

# Canadian Foundation for Dietetic Research

## Dietetic Research Event – June 12–14, 2014

Welcome to the nation's capital, Ottawa, Ontario host city of the 2014 Dietitians of Canada Annual Conference. The submissions for this year's Canadian Foundation for Dietetic Research event reflected the very high level of scientific quality and diversity of topics associated with Dietetic research in Canada. Through the support of Dietitians of Canada and the Canadian Foundation for Dietetic Research, the 2014 event was an educational and inspiring exchange of research and experience-sharing initiatives to help motivate conference attendees.

The topics highlighted from this year's abstracts include Dietetic Practice and Education, Community-based Nutrition Education, Nutrition Health and Education, Vulnerable Groups and their Nutritional Needs, Clinical Research and Patient Services and much, much more. The research and experience-sharing work will provide new insights which can be applied to your work. Each presenter provided an 11 minute oral presentation (8 minutes for presenting and 3 minutes for questions). This allowed for meaningful interaction between the presenters and those attending the sessions. This year there were oral research presentations on each day of the conference: I urge you to use these presentations as an impetus to start your own research projects or to engage in conversations with your colleagues.

This Research Event would not be possible without the commitment and dedication of many people. On behalf of Dietitians of Canada and the Canadian Foundation for Dietetic Research, I would like to extend a special thank you to the 2014 Abstracts Review Committee who represented research, clinical nutrition, community nutrition, education, food services and academics: Jennifer Brown (Registered Dietitian, The Ottawa Hospital Weight Management Clinic and Bariatric Surgery Program), Josée Bertrand (Acting Chief of Dietetics, The Ottawa Hospital), Marketa Graham (Public Health Dietitian, Ottawa Public Health Unit), Mahsa Jessri (PhD Candidate, Faculty of Medicine, University of Toronto), Mary Elizabeth Davies (Coordinator/Professor, Food and Nutrition Management, School of Hospitality & Tourism, Algonquin College), Dr. Bénédictte Fontaine-Bisson (Assistant Professor, Nutrition Sciences Program, University of Ottawa). I would also like to thank all of our moderators who took the time during the conference to keep our research presentation sessions on time. A special thank you to Shilpa Mukund and Isla Horvath at the Canadian Foundation for Dietetic Research for their guidance, patience, and support throughout the review process.

I enjoyed interacting with many of you at the oral research presentations where we showcased the talents, efforts and important findings from our dietetic colleagues across our country.

*Marcia Cooper, PhD, RD*  
Chair, 2014 Abstracts Review Committee  
Health Canada

(DOI: 10.3148/cjdpr-2014-014)

These abstracts represent research projects of dietitians that were accepted through a peer-review process for presentation.

\*Indicates the presenter

[R] = Research abstract

[E] = Experience-sharing abstract

### ORAL RESEARCH PRESENTATION ABSTRACTS DC CONFERENCE-OTTAWA JUNE 12–JUNE 14, 2014

#### CLINICAL RESEARCH (INCLUDING OUTCOMES OF INTERVENTION)

##### **Dietary calcium versus calcium supplementation on vascular and bone health in postmenopausal women; Results of a pilot study**

A Ong<sup>\*1</sup>, H Weiler<sup>2</sup>, M Wall<sup>1</sup>, ER Hamilton-Levitt<sup>2</sup>, R Hadad<sup>2</sup>, SS Daskalopoulou<sup>3</sup>, D Goltzman<sup>3</sup>, SN Morin<sup>3</sup>. <sup>1</sup>McGill

University Health Centre Research Institute, Montreal, QC; <sup>2</sup>Dietetics and Human Nutrition, McGill University, Ste-Anne-de-Bellevue, QC; <sup>3</sup>Department of Medicine, McGill University, Montreal, QC [R]

**Objectives:** Calcium supplements may be associated with increased rates of cardiovascular events. Whether calcium intake from supplements has similar effect to that from dietary sources on vascular and bone markers is unknown. A 12-month

randomized trial was piloted to estimate the effect of dietary calcium versus supplemental calcium on vascular and bone health in postmenopausal women.

**Methods:** Healthy postmenopausal women were randomized to a dietary (DI) intake of 1200 mg Ca + 400 IU vitamin D or a supplemental (S) intake of 750 mg CaCO<sub>3</sub> (and 450 mg dietary Ca) + 800 IU vitamin D. Correlations were conducted between dietary intakes and carotid–femoral pulse wave velocity (cfPWV) at baseline. Using repeated measures ANOVA, between-group differences in BP, anthropometric measurements, and cfPWV were measured at baseline, 6 and 12 months, and in dietary calcium/vitamin D intakes at every month post-randomization.

**Results:** Twelve participants were randomized (63 [SD 2] years, BMI 24.7 [SD 0.9] kg/m<sup>2</sup>; WC 81.8 [SD 2.3] cm; systolic BP 112 [SD 4] mmHg; diastolic BP 74 [SD 3] mmHg; cfPWV 7.6 [SD 1.7] m/s). No associations were found between calcium and vitamin D intakes and cfPWV at baseline. No significant between group differences in BP, anthropometric measurements, or cfPWV were found at baseline, 6 or 12 months. Higher dietary calcium and vitamin D intakes were observed in the DI group as compared to the S group throughout the trial. Overall compliance with supplements was 92%.

**Implications & Conclusions:** A brief education session and monthly contacts were effective in changing dietary calcium intake and ensuring compliance with the study interventions. Although the sample size was small, we found no differential effect of dietary calcium versus supplemental calcium on vascular health as measured by cfPWV. Based on these findings, a randomized control trial is currently ongoing.

