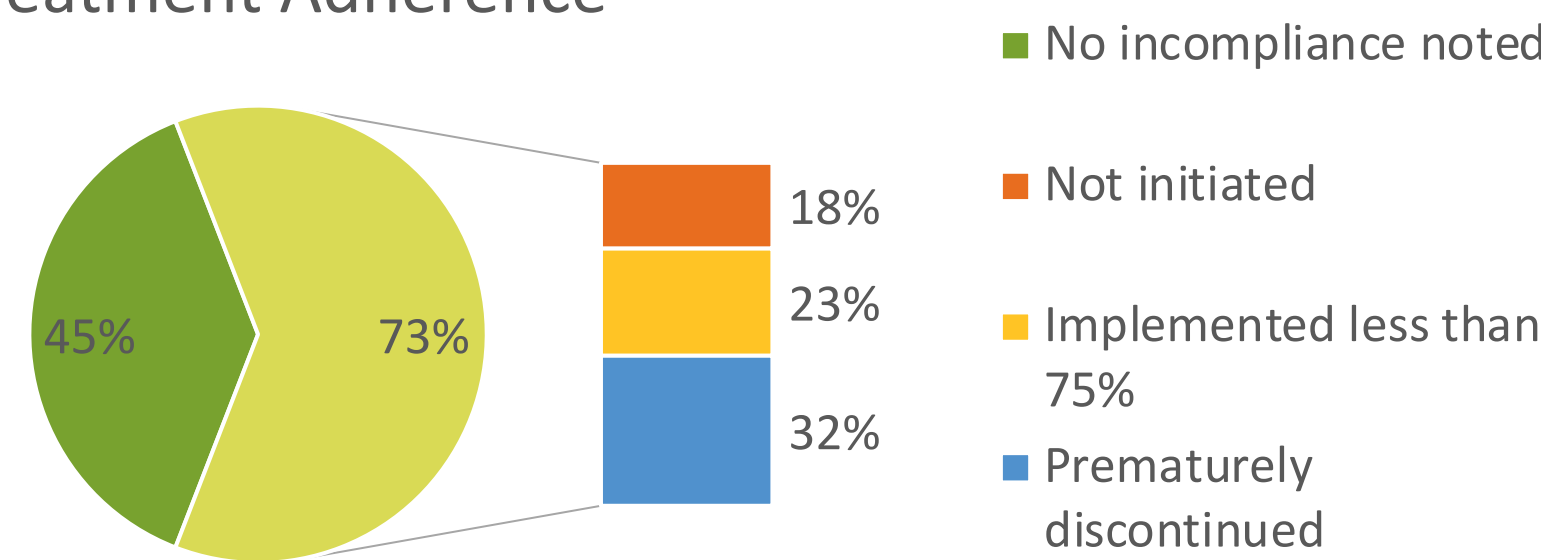
- The average PHQ9 and GAD7 score showed a statistically significant decrease after treatment (p < 0.05)
- Most participants achieved a clinically significant improvement (responder defined as a score decrease of ≥ 5), and some achieved remission (final score < 10)



Adverse Events (A/E)

- 6 A/E were reported including “grogginess”, nausea, sleep disturbance and acid reflux. These account for 31% of the reported non-compliance

Treatment Adherence



Limitations

- Missing data for substance use, history of self-harm, medical team, adverse events and compliance
- Small sample, lacking long-term follow up & comparator

Conclusions

Naturopathic care for mental health as performed on the MHS is effective in reducing some depression and anxiety symptoms in most patients. Treatment was well tolerated with no serious adverse events reported.

For references or further questions, please
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The Effect of Community Involvement on Anxiety and Depression: A Narrative Review

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Introduction

- Mental health concerns, like anxiety and depression, are commonly expressed to primary care providers
- Current standard of care involves a combination of drug interventions and psychotherapy.
- Treatment success is not guaranteed with existing options and adjunctive or alternative interventions are often desired by patients.
- Social engagement has been researched as a possible intervention to improve outcomes related to mental health concerns, which may be facilitate by increasing community involvement.
- This review will summarize studies related to increased social engagement through volunteerism and community gardening, whether self or other oriented (as in mandatory community service hours) outside of professional environments.

Objectives

This review will explore the latest 5 years of evidence for the effects of volunteer work (self and other oriented) and community gardens on various mental health determinants, including social connectedness, subjective well-being, quality of life, self-esteem, and many more.

Search Methods

- PubMed was searched for articles of any methodology published between 2016-2020.
 - Since this topic broadly explored community involvement in general, two separate searches were conducted.
 - Studies included must have reported outcomes related to mental health, depression, and anxiety using any validated measure.
 - Studies involving professional volunteer services (volunteer firefighting, for example) were excluded
1. community garden AND (mental health OR depression OR anxiety)
 2. (Volunteer OR Volunteering) AND (mental health OR depression OR anxiety)

Results

Table 1: Summary of Included Studies

Author, Year	Study Type	Methods	Results and Key findings
Cipriani et al. 2017	Systematic Review	14 studies included Evaluated affect, agitation, behaviour/ engagement, cognitive functioning, interpersonal relationship, physical well being, psychiatric symptomatology, mental well being, quality of life, self esteem, sleep, social behaviour, stress and coping, volition, work behaviour.	Significant findings were identified in 11 of 14 studies. Improvements were identified in self-esteem, interpersonal relationships and social behaviour. Additional benefit was found with regard to affect/agitation, mental well being, psychological well being, behaviour/engagement and cognitive functioning.
Creaven et al. 2017	Cross Sectional Survey (n=27,301)	Chi square analysis to assess associations between volunteering and depression Regression Models predicting depression: unadjusted, adjusted for social connectedness variables, and adjusted for sociodemographic (age) differences	Unadjusted model: volunteering predicted lower depressive symptoms across the 15 countries analyzed. Adjusted for Social connectedness: Association between volunteering and depressive symptoms was eliminated after adjustment for social connectedness.
Held M.L. and Lee S. 2018	Survey (n=1127)	Individuals in the California Health Interview Survey provided responses to the K-6 score that identified if they had felt nervous, hopeless, restless or fidgety, worthless, depressed, as if everything was an effort in the last 30 days. They were also asked their Perceived General health Status and whether or not they engage in volunteer or community services (in the past year)	As an independent variable, volunteer work significantly positively impacted mental health outcomes (p=<0.03)
Kingsley et al. 2019	Semi-Structured Interviews (n=23)	22 questions were asked regarding participants' motivations, limitations, benefits, and outcomes of maintaining a community garden. No statistical analyses were used in this paper.	Participants cited many benefits of joining a community garden such as; spending time with family and friends, maintaining a sustainable environment, and quality time with nature A pertinent finding was that participants were able to build social and community connections. Participants found a community in which they “clicked.”
Salt et al. 2016	Observational Study (n=199 women older than 50)	Outcome measures were pain calculated by averaging past 7 days of self reported pain measures. Additionally an 84 Item Scale of Psychological Well being (SPWB) with Life Purpose sub scale. Volunteering activities were measured by asking various questions frequency and type of community involvement.	Participants who volunteered more had higher reports of life purpose. These participants who volunteered more also were more physically active. Higher frequency of volunteering was correlated with moderating effects on pain severity and life purpose (p=0.03)
Whillans A.V. et al. 2017	Randomized Control Trial CSL: n=232 Control: n=56	Participants in Community service learning (CSL) program at their University were randomized to either Community Service Learning (10-12h/week of volunteering, subsequent philosophy course with reflection and discussion) or Waitlist (control). Patient completed the following at times 1 and 2: Schedule of positive affect and negative affect, 5 item satisfaction with Life Scale, 5 item Meaning in Life Questionnaire, 20 item Centre for Epidemiological Studies (CES) Depression scale, The UCLA loneliness scale, Social Connectedness scale, 5 item Perceived Stress Scale	No statistically significant evidence that CSL volunteering conferred greater benefit on those with higher depressive symptoms at baseline. Marginally statistically significant results indicating men may have experienced higher positive affect as a result of CSL participation. Students who felt their volunteer requirements were elective rather than required experienced greater life satisfaction at time 2.
Yeung et al. 2018	Survey (n=1504)	Patients in the survey were asked questions based on Mental Health, Physical Health, Life Satisfaction, Depression, Social well-being, Other oriented volunteering, Self oriented volunteering Regression analyses analyzing just self-oriented or other oriented volunteering, while retaining all other socio-demographic covariates were conducted. The two regression equations were then pooled in a single comparison model and other oriented and self-oriented volunteering was set to be equivalent.	Other oriented volunteering was significantly predictive of better mental health, physical health, life satisfaction, and social wellbeing (p<0.01). It was also predictive of fewer depressive symptoms (p<0.05). Self oriented volunteering was significantly predictive of better mental health, physical health, life satisfaction, and social well being (p<0.05). However, it was not predictive of fewer depressive symptoms (p>0.05). Results from the combined regression show that other oriented volunteering had stronger effects on all outcomes excluding depression. Strongest effect observed with social well being, excluding depression.

