

Canadian Foundation For Dietetic Research

Dietetic Research Event: June 7 and 8, 2018

Vancouver, British Columbia was the host city of the 2018 Dietitians of Canada Annual Conference.

Through the support of Dietitians of Canada (DC) and Canadian Foundation for Dietetic Research (CFDR), the 2018 Research Showcase was an informative exchange of research and experience-sharing efforts. The submissions for this year's CFDR event represented the diversity of dietetic research conducted within Canada.

The 2018 Research Showcase highlighted the Early Bird abstracts in 2 formats; some as 10 minutes oral sessions and others as ePosters with a short oral component. The Late Breaking abstracts were displayed as ePosters.

This research event would not be possible without the commitment and dedication of many people. On behalf of DC and CFDR, we would like to extend a special thank you to members of our Early Bird abstract review committee: Susan Campisi (University of Toronto); Elaine Cawadias (Retired); Andrea Glenn (St. Francis Xavier University); Mahsa Jessri (University of Ottawa); Jessica Liefers (University of Saskatchewan). Members of the Late Breaking abstract review committee included: Laurie Drozdowski (University of Alberta); Laura Forbes (Co-chair)(University of Guelph); Joann Herridge (Hospital for Sick Children); Grace Lee (Toronto General Hospital); Lee Rysdale (Northern Ontario School of Medicine); Jessica Wegener (Ryerson University); Sarah Woodruff Atkinson (University of Windsor).

We would also like to thank all of our moderators, Pierrette Buklis (CFDR Board), Marcia Cooper (Health Canada), Jenny Gusba (CFDR Board), Brenda Hartman (Brescia College), Paula Brauer (University of Guelph), Dawna Royall (DC), and MaryAnne Smith (DC), who kept our research presentation sessions on time during the conference. Finally, a special thank you to France Bertrand and Michelle Naraine at CFDR for their assistance and support throughout the review process.

We enjoyed interacting with many of you at the oral research presentations as we highlighted the research findings from our dietetic colleagues across our country!

*Christina Lengyel, PhD, RD
Chair, 2018*

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*Janis Randall Simpson, PhD, RD, FDC
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*Late Breaking Abstracts Review Committee
Professor Emerita
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These abstracts were accepted through a peer-review process for presentation.

CLINICAL RESEARCH (INCLUDING OUTCOMES OF INTERVENTION)

Examining the day to day effect of varying FODMAP content on the microbiota: A case study of an IBS patient and a healthy control

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Introduction: A low FODMAP diet reduces the intake of prebiotic fructooligosaccharides (FOS) and galactooligosaccharides (GOS) which are substrates used by host microorganisms to confer a health benefit.

Objective: To investigate the day to day effect of increasing dietary oligosaccharides on clinical symptoms and the microbiota in an IBS patient and a healthy control.

Methods: Two participants 1 with IBS and 1 without IBS consumed a diet low in FOS, GOS, sorbitol and fructose for 10 days they then switched to a diet high in FOS and GOS for 10 days. Weighed food records were collected and analysed on ESHA and the online FODMAP calculator. Daily stool samples were collected. DNA was extracted using the DNAeasy kit. The V4 region of the 16S rRNA was amplified. DNA was sequenced on Illumina MiSeq. Sequence variants were annotated using the Silva database version 128. Data was treated compositionally. Dendrograms of relatedness were generated by unsupervised clustering of Aitchinson distances.

Results: Sixty-two percent of the variation in the microbiome was explained by the difference between the 2 individuals. At the genus level the IBS patient had more Prevotella and the control more Alistipes. Dendrograms showed that in the IBS patient but not the control there was clustering of samples by diet with 1 branch only containing samples taken during the low FODMAP diet.

Conclusions: Altering the oligosaccharide control of the diet significantly changed the total microbiota of the participant

with IBS, however there was less effect on the microbiota of the individual without IBS.

Significance to the Field of Dietetics: Conducting longitudinal studies on a smaller number of individuals may reveal additional and complementary insights into the effect of dietary intervention of the microbiota especially as it reduces the effect of contaminated or unusual microbiota samples.

Improving the Mediterranean diet score and fitness levels in practice: A preliminary look at the effects of the CHANGE lifestyle program in primary care

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Introduction: Metabolic Syndrome (MetS) greatly increases the risk of developing cardiometabolic diseases. An efficacious diet and exercise program aimed at reducing MetS is needed. However, the uptake of lifestyle modification programs in primary care is inconsistent and evaluation on clinically relevant outcomes is lacking.

Objectives: To report on the effects of a team-based diet and exercise program designed for primary care (The CHANGE Program) on the incidence of MetS, its components, changes in Mediterranean Diet Score (MDS; 14-point scale) and exercise fitness at 3 months.

Methods: As part of the implementation of the CHANGE program into practice, patients from 2 Ontario Family Health Teams (FHTs) were identified as having MetS by the Family MDs and were referred to the FHT Registered Dietitian (RD) and an Exercise Specialist (ES) for implementation of an individualized diet-exercise plan. Each patient was followed weekly \times 12 weeks by the RD and ES and saw the Family MD for review of blood work at 3 months.

Results: Twenty-four patients were enrolled in the CHANGE Program. Compared to baseline, at 3 months the average rate of MetS reversal (defined as $<3/5$ components) was 17% (95% CI 5%–35%), with 33% (95% CI 16%–55%) of patients showing improvement in at least 1 component. MDS improved by 2.8 points from 4.8 to 7.6 ($P = 0.007$). RD and ES visit attendance was 82% and 86%.

Conclusions: Participation in the CHANGE program was associated with a significant reduction in the incidence of MetS, improvements in MetS components, MDS and fitness levels at 3 months. Attendance at the weekly visits was not considered a barrier.

Significance to the Field of Dietetics: Through the CHANGE Program, RDs in primary care teams can support patients to incorporate components of the Mediterranean diet and contribute to reducing the risk of cardiometabolic diseases.

Low glycaemic index diet for reduction of oxidative stress in women with gestational diabetes

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Introduction: A low glycaemic index (LGI) diet may be beneficial to women with gestational diabetes (GDM) but it is not known whether this diet provides additional benefits on oxidative stress and antioxidant status.

Objective(s): To compare the effects of a LGI diet with that of standard care (SC) and the effects of GDM to normoglycemic pregnancies by examining markers of oxidative stress and antioxidant capacity.

Methods: Participants ($n = 43$) with GDM from the glycemic index (GI) in GDM study (NCT01589757), provided plasma samples at baseline (V1), 4–6 weeks following dietary education intervention (V3), and 4–6 months post-partum (V4). Participants with GDM ($n = 8$) and normoglycemic participants ($n = 10$) provided breast milk (BM) samples. Plasma samples were analyzed for antioxidants by oxygen radical absorption capacity (ORAC), and for oxidative stress by the conjugated dienes to low density lipoprotein ratio (CD/LDL) and oxidized LDL (LDLox). BM was analyzed for antioxidants by ORAC.

Results: The main study participants (mean \pm SEM; age 34.2 ± 0.7 years, pre-pregnancy BMI 26.4 ± 0.9 kg m^2) were recruited at a mean gestational age of 25 weeks \pm 3.5 days. Between V1 and V3 the net change in mean plasma ORAC (\pm SEM) significantly increased in both diet groups (734 ± 368 mM TE; $P = 0.006$). Plasma LDLox increased significantly between V1 and V3 on the SC diet, but decreased slightly in LGI diet. As such, net change in LDLox was significantly different by diet group (LGI = -1.98 ± 1.59 ; SC = 5.31 ± 1.35 ; $P = 0.001$). No significant differences were found in plasma CD/LDL or BM ORAC concentrations.

Conclusions: An LGI intervention may reduce plasma oxidative stress in women with GDM. Both SC and LGI diets may increase plasma antioxidants. GDM does not, however, appear to have any effect on BM antioxidants.

Significance to Field of Dietetics: This study provides further insight into the beneficial mechanisms of registered dietitians administering a LGI diet for GDM patients.

Lipid formulations for patients requiring parenteral nutrition: A review of clinical and cost-effectiveness and guidelines

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Introduction: Although intravenous lipid emulsions are routinely provided to patients requiring parenteral nutrition (PN), the evidence on the clinical effectiveness and safety of various formulations remains unclear.

Objectives: CADTH's objectives of this review were to examine the clinical effectiveness, cost-effectiveness and evidence-based guidelines associated with lipid formulations in adult and pediatric patients requiring PN.