### Does the lipid-lowering effect of soy foods differ based on equol status? A systematic review of randomized controlled trials

Julia MW Wong, PhD, RD<sup>1,2</sup>, Sonia Ruparell, BSc<sup>3</sup>, Russell de Souza, ScD, RD<sup>1,4</sup>, Vanessa Ha, MSc<sup>1</sup>, Joseph Beyene, PhD<sup>4</sup>, Edward Giovannucci, MD, ScD<sup>5</sup>. <sup>1</sup>Clinical Nutrition and Risk Factor Modification Centre, St. Michael's Hospital, Toronto, Canada; <sup>2</sup>New Balance Foundation Obesity Prevention Center, Boston Children's Hospital, Boston, USA; <sup>3</sup>Royal College of Surgeons in Ireland, Dublin, Ireland; <sup>4</sup>Department of Clinical Epidemiology & Biostatistics, McMaster University, Hamilton, Canada; <sup>5</sup>Department of Nutrition, Harvard School of Public Health, Boston, USA [R]

**Background:** Soy is currently recommended as part of a diet for cardiovascular disease risk reduction. However, the magnitude of lipid reductions may be dependent on inherent phenotypical differences in the colonic biotransformation of soy isoflavones (i.e. production of equol).

**Objective:** We conducted a systematic review of randomized controlled trials (RCTs) to assess the evidence for effect modification of the lipid-lowering effect of soy by equol status.

**Methods:** We searched MEDLINE, EMBASE, CINAHL and the Cochrane Registry of Controlled Trials for relevant trials up until October 2013. Key inclusion criteria included RCTs

conducted in humans, ≥14 days in duration, soy consumption (oral intake), determined equol status, and had suitable lipid end point data. No restriction was placed on language. Two independent investigators extracted relevant data using a standardized abstraction *pro forma*.

**Results:** A total of 1,322 eligible reports were identified, of which, 18 reports meet eligibility criteria and were included. The duration of the studies ranged from 4 weeks to 12 months where the majority of participants had hyperlipidemia, or were postmenopausal women considered as “healthy” or with a history of breast cancer. The dose of soy protein ranged from 0.8–52g/d and soy isoflavones from ~2–114mg/d. Among the reports, 4 found a greater improvement in serum lipids in equol producers vs. equol non-producers, with two additional reports showing this trend. A meta-analysis was not conducted due to limited numeric data presented in the reports.

**Conclusions:** To our knowledge, this is the first systematic review on the effect modification of the lipid-lowering effect of soy by equol status. It is unclear if a phenotypical difference exists due to limited data presented in the reports. Nonetheless, increasing soy intake is an effective lipid-lowering strategy recommended by current dietary approaches for cardiovascular health.

### Decrease in type 2 diabetes risk factors in rural adults participating in a 6-month healthy lifestyle prediabetes education program

A Vermeer<sup>1</sup>, S Azzi<sup>2</sup>, B Whebby<sup>1</sup>, T Barresi<sup>1</sup>, S Blaine<sup>1</sup>, I Giroux<sup>2</sup>. <sup>1</sup>STAR Family Health Team, Stratford, Ontario; <sup>2</sup>Faculty of Health Sciences, University of Ottawa, Ottawa, Ontario [R]

**Objectives:** To determine if healthy lifestyle education as part of a 6-month education program can decrease risk factors for developing type 2 diabetes (T2DM) in rural adults with prediabetes.

**Methods:** Fifty rural adults diagnosed with prediabetes were referred to the STAR Family Health Team by their physician to participate in the prediabetes education program. At baseline and after a program of 6 monthly education sessions, they completed questionnaires about their lifestyle, anthropometric measurements including weight, waist circumference and height were taken, and fasting blood glucose (FBG), blood glycosylated hemoglobin (A1c) and 75g oral glucose tolerance test (OGTT) were measured.

**Results:** At baseline, aside from their history of impaired glucose tolerance or impaired fasting glucose, 96% had abdominal obesity, which is a controllable T2DM risk factor. Thirty-eight participants (age 60 ± 8 years, mean±SD) out of 50 had an attendance rate of 5 visits or more (high attendees). In those participants only, significant reductions (P < 0.05) were observed from baseline to post program for waist circumference (109.7 ± 13.2 cm vs 106.2 ± 12.5 cm), BMI (33.4 ± 5.9 kg/m<sup>2</sup> vs 32.7 ± 6.0 kg/m<sup>2</sup>) and A1c blood levels (6.0 ± 0.3% vs 5.8 ± 0.3%). Participating in a healthy lifestyle prediabetes education program may have helped decrease T2DM

controllable risk factors, since post program, many high attendees had A1c blood concentration levels within normal ranges ( $n = 22/34$ ), no longer had abdominal obesity ( $n = 7/38$ ) and lost weight ( $n = 27/38$ ).

**Implications and Conclusions:** Our preliminary results suggest that participation in the STAR Family Health Team prediabetes education program was associated with improvements in some controllable T2DM risk factors in rural adults who attended the program regularly. Monthly education sessions over 6 months, with an emphasis on healthy lifestyle, could be beneficial to assist rural adults with prediabetes to delay or prevent T2DM. Funding received from the Public Health Agency of Canada: Canadian Diabetes Strategy.

## COMMUNITY-BASED NUTRITIONAL CARE

### Nutri-eSTEP: The development of an online nutrition self-management tool

M. Reesor<sup>\*1</sup>, H. Haresign<sup>\*2</sup>, L. Rysdale<sup>1</sup>, C. Mehling<sup>2</sup>, H. Keller<sup>3</sup>, J. Beyers<sup>4</sup>, J. Randall Simpson<sup>\*1</sup>. <sup>1</sup>University of Guelph, Guelph, ON; <sup>2</sup>Dietitians of Canada, Toronto, ON; <sup>3</sup>University of Waterloo, Waterloo, ON; <sup>4</sup>Sudbury & District Health Unit, Sudbury, ON [R]

**Objectives:** Since the development of the original NutriSTEP® paper questionnaires, there has been an expressed need for the tool to be adapted to an online setting, both in English and French. The objective of this research was to create online adaptations of the NutriSTEP® screening questionnaires for parents of preschoolers and toddlers. The online Nutri-eSTEP web tool provides immediate results, feedback and links to resources, hosted on the Dietitians of Canada website at [www.nutritionscreen.ca](http://www.nutritionscreen.ca).

**Methods:** The development of Nutri-eSTEP occurred in six phases involving parent advisors and a national advisory committee of dietitians and health professionals. The phases guided the development process and included: 1) key intercept interviews; 2) review of feedback messages; 3) usability testing; 4) the modified Delphi method to determine importance of changes; and 5) a satisfaction survey. Anglophone and Francophone parent advisors were purposefully selected throughout southern Ontario and Sudbury and represented a variety of ages, ethnicities, and economic status'. Results from each phase were used to guide the development process. The national advisory committee ( $n = 9$ ) provided evidence-based information and content validation for the feedback messages and links to province specific resources.