Discussion

The results of these trials indicate positive benefit of community involvement on mental health outcomes whether that be self-directed, other directed, or community gardening. Other directed volunteering might come in the form of hours to be completed for school or for a court sentence. Regardless of motivation, community involvement was able to improve mental health, depressive symptoms, quality of life, life satisfaction, self-esteem, cognitive functioning, and social connectedness. Despite some trials mandating volunteer work, positive benefit was maintained.

Conclusion

Volunteer work is both abundantly available and in demand in most municipalities. As the recent evidence shows, prescribing community involvement as part of a treatment plan can be accessible and inexpensive. Most importantly, it can be an effective intervention for anxiety and depression, with benefits to the patient and their entire communities.

The authors have no conflicts of interest to declare.
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Effects of Perinatal Diets on Offspring Anxiety: A Scoping Review

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Introduction

- Anxiety disorder: specific psychiatric disorders that involve extreme fear or worry.
- Lifetime prevalence: 31 %, among the most common psychiatric illnesses.
- Canadian survey: about 24 % of Canadians will report having suffered from an anxiety disorder in their lifetime.
- Accumulating data suggests strong association between poor diet and exacerbation of mood disorders.
- Maternal diet during pregnancy can play a crucial role in subsequent development of a range of illnesses in adulthood.

Objectives

The purpose of this study is to systematically review the data on the link between maternal diet and incidence of anxiety disorders in offspring.

Search Methods

- MEDLINE and Embase databases were searched with no language or date restrictions.
- Titles and abstracts were screened in duplicate and Data extraction was completed using a piloted extraction template and data was analyzed qualitatively to identify trends, gaps and areas that warrant further research.

Table 1: PICO framework		
Population	Intervention	Outcomes
• Pregnant female or animals	<ul style="list-style-type: none">• Assessment or modification of participant diet (whole diet or a diet component such as protein, high fat etc...)• Any assessment of use or supplementation of a natural health product that provides an active constituent naturally found in the North American diet	<ul style="list-style-type: none">• Incidence of anxiety disorders• Severity of anxiety symptoms

Results

Search results:

- As part of a larger search on diet and anxiety: 55 915 references
- After title and abstract screening: 135 studies
- After full text review: 99 animal and 2 observational human studies
- Observational studies:
 - 8+ cups of coffee per day during pregnancy associated with increased offspring anxiety
 - Early life protein-energy malnutrition associated with increased anxiety as an adult