Methods: A limited literature search was conducted. The included SRs were critically appraised using AMSTAR, RCTs were critically appraised using the Downs and Black checklist, economic studies were assessed using the Drummond checklist, and guidelines were assessed with the AGREE II instrument.

Results: Low to moderate quality evidence from 8 RCTs and 10 SRs demonstrated that non-100% soybean emulsions, especially fish oil-containing emulsions, are no less safe than pure soybean emulsions and may confer clinical benefits in post-operative adult patients. Safety parameters related to liver function, inflammation, and adverse events were not adversely affected by non-100% soybean emulsions. The economic evaluations demonstrated the cost-effectiveness of fish oil emulsion over soybean-based emulsions. However, there were substantial limitations in the economic analyses and the results should be interpreted with caution. European guidelines suggest the use of fish-oil containing emulsions in post-operative adult patients.

Conclusions: Due to the lack of high-quality evidence for the comparison of clinical outcomes between patients receiving PN with different intravenous lipid emulsions, it is not possible to draw any conclusions with a high level of confidence. However, there were consistent trends among studies.

Significance to the Field of Dietetics: Clinical dietitians receive conflicting messages on formulations of intravenous lipid emulsions for PN. CADTH's review provides the latest evidence to inform decision making both in clinical practice as well as product procurement efforts within institutional settings.

COMMUNITY-BASED NUTRITIONAL CARE

Introduction of the Mini Nutritional Assessment (MNA[®]) in a community health center is associated with increased referrals to dietitians

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Introduction: Among newly admitted patients to Community Home Health (HH), a total of 64% are malnourished or at risk of malnutrition. Routine nutrition screening and timely follow up by Registered Dietitians (RDs) can reduce length of stay and complications in acute care.

Objectives: To examine whether the implementation of the Mini-Nutritional Assessment (MNA[®]) done by HH clinicians leads to an increase of patient referrals and more timely referrals to HH RDs. To explore clinicians' and the manager's experiences with respect to the MNA[®] application in the community setting.

Methods: Quantitative retrospective data analyzed tabulating the number of referrals made to the RD and time from admission to HH and date of referral to RD during two 6-month periods: pre-intervention and MNA[®] intervention at Evergreen Community Health Centre in Vancouver. Post intervention, a focus group was conducted with the manager and 5 HH clinicians to assess tool acceptability. A time control group at another health unit that did not receive the intervention was also assessed.

Results: With the MNA[®] intervention, the referral rate to the RD increased from 4.6% to 8.4% ($P = 0.002$) but no change in the time to referral ($P = 0.75$). In the control group, referral rate change was insignificant ($P = 0.200$) and increase in referral time ($P = 0.08$) was significant hypothesizing that the absence of the MNA[®] may increase referral times to the RD. Enablers of the screening tool included important knowledge gained and increased patient satisfaction. Barriers included need for further BMI education, limited RD resources, and additional weighing scales required.

Conclusion: Use of the MNA[®] was associated with increased referrals to the HH RD. Although clinicians and clients found the MNA[®] easy to use, further education on BMI calculations, increased RD resources, and additional weighing scales are needed.

Significance to the Field of Dietetics: Routine screening using MNA[®] in HH community to make appropriate referrals to the RD is recommended.

DIETARY ASSESSMENT

Food sources of choline for Canadian women of childbearing age. Is it enough?

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Introduction: The nutrient choline is considered to play an important role in reproductive health. It is essential during the early neonatal period to reduce the risk of neural tube defects but is critical for fetal neuronal and brain development. There is limited Canadian evidence of choline intakes during

pregnancy but none looking at women of childbearing years (WCBY) in general. What evidence that does exist suggests that the majority of women, pregnant or otherwise, do not meet the recommendations. The AI for WCBY is 425 mg per day.

Objectives: This study was designed to examine choline intakes nationally in WCBY and determine what food choices contribute to those intakes.

Methods: Diet recall data was collected for all non-pregnant and non-lactating women 18–45 year age ($n = 4308$) using the Canadian Community Health Survey 2.2 (CCHS) data. Nutrient information for choline was imported from the Canadian Nutrient File (2010 version) and matched to the foods in the CCHS 2.2 dietary recall data. Choline intakes and percent contributions were then estimated for all food sources in the CCHS for WCBY. Distributions of usual intakes for total choline were estimated using PC Side (version 1.11).

Results: For WCBY, the top 5 foods contributing to choline intake are: eggs, 1% and 2% milk, chicken and ground beef which contribute ~32% of intake. Mean choline intake was 297 mg/day with ~85% having intakes below the AI.

Conclusions: Food sources for choline are primarily animal in origin but the majority of WCBY are not meeting the AI for choline. Next steps are to examine choline intakes using the more recent 2015 CCHS Nutrition data to examine choline intakes and trends in choline food consumption patterns.

Significance to the Field of Dietetics: Dietitians need to focus not only on folate consumption in WCBY but choline as well.

Improving the accuracy of measuring oral food and fluid intake of adult patients in acute care

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Purpose: To identify an effective and practical method to evaluate patient food consumption for patient care and clinical decision making and evaluation of malnutrition interventions.

Process: Patients were randomized to (i) tray ticket (TT) (% of each foods eaten is recorded), or (ii) modified My Meal Intake Tool (MMIT) group (proportion of meal consumed is recorded). Patients self-recorded their 3-day food consumption. Food records of 6 meals per patient were compared to weighed food intake for accuracy. Each patient completed a satisfaction survey upon study completion. Each method results were evaluated for accuracy, feasibility, ease, appropriateness for use, and workload impact. Results were discussed by Dietitian, Management and Researcher focus groups.

Systematic Approach Used: Seventy-two (72) patients from 2 hospitals completed the study. Ninety percent (90%) of patients self-recorded their food intake; patients reported that recording intake took minimum effort and time. Based on

comparison to the weighed food method, TT was more accurate than MMIT in total meal calories (88% vs 40%) and protein (75% vs 52%). All focus groups preferred TT and made suggestions to improve TT method's data collection process and completeness of between meal foods.

Conclusions: TT is a patient-friendly tool that provides an accurate measure of patient food consumption. Collaboration between nutrition, food services and other health professionals may improve the data collection process, thus maximizing TT's potential.

Otago Next step is to study ability to have other staff (e.g., nurses or food service workers) use TT tool to record intake of patients who are unable to do so.

Significance to the Field of Dietetics: Dietitians require accurate measurement of food intake to provide optimal patient care and for evaluating malnutrition interventions. This study has shown the TT tool is accurate in providing this required information.

DIETETIC PRACTICE AND EDUCATION

Protected Meal Time implementation on an acute hospital unit: Addressing inpatient malnutrition

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Purpose: Protected Meal Times (PMT) was implemented on the acute Urban Health unit at St. Paul's Hospital for specified patients. PMT is patient-focused nursing care during meals for malnourished patients or those who require more care during meals. We would like to share our experiences with implementation, including quantitative audits and testimonies from patients and staff.

Process or Summary of Content: Audits on our unit showed that 90% of patients were interrupted 2 to 11 times during meals, and of those who were not fully independent, only half were given assistance to eat. PMT is used to address some environmental and organizational barriers for optimal intake in hospital.

Systematic Approach Used, Including Supporting

Information: The implementation of a ward-specific, individualized PMT was designed with input from interdisciplinary staff, and evaluated with audits and informal interviews with patients and staff. 75% of patients were put on PMT due to weight loss/severe malnutrition and/or poor intake, and the remainder due to dysphagia or increased care needs. Sixty-three percent of patients who were on PMT had significant increase in intake and 67% who had history of severe weight loss regained 5%–10% of their weight. Staff report full support of PMT and feel it improves outcomes. Patients reported positive outcomes and experiences with PMT.

Conclusions: Implementation of PMT requires nursing and dietetic leadership and support from staff to be successful. PMT can reduce the exacerbation of inpatient malnutrition,

improve overall patient health outcomes and provide patient-centred care.

Recommendations: We encourage acute care dietitians to evaluate if PMT would work on their specific units and patient population. Joining quality assurance committees and completing pre-implementation audits can help gather support from interdisciplinary staff.

Significance to the Field of Dietetics: PMT has been shown to improve nutrition outcomes in an inpatient setting for patients struggling to maintain nutrition status.