**Results:** Parent advisors ( $n = 11$ ) participated in all phases of the study with no drop-outs. Eighteen parents completed the usability analysis. Results from each phase were used to create and revise the Nutri-eSTEP pilot platform. The analysis of the completed satisfaction surveys determined that all participants were satisfied or very satisfied with the overall product.

**Implications & Conclusions:** Nutri-eSTEP serves as a knowledge translation vehicle to raise parental awareness of their

children's nutritional needs while providing resources to support self-management. By utilizing parental input, identifying the barriers and needs, and tailoring the platform and its resources, Nutri-eSTEP is acceptable and satisfactory for parents to obtain knowledge on their children's nutritional needs. CIHR funded.

### Prioritizing a Canadian research agenda for nutrition and community mental health

Carla D'Andrea Matteo<sup>1</sup>, Karen Davison<sup>2</sup>, Scott Mitchell<sup>3</sup>, Pat Vanderkooy<sup>\*4</sup>. <sup>1</sup>Research Coordinator - Dietitian, Winnipeg, MB (Steering Committee); <sup>2</sup>School of Nursing, University of British Columbia, Vancouver, BC (Co-applicant/Steering Committee); <sup>3</sup>Knowledge Translation, Canadian Mental Health Association, Toronto, ON (Co-applicant/Steering Committee); <sup>4</sup>Public Affairs, Dietitians of Canada, Toronto, ON (Co-applicant/Steering Committee) [R]

**Objective:** The objective of this project was to prioritize a research agenda relevant to nutrition and dietitian services in community mental health settings. This project engaged a wide range of stakeholders to better inform research and knowledge translation.

**Methods:** Funded by the Canadian Institutes for Health Research, co-applicants from the Canadian Mental Health Association, University of British Columbia and Dietitians of Canada formed a project steering committee, engaging an expert advisory committee and a research dietitian to coordinate the project. Data collection included an environmental scan of mental health and nutrition collaborations, a national online stakeholder survey to identify research priorities, key informant interviews and a one-day multi-stakeholder workshop to further inform and refine the prioritization of a research agenda. More than 850 stakeholders participated, people with lived experience of mental illness, service providers and policymakers. Priorities of various stakeholder groups, including dietitians, other health professional/service providers, and people with lived experience were also compared.

**Results:** The top three research priorities were: 1) evaluating the relationships among life situations, food intake, and mental health, 2) identifying food and/or nutrient intakes and food-related policies to help individuals with mental health conditions, and 3) defining mechanisms for nutrition services in community mental health settings. Analysis by stakeholder groups revealed some minor differences in prioritization of research topics.

**Implications & Conclusions:** By actively engaging a broad range of stakeholders, a meaningful nutrition and community mental health research agenda for Canada was created. This research agenda is shared with Canadian researchers and funders, to contribute to emerging roles for dietitians providing nutrition support in community-based mental health settings and programs.



## DETERMINANTS OF FOOD CHOICE, DIETARY INTAKE

### Male University Students' Knowledge of Nutrition

Allyson Gallant BSc<sup>1</sup>, Debbie MacLellan, PhD, RD\*<sup>1</sup>, Kathy Gottschall-Pass, PhD, RD<sup>1</sup>. <sup>1</sup>University of Prince Edward Island

**Objectives:** The purpose of this study was to determine male university students' knowledge of current dietary recommendations and the nutrient content of foods and to identify sources of nutrition information.

**Methods:** A descriptive survey design with a convenience sample of male undergraduate university students (n = 130) at the University of Prince Edward Island was used. Nutrition knowledge was assessed using a modified version of the General Nutrition Knowledge Questionnaire developed in the United Kingdom by Parmeter and Wardle. Analysis of variance (ANOVA) and Tukey's Honestly Significant Differences tests were used to determine significant differences in scores based on demographic information.

**Results:** Results indicated that participants had relatively poor knowledge of nutrition with a mean score of 60%; only 32% of participants knew that they should be consuming 8–10 servings of vegetables and fruit daily. Questions relating to fat and kcal were mostly answered incorrectly. Age, year of study, place of birth, ethnicity, living arrangements during the academic year, and completion of a nutrition course significantly related to nutrition knowledge scores. Participants who had completed a nutrition course had the highest overall scores and higher scores in each section. Food labels, family and media were the most commonly used sources of nutrition information, with *Canada's Food Guide* and literature used the least. However, participants who used more reliable sources of nutrition information had higher nutrition knowledge scores.

**Implications & Conclusions:** The results of this study suggest a need for targeted nutrition education to improve nutrition knowledge of male university students.

### What was on sale this week? An in-depth analysis of grocery store flyers and what is being promoted

E O'Flaherty<sup>1</sup>, LA Wadsworth<sup>2</sup>, MJ Cooper<sup>1</sup>. <sup>1</sup>Research Division, Health Canada, Ottawa, Ontario; <sup>2</sup>St. Francis Xavier University, Antigonish, Nova Scotia [R]

**Objectives:** Retail supermarkets often use sales flyers to promote advertised specials while increasingly providing additional information to help the consumer make purchase decisions. The flyer is a savvy marketing tool as it directs individuals to what store to visit and what to potentially purchase. The objective of this research was to examine the quantity, types, and nature of foods advertised in supermarket flyers.

**Methods:** Over a 6-week period in 2014, flyers from seven of the largest supermarkets in Ontario (Loblaws, No Frills, Metro, Food Basics, Sobey's, FreshCo, Walmart) were analyzed. Deductive content analysis was conducted using pre-established criteria. For each flyer, the proportion of food

products within food groups, level of processing and special highlights e.g. nutrition information were recorded.