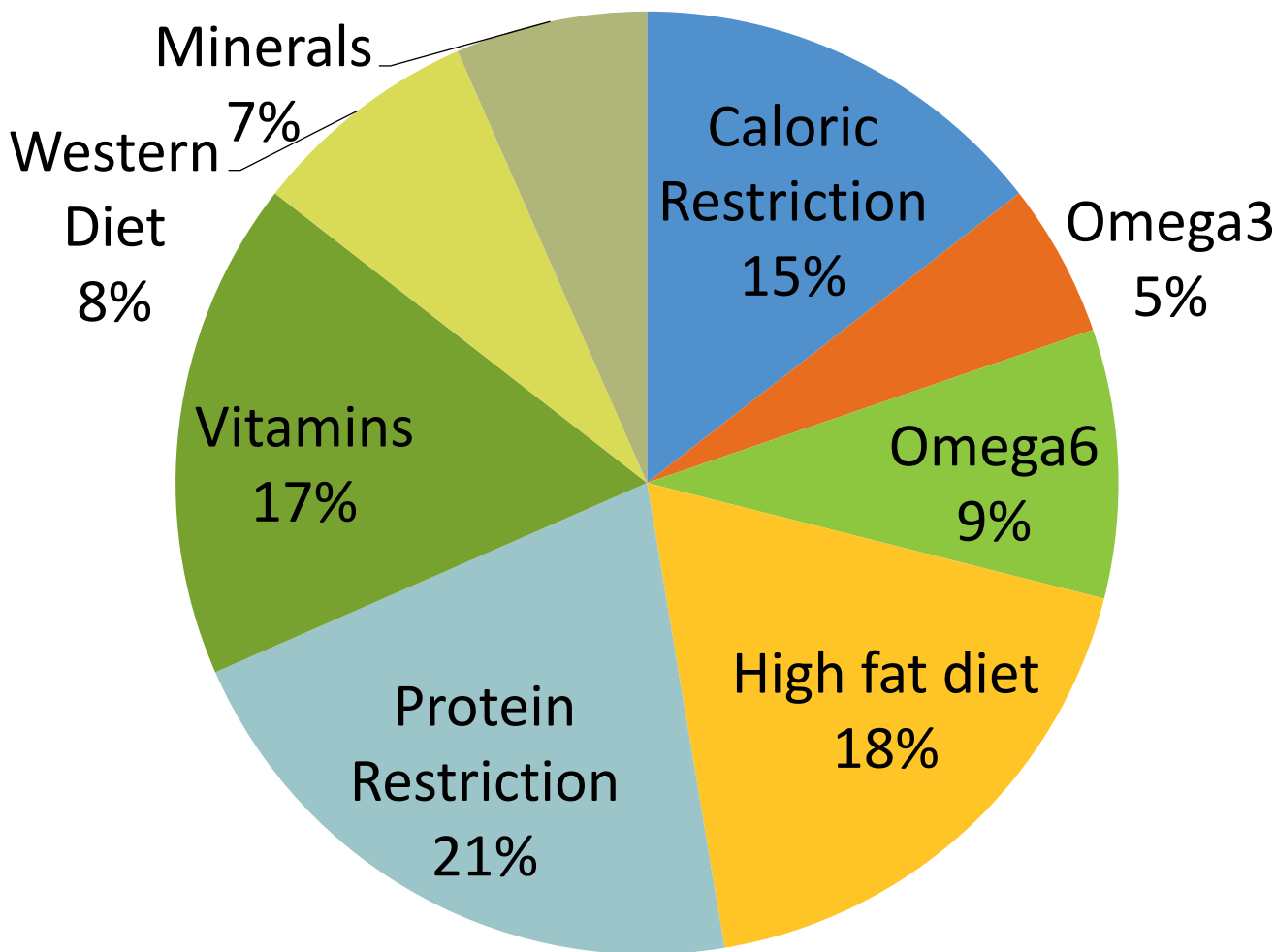


Figure 1: Number of studies using each diet intervention

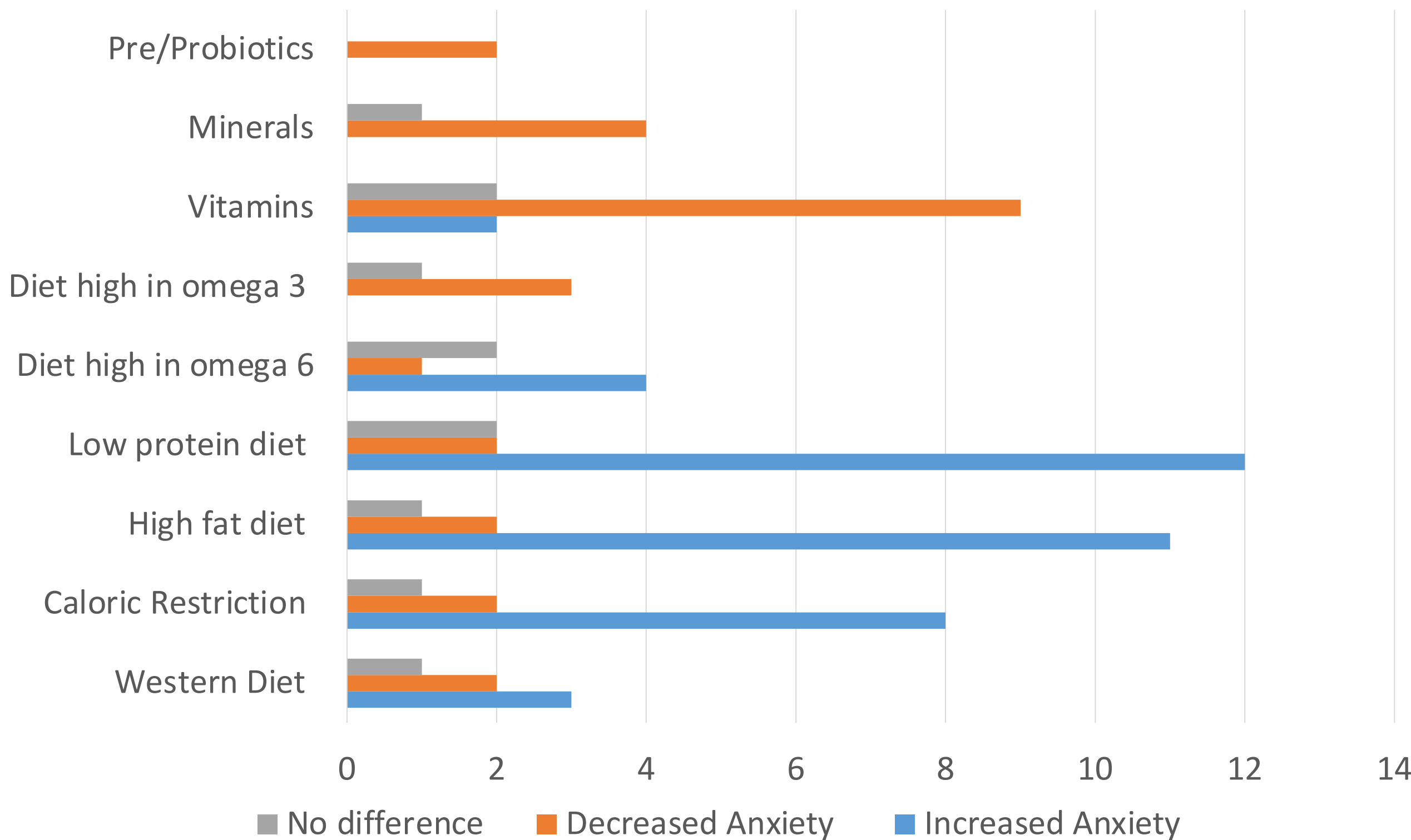


Figure 2: Effect of perinatal diet patterns and constituents on offspring anxiety level

Discussions

- Perinatal protein restricted diet and high fat diet may increase the risk of anxiety in offspring .
- High fat diet alters gene expression in the amygdala impacting glutamate transmission .
- Amino acids from protein are needed for the synthesis of neurotransmitters relevant to anxiety disorders .
- Choline, vitamin D, folic acid, and omega-3 fatty acids may have a protective effect .
- Limitations: Animal studies .



Conclusions

- Preliminary data suggest that different maternal diet factors have effects on the incidence of anxiety disorder in offspring.
- The results of this scoping review may guide dietary recommendations for pregnant woman; while the exact role in decreasing offspring anxiety risk is not known, the findings are in line with generally accepted nutrition recommendations
- More human studies on this topic are needed .

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The Effect of Natural Therapies in Combination with Usual Care for Major Depressive Disorder: A Narrative Review

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Introduction

- Major depressive disorder (MDD) is the most common and debilitating form of depression with a 12 months prevalence of 4.7% and a lifetime prevalence of 11.2% in Canada.
- Selective Serotonin Reuptake Inhibitors (SSRIs), Serotonin Norepinephrine Reuptake Inhibitors (SNRIs) and Tricyclic Antidepressants (TCAs) are the most widely used treatments for MDD.
- Antidepressants are effective in 20%-70% of patients treated for depression. Their high failure rates are due to adverse events, non-response and withdrawal from treatment.
- Adjunctive natural therapies may prove to be an effective option to enhance outcomes.

Results

Table 1: Lavender/*Lavandula officinalis* (LO)/*Lavandula angustifolia* (LA)

Authors	Intervention	Comparison	Results
Nikfarjam, et al., 2017	1.5g LO infusion Q12H & 37.5 mg Venlafaxine for 6 weeks	1.Placebo & 37.5mg Venlafaxine 2. Venlafaxine	A significant decrease (p<.001) in score in the combined group versus using both treatments alone
Nikfarjam et al., 2013	5g LA infusion & 20 mg Citalopram bid for 8 weeks	20 mg Citalopram bid	A significant decrease (p<.01) in score in the combined group as compared to using SSRI alone
Akhondzada et al., 2003	60 drops/d LA tincture & 100 mg/d Imipramine for 4 weeks	1: 100 mg Imipramine 2. 60 drop/d LA tincture	A significant drop (p<.0001) in score in the combined group as compared to using both treatments alone

Table 2: Folic acid (FA)/Methylfolate (MF)/Folate (FO)

Authors	Intervention	Comparison	Results
Morovatii et al., 2020	1 mg/d FA + 20 mg/d Citalopram for 90 days	20 mg/d Citalopram	The decrease of HAM-D score was negatively correlated to the increase of blood folate level
Roberts, Carter, Young, 2018*	FO: 0.5mg to 10mg MF: 7.5mg -15mg/d MF & drug for 30 – 60 days	Placebo FO: 0.5mg to 10mg MF: 7.5mg to 15mg	MF at 15mg/d and FO <5mg/d with drugs causes a significant drop (P<.002, <.001, respectively) in HAM-D score
Venkatashubramanian et al., 2013	20 mg Fluoxetine + 5 mg FA	20 mg Fluoxetine + 1.5 mg FA	After 3 weeks HAM-D scores decreased more in high dose group but did not achieve statistical significance (p =.15)

Table 3: Acupuncture/Manual acupuncture (MA)/Electroacupuncture (EA)

Authors	Intervention	Comparison	Results
Zhao et al., 2019	MA & SSRI, 30 min/session, 3 sessions per week for 6 weeks	1.EA & SSRI 2. SSRIs alone	A significant improvement (p=.008) in combination group, EA>MA
Chan et al., 2015*	MA & drug, 30 min sessions 3-6 times/week for 6-8 weeks on GV4, GV24, GV14, HT 7, PC 6, LR2, LR3, LI4, Sp6, KI 3	1.EA & drug 2. Drug alone	A significant rise (p<.001) in score in combined group vs drug alone, EA>MA
Wang et al., 2014	MA & SSRI, 30 min/sessions, 5 days/week for 6 weeks on GV4, GV24, GV14, GV20	SSRI alone	A significant reduction (p<.05) in HAM-D score in the combined group vs SSRI alone
Smith et al., 2018*	MA or EA & Drug	Drug alone	MA+drug more effective than drug alone (p = .0007) EA+drug more effective than drug alone (p < .00001)

Discussion

Strengths: Most of the RCTs are double-blinded, positive results noted for all interventions.

Limitations: Small sample sizes (less than 200 for most studies), inconsistent dosing, duration and use of different antidepressants among the studies. Inconsistent dosing of oral interventions and minimal overlap in acupuncture points used.

Mechanism of Action: MDD is associated with a change in the levels of neurotransmitters (NTs) in the brain and neural pathways. Natural therapies maintain a balance of NTs by receptor regulation and facilitation of cofactors involved in the synthesis.