Implementation of the nutrition care process and nutrition care process terminology in Canadian dietetic practice

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Introduction: The Nutrition Care Process (NCP) is a standardized approach to guide nutrition care. It encompasses 4 steps (nutrition assessment, nutrition diagnosis, nutrition intervention, nutrition monitoring, and evaluation). The NCP Terminology (NCPT) was developed to help improve dietetic documentation. Although NCP/NCPT implementation has been occurring in Canada for ~10 year, few data are available on this process.

Objective: To assess NCP/NCPT implementation in Canadian dietetic practice using the newly developed and validated International Nutrition Care Process and Terminology Implementation Survey.

Methods: From February–April 2017, various channels (e.g., dietetic regulatory bodies, Dietitians of Canada newsletters, social media, and word-of-mouth) were used to invite dietitians from across Canada to complete the online survey (mounted on SurveyMonkey) in English or French. Data were analyzed using descriptive statistics.

Results: In total, 503 dietitians participated; 92% completed the survey in English, and 59.8% resided in Alberta or Ontario. Respondents worked in various practice areas, but many worked with inpatients (56.7%) and/or outpatients (52.7%). Most respondents (97.3%) had heard about the NCP. Over 70% reported either frequently or always using the nutrition assessment and nutrition diagnosis steps of the NCP, and >50% reported frequently or always using the nutrition intervention, and nutrition monitoring and evaluation steps. The NCPT was most commonly implemented in the nutrition diagnosis NCP step (73.9% of respondents reported frequently or always implementing the NCPT at this step);

Conclusions: Results in volunteer respondents suggest high awareness of the NCP and that many dietitians currently implement the NCP in their practice. Implementation varies

depending on the NCP step and implementation was higher for the NCP versus NCPT.

Significance to the Field of Dietetics: This work provides baseline data on NCP/NCPT implementation in Canada, and information on where to target initiatives to improve uptake.

A snapshot of dietetic staffing ratios in primary health care

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Introduction: Registered Dietitians (RD) in primary health care (PHC) improve health outcomes and save \$5 to \$99 for every \$1 spent on nutrition interventions. Despite proven benefits, few dietetic positions exist in Canada and internationally with only 3%–15% of the dietetic population reported to be working in PHC. Limited access to dietetic counseling for vulnerable populations at risk or living with chronic disease is an ongoing problem with <30% of Ontarians having access to dietitians in primary care settings.

Objectives: Provide a snapshot of observed and recommended staffing ratios for dietitians working on interprofessional teams in PHC. Identify factors influencing staffing projections. Demonstrate utilization of staffing ratios to identify service gaps and plan for appropriate workforce capacity.

Methods: A review of the literature on dietetic staffing and workforce capacity was completed in 2017 to complete a PEN pathway on dietetic staffing ratios in PHC.

Results: Dietetic staffing ratios include ranges of 1 RD: 15 000–18 500 patients and 1 RD for every 4–14 family physicians. Expert consensus studies from Australia, Canada, and the U.K. recommend 1 RD for every 300–500 patients with diabetes to meet population specific health needs and best practices.

Conclusions: Current staffing ratios are likely inadequate to meet the needs of aging populations with high rates of chronic disease and to keep up with high expected vacancies. Projection models based on specific population needs and best practices are recommended over traditional staffing estimates based on physician or population numbers.

Significance to the Field of Dietetics: With the expansion of PHC in Ontario to meet the needs of 70% of the population currently not rostered with FHTs, dietitians and health care planners are urged to utilize the ratios to identify service gaps and ensure adequate dietetic capacity.

Addressing malnutrition at Vancouver Acute

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Purpose: To address and raise awareness of malnutrition amongst the healthcare team at Vancouver Acute (VA).

Process/Summary of Content: Malnutrition in the hospital setting leads to negative patient outcomes, extended length of stay, and increased costs to the healthcare system. To address

malnutrition at VA [Vancouver General Hospital (VGH), UBC Hospital (UBCH), and GF Strong Rehabilitation Centre (GFS)], we undertook projects and strategies over the last several years. Starting in 2012, VGH medical units participated in the Canadian Malnutrition Task Force (CMTF) Nutrition Care in Canadian Hospitals study (NCCH). We presented site results and recommendations to the VA Patient Safety and Quality Council. In 2013, the CMTF presented to the organization on the prevalence and impact of malnutrition with data from the NCCH. In 2014, we collaborated with Patient Quality, Food Services, and nursing to implement a protected meal time (PMT) program on 1 VGH medical unit. The PMT program later expanded to GFS. We successfully advocated to include the Canadian Nutrition Screening Tool (CNST) into the VA Nursing Admission Assessment form and into the health authority electronic health record. Other strategies utilized were dietitian education with malnutrition webinars, research projects on malnutrition risk using the CNST, dietitian led malnutrition awareness presentations, nutrition myth buster posters, and the formation of a dietitian malnutrition awareness working group.

Systematic Approach Used: We utilized institution and CMTF resources to complete projects over time.

Conclusions: Addressing and raising awareness of malnutrition at VA has been an ongoing process.

Recommendations: Our plan is to continue our projects and strategies to bring awareness to malnutrition and to advocate for dietitian services.

Significance to the Field of Dietetics: Dietitians in the hospital setting are well positioned to address malnutrition. When done in manageable projects over time and in collaboration with others, progress can be effectively realized.

You can't touch ... or can you? Dietitians' perceptions of expressive touch in client encounters

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Introduction: Expressive touch (ET) is a non-procedural, affective, and non-verbal form of communication that can enhance the provision of client-centred care and improve outcomes in dietetics. Registered Dietitians' (RDs') perceptions and use of ET in client encounters are unknown.

Objectives: We explored RDs' characteristics and perspectives related to their use of ET in client encounters.

Methods: Using an explanatory sequential mixed-methods approach, Northern Ontario clinical RDs participated in a survey to provide quantitative data that was further explained through interviews with a subset of participants (n = 17).

Results: Survey response rate was 54% (n = 135); distribution by age, location, and work setting were consistent with Ontario clinical RD practice profiles. Survey results indicated that most RDs consider ET a useful communication tool in

client encounters (66%–77%), yet are hesitant to use ET (81%). Comfort with ET was reported among older and more experienced RDs and those working with long-term, ambulatory, or pediatric populations. Qualitative analysis revealed ET overall, to be situationally beneficial by communicating: empathic concern, kindness, teamwork, and gratitude. The interplay of factors influencing RD uptake were described as themes: client openness to touch, the environment, and RD comfort with touch. ET use was common among RDs with an affinity to touching, and with distressed clients of the same sex outside of their age group. Concerns regarding personal safety, misinterpretation, or unknown client customs limited use of ET.

Conclusion: Expressive touch is valued by many Northern Ontario clinical RDs to enhance care. Selective use of ET within the different contexts of dietetic practice is determined by perceived client and individual RD comfort.

Significance to the Field of Dietetics: These results can sensitize RDs to consider adopting ET into practice. Education, including exploration of personal limits, is needed to promote ET as another communication tool for the provision of effective client-centred care.

Simulation-based training and role playing to increase nutrition facilitators' knowledge and perceived self-efficacy to promote vegetable consumption among 3 to 5 year-old children

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Background: Much is known about interventions that promote child intake of vegetables. However, nutrition training for facilitators to deliver interventions in child care comes with many challenges. Simulation-based training assists facilitators in transferring knowledge to real-world situations yet use in dietetic training is limited.

Objective: Use simulation-based and role playing approaches for training facilitators to implement a Food Literacy Intervention Program to promote consumption of vegetables to preschoolers in child care.

Methods: Dietetic and health sciences students were recruited as nutrition facilitators. The development of three 90-minute training sessions was guided by the Social Cognitive Theory and Adult Learning. Facilitators were paired in teams (dietetic—health sciences dyad). Facilitators were given problem-based scenarios and ask to role play the intervention [i.e., introduce the vegetable, read the story interactively, build a relationship with children, set group rules, and demonstrate how they would handle a problematic situation and why (e.g., children refusing to eat, crying or ignoring the facilitator)]. A group debrief was conducted at the end of each session. Facilitators provided feedback through surveys and field notes (post-intervention).

Results: Eleven facilitators were trained (8 from dietetics). All facilitators agreed training was relevant, clear, well-organized,

easy to understand, and added new knowledge and skills. Facilitators reported self-efficacy to implement the vegetable intervention. Qualitative comments highlighted the positive aspects of training, opportunity to practice their roles and learn from their peers. Field notes showed that strategies presented, as well as new ones learned, were applied across child cares.

