Supervisor Information

Name: John L. Sievenpiper    Email: john.sievenpiper@utoronto.ca

Degree(s): MD, PhD, FRCPC    SGS Department: Nutritional Sciences

Academic Rank: Associate Professor    Field of Research: Clinical Nutrition

Research Institution Affiliation (if applicable):
University of Toronto
St Michael's Hospital

Allocation of student contact time: 2h/week
(number of hours per week YOU are available to the student for any concerns or to review progress)
Project Information (for posting on GDipHR website)

Title: Important food sources of fructose-containing sugars and markers of non-alcoholic fatty liver disease: A systematic review and meta-analysis of controlled feeding trials

Description (max 500 words):
Non-alcoholic fatty liver disease (NAFLD) affects up to one-third of the adult population in industrialized countries. The increasing prevalence of NAFLD has been associated with type 2 diabetes and cardiovascular disease. Dietary factors can influence NAFLD, however, recently concerns have been raised regarding the role of dietary fructose in inducing NAFLD. Animal models featuring extreme levels of fructose exposure and low-quality observational studies show an association of fructose with the risk NAFLD. On the other hand, in a meta-analysis of human feeding trials, isocaloric exchange of total fructose intake for other carbohydrates did not show an effect on markers of NAFLD at moderate doses. Still, it is unclear whether the different food sources of fructose-containing sugars contribute to NAFLD.

Health guidelines recommend reducing sugar intake but at the same time are shifting from a largely nutrient-based recommendations toward a more food and dietary-pattern based recommendations. Thus, it is important to explore how different food sources of fructose-containing sugars affect the risk of NAFLD.

In this study we will undertake a systematic review and meta-analysis of controlled feeding trials of food sources of fructose-containing sugars (sugar-sweetened beverages, fruit and fruit-based products, grain-based products, dairy-based products, sweets, chocolate, and desserts etc.) for their effect on the markers of NAFLD. This study will build upon our previous work in which we conducted a number of systematic reviews and meta-analyses to assess the effect of food sources of sugars with cardiometabolic health outcomes.

Candidates will be trained in methodology of conducting systematic reviews and meta-analyses with an aim to publish a high-impact paper.

If human subjects are involved, have the appropriate Research Ethics Board approvals been obtained?
☐YES ☐NO ☐Application Submitted ☑N/A

Do you expect this work will be published within the 20 months?
Student's roles and responsibilities (please be as specific as possible):

1. Conduct a systematic reviews and meta-analyses of the association of food sources of fructose-containing sugars with markers of NALFD in controlled feeding trials using Cochrane Handbook for Systematic Reviews of Interventions
2. Report results according to the "Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)" guidelines
3. To identify sources of heterogeneity in the pooled data using sensitivity analyses and a priori subgroup analyses with meta-regression models.
4. Publish the study in high-impact journal.
5. Disseminate the results of the meta-analyses at local, national, and international meetings and promote the results among scientific, clinical, political, and industrial opinion leaders in nutrition.
6. Use the results of the meta-analysis to inform future guidelines development for disease preventative recommendations and determine the direction for future research

Please indicate who will serve as the student's direct report for daily oversight (PI, PhD student, technician, etc...):

Post-doctoral fellow.