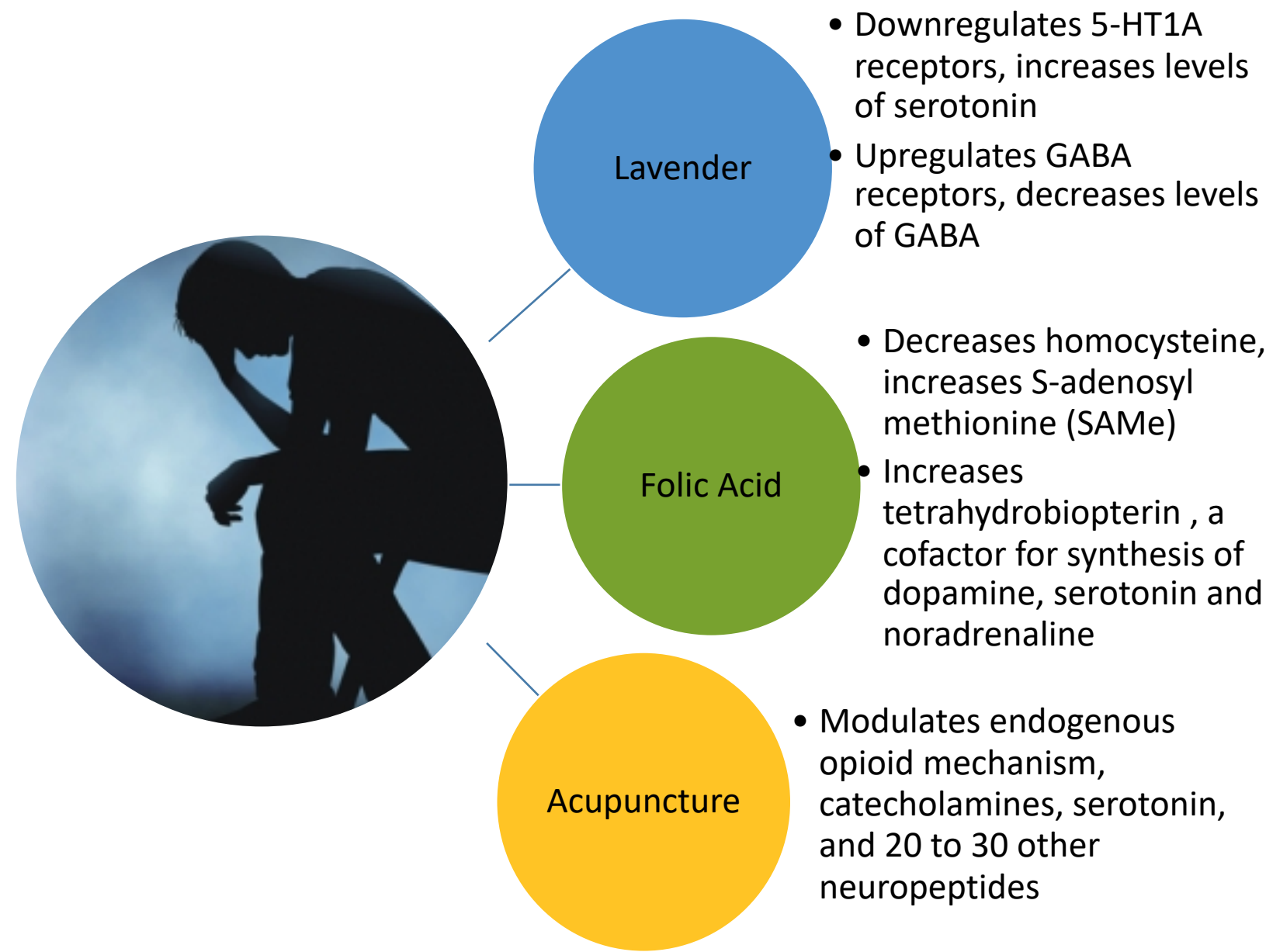


Figure 1 The mechanism of action of natural therapies

Adverse effects: A few adverse effects associated with the use of lavender are nausea, dyspepsia, and headache. Excess folic acid can mask the symptoms of B12 deficiency anemia and monitoring B12 and FA levels is warranted. Acupuncture can cause pain, bleeding, infection at site, headache, or pneumothorax in rare cases.

Conclusion

Evidence suggests that lavender, folic acid, and acupuncture could be effective adjunctive option to usual care of MDD. The data, in general, is of low quality. Further research is required to increase the validity of these interventions.

For references or further questions, please email: pchohan@ndnet.ccnm.edu

Objectives

To analyze the effect of natural therapies in combination with usual care for the management of MDD.

Search Methods

- PubMed database, APA PsycARTICLES and Google scholar were searched. The articles were limited to randomized clinical trials, systematic reviews and meta-analyses in human population.
- Only articles that examined the effect of the combination of natural therapy and standard treatment, had a comparison with placebo, standard treatment or natural therapy used alone or combined and noted changes in Hamilton rating scale for depression (HAM-D) were included in the review.

PICO framework

Population	Intervention	Outcomes
• Adults with MDD	• Natural therapy + Usual care/Standard treatment for MDD	• Changes in the HAM-D 17 or 21

The Effect of Echinacea Supplementation on Cytokine Levels: a Systematic Review

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Introduction

- COVID-19 is a respiratory illness caused by a novel coronavirus which resulted in a worldwide pandemic beginning in 2020.
- Cytokine storm appears to be a factor in COVID-19 mortality.
- *Echinacea* species have been used historically for immune support.
- Rapid review on the role of *Echinacea* in the management of COVID-19 suggested that *Echinacea* supplementation may decrease the levels of pro-inflammatory cytokines involved in cytokine storm in human trials.

Objectives

Systematic literature search to identify all human, animal and *in vitro* studies assessing the impact of *Echinacea* supplementation on cytokine levels.

Search Methods

- Databases: Medline (Ovid), AMED (Ovid), CINAHL (EBSCO), EMBASE (Ovid).
- Titles and abstract screening, full text screening and data extraction are being completed in duplicate using a piloted extraction template.
- Risk of bias assessment.
- Qualitative analysis will assess for trends in cytokine levels.

Table 1: PICO Framework

Population	Intervention	Outcomes
<ul style="list-style-type: none">• Humans• Animals• Cell cultures	<ul style="list-style-type: none">• Echinacea supplementation or exposure	<ul style="list-style-type: none">• Changes in levels of cytokines related to cytokine storm<ul style="list-style-type: none">-interferons (IFN)-interleukins (IL)-tumor necrosis factor (TNF)-colony stimulating factors (CSF)• Development or progression of cytokine storm

Results

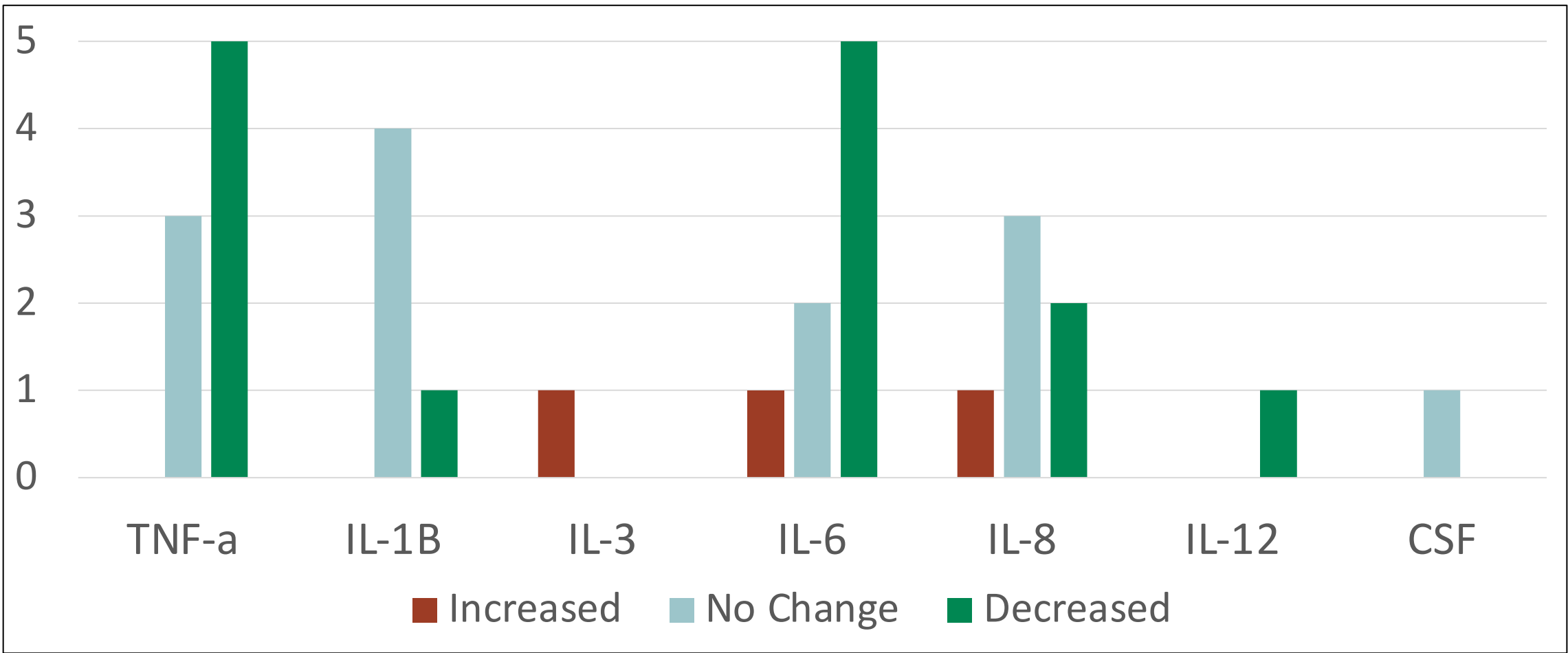


Figure 1. Change in pro-inflammatory cytokine levels following Echinacea exposure in 12 human studies.