Conclusion: Using simulation-based and role playing approaches for training allowed students with limited real-life experiences to incorporate useful knowledge and enhance self-efficacy and provided opportunities to collaborate and learn from peers.

Significance to the Field of Dietetics: The results support use of simulation-based training and inform RD interested in developing training resources for dietetic students.

What is the effect of the multidisciplinary nature of primary care settings on dietitians' weight management practices?

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Introduction: In Canada, multidisciplinary primary care settings are relatively new and were put in place to address the rise in chronic diseases, including obesity. Registered dietitians (RDs) play an important role in these clinical settings by providing Medical Nutrition Therapy (MNT) to patients. Studies have demonstrated the effectiveness of their weight management approach. However, it is unclear how the team-based nature of these settings influences RDs' weight management practices.

Objective: To understand the perception of RDs regarding the effects of the multidisciplinary setting on weight management practices.

Methods: Individual semi-structured interviews were conducted with 14 dietitians working in multidisciplinary primary care settings in Ontario. All interviews were audio-recorded with the participant's informed consent and transcribed verbatim. Two researchers coded the data independently using a thematic analysis approach. All themes emerged inductively and themes were refined iteratively.

Results: Three main themes emerged: interprofessional collaboration, perceived benefits to patients, and conflicting approach and beliefs. Inter-professional collaboration was facilitated through access to various health professionals and time-effective referral processes as well as knowledge exchange and communication. The team-based nature of these clinics was also believed to allow for continuity in the delivery of care. Dietitians' also perceived multidisciplinary clinics to have benefits for patients by allowing for convenient scheduling, consistent messaging, and motivation. Specifically, participants believed that when various health professionals are conveying the same message to patients, it improved patient motivation. The final theme was the possibility of conflicting approaches and beliefs between health professionals. However, there were

ways to address these conflicting approaches through clinical meetings and education.

Conclusions: Multidisciplinary clinical care settings had positive effects on RDs' weight management practices and patient care. Significance to the field of dietetics: Understanding how these team-based settings affect RDs' weight management practices is essential to promote best practices in primary care.

DETERMINANTS OF FOOD CHOICE, DIETARY INTAKE

The impact of calorie menu labelling in a chain coffee shop

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Introduction: The Healthy Menu Choices Act, enacted on January 1, 2017 in Ontario, Canada, requires food establishments with 20 or more locations to display calories on menus. Current research on the impact of calorie labelling suggests an increase in consumer awareness of caloric values, yet limited impact on consumer purchases. The reason for this is unclear, as current literature is limited and lacks qualitative data.

Objectives: To explore the impact of mandatory calorie labelling on Canadian consumer food and beverage choices in a chain coffee shop, and to assess consumer attitudes towards menu labelling.

Methods: This was a small, mixed methods observational study. A questionnaire was created and completed by 50 adults at 2 chain coffee shop locations. Four focus groups, consisting of 13 participants, were conducted using constructs of the Health Belief Model.

Results: Although 84% of participants believed calorie information should be posted, 52% did not notice. Of the participants that noticed the menu board, 48% indicated calorie counts did not impact their purchases, 24% purchased lower calorie items, and 8% did not purchase an item; 64% of respondents felt calorie count alone did not provide enough information to guide purchases. Four focus group qualitative analysis themes emerged: Ambivalence; Eating Out is a Treat; Variable Level of Nutrition Priority; and Need for Further Education.

Conclusions: While most participants thought calorie information should be visible on menus, many reported this information did not impact their purchases. The majority believed caloric values alone do not provide enough information to make informed decisions. Studies with larger, more varied populations and validated tools should be conducted to further evaluate the impact of calorie menu labelling.

Significance: The results inform decisions related to calorie menu labelling interventions, and support the development of health promotion tools for general consumer populations in Ontario.

Do middle-aged men enjoy the taste of health-promoting foods?

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Introduction: Food intake and choices are influenced by a wide array of factors, including taste appreciation. Taste appreciation appears to be particularly important for men, and could also be a significant determinant of their levels of satisfaction postprandially.

Objectives: To (i) describe the relative importance of factors influencing food choices and (ii) compare taste appreciation of 5 foods selected for their potential health benefits.

Methods: Thirty-two men with (n = 14, group 1) or without (n = 18, group 2) type 2 diabetes (T2D) or prediabetes were recruited through posters and flyers. Participants were asked to rank-order 11 factors that could influence food choices. They were also offered 20 g of the 5 foods (almonds, pistachios, avocados, boiled eggs, and oatmeal) in a random order, and were asked to rate their taste appreciation on 100 mm visual analog scales. A 1-way ANOVA with Tukey post-hoc tests were used to compare taste appreciation of the 5 foods. *t* tests were used to assess differences in taste appreciation between groups.

Results: In both groups, the most important factor influencing food choices was participants' own taste. Food cost and recommendations of a health professional were more important in participants with T2D or prediabetes. Except for oatmeal, all foods had a mean taste appreciation >60 mm. There was a significant overall difference in taste appreciation of the 5 foods ($F = 14.37$, $P < 0.001$). Almonds, pistachios, avocados, and eggs were more appreciated than oatmeal (all $P < 0.05$), and pistachios were more appreciated than avocados ($P < 0.05$). There was no difference in taste appreciation between groups.

Conclusion: Taste was reported as being the most important factor influencing food choices and, besides oatmeal, all tested foods seemed well appreciated.

Significance to the Field of Dietetics: As a well-recognized and important determinant of food intake and choices, taste appreciation should be taken into consideration when making dietary recommendation in clinical contexts.

FOOD SECURITY

Exploring the prevalence and association of food insecurity and psychological distress in university students

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Introduction: In 2016, 45% of Canadian university students reported disabling depression and 65% reported overwhelming anxiety. In the same year, one-third of university students in Canada reported experiencing food insecurity. Although it is hypothesized that food insecurity is associated with poor mental health, few studies have investigated this association.

Objectives: We conducted a cross-sectional study at the University of Ontario Institute of Technology in Oshawa, ON to assess the prevalence and association of food insecurity and psychological distress in university students.

Methods: We surveyed undergraduate students (all years) in the Faculties of Health Sciences and Education in October 2017. We used valid and reliable instruments to measure depression, anxiety, and stress symptoms (DASS-21), and food insecurity (USDA 6-item tool). We administered a web-based questionnaire in-class, followed by 2 online waves (e-mail broadcasts) reminding enrolled students to access the online questionnaire. We used logistic regression to compute the association.

Results: We recruited 882 undergraduate students. The 12-month period prevalence of marginal to severe food insecurity was 27% (95% CI: 24.1–29.9). Compared to food secure participants, those with marginal food insecurity or moderate-severe food insecurity were more likely to report psychological distress (OR = 2.2; 95% CI 1.3–3.6 and OR = 3.4; 95% CI 1.8–6.6, respectively).

Conclusions: We found a strong association between food insecurity and psychological distress in undergraduate university students. Further investigations are needed to determine whether food insecurity is a risk factor for the development of psychological distress in this population.

Significance to the Field of Dietetics: Findings illuminate the invisible experience of food insecurity in university students and its potential impact on mental health. Dietitians are well positioned to collaborate with administrators, faculty, Ministries of Higher Education, and others, in developing short- and long-term strategies to reduce its negative impact on university students.

Build a better foodbank or poverty reduction? Why dietitians should care

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Purpose: To share the experiences of dietitians and lessons learned working collaboratively with food bank organizations to evaluate and address food insecurity, nutritional inequalities, and barriers to wellness.

Process: This presentation offers insights from the scholarly literature, policy reports, and dietitians' experiences working as strategic partners with food banks to support improved access to nutritious foods and health promotion services for low-income Canadians. We will also reflect on the limitations of food bank-based approaches for addressing nutritional inequalities.

Systematic Approach: After drawing on secondary sources to examine the history and context of food bank use in Canada, insights will be shared from an on-going research project using a mixed-methods approach to examine the spectrum of food bank users' experiences in Vancouver, BC. This research forms an integral part of a community-based project envisioning a redesign of the food bank model to contribute to broader community food security outcomes.

Conclusions: Despite well-documented limitations of food banks as a response to food insecurity, dietitians can contribute to emerging strategies for improving the impact of food bank-based approaches.

Recommendations: Continued training and professional development is needed to equip dietitians with the competencies needed to work with individuals, community-based organizations, governments, and health authorities to improve dietary quality and health outcomes for Canadians living in poverty, including those who draw on food banks.