**Results:** Over the time period examined, 6015 food and beverage products were advertised in the seven flyers. Based on the total food advertisements, the percentage of foods advertised from each food groups were meat and alternatives (22.0%), fruits and vegetables (19.1%), snacks (14.3%), grain products (12.0%), combination foods (9.6%), milk and alternatives (8.6%), beverages (8.0%), and other foods (5.6%), respectively. Over 68% of the products advertised were processed, with the majority of grain products, snacks and combination foods in this category. Within the flyers, internal industry advertisements, rewards programs and 'holidays' were highlighted features.

**Implications & Conclusions:** Although a large proportion of foods advertised were processed, this is another vehicle by which food and nutrition messages are now provided to the consumer. This research provided a unique evaluation of the grocery store flyer as a reflection of the food environment in Canada.

### Acculturation, statut linguistique et santé nutritionnelle des enfants immigrants de descendance africaine et caribéenne: Méthodologie du projet

I Giroux\*<sup>1</sup>, M-C Sirois<sup>1</sup>, M Martineau<sup>1</sup>, D Sanou<sup>1</sup>, M Batal<sup>2</sup>, R Blanchet<sup>1</sup>. <sup>1</sup>Faculté des sciences de la santé, Université d'Ottawa, Ottawa, Ontario; <sup>2</sup>Faculté de Médecine, Université de Montréal, Montréal, Québec [E]

**Objectif:** Le but de ce projet consiste à déterminer les facteurs ayant un impact sur les habitudes alimentaires et le statut pondéral des enfants immigrants d'âge scolaire de descendance africaine et caribéenne.

**Contenu:** Il est généralement accepté que l'état de santé des immigrants commence à se détériorer peu après leur immigration. En même temps, en Ontario et au Canada, les francophones en minorité linguistique sont aussi en moins bonne santé que leurs compatriotes anglophones. Il est donc possible que les immigrants francophones de descendance africaine ou caribéenne vivant en Ontario soient d'autant plus à risque puisqu'ils combinent les minorités visibles et linguistiques.

**Résumé du projet:** Ce projet de recherche est une enquête transversale avec une méthodologie mixte composée d'un volet quantitatif et de deux volets qualitatifs. Le volet quantitatif consiste à recruter 200 enfants âgés de 6 à 12 ans ayant une mère née en Afrique subsaharienne ou aux Caraïbes (100 pour chaque région d'origine divisés en deux groupes égaux: francophones et anglophones) habitant dans la région de la capitale nationale. Nous recruterons aussi 50 enfants ayant une mère francophone née au Canada habitant la même région afin d'enrichir les comparaisons. Le premier volet qualitatif utilisera une approche basée sur l'art, alors que le second sera composé d'entrevues individuelles semi-dirigées.

**Recommandations et conclusion:** Il est important, lorsqu'on veut étudier des populations vivant en situation minoritaire, d'avoir une approche culturellement appropriée, de tenir

compte des déterminants contextuels tels l'acculturation et le statut linguistique, et idéalement, de solliciter la contribution d'assistants de recherche issus de ces communautés. L'étude informera sur les facteurs clés à considérer lors du développement d'interventions culturellement adaptées au profit de cette population. Ce projet est financé par le Consortium national de formation en santé (CNFS) – volet Université d'Ottawa.

### **Alimentation et masculinité : perceptions d'hommes gais**

*B Lavallée<sup>1</sup>, M Marquis<sup>1</sup>. <sup>1</sup>Département de nutrition, Université de Montréal, Québec [R]*

**Objectif:** Les comportements adoptés par les hommes constituent une façon d'affirmer leur identité. Les comportements liés à la santé, dont les choix alimentaires, qui réfèrent à une masculinité plus traditionnelle seraient plus délétères à la santé que ceux associés à des masculinités alternatives ou à la féminité. L'objectif était d'explorer la perception des comportements alimentaires liés à la masculinité traditionnelle telle que rapportée par de jeunes hommes gais.

**Méthode:** Une méthode qualitative s'appuyant sur la prise de photographies et des entrevues individuelles semi-dirigées a été utilisée. Les photographies servaient de support à la discussion. Les entrevues furent enregistrées, retranscrites, puis codées selon le modèle écologique des déterminants du comportement alimentaire de Story (2002) et des ajouts de Marquis et Manceau (2007).

**Résultats:** Onze hommes de 21 à 25 ans habitant dans la région de Montréal et s'identifiant comme gais ont participé. Questionnés sur l'alimentation des hommes hétérosexuels, les participants énoncent beaucoup de stéréotypes provenant directement du modèle de masculinité nord-américaine traditionnelle et s'en dissocient. Selon les participants, les hommes hétérosexuels consomment beaucoup de malbouffe, mangent peu de légumes, cuisinent rarement et se soucient peu de leur alimentation ou de leur santé. La viande est centrale au stéréotype de masculinité énoncé par les participants. Les hommes hétérosexuels sont décrits comme des « carnivores » affectionnant particulièrement la cuisson au barbecue.

**Implication et conclusion:** Le portrait global des habitudes alimentaires associées à la masculinité traditionnelle est décrit négativement. Les hommes gais incarnent une masculinité alternative qui n'est pas incompatible avec des comportements alimentaires généralement associés aux femmes et promoteurs de santé. Cette masculinité moderne incarnée par les hommes gais pourrait être annonciatrice de changement de paradigme de la masculinité traditionnelle, ce qui aurait de profondes conséquences sur le comportement alimentaire des prochaines générations d'hommes, toutes orientations sexuelles confondues.

### **Examining associations between characteristics of children's daily commute to school and parental food rules**

*M Szeliga<sup>1</sup>, J Gilliland<sup>2</sup>, C O'Connor<sup>1</sup>. <sup>1</sup>Brescia University College at Western University, London, ON; <sup>2</sup>Western University, London, ON [R]*

**Objective:** To investigate associations between characteristics of children's commute to school and type of food rules parents have for their children.

**Methods:** Parents of grade 5 and 6 children across Southwestern Ontario who participated in the Spatial-Temporal Environment and Activity Monitoring (STEAM) study in 2010–2013 were recruited to complete the Healthy Neighbourhoods Survey for Parents. The survey gathered information about household demographics, daily commute to and from school, and parental food rules in the household.