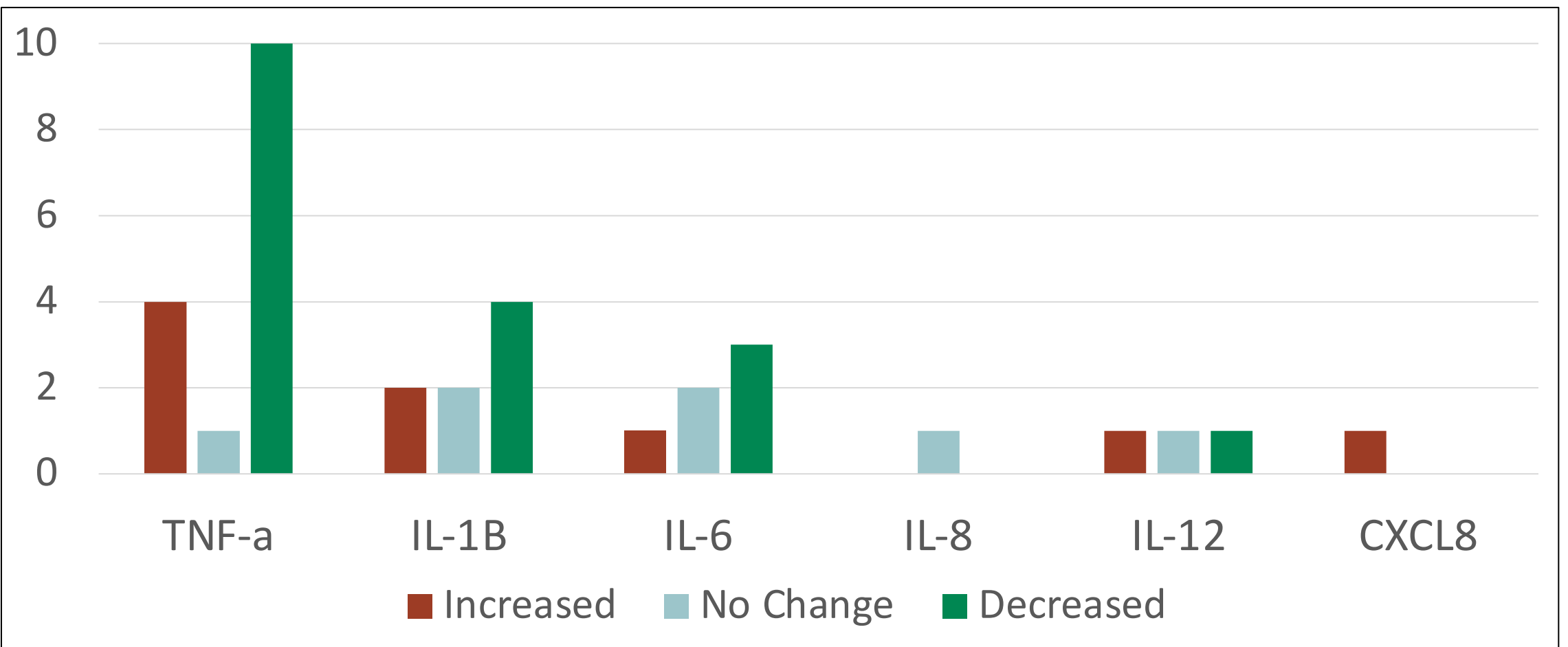


Figure 3. Change in pro-inflammatory cytokine levels following Echinacea exposure in 20 animal studies.

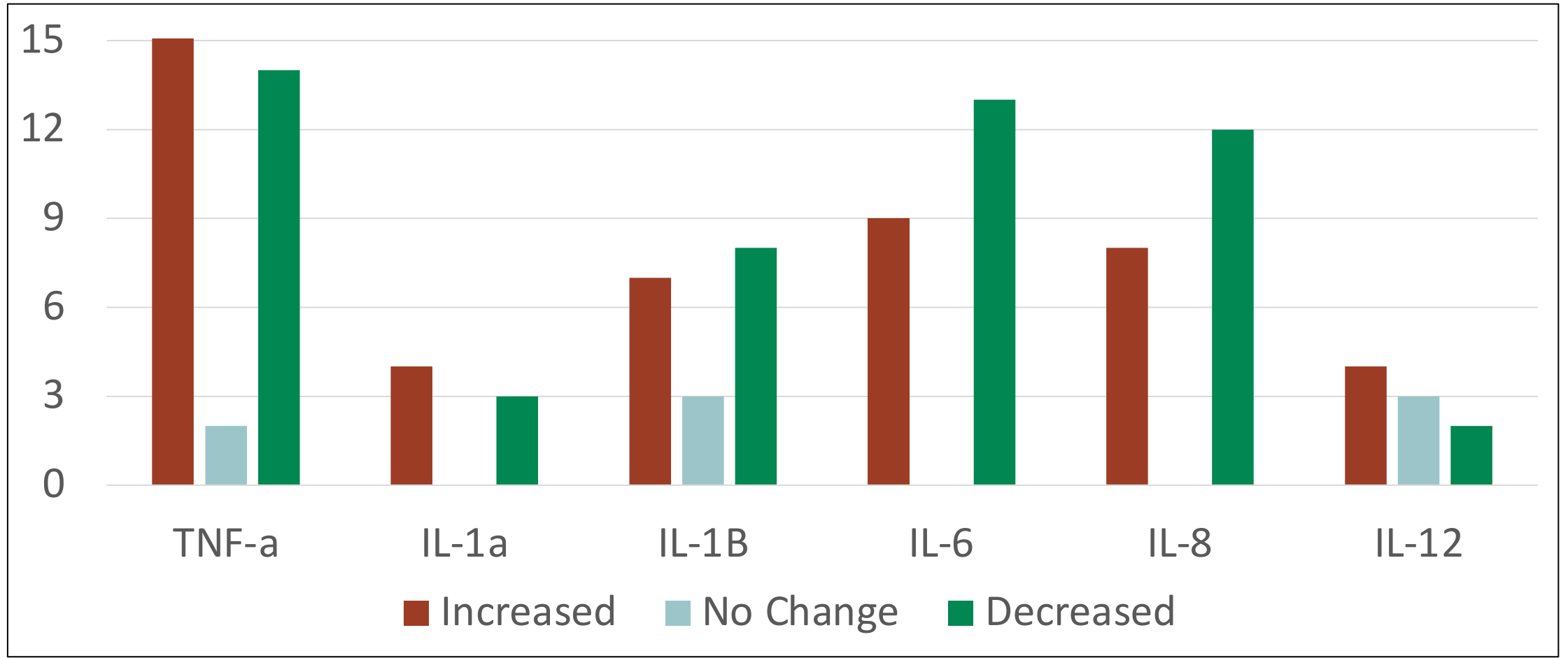


Figure 5. Change in pro-inflammatory cytokine levels following Echinacea exposure in 66 *in vitro* and *ex vivo* studies.

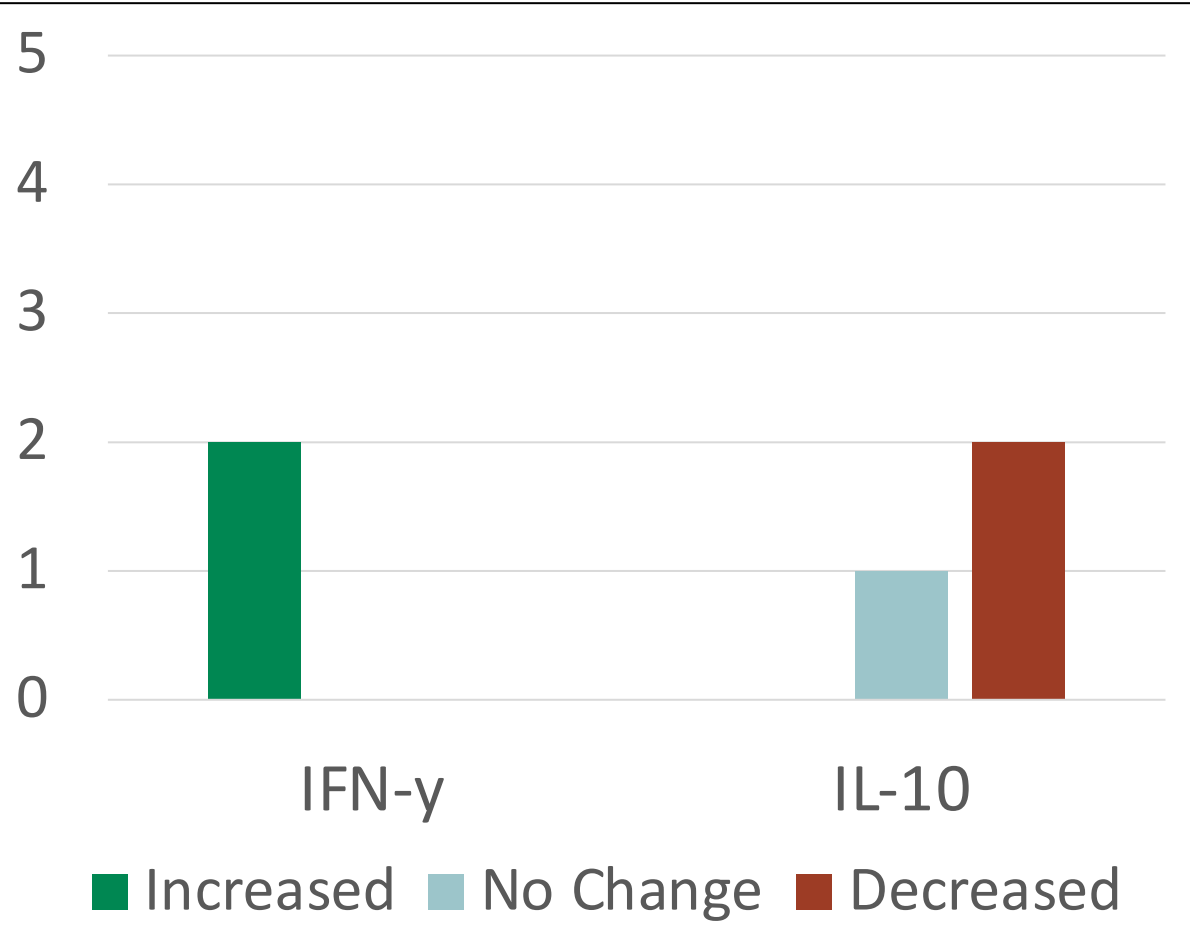


Figure 2. Change in anti-inflammatory cytokine levels following Echinacea exposure in 12 human studies.