Significance to the Field of Dietetics: Perspectives of dietitians are valuable for informing ongoing debates, research, education and grassroots actions to address poverty and food insecurity in communities across Canada.

NUTRITION AND HEALTH EDUCATION

Applying a health literacy lens to the labelling of supplemented foods

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Introduction: Since 2012, foods supplemented with ingredients such as herbals, bioactives, amino acids, vitamins and/or minerals, have been marketed in Canada subject to specific conditions until regulatory requirements, including package labelling, are finalized for these "Supplemented Foods" (SFs).

Objectives: To determine a key set of labelling tools that enable health intermediaries and consumers to identify SFs, their supplemental ingredients, and any guidance or caution for their use.

Methods: Health intermediaries and consumers of varying health literacy levels were recruited by convenience sampling to participate in individual interviews or discussion groups. Ten discussion groups were conducted with health Intermediaries (exercise professionals, food/nutrition professionals, medical professionals, and complementary/alternative medicine specialists). Thirty-one interviews and 8 discussion groups were conducted with consumers (parents with children under the age of 18, adults 55 years and older, physically active adults). An a-priori codebook was

developed by the research team based on an adapted conceptual health literacy framework. Transcripts were thematically analysed for the core health literacy competencies of access, understanding, and appraisal of label information using NVivo.

Results: Front-of-pack, SF product identifiers were found to be accessible and recognizable. Integration of a prominent "Supplemental Ingredients" box in proximity to the Nutrition Facts table facilitated access and understanding of the type and amount of the supplemental ingredients. Addition of a prominent "Caution" section, placed in a clutter-free area close to other regulated label information improved the credibility of the approach.

Conclusions: This study helped identify key labelling attributes for SFs. These initial findings are being used to inform a nation-wide mock-package trial that will objectively test these labelling tools with consumers of varying health literacy levels.

Significance: To our knowledge, this is the first study to incorporate a health literacy lens into the development of labelling tools that help consumers to access, understand and appraise nutrition labelling information in order to make informed dietary choices.

Culinary medicine labs: A Northern Ontario School of Medicine (NOSM) pilot

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Purpose: To pilot and evaluate an interprofessional education model involving Registered Dietitians (RDs), dietetic interns and medical students to determine the perceived need and potential for enhanced nutrition curriculum at NOSM.

Process: Culinary Medicine Labs (CML) are common in many US medical schools as a way to integrate nutrition into medical education curriculum. The Northern Ontario Dietetic Internship Program (NODIP) at NOSM partnered with 2 medical student groups to pilot 4 CMLs; three in Sudbury and 1 in Thunder Bay, ON. These 2-hour sessions were facilitated by 2 RDs supported by 2 dietetic interns at each site. Each session included up to 12 medical students who completed individual evaluations to assess their learning and confidence related nutrition, food skills, and nutrition competence as future physicians. Research Ethics waivers were received from Laurentian and Lakehead Universities.

Systematic Approach Used: Each site secured a local teaching kitchen and liability insurance coverage. Students were recruited through word of mouth, posters, and student newsletters. Participation was voluntary and outside the school schedule. Each session included a food skills demonstration;

meal preparation; a lecture/discussion; and, a meal/closing. Written evaluations were completed at the end of each session. All responses were anonymous; results were collated after each session to guide the next session and inform future planning efforts to integrate similar sessions into the formal curriculum.

Conclusions: These hands-on culinary sessions increased medical students' personal nutrition knowledge and food skills and provided new concepts and strategies around nutrition care as future physicians.

Recommendations: Future CMLs require dedicated NODIP resources and funding including faculty stipendiaries. Suitable space and adequate equipment on campus and integration into the formal curriculum would increase access and participation for all students.

Significance to the Field of Dietetics: This innovative approach can enhance both the nutrition curriculum and the roles of RDs in medical education.

Assessment of social media and technology as a tool for diabetes lifestyle education for youth at risk, or with type 2 diabetes (T2D) at Diabetes Grey Bruce (DGB) in Owen Sound, Ontario

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Introduction: Diabetes educators at Diabetes Grey Bruce (DGB) are interested in determining the value of social media and other online technologies as a tool for providing evidence-based information to at-risk children and their families.

Objectives: First, to examine the use of social media and technology for health promotion among children attending DGB (≤ 18 years old) who are at risk or have type 2 diabetes (T2D) and their accompanying parents. Second, to determine the interest in social media and technology for the dissemination of diet and lifestyle education.

Methods: This was an 8-week qualitative study aimed at improving online patient services at DGB. Children and parents were provided with 2 separate surveys. Nine children's surveys were distributed, 8 were completed. Ten parent surveys were distributed, 9 were completed.

Results: Children had a greater interest than parents in getting healthy lifestyle information from mobile apps (75% vs 33.3%), the internet (62.5% vs 33.3%), and social media (37.5% vs 11.1%). More specifically, children had a greater interest than parents in using technology such as videos (87.5% vs 50%), games (87.5% vs 25%), social media (62.5% vs 37.5%), and mobile apps (50% vs 37.5%) to access information about healthy living. Interest in accessing healthy lifestyle information through the DGB website is higher in children (37.5%) than in parents (33.3%). The top 4 learning interests of children included cooking skills (75%), physical activity (62.5%), healthy body weight (50%), and healthy meals and snack ideas (50%).

Conclusion: Despite the differences in learning methods and social media use, children had a greater interest in the use of social media and online technology platforms for learning about healthy living than their parents.

Significance to the Field of Dietetics: Social media and online technology can be used as a tool for dietitians and diabetes educators to provide evidence-based material to at-risk youth.

The role of the Youth Advisory Group (YAG) in implementing nutrition interventions for the South Asian Adolescent Diabetes Awareness Program (SAADAP)

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Purpose: The South Asian Adolescent Diabetes Awareness Program (SAADAP) is a research-based health promotion program developed to increase awareness and knowledge of diabetes prevention strategies for South Asian (SA) adolescents with a family history of diabetes. The research team established a Youth Advisory Group (YAG) to capture youth perspectives, needs and recommendations to implement nutrition interventions for the study.

Summary of Content: We recruited YAG members to participate in 3 focus groups (n = 4 each) in April and May 2017; and 1 pilot test (n = 2) in November 2017. Feedback suggested that participants have a range of eating out (fast foods) frequency i.e., from once a year to once a day. They have limited involvement in cooking and grocery shopping at home. YAG members urged the researchers to include: hands-on engaging activities; content on learning to read nutrition labels; cooking with various dietary restrictions and information on diabetes and its complications.

Systematic Approach Used: A community-based participatory research approach to guide the study has been utilized. This approach involves youth to be engaged in the research process and create social change through a collaborative partnership with the research team. Our aim for the YAG is to empower SA adolescents to contribute to positive and culturally-relevant health promotion experiences for their community.

Conclusions: This program encourages researchers and dietitians to consider youth to participate and provide leadership in research studies to guide nutritional interventions.

Recommendations (for researchers): Youth engagement should be considered for diabetes prevention in the SA population; Researchers should empower youth members to become leaders of their communities; Researchers should provide adequate incentives for youth to participate in research studies (e.g., volunteer hours).

Significance to the Field of Dietetics: Youth involvement in the development of nutritional interventions provided key insights into SA adolescents' dietary patterns that have both western and cultural influences.

NUTRITIONAL ASSESSMENT AND THERAPY

Phase angle and malnutrition in Canadian community-dwelling adults

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Introduction: Bioimpedance-derived phase angle (PhA) has been investigated recently as a surrogate marker for malnutrition. Phase angle is known to vary depending on age, sex, and BMI due to variability in body water, lean tissue, and adipose tissue.

Objectives: The primary objective was to determine PhA in a sample of Canadian, overweight/obese, community-dwelling adults categorized by age, sex, and BMI. The secondary objective was to compare PhA of our sample to a healthy reference population matched for age, sex, and BMI.

Methods: This study was a sub-analysis within the larger NOW Trial (NCT: 03015012). Overweight/obese adults attending a lifestyle counselling program in Southwestern Ontario, underwent body composition analysis via bioelectric impedance analysis (BIA). Phase angle is an output measure given by the device. Participants' PhA values were matched for age, sex, and BMI to previously published reference values. Z-scores were calculated to compare our values to a healthy reference population, then dichotomized into low or normal PhA groups depending on distance from the mean (<-1 SD, or ≥ -1 SD, respectively). Statistical analysis included calculating means \pm SD, frequencies, Z-scores, and paired *t* tests to assess changes in PhA in response to the intervention.