**Results:** A total of 704 parents/caregivers of grade 5 and 6 children completed questions regarding commute length of time, mode of transport and food rules in the household. Students who never took the school bus from school were more likely to have a “no fast food” rule than those who took the school bus home 3–5 days per week ( $p = 0.019$ ); the same effect on the “no fast food” rule was observed in students never taking the school bus to school ( $p = 0.03$ ). Compared to students who were never driven to school by car, those who got a car ride to school 3–5 days per week were more likely to have a “no TV/videos during meals” rule ( $p = 0.024$ ). Students whose commute took more than 20 minutes were less likely to have a “no fast food” rule implemented at home than those whose commutes were shorter (i.e., 1–10 minutes) ( $p = 0.025$ ).

**Implications & Conclusions:** Results suggest that children who travel between home and school independently of their parents and those who have longer commutes are less likely to have food rules associated with healthy eating habits. These findings may be explained by parental struggles to influence their children's food intake when less time is spent with their children. This research suggests that children's daily commutes between home and school present opportunities for establishing healthy behaviours.

## **DIETARY ASSESSMENT**

### **Comparing nutrition screening tools for use in a geriatric rehabilitation setting: A literature review**

*Atiya Hemraj<sup>1</sup>, Sean Haber<sup>2</sup>, Cheli Barokas-Agate, RD<sup>3</sup>, Anna Berall, RN<sup>3</sup>, Jurgis Karuza, PhD<sup>3</sup>. <sup>1</sup>Waterloo University (4th year BSc); <sup>2</sup>McMaster University (third year B.A.Sc. student); <sup>3</sup>Baycrest Health Sciences, Toronto ON*

**Objectives:** To conduct a literature search to identify and compare the nutrition screening tools that are validated in a geriatric inpatient population. Study findings will inform a subsequent quality improvement project aimed at creating best practices for nutrition screening on geriatric inpatient rehabilitation units at Baycrest.

**Methods:** The following 5 screening tools were studied because of their practical use in clinical settings: Malnutrition Screening Tool (MST), Short Nutrition Assessment Questionnaire (SNAQ), Mini Nutritional Assessment-Short Form (MNA-SF), Malnutrition Universal Screening Tool (MUST) and the Nutritional Risk Screening 2002 (NRS-2002). A literature search was conducted on Medline using keywords. Tools

were validated using the commonly accepted measures of sensitivity and specificity. Exclusion criteria included: published prior to 2000, not inpatient samples and screening tools that were not part of the study. Studies included age 18+ years and 65+ years.

**Results:** The literature search produced 149 results and 119 articles were excluded. The 30 articles included for review had 11 studies with psychometric data. The MUST and the NRS-2000 showed the highest values for both specificity and sensitivity, but this is based on a small number of studies. The MNA-SF intended for this population was overly sensitive and classified almost all patients as malnourished. Only 1 study had psychometric data on SNAQ in elderly inpatient populations. The MST showed good sensitivity and specificity for three studies while the fourth study had lower values.

**Implications & Conclusions:** The lack of a gold standard for malnutrition makes it difficult to calculate sensitivity and specificity for the various tools. There is an insufficient number of studies to validate nutrition screening tools for geriatric inpatient populations. This literature search confirms the need to conduct a study at Baycrest to determine the clinical value of nutrition screening tools specific to geriatric inpatient populations.

## DIETETIC PRACTICE AND EDUCATION

### Harmonisation des thèmes de gestion entre les besoins du marché du travail et les exigences de formation des nutritionnistes

M Marquis<sup>\*1</sup>, M Bélanger<sup>1</sup>, C Blais<sup>1</sup>, M Bureau<sup>1</sup>, J Dean<sup>1</sup>, M Sanscartier<sup>1</sup>. <sup>1</sup>Département de nutrition, Université de Montréal, QC [E]

**Objectif:** Exposer des nutritionnistes occupant des fonctions administratives au contenu des cours offerts au BSc nutrition de l'Université de Montréal abordant des dimensions administratives pour confirmer la pertinence des contenus ou les bonifier.

**Processus:** Les thématiques à aborder en gestion sont multiples, encadrées par des exigences de l'Ordre professionnel des diététistes du Québec et aussi orientées par les réflexions du partenariat pour la formation et la pratique en nutrition. Gestion financière, gestion des ressources humaines, indicateurs de qualité, gestion de la production et la distribution des repas, leadership, gestion de projet, salubrité, étiquetage nutritionnel de produits vendus furent abordés lors de trois groupes de discussion (n = 9 Dt.P. gestionnaires) en présence de 4 enseignants, de la coordonnatrice universitaire du programme des stages et d'un étudiant.

**Résumé du projet:** La gestion des ressources humaines est de loin le secteur administratif le plus exigeant pour lequel les candidats doivent développer des habiletés managériales. Les habiletés de communication, de vulgarisation et de réseautage, sans oublier les habiletés politiques sont aussi déterminantes. L'expression de leadership et les capacités à négocier sont obligatoires dans un contexte de rareté de ressources. Concernant

l'offre alimentaire, une maîtrise des politiques, programmes et cadres de référence en alimentation déployés dans les institutions, un suivi des tendances alimentaires et des compétences culinaires de base sont attendues. La standardisation de recettes rejoignant les besoins d'une clientèle vieillissante fut soulevée. Finalement les capacités d'analyse financière et de justification d'écarts budgétaires sont essentielles.

**Recommandations et conclusion:** L'exercice d'harmonisation des contenus de cours est essentiel non seulement pour veiller à la pertinence des thématiques mais aussi pour prévoir des besoins émergents. L'importance du transfert des apprentissages du milieu académique vers les milieux de stages et le développement d'approches par problèmes sont définitivement des éléments de formation à retenir.

## EDUCATION, TRAINING AND COUNSELLING

### Body mapping: Making connections within an increasingly global nutrition classroom

D Lordly<sup>\*1</sup>. <sup>1</sup>Mount Saint Vincent University, Halifax, NS [E]

**Purpose:** International student enrollment at Canadian universities is increasing, placing new demands on faculty for effective communication within the classroom. A modified body-mapping (BM) activity was used as a first step to relationship building and contributing to a positive class environment.