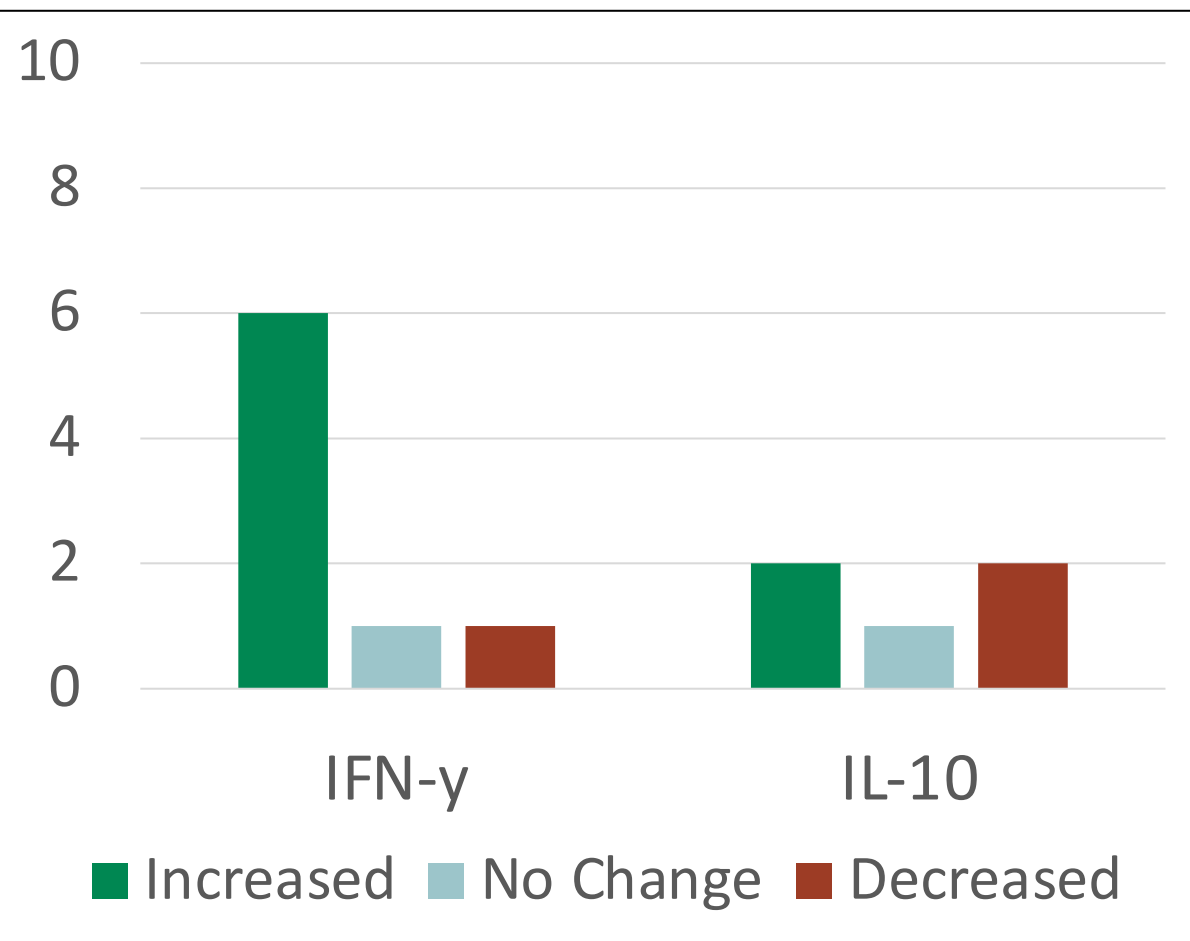


Figure 4. Change in anti-inflammatory cytokine levels following Echinacea exposure in 20 animal studies.

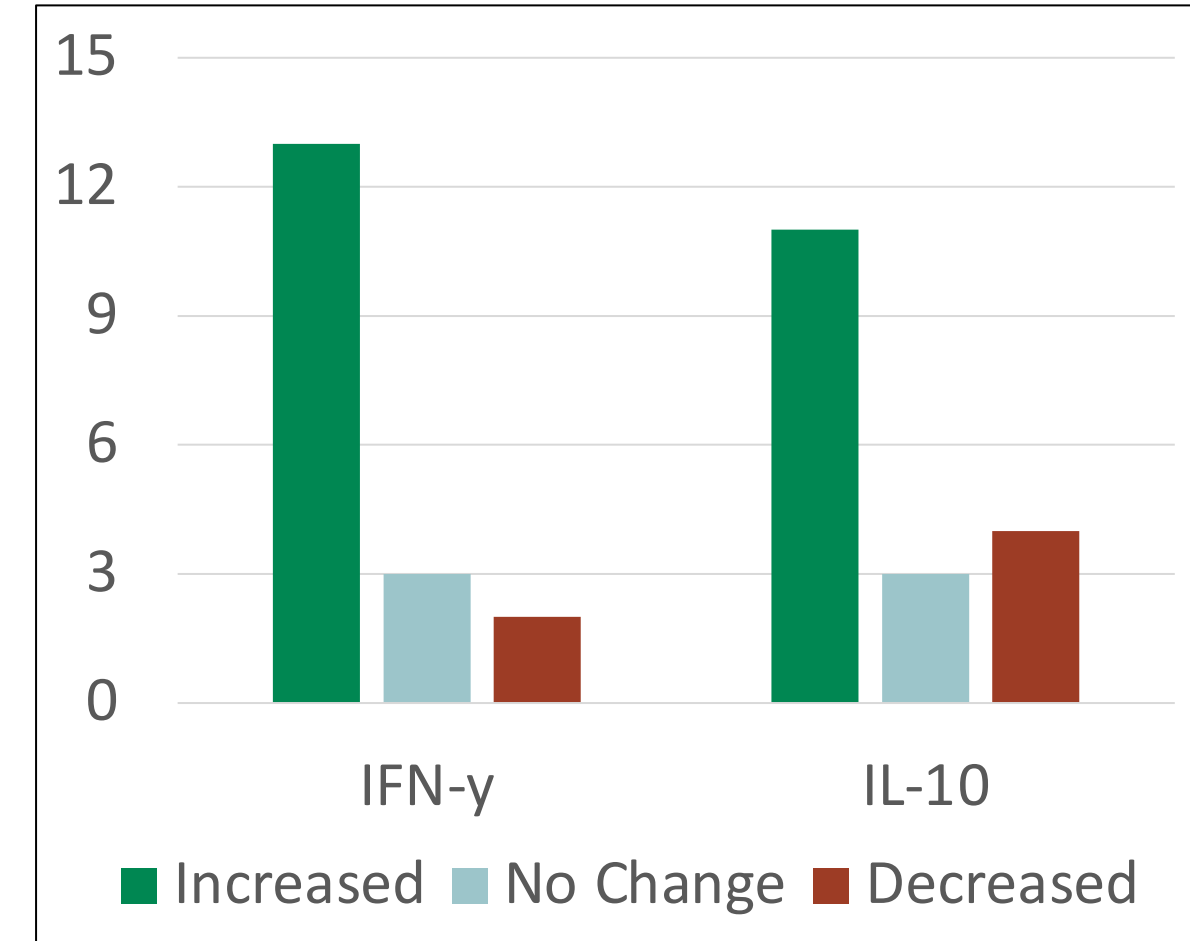


Figure 6. Change in anti-inflammatory cytokine levels following Echinacea exposure in 66 *in vitro* and *ex vivo* studies.

Results

Table 2: Risk of Bias

Category	Overall ROB
Human	Generally high
Animal	Combination of high and low
<i>In Vitro</i>	In progress

Discussions

- **Strengths:** extensive search strategy, duplicate screening and extraction.
- **Limitations:** Large proportion of cell studies, pathogens mainly rhinovirus or influenza; transferability to humans with COVID-19 unclear.

Conclusions

Echinacea may decrease pro-inflammatory cytokines and increase anti-inflammatory cytokines which may be beneficial in the management of cytokine storm in patients with COVID-19. Human trials are warranted.

For references or further questions, please email: maucoin@ccnm.edu

Jarische Herxheimer Reaction in GI Fungal Treatment With Natural Supplements : a Case Report

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Introduction

Jarische Herxheimer reaction (JHR) is a transient immunological response to treatment caused by endotoxin like products released on micro-organism death, typically described in antibiotic treatment of spirochetal infections, and other bacterial, fungal, protozoal infections, with symptoms like fever, chills, headache, myalgias, skin lesion aggravations.