Results: Mean PhA ($n = 72$) was $5.3^\circ \pm 0.8^\circ$ at baseline, and $5.2^\circ \pm 0.7^\circ$ three months into the program ($P = 0.14$) for a sub-set of the group ($n = 34$). In total, 40.3% had low PhA, while 59.7% were categorized as normal PhA at baseline. At 3 months, 38.2% had low PhA, and 61.8% had normal PhA values.

Conclusions: Since PhA is likely a surrogate marker of malnutrition, 40% of participants may be malnourished at baseline. It is probable that 3 months is not enough time to observe changes in PhA. More research is needed to determine responsiveness of this marker.

Significance to Dietetics: PhA may be an objective marker for assessment of malnutrition which is easily and reliably obtained with BIA.

Collaborative consultation to develop trans-friendly and trans-appropriate nutrition assessment and practice guidelines

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Introduction: Traditional nutrition assessment parameters assume a sex binary (identified as female or male at birth) thus, are of limited use when working with members of the trans community.

Objectives: To consult with members of the trans community and colleagues working in trans health to seek guidance about developing trans-appropriate nutrition assessment approaches.

Methods: At a workshop at the Canadian Professional Association for Transgender Health conference (CPATH), we described nutrition assessment parameters (Anthropometrics; Biochemical; Clinical; Dietary; Eating experiences/environments; relationships with Food and with others through Food), and invited attendees to record thoughts arising on coloured paper (one colour/parameter). Pages of the same colour were assembled, reviewed by one of the participants, and observations presented.

Results: We did not collect attendee demographic information. Sex identifiers were not appropriate; observations were that of the 6 participants, 1 was an ally. All had experienced transitioning and/or working with the trans community. All worked in transhealth. Findings from the community consultation revealed a plethora of ideas on making nutrition assessment trans-appropriate. These ideas will form the basis of consultations with dietitians to develop clinical practice guidelines (CPG) of relevance in clinical, residential, and community settings. Unanticipated outcomes were that attendees became aware of the complexity of food, eating, and nutrition issues generally and for trans folk specifically, and that delegates not attending our session told us that they had become aware of the complexities of food/nutrition/eating issues from colleagues who had attended the workshop.

Conclusions: We acquired information to inform consultations on CPG development, and were encouraged with delegates' enthusiasm for the topic.

Significance to the Field of Dietetics: These results reflect the potential for nutrition professionals to partner with the trans/transhealth communities to optimize nutrition care. We will nurture our connections with CPATH to ensure the inclusion of food/nutrition issues in trans health learning opportunities.

OTHER

Nut consumption and measures of adiposity in type 2 diabetes: A systematic review and meta-analysis of randomized controlled trials

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Introduction: Nuts have been shown to improve glycemic control in diabetes, yet diabetes guidelines caution against the overconsumption of nuts at the same time that they recommend them for CVD prevention suggesting nuts may contribute to weight gain due to their high energy density.

Objective: To conduct a systematic review and meta-analysis of the effect of nut (tree nut and peanut) consumption in diabetes on markers of adiposity in randomized controlled trials.

Methods: We searched MEDLINE, EMBASE, and Cochrane databases (through August 8, 2017). Randomized controlled trials ≥ 3 -weeks assessing the effect of nut intake on measures of adiposity in diabetes were included. Three independent reviewers extracted relevant data and assessed risk of bias of included trials. Data were pooled using the generic inverse variance method and expressed as mean differences (MDs) with 95% confidence intervals (CIs). Heterogeneity was assessed (Cochran Q statistic) and quantified (I² statistic). The overall quality of the evidence was assessed using the GRADE approach.

Results: Thirteen randomized controlled trials (including 741 people) met eligibility criteria. Nut consumption had no effect on global adiposity (BMI: MD -0.52 [95% CI: -1.35, 0.30]; body weight: MD 0.00 [95% CI: -0.28, 0.28], % body fat: MD 0.34 [95% CI: -1.19, 1.87]) or abdominal adiposity (waist circumference: MD 0.06 [95% CI: -0.73, 0.86]). The overall quality of the evidence was graded as "high" for body weight, % body fat, and waist circumference but "low" for BMI owing to imprecision, and publication bias.

Conclusions: Pooled analyses show nut consumption does not have an adverse effect on measures of adiposity in diabetes. The concern that nut intake may result in weight gain appears unwarranted.

Significance: These results provide diabetes guidelines and dietitians with evidence to inform advice given to individuals with diabetes in regards to nut intake without fear of weight gain.

Evaluation of the first 3 years of Nutri-eSTEP usage (2013–2016)

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Introduction: In October 2013, Nutri-eSTEP was launched on the Dietitians of Canada website (www.nutritionscreen.ca). These internet adaptations of the toddler and preschool NutriSTEP[®] nutrition risk questionnaires are part of a broader web tool that provides immediate feedback to users and links to relevant resources.

Objective: To assess usage and screening results from the first 3 years of Nutri-eSTEP (October 2013–September 2016).

Methods: Data from Canadian Nutri-eSTEP users were analyzed using SPSS v24. Data analysis included: descriptive statistics for total risk scores and individual NutriSTEP[®] questions; relationships between NutriSTEP[®] scores and demographics using independent *t* tests; and, associations between individual NutriSTEP[®] questions, where theoretical relationships were thought to exist, using bivariate statistics.

Results: Parents/caregivers completing Nutri-eSTEP, totaled 15 103 (7052 toddlers and 8051 preschoolers) with 73% from Ontario. Mean (\pm SD) risk scores for toddlers was 17(\pm 9) and 20(\pm 8) for preschoolers; males had significantly higher risk scores. 16% of toddlers and 22% of preschoolers were at high nutritional risk; 13% of toddlers and 18% of preschoolers were at moderate risk. For both groups, >55% had low frequency of grain product consumption; >40% had low frequency of consumption of meat and alternates; and, >33% had low frequency of fruit and vegetable consumption. Screen time ≥ 2 hours/day was found for 65% of preschoolers and 34% of toddlers. More screen time was significantly associated with low physical activity, and parental concerns related to growth and weight. Higher parental control of feeding and food insecurity were significantly associated with lower frequency of consumption of fruits and vegetables.

Conclusion: Nutri-eSTEP screening results for Canadian children illustrates concerns related to food group intake, screen time, parental control and food security, with more preschoolers at risk than toddlers.

Relevance to Practice: These results are useful for health practitioners designing nutrition education approaches for Canadian families with toddlers and preschoolers.

Iron sufficiency of Canadians: 2012–2013

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Introduction: Based on data from Cycle 2 (2009–2011) of the Canadian Health Measures Survey (CHMS), 97% of Canadians 3–79 years had sufficient hemoglobin concentrations (Hb). Serum ferritin (SF) sufficiency for women aged 12–19 years and 20–49 years were lower at 87% and 91%, respectively. In view of changing dietary patterns, it is important to monitor iron status on an ongoing basis.

Objectives: To determine iron sufficiency of Canadians (3–79 years) from CHMS Cycle 3 (2012–2013) and its relationship with selected demographic and dietary variables.

Methods: CHMS Cycle 3 data from 5760 participants, representing 96% of Canadians, were analyzed using SPSS. CHMS survey weights were applied; data for pregnant women and individuals with abnormally high laboratory values were excluded. World Health Organization reference values for age and sex were used to estimate iron sufficiency based on Hb, SF, and other markers.

Results: 95% of Canadians had Hb at or above age group and sex references. Of the 5% who were anemic, 61% had SF

greater than reference values. The lowest Hb sufficiency (89%) was for females aged 20–64 years. Overall, 94% of Canadians had sufficient SF with 78% and 85% for women 12–19 years and 20–49 years, respectively. Hb and SF were significantly lower for those with low incomes and for those who reported good/fair/poor versus excellent/very good health. For women, Hb and SF were significantly higher for those consuming red meat, pasta and green leafy salads 1–3 times/week compared to those consuming these foods 4 times/week.

Discussion: The proportion of young women (12–19 years) with sufficient SF dropped from 87% in Cycle 2 to 78% in Cycle 3. This is of concern given that it is crucial that women of child-bearing age have sufficient iron stores for pregnancy.

Relevance: These results suggest that consumption of iron-rich foods should be emphasized, particularly for women of child-bearing age.