**Process or Content:** BM is a visual depiction of one's story about their life, body or world. Students are introduced to the concept of BM and the purpose of the modified activities. Modifications respect limited time for engagement in BM in the classroom setting and restrictions for touch between some female and male students. Students choose a body part(s) that has relevance for them, draw it and using the basic concepts of the BM process, use a variety of pictures, writing, symbols and colors to depict their story as it will be told to the class. The class instructor has on hand, magazines, pictures, colored paper, tape, scissors, glue, markers, and flipchart sized sheets of paper for student use. The students are guided by the following questions: Who are you? What is important to you? What do you bring to the counseling setting (as this activity was undertaken in a graduate level counseling course)?

**Project Summary:** The outcome of this activity has been positive. Students talk and work amongst themselves as they construct their maps. When they explain their maps to others, the depth and freedom of the conversation is substantially more than through typical introduction methods.

**Recommendations & Conclusions:** Faculty can gain an appreciation of the intersecting pressures that may come to bear on international student classroom performance through the mapping activity. The process creates opportunities for conversation, reflection, cultural understanding and relationship building between faculty and students. The modified BM activity is recommended as an effective tool for making connections and establishing a positive platform for future communications in diverse classrooms.



## FOOD CONTENT, SELECTION AND SAFETY

### Snacks Formulated with Navy Bean Powder are Well Tolerated by Children

Phillip Joy<sup>\*1</sup>, Tove Armstrong<sup>1</sup>, Connie J.N. Yu<sup>1</sup>, Bohdan L. Luhovyy<sup>1</sup>. <sup>1</sup>Department of Applied Human Nutrition, Mount Saint Vincent University, Halifax, Nova Scotia [R]

**Objectives:** The major barriers to healthy eating in children have been documented as convenience and availability of less healthy foods and snacks. The objective of this project was to develop a novel, stable and healthy food snack for children with crispy texture and palatable taste using a navy bean powder.

**Methods:** A tart was developed with a ratio of 70% cooked navy bean powder and 30% whole wheat flour using two flavours and flavour-free control. Final products were tested by 9–14 year old children (n = 11, 7 boys and 4 girls). The pleasantness of the treatments was assessed with 9-point Peryam & Kroll hedonic scale for children. Other sensory characteristics including mouthfeel, flavour intensity and sweetness were assessed with 5-point hedonic scales. Physical comfort and the gastrointestinal wellness were measured every 15min for one hour using 100 mm visual analogue scales (VAS) where 0 and 100 mm indicate the lowest and highest level of comfort, respectively.

**Results:** There was no effect of flavour on sensory characteristics of the treatments. The subjective level of pleasantness was  $4.1 \pm 0.4$ , 95% CI [2.7, 5.4] ranging from “Good” to “Maybe Good or Maybe Bad”. The mouthfeel sensation was  $3.2 \pm 0.2$ , 95% CI [2.7, 3.8] and rated as “OK”. The flavour intensity and sweetness were  $3.2 \pm 0.1$ , 95% CI [2.8, 3.6], and  $3.3 \pm 0.2$ , 95% CI [2.8, 3.9], respectively and were rated as “About Right”. The level of one hour physical comfort was high  $69.3 \pm 3.8$  mm, 95% CI [52.6, 86.0]. The gastrointestinal symptoms were low:  $15.8 \pm 3.9$  mm, 95% CI [0.3, 31.2] for nausea,  $11.4 \pm 2.2$  mm, 95% CI [2.7, 20.0] for stomach hurt,  $4.6 \pm 2.1$  mm, 95% CI [–3.7, 12.9] for meteorism, and  $2.1 \pm 0.5$  mm, 95% CI [0.1, 4.1] for diarrhea.

**Implications and Conclusion:** the snack products formulated with cooked navy bean powder have acceptable sensory characteristics and their consumption is not associated with gastrointestinal discomfort.

## NUTRITION AND HEALTH EDUCATION

### Health professionals’ understanding of added sugars consumption in relation to key nutrition issues in Canada

CL DiAngelo<sup>\*1</sup>, F Wang<sup>1</sup>, JT Bernstein<sup>1</sup>, SL Marsden<sup>1</sup>. <sup>1</sup>Nutrition Information Service, Canadian Sugar Institute, Toronto, ON [R]

**Objectives:** Media articles often report that added sugars consumption in Canada is increasing and contributing to rising obesity rates. On the contrary, Statistics Canada data indicates that sugar (sucrose) intake has been declining over the past 4 decades. Consumption of total added sugars is estimated to

be approximately 11% of caloric intake. While sugars are widely perceived as a unique factor contributing to weight gain, findings from systematic reviews and meta-analyses consistently demonstrate that sugars are no more likely to contribute to weight gain than other energy sources. Since the general public and the media largely rely on health professionals for accurate sugar-related scientific information, the aim of this study was to assess health professionals’ perceptions regarding Canadian added sugars consumption patterns, and their degree of agreement towards certain statements on sugars and health.

**Methods:** A total of 511 health professionals, primarily dietitians, completed questionnaires at two national conferences and one regional conference in 2013.

**Results:** Less than half (44%) of respondents held the correct perception that sugar (sucrose) found in fruits and vegetables is metabolized the same as sugar (sucrose) added to foods, and that sugars are no more likely to contribute to weight gain than other energy sources in the diet. About 20% of respondents did not know that diets higher in sugars are typically lower in fat and calories (i.e. the “sugar-fat seesaw”). Only 7.4% of respondents were aware that sugars from “other foods” (i.e. not part of the four food groups of Canada’s Food Guide) contribute approximately 7.5% of total daily energy intake; almost half (47%) thought sugars in other foods contributed 15% of energy, double the actual consumption level.

**Implications & Conclusions:** This qualitative survey among health professionals revealed certain discrepancies between scientific evidence and health professionals’ understanding of certain sugars-related scientific information.