Case Presentation

- A 3-year-old girl presented with atopic dermatitis with a 9-month history of red, itchy, dry, cracked patches on elbows and behind knees, with subsequent spread and scarring on chest, back and inner thighs. Co-morbidities included diarrhea, runny nose, frequent colds. Initial treatment with omega3s, vitamin D3, probiotics, and dietary modifications, showed some relief.
- Stool C/S over 3 days, elicited *Rhodotorula*, sensitive to Caprylic acid & Grapefruit seed extract. No growth of *Lactobacillus* spp. found. NFH Candida SAP (*Allium sativum*, Berberine, Oregano, Selenium, Ca, Mg, & Zn caprylate) was commenced, 3 days into which there was increased itchiness, puffy eyes, nasal congestion and fever. Diagnosing this to be a JHR or “Candida die-off like reaction”, treatment was stopped, and subsequently recommenced at a lower dosage with gradual stepwise increase, with no further reaction and progressive symptom resolution.

Labs

Comprehensive Parasitology x3

BACTERIOLOGY CULTURE		
Expected/Beneficial flora	Commensal (Imbalanced) flora	Dysbiotic flora
4+ <i>Bacteroides fragilis</i> group	3+ Alpha hemolytic strep	
4+ <i>Bifidobacterium</i> spp.	4+ Gamma hemolytic strep	
3+ <i>Escherichia coli</i>	1+ <i>Providencia rettgeri</i>	
NG <i>Lactobacillus</i> spp.	2+ <i>Staphylococcus aureus</i>	
2+ <i>Enterococcus</i> spp.		
1+ <i>Clostridium</i> spp.		
NG = No Growth		

YEAST CULTURE	
Normal flora	Dysbiotic flora
1+ <i>Rhodotorula mucilaginosa</i>	

Yeast Susceptibilities; *Rhodotorula mucilaginosa*

NATURAL ANTIFUNGALS		
	LOW SENSITIVITY	HIGH SENSITIVITY
Berberine*		
Caprylic Acid*		
Uva Ursi*		
Plant Tannins*		
Oregano*		
Undecylenic Acid*		
Grapefruit Seed Extract*		

NON-ABSORBED ANTIFUNGALS		
	LOW SENSITIVITY	HIGH SENSITIVITY
Nystatin		

Discussions

There is a paucity of literature of a JHR after gastrointestinal fungal infection, or after treatment with a supplement preparation. We document here such an occurrence, and resolution through a temporary treatment halt and dose reduction, whereas a mis-diagnosis may lead to stopping an otherwise efficacious treatment, mistakenly considering it inefficacious or harmful consequent to such a reaction. Clinicians may consider the possibility of JHR occurring as a result of either nutraceutical or pharmaceutical treatment. Commencing anti-fungal treatment in a gradual, stepwise manner may be useful in decreasing the risk of JHR.

Conclusions

This is a documented occurrence of a JHR reaction elicited by a combination of natural health products in a 3 y/o patient with a GI fungal infection. JHR or candida die off is mentioned anecdotally but has little documentation in relation to gastrointestinal fungal infestation (and none with *Rhodotorula*), or with supplement treatments. We hope to bring some focus on the same and stimulate more case reports and research into its incidence in such settings, and into differences in manifestations, severity and mechanism as opposed to JHR with pharmaceutical treatments.

For references or further questions, please email: atuteja@ndnet.ccnm.edu

A Systematic Review of Probiotics Use During Cancer Surgery

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Background & Objectives

Probiotics are live beneficial microorganisms that have shown promise in preventing post-operative complications. Our objective was to evaluate the evidence base for safety and efficacy of probiotics in patients with cancer during the peri-operative period.

Methods

- Protocol was registered *a priori* in PROSPERO (CRD42018086168).
- MEDLINE(Ovid), Embase and Cochrane CENTRAL databases were searched from inception to September 19, 2020 for human comparative studies in English.
- Study selection, data extraction were done independently in duplicate; discrepancies were resolved by consensus.
- Risk-of-bias was appraised for randomized controlled trials (RCTs) using the Cochrane Risk-of-Bias Tool (v1).
- Quality assessment of observational studies with a control group conducted with Newcastle-Ottawa Scale.

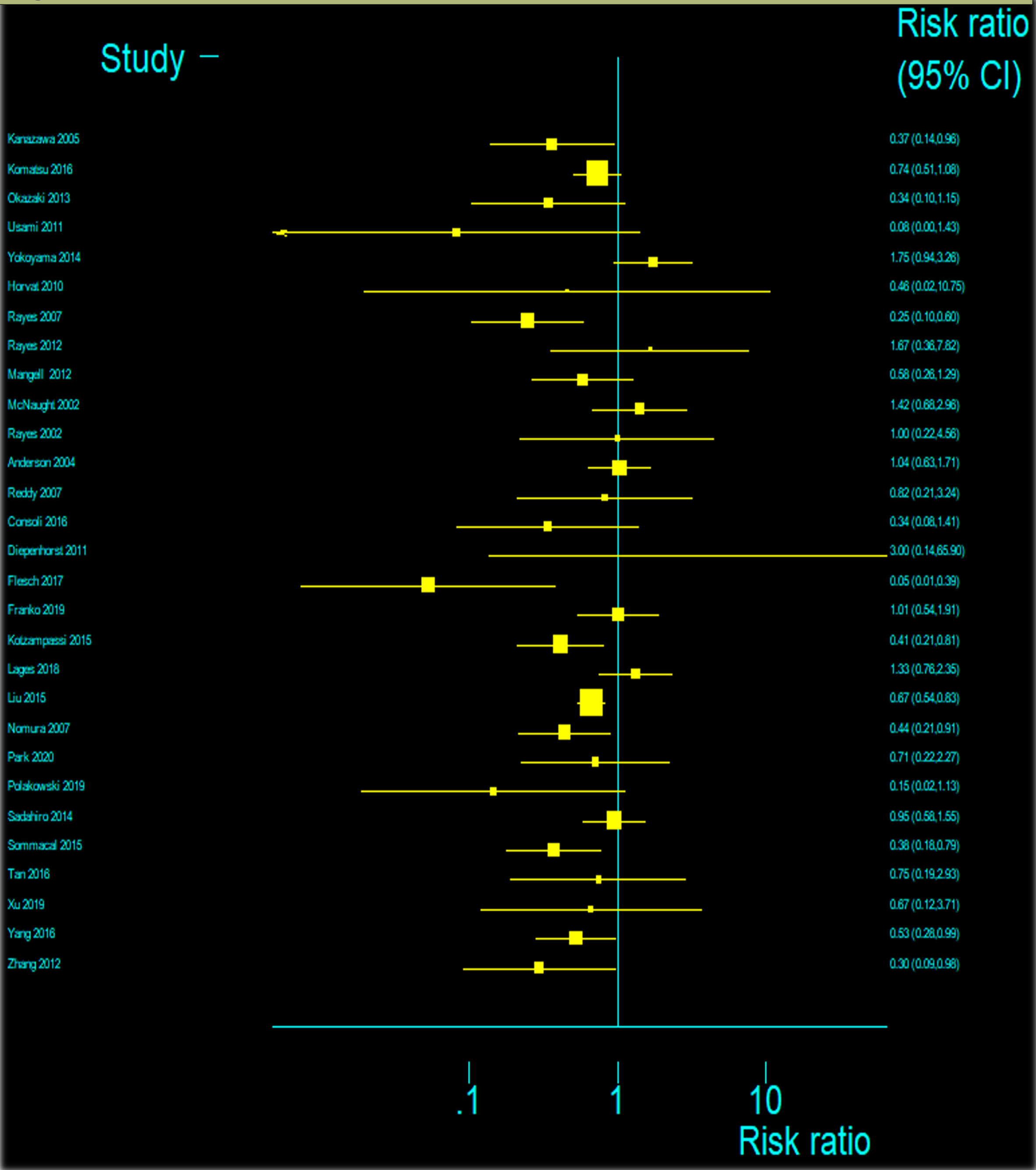
Results

- 48 articles in total reporting on 45 studies were included after screening:** 40 reports of 37 randomized controlled trials (RCTs) and 8 observational cohort studies.
- Surgical period of probiotics use:**
 - Pre-operative only – 10 RCTs (27%)
 - Post-operative only – 7 RCTs (19%)
 - Both periods – 20 RCTs (54%)
- Route of administration of Probiotics:**
 - Oral – 31 RCTs (84%)
 - Enteral (excluding oral) – 6 RCTs (16%)
- Outcomes reported in >50% of the RCTs:**
 - Post-operative infections: 29 RCTs (78%)
 - Hospital length of stay: 21 RCTs (57%)
 - Adverse events: 20 RCTs (54%)
 - Mortality: 19 RCTs (51%)