PATIENT SERVICES

Environmental scan of LTC nutrition policies and practices in Canada

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Introduction: Residents in long term care (LTC) have multiple nutrition risk factors, and dietitian services can improve health and enhance quality of life. LTC systems are governed at the provincial and territorial (P/T) level, and differences in nutrition-related standards are likely.

Objectives: To compare P/T standards for dietitian services in LTC homes in Canada; To describe dietitians' practice in LTC homes in each P/T.

Methods: Standards relevant to LTC dietitian services were extracted from government websites. One focus group of LTC dietitian leaders ($n = 14$) in June 2017 identified issues for developing interview guide. Key informants were identified through DC member groups, and suggested by initial interviewees. Interviews ($n = 33$) were held between August and November 2017 using a semi-structured interview guide, to verify implementation of legislation/standards and dietitian roles within LTC. Dietitians' practices and challenges to nutrition care were summarized for each P/T.

Results: P/T standards for LTC dietitian services and nutrition care vary widely across Canada. Dietitian services are required in 8 jurisdictions, but only 1 (Ontario) has a specified level of staffing. Assessments and care planning by dietitians is specified in standards of only 6 P/T but is common practice in all P/T. Funding for food in LTC homes is specifically funded by government in only 2 jurisdictions. Common elements of practice include assessment, care planning, dysphagia management, wound care, menu planning or review, and staff education, as well as broader roles in departmental management.

Conclusions: LTC residents across the country have inequitable access to dietitian services, and LTC standards are inconsistent regarding dietitians' roles and staffing requirements.

Significance to the Field of Dietetics: Dietitians' value in LTC could be enhanced by improved standards for nutrition care and staffing. Recommendations for government, researchers, and dietitians are made to support advocacy for consistent and improved standards for dietitian services in LTC.

SCHOOL NUTRITION

Exploring school day food intake in Southwestern Ontario elementary schools with student nutrition programs

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Introduction: Proper childhood nutrition is important for optimal growth, development, and learning. School nutrition programs (SNPs) offering healthy options have the potential to positively influence children's eating habits since children consume one-third of their daily intake at school. Currently, the food intake of children receiving SNPs is not known.

Objective: To explore food intake during the school day in elementary schools where SNPs were implemented.

Methods: Children ($n = 549$) in Grades 4–8 from 22 schools in Southwestern Ontario recorded their intake during the school day using the self-administered Pupils Eating At School (PEAS) questionnaire. PEAS was created by modifying a previously validated tool for this age group. Reported intake in PEAS was quantified into Eating Well with Canada's Food Guide (CFG) servings and compared to one-third of CFG recommendations for children 9–13 years old. Fruit juice, sugar sweetened beverages (SSB), and snacks were counted separately.

Results: Median (interquartile range) intake of servings were as follows: milk and alternatives (Mi) 0.5 (0.0, 1.5); meat and alternatives (Me) 0.5 (0.0, 1.0); grain products (G) 2.0 (0.0, 2.0); vegetables 0.0 (0.0, 1.0) and fruit 1.0 (0.0, 2.0) (VF); snacks 1.0 (0.0, 2.0); fruit juice 0.0 (0.0, 0.0); and SSB 0.0 (0.0, 1.5). In comparison to one-third of CFG recommendations, children met 50% for Mi; 152% for Me; 100% for G; and 50% for VF.

Conclusions: Children did not meet the CFG recommendations for Mi and VF. Since VF intake can be indicative of overall diet quality, promoting increased servings at school should be a primary focus of SNPs. It is unknown if SNP offerings added to or displaced items packed in lunches.

Significance to the Field of Dietetics: Exploring school day intake in children receiving SNPs provides context for evaluating these important programs.

Food for thought: A scan of rural school food environments

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Introduction: Supportive food environments are highly influential in the development and maintenance of healthy habits.

In Grey Bruce, only around 1 in 4 students consume sufficient fruits and vegetables and 40% have reported eating junk foods more than 4 times a day. Elementary and secondary students consume about one-third of their calories at school.

Objectives: Researchers sought to assess facilitators and barriers to a healthy food environment in Grey County and Bruce County schools. Research questions included “How are schools in Grey Bruce currently supporting healthy food environments in the school and classrooms? Are there examples of innovative or best practice approaches that support a healthy food environment?”

Methods: A mixed-methods approach was undertaken in this study. Fourteen semi-structured key informant interviews were conducted (n = 18) with an adapted environmental scan. Key informants were identified by schools and included principals, faculty, and parent volunteers. An iterative approach and thematic content analysis was used.

Results: School food environments were perceived as healthy or fairly healthy. Contributing factors included compliance with the provincial regulations, participation in meal/snack and milk programs, engagement of parents/parent council, and supportive staff modeling. Perceived barriers included: Foods sent from home, feasibility of healthy fundraising, accessibility of healthy foods, insufficient human, financial and material resources, insufficient allergy awareness and lack of policy support. Eight percent of schools reported no barriers to promoting supportive food environments.

Conclusions: Recommendations include supporting efforts to improve food brought from home; policy implementation and evaluation by establishing a healthy schools committee; and healthier fundraising options. Engaging student leadership may be particularly influential in secondary school settings.

Significance to Dietetics: This study adds to literature on the school food environment and its influence on students’ well-being. The results revealed needs for: greater support for caregivers; continued support for meal programs; and addressing gaps in evaluation practices.

PROFESSIONAL STANDARDS AND SKILLS

Advancing indigenous cultural competency in dietetics: The Northern Ontario Dietetic Internship Program (NODIP) experience

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Purpose: To develop, implement, and evaluate cultural competency curriculum to enhance Indigenous cultural self-efficacy in internship.

Process: The Truth and Reconciliation Commission Calls to Action (December 2015) advocates for cultural competency training of all healthcare professionals, yet there is a gap in the dietetics profession. As a mandatory component of NODIP, cultural curriculum includes self-directed and facilitated learning activities and intentional, focused placements.

Both generic and food/nutrition specific competency resources have been developed and evaluated along with placement and final program evaluations.

Systematic Approach Used: Five core generic competencies were developed and validated for allied health learners with additional food and nutrition domains validated with a national sample of Registered Dietitians (RDs) (n = 120) who work in and/or have an interest in Indigenous health. National consultations also took place to inform integration of this curriculum across Canadian dietetic internships. Annually NODIP intern and RD preceptor feedback is collated to lead to refinements and enhancements including an online learning module (Qualtrics®). This platform allows for increased learner interactivity, and improved tracking of uptake and evaluation results. Ongoing program evaluations guide and inform curriculum planning.

Conclusions: This competency curriculum has increased cultural self-efficacy; more than 10% of NODIP graduates are working in Indigenous health across Canada.

Recommendations: While collaboration is needed by all dietetic educators to optimize cultural training for dietetic students, practicing dietitians need the requisite attitudes, knowledge and skills to deliver culturally competent services to meet the diversity of Indigenous populations and dietetic practice settings across Canada. There is a need to discuss current competencies and curriculum, and the opportunities and challenges of integrating Indigenous cultural safety in Canadian dietetic practice.

Significance to the Field of Dietetics: Well-defined dietetic cultural competencies and cultural self-efficacy can improve the capabilities of RDs to address the complex and significant nutrition issues amongst Indigenous peoples.

VULNERABLE GROUPS AND THEIR NUTRITIONAL NEEDS

Effect of creatine supplementation dosing strategies on aging muscle performance

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Introduction: Creatine supplementation has shown promise for increasing muscle strength, endurance and tasks of functionality during aging. Previous studies indicate low-dosage supplementation (0.1 g/kg) for >6 weeks and high-dosage (0.3 g/kg) for 5–7 days can increase intramuscular creatine which may subsequently benefit aging muscle performance. Proteins involved in sensing changes in osmolarity and signal transduction have been upregulated, along with proteins involved in satellite cell proliferation and differentiation in response to 10 days of creatine supplementation, independent of exercise.

Objective: Compare different creatine dosages independent of exercise on aging muscle performance and functionality.

Methods: Using a double-blind, repeated measures design, participants were randomized to: Creatine-High (n = 11;

0.3 g/kg/day of creatine + 0.1 g/kg/day of maltodextrin), Creatine-Low (n = 9; 0.1 g/kg/day of creatine + 0.3 g/kg/day of maltodextrin) or Placebo (n = 11; 0.4 g/kg/day of maltodextrin) for 10 days. The dependant variables measured at baseline and after supplementation were muscle strength (1-RM leg, chest press, and hand grip), muscle endurance (leg, chest press; maximum repetitions at 80% and 70% baseline 1-RM), and tasks of functionality (walking speed, balance).