### Nutrition programming for older adults: A service learning partnership between community nutrition students and Toronto Public Library

Charna Gord<sup>\* (UT)</sup>, Melanie Morris<sup>\* (UT)</sup>, Laura Arrizza (TPL), Ann Fox (UT). [E]

**Purpose:** For older adults, nutrition is an important component of health promotion and disease prevention. Toronto Public Library and the University of Toronto collaborated to develop nutrition and healthy aging workshops implemented by students in library branches across the city. This service learning initiative facilitated the presentation of nutrition education to older adults while enabling graduate students to gain first-hand experience planning and implementing community initiatives. Service learning emphasizes reciprocal, relevant, respectful and reflective activities that can benefit learners, community members, community organizations and the university. Research suggests that students engaged in service learning may gain a more developed commitment to social responsibility.

**Process or Content:** Students were asked to develop one hour interactive workshops for implementation in ten different branches. The course assignments consisted of: a literature review; a needs assessment; a workshop outline incorporating

adult education principles; participant resources reflecting communication principles; and the actual delivery and evaluation of the workshops. In addition, the students developed a mock funding proposal that sought to acquire the resources needed to sustain the workshop series. These activities enabled students to develop competence in partnership building, program planning and evaluation, communication, health literacy, and adult education.

**Project Summary:** Preparing future practitioners to address the nutrition needs of older adults is an important component of public health professional education and training. Workshop and student evaluations confirm that participants enhanced their knowledge of nutrition while students practiced many professional skills through direct interaction with community members.

**Recommendations & Conclusion:** The project has been implemented twice since the original offering and has benefited not only the participating older adults and students, but also the University and the Library, who formed a sustained partnership that continues to extend its reach in the community. Efforts to expand the initiative to intergenerational and culturally specific groups are underway.

### Canadian family physicians' perceptions regarding nutrition and dairy products

M. Kalergis<sup>1</sup>, H. Razzak<sup>2</sup>, N. Savoie<sup>1</sup>, J. Hovius<sup>3</sup>. <sup>1</sup>Dairy Farmers of Canada, Montreal, Quebec; <sup>2</sup>School of Dietetics and Human Nutrition, McGill University, Canada Montreal, Quebec, Canada; <sup>3</sup>Research Management Group, Toronto, ON; \*Presenting author [R]

**Objectives:** Determine perceptions and behaviours regarding nutrition and dairy products of Canadian family physicians.

**Methods:** In-person interviews were conducted among 300 family physicians from various regions of Canada in 2012. The interviews consisted of 45 main questions regarding nutrition with specific questions on dairy products.

**Results:** Nutrition training received in medical schools was rated as poor (3.2/10) while interest in nutrition remains high (7.9/10). Self-perceived nutrition knowledge is rated as 6.3/10 (0=general public and 10=RD) and 73% feel they need to upgrade their knowledge on nutrition. The most common sources of nutrition information are medical journals; only 6% view nutrition journals as the most credible source, while 15% say it's discussions with dietitians. Obesity and diabetes were cited as emerging nutrition related issues (44% and 33% respectively). 73% of physicians believe that dairy products are a major source of fat while only 36% mentioned fried/fast food as major sources. Knowledge concerning the nutrients and health benefits associated with dairy products is limited to *calcium, vitamin D, protein and bone health*. The majority (69%) of physicians would recommend dairy products for conditions like osteoporosis, but only 38% would recommend dairy for patients who are overweight. Only 26% of physicians would recommend milk during pregnancy and 99% believe that dairy should be limited for patients with

lactose intolerance which is not in line with the most recent recommendations.

**Implications and Conclusions:** Although only 1 in 3 Canadians consume the recommended intake of Milk and Alternatives, the majority of physicians are inclined to limit dairy products including for conditions where they may be beneficial or not an issue. Continuing education efforts are therefore needed regarding nutrition and the role of dairy products as part of a healthy diet. Referrals to registered dietitians should also be encouraged.

### Evaluation of the eaTracker My Goals feature

JRL Lieffers<sup>\*1</sup>, H Haresign<sup>2</sup>, C Mehling<sup>2</sup>, RM Hanning<sup>1</sup>. <sup>1</sup>School of Public Health and Health Systems, University of Waterloo, Waterloo ON; <sup>2</sup>EatRight Ontario/Dietitians of Canada, Toronto ON [R]

**Objectives:** Nutrition goal setting/tracking e-tools are gaining popularity, however, little is known about user needs. Recently, Dietitians of Canada added the "My Goals" feature to their web-based eaTracker program which allows users to choose ready-made "SMART" goals or write their own goal, and self-report progress using three categories ("met my goal," "still trying," "remove goal"). EatRight Ontario (ERO) added additional options for Ontario users: a) weekly motivational email messaging, and b) opportunity to contact ERO dietitians about goals. The purpose of this study was to describe user experiences with the My Goals feature with or without the ERO options and to provide recommendations for future updates/programs.

**Methods:** Twenty-three My Goals users (age range: 18–70yr, 91% female, n = 5 from Alberta/n = 18 from Ontario) and five ERO dietitians completed one-on-one semi-structured interviews. Audiotaped interviews were transcribed and the data was coded and organized thematically using NVivo v10 (Burlington, MA).

**Results:** Users/dietitians were enthusiastic about the My Goals concept, and felt the ready-made goals were a strength. Users found that entered goals were a good reminder; however, they had little/no use of the goal progress tracker for different reasons (e.g., unsure how to use). Ontario users strongly preferred motivational messages with goal-specific content over those with non-goal-specific content. Emailed messages had mixed appeal to users. Users/dietitians reported little use of ERO dietitian services in conjunction with My Goals use; reasons varied, and included user uncertainty of what to ask. Both users and RDs provided suggestions to guide future e-goal setting/tracking tools and associated services which included: electronic goal suggestions linked to eaTracker data, graphs of goal-related progress, comment log, mobile apps, and personalized feedback messaging.

**Implications & Conclusions:** Goal setting/tracking are beneficial adjuncts to e-tools for self-monitoring food intake/activity. This evaluation captured user and service-provider recommendations for ongoing improvement to electronic goal setting/tracking tools.