Table 1: Characteristics of the 37 RCTs	No.	%
Year of publication		
1992- 2000	1	3
2001- 2010	9	24
2011- 2020	27	73
Country		
Japan	10	27
China	7	19
Brazil	5	14
Germany	3	8
UK	3	8
Slovenia	2	5
South Korea	2	5
Greece	1	3
Malaysia	1	3
Netherlands	1	3
Sweden	1	3
USA	1	3
Cancer Types		
Digestive system	34	92
Bladder	1	3
Head and neck (including Laryngeal)	2	6
Age (mean/median)		
55-64 Years old	18	49
65-59 Years old	16	43
Not reported	3	8
Female		
10 - 29 %	6	16
30 - 49 %	19	51
50 - 73%	10	27
Not reported	2	5

Table 2: Four Interventions Studied in Multiple RCTs	
In 7 RCTs - <i>Lactobacillus casei</i> strain Shirota, - <i>Bifidobacterium breve</i> strain Yakult, and - galacto-oligosaccharides combination.	In 3 RCTs - <i>Lactobacillus plantarum</i> 299v.
In 4 RCTs - <i>Pediococcus pentosaceus</i> 5-33:3, - <i>Leuconostoc mesenteroides</i> 77;1, - <i>Lactobacillus paracasei</i> subsp. <i>Paracasei</i> F19, - <i>Lactobacillus plantarum</i> 2362, - betaglucan, - inulin, pectin, and resistant starch combination.	In 2 RCTs - <i>Lactobacillus acidophilus</i> La5, - <i>Bifidobacterium lactis</i> Bb-12, - <i>Streptococcus thermophiles</i> , - <i>Lactobacillus bulgaricus</i> , and - oligofructose combination.

Figure 1: Post-Operative Infections Forest Plot



Conclusions

This large and up to date evidence synthesis provides the most comprehensive systematic review on this topic, including 37 RCTs. Meta-analysis was not conducted due to the heterogeneity across the very diverse interventions. Data synthesis is being finalized with subsequent plans for knowledge translation, including report submission for publication in an open-access, peer reviewed, PubMed indexed journal.

For references or further questions please contact:
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Naturopathic Management of Chronic Neuropathic Pain: A Case Study

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Introduction

- Neuropathic pain has a prevalence rate of 4% - 10% among Canadians.
- There are a multitude of causes and processes leading to neuropathic pain, many of which are poorly understood and difficult to treat effectively.
- First-line pharmaceutical interventions are gabapentinoids, tricyclic antidepressants, and serotonin-norepinephrine reuptake inhibitors. Second-line pharmaceuticals are tramadol, opioids, and cannabinoids. To avoid contributing to Canada's growing opioid crisis, it is imperative that more pain management interventions are presented to patients.
- Canadian Family Physician (CFP) guidelines state that a whole-person approach to neuropathic pain is ideal. This identifies a unique opportunity for naturopathic interventions.

Case Presentation

- A 59-year-old female presented to the clinic with a diagnosis of postherpetic neuralgia (PHN) established 14 years ago, however, there were no lesions at the time of herpes zoster reinfection.
- A full body MRI was performed in 2019 which ruled out structural abnormalities.
- Burning pain has been consistently present and intense since onset despite multiple conventional treatments, including gabapentin and cryotherapy.
- A protocol involving electroacupuncture (EA) and low-level laser therapy (LLLTL) treatments for six weeks was implemented alongside intramuscular B12 injections and supplementation of palmitoylethanolamide (PEA) and alpha lipoic acid (ALA).

Results

- Changes in pain severity were systematically measured at the beginning and end of each visit using a visual analogue scale (VAS). Ratings are presented in Figure 1.
- All pre-treatment pain intensity ratings were found to be 10/10 and post-treatment pain was reduced to a minimum of 3/10 and an average of 7.8/10.
- Each event of post-treatment pain relief lasted 3-6 hours.

Neuropathic Pain Rating Pre- and Post-Treatment

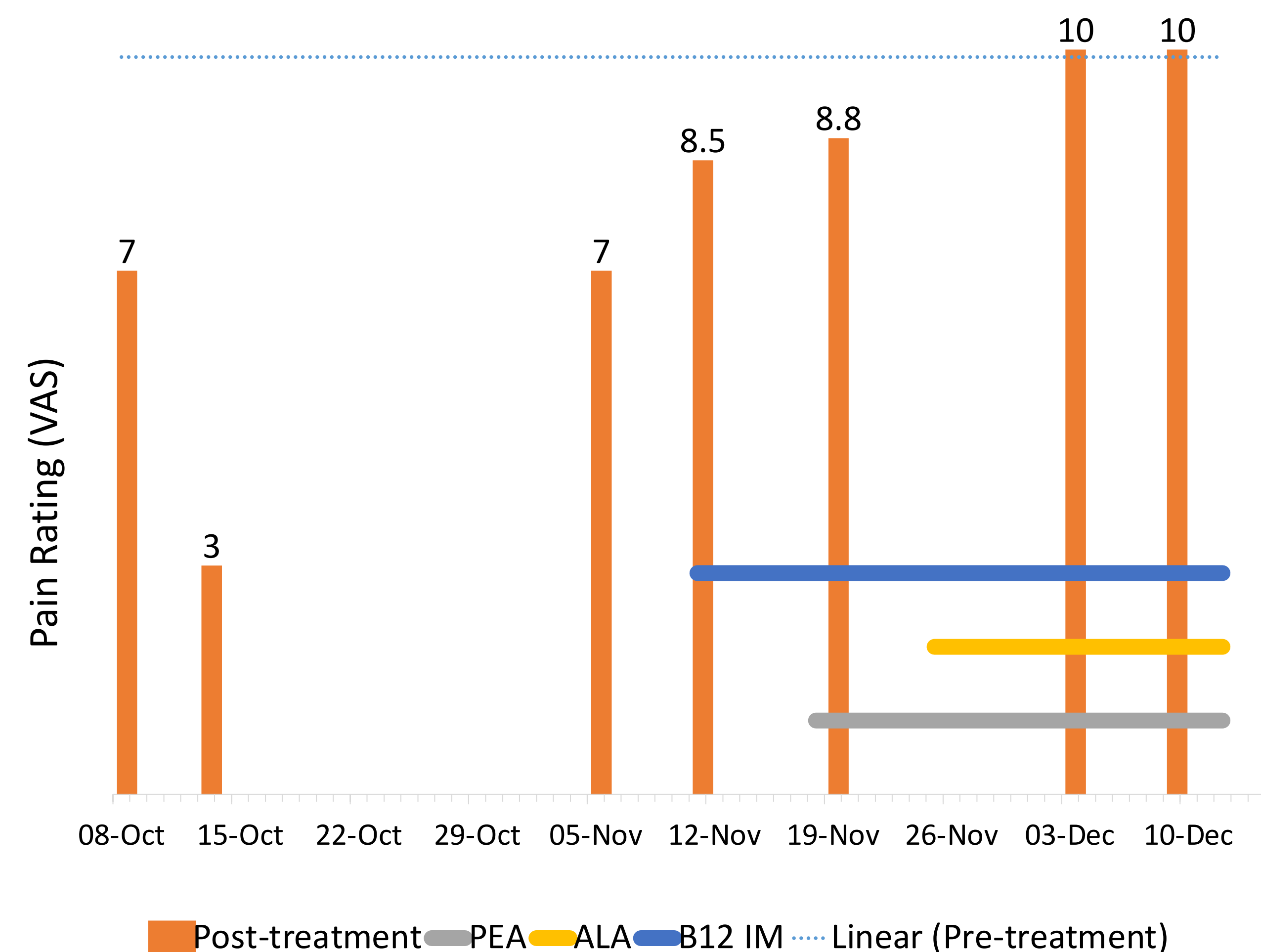


Figure 1. Pain rating on a VAS of 1-10 by date of visit. Horizontal bars indicate when B12 injections and supplementation were added.

Discussions

- Proposed Mechanism
 - EA may reduce neuropathic pain by regulating brain-derived neuropathic factor in the anterior cingulate cortex.
 - The mechanism behind using LLLT for pain reduction is thought to be from a cell growth and regeneration perspective.
 - PEA was chosen as it is a fatty acid that acts as an anti-inflammatory by mediating mast cell activity and an antinociceptive possibly by activating ATP-sensitive K⁺ channels.
 - ALA has been found to have neuroprotective and antioxidant properties that may be effective in reducing neuropathic pain.
- Limitations
 - The data show a marked decrease in pain after the first two treatments, but post-treatment pain gradually increases on subsequent visits.
 - Due to the pandemic, clinic restrictions have made it difficult to give consistent treatment and follow-up.
- Future Recommendations
 - Mindfulness techniques should be implemented next as CFP recommends a holistic approach for reduction of pain.

Conclusions

This case provides a framework for the use of naturopathic modalities for chronic neuropathic pain. More time and consistency of interventions are needed to determine which interventions will provide reliable benefit. Further research into each of the interventions is warranted.