Results: There was a significant increase over time for leg press strength ($P = 0.000$), chest press strength ($P = 0.001$), leg press endurance ($P = 0.001$) and chest press endurance ($P = 0.001$), with no differences between groups. There were no changes over time between groups for right-hand grip strength ($P = 0.571$), left-hand grip strength ($P = 0.386$), walking speed ($P = 0.226$) or falls ($P = 0.414$).

Conclusion: Short-term creatine supplementation, independent of dosage, has no effect on aging muscle performance.

Significance to the Field of Dietetics: Provide important information for the development of dietary and nutritional supplementation protocols for aging muscle health to prevent a loss of functional capacity and improve overall quality of life.

The efficacy of intensive nutrition interventions provided by Registered Dietitians in a psychiatric hospital on health outcomes and nutrition knowledge, attitudes, and practices

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Introduction: Individuals with severe mental illness (SMI) are at higher risk for poor physical health. Nutrition interventions provided by RDs positively affect physical health outcomes and nutrition knowledge, attitudes and practices in SMI populations.

Objective: To compare an intensive dietetic service model with the current referral-base standard of care at a psychiatric hospital to better understand health outcomes and nutrition knowledge, attitudes and practices.

Methods: This prospective randomized study was approved by the Waypoint REB, it includes 21 consenting participants from a 13-week Concurrent Disorders Program (CDP) with stable mental health. Participants were randomized to receive intensive nutrition services or the standard of care. Outcome indicators were monitored at baseline, mid-point, and post-treatment. Quantitative data was collected and analyzed using SPSS.

Results: 21 participants completed the study; 10 control (6 males, 4 females) and 11 treatment (5 males, 6 females). The mean age of treatment and control participants is 38.7 and 35.9 years, respectively. Weight and waist circumference (WC) at baseline were not significantly different between the groups. The treatment group experienced a median weight gain of 1.8 kg ($P = 0.7$), and a median WC increase of 1.98 cm ($P = 0.3$). The control group had a median weight

gain of 2.6 kg ($P = 0.08$), and a median WC increase of 0.38 cm ($P = 0.7$). Neither group displayed significant weight or WC changes; however weight gain was larger in the control group.

Conclusion: Intensive dietetic interventions in a population with SMI has many benefits for health outcomes relating to nutrition. Psychiatric hospitals should consider offering dietetic services that provide more contact with patients than referral-based dietetic services. This study had a small sample size and further research would be needed to support this evidence.

Significance: This study will contribute evidence-based practice to support the importance of regular nutrition related health teaching by RDs in a population with SMI.

WELLNESS AND PUBLIC HEALTH

Ottawa Good Food Corner Store Initiative: A pilot project to increase access to fresh vegetables and fruit and healthy staple foods

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Introduction: Healthier corner store (CS) initiatives are gaining popularity as a population health strategy to improve access to nutritious food. Ottawa Good Food Corner Store (GFCS) Initiative aimed to increase access to fresh vegetables and fruit (VF) and healthy staple foods (HSF) in priority neighbourhoods.

Objectives: The objectives of the GFCS pilot were to: (i) understand current CS practices, challenges and opportunities to stock healthier inventory; (ii) inform development GFCS resources; and (iii) engage community and increase consumer demand.

Methods: GFCS Pilot implementation included branding, promotion, resources, and community support. Participating CS operators committed to meet minimum inventory of VF and HSF. Observational surveys, interviews, sales data and experiential knowledge were collected before, during and at end-of-pilot.

Results: Eight diverse CS participated in the GFCS pilot. Continuous improvement of processes, tracking and resources occurred during the pilot. Key challenges included inconsistency in variety, quality, and quantity of VF. Most operators shopped in discount stores or supermarkets for VF instead of wholesaler. Other challenges were: limited refrigeration, waste management and low consumer demand. Furthermore, sales data collection was inconsistent due to lack of point-of-sale tracking. Successes include increased inventory and prominence of VF, improved operators' skills and confidence around tracking sales, waste management and handling fresh VF. All CSs reported satisfaction with the GFCS model. One CS closed and remaining CS continue selling VF and use GFCS branding.

Conclusions: An innovative sustainable model needs to be developed to strengthen consumer demand and improve

procurement options for small businesses. This Pilot informed the development of key resources including GFCS Guide for CS operators.

Significance to the Field of Dietetics: This experience contributes knowledge of successes and challenges of engaging with community and small retail businesses to find viable options to improve healthy food access in neighbourhoods.

Views of Ottawa residents on purchasing fresh vegetables and fruit in neighbourhood corner stores

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Introduction: Healthier corner store (CS) initiatives are an approach to improve access to nutritious food, particularly fresh vegetables and fruit (VF). Understanding attitudes of shoppers is essential before changing inventory in retail environments.

Objectives: The objectives of this study were to: (i) understand perceptions among Ottawa residents about buying fresh VF in CS; and (ii) inform the development of Ottawa's Good Food Corner Store Initiative.

Methods: A telephone survey of 603 residents of the City of Ottawa, 18+ years of age, was conducted in December 2016. Participants were randomly recruited using live agents and random digit dialing.

Results: On average, respondents shop for food at supermarkets twice per week (7.6×/month) and CS 1×/month. More than half of respondents (54%) do not shop at CS for food. Younger respondents (18–29 years) shop at CS more often (1.8×/month) than older respondents (60+ years, 0.4×/month). Respondents also shop for food at pharmacies 2×/month and speciality stores 1×/month. Proximity to home (14%) and convenience (11%) are top reasons to shop at CS. Half of respondents buy dairy products (51%), beverages (48%) and snacks (50%) regularly or occasionally from CS. Almost half (43%) of respondents consider the availability of VF at CS either poor or very poor. When asked what would encourage buying VF from CS, local produce and comparable prices to supermarkets were top cited ideas. Almost one fifth (17%) said nothing would encourage them to purchase VF from CS.

Conclusions: Interventions to improve access to VF in CS may be viable as consumers occasionally shop for food in CS. Strategies, such as price matching and sourcing local food, should be considered to increase acceptance and demand for VF in CS.

Significance to the Field of Dietetics: Retail food environments affect food choices and population health. This study contributes evidence of consumers' food shopping habits and their perceptions of shopping for food in CS.

Food sources of total energy and overconsumed nutrients of public health concern among US adolescents: National Health and Nutrition Examination Survey 2011–2014

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Introduction: There is high intake of energy and overconsumed nutrients of public health concern in adolescents' diet. Overconsumed nutrients are sodium, saturated fatty acids (SFA), and added sugars.

Objectives: To identify the most commonly consumed foods by adolescents as percentage of total energy, total gram amount consumed and for intake of sodium, SFA and added sugars.

Methods: One 24-h dietary recall from the cross-sectional National Health and Nutrition Examination Survey (2011–2014) was assessed among 3156 adolescents 10–19 years of age. Mean percent energy, total gram amount, sodium, SFA, and added sugars consumed from food sources were sample-weighted and ranked based on percent contribution to intake of total amount consumed.

Results: The three-highest ranked food subgroup sources of total energy consumed were: 7.8% from sweetened beverages; 6.9% sweet bakery products, and 6.6% mixed dishes—pizza; while diet beverages and plain water each contributed 0%. Three highest ranked sources of total grams were 34.8% from plain water, 15.8% sweetened beverages, and 7.2% milk; while cooked cereals, crackers and snack/meal bars each contributed 0.5% to 1.2%. The 3 highest ranked sources of total sodium were 8.7% from mixed dishes—pizza; 6.7% mixed dishes—Mexican; and 6.6% cured meats/poultry; while yogurt, fruits and flavored/enhanced water each contributed 1.2% to 3.4%. The 3 highest ranked sources of SFA were 9.1% from mixed dishes—pizza; 8.3% sweet bakery products, and 7.9% mixed dishes—Mexican, while diet beverages, plain water, and flavored/enhanced water each contributed 0%. The 3 highest ranked sources of total added sugars were 42.1% from sweetened beverages, 12.1% sweet bakery products, and 7.6% coffee and tea; while eggs, milk and plain water each contributed 0%.

Conclusions: Identifying food sources of energy and nutrients of public health concern among US adolescents is critical for designing strategies to help them meet nutrient recommendations within energy needs.