## Les formations Croqu'Plaisir: saines habitudes alimentaires en milieu de garde québécois

P Grand<sup>\*1</sup>, J Aubé<sup>1</sup>, A Baillargeon<sup>1</sup>, L Chapdelaine<sup>1</sup>, S Côté<sup>1</sup>, E Gelin<sup>1</sup>, E Lacaille<sup>1</sup>, B Lavallée<sup>1</sup>, C Lebel<sup>1</sup>, S Pernice<sup>1</sup>, M Marquis<sup>2</sup>. <sup>1</sup>Extenso, Centre de référence sur la nutrition de l'Université de Montréal, QC; <sup>2</sup>Département de nutrition, Université de Montréal, QC [E]

**Objectif:** Déployer un projet de transfert de connaissances en nutrition et en alimentation visant le personnel des milieux de garde québécois et les parents.

**Processus:** Extenso a développé dix modules de formations en nutrition et gestion de services alimentaires pour répondre aux besoins de formations des responsables de l'alimentation, des éducatrices, des responsables de milieux de garde familiaux et de parents d'enfants en services de garde. Ces besoins furent identifiés lors d'une étude transversale menée dans 106 services de garde québécois. Les formations furent pré-testées en Montérégie et au Bas-Saint-Laurent dans 34 milieux de garde en installation et a rejoint 98 responsables de milieux de garde familiaux. La satisfaction, la rétention des connaissances et les intentions de changement de comportements ont justifié le passage à une phase de transfert de connaissances.

**Résumé du projet:** Un plan de communication fut prévu pour favoriser le déploiement des formations. Pour en assurer le rayonnement dans toutes les régions du Québec, Extenso a formé 55 nutritionnistes et 5 techniciennes en diététique. Le déploiement des formations a débuté à l'hiver 2014 et il s'accompagne de mesures de satisfaction et d'intentions de changement de comportements. Le contenu des formations Croqu'Plaisir est en harmonie avec le cadre de référence du Ministère de la Famille du Québec, *Gazelle et Potiron*, qui vise à créer des environnements favorables à la saine alimentation dans les services de garde éducatifs québécois.

**Recommandations et conclusion:** En développant un projet de transfert de connaissances en services de garde, retenons l'importance de consulter les associations du réseau des services de garde, les ministères liés à l'alimentation et à l'enfance et les experts provenant de ce réseau pour un développement et une implantation efficaces et pérennes du projet. Ce projet est rendu possible grâce au soutien et à l'appui financier de Québec en Forme.

## NUTRITIONAL ASSESSMENT AND THERAPY

### Development of a nutrition screening tool to detect nutrition risk in Inflammatory Bowel Disease: A pilot study

N Haskey<sup>\*1</sup>, S Fowler<sup>2</sup>, J Jones<sup>2</sup>, D Berry<sup>1</sup>, N Foth<sup>1</sup>, K Cochrane<sup>1</sup>, B Harper<sup>1</sup>. <sup>1</sup>Saskatoon Health Region, Food and Nutrition Services; <sup>2</sup>College of Medicine, University of Saskatchewan [R]

Malnutrition is a well-known complication of Inflammatory Bowel Disease (IBD). A nutrition screening tool to detect nutrition risk in patients with IBD does not exist. The

Malnutrition Universal Screening Tool (MUST) has been validated in the outpatient setting, but not in an IBD patient population.

**Objective:** To develop a screening tool to detect nutrition risk in patients with IBD.

**Methods:** A nutrition screening tool (MDIBDC tool) was developed and administered alongside the MUST to patients attending an outpatient gastroenterology clinic. Nutrition risk was assessed by the IBD clinic dietitian (RD) and treating gastroenterologist (GI). Agreement between the two tools and the presence of nutrition risk as assessed by the RD/GI was determined.

**Results:** Sixty-two patients were screened. Mean age was 37 years (range 18 to 73) with 40% men and 60% women. Forty (65%) patients were diagnosed with Crohn's disease, 17 (27%) with ulcerative colitis and 5 (8%) with irritable bowel syndrome. The mean BMI was 26.19 kg/m<sup>2</sup>. As assessed by the RD/GI, 21 (34%) of patients were at nutrition risk, 11 (18%) by the MUST and 20 (32%) by the MDIBDC tool. Agreement between the GI/RD assessment and the MDIBDC tool was 90% compared to only 38% with the MUST. Of the 20 patients deemed at risk by the MDIBDC tool, 19 (95%) had GI symptoms, 12 (60%) weight loss, 9 (45%) poor appetite and 19 (95%) were restricting foods.

**Implications & Conclusions:** BMI and weight loss alone did not detect nutrition risk in this IBD patient population. Thus, the MUST was not able to identify the majority of IBD patients at risk. The MDIBDC tool, which assessed GI symptoms and food restriction, along with weight loss, appeared to be a better predictor of nutrition risk in IBD patients. Further study in a larger patient population is required to validate the MDIBDC tool.

### Are we adequately screening for vitamin B12 deficiency in high-risk patients?

T Watson<sup>\*1</sup>, O Siswanto<sup>1</sup>, K Smeall<sup>1</sup>, N Foley<sup>2</sup>, M Donnelly-Vanderloo<sup>3</sup>, C O'Connor<sup>4</sup>, J Madill<sup>4</sup>. <sup>1</sup>Brescia University College at Western University, London, ON; <sup>2</sup>Western University, London, ON; <sup>3</sup>London Health Sciences Centre, London, ON; <sup>4</sup>Brescia University College at Western University, London, ON [R]

**Objectives:** To investigate the prevalence of vitamin B12 (B12) deficiency among high-risk hospitalized patients.

**Methods:** A chart review of adults admitted to emergency, critical care & trauma, medicine, rehabilitation, and neurology units of two regional hospitals in Southwestern Ontario, between January 2010 and December 2012, was conducted. Data collection included: reason for admission, gender, age, clinical signs and symptoms of B12 deficiency, serum B12 at admission, mean corpuscular volume (MCV), B12 & folate supplementation, metformin use, proton pump inhibitor use and history of dementia. Since methylmalonic acid (MMA), a more specific marker of B12 status, was not available, serum B12 <258pmol/L was used to define deficiency.

**Results:** 710 charts were reviewed. Serum B12 values were available for 439/710 (62%) patients; of these, 134/439 (30.5%) were B12 deficient. The mean age of B12-deficient patients was 68.0 + 17.4 years and 40% were female. Over half of those with B12 deficiency (76/134, 57%) received B12 supplementation. Macrocytosis, or MCV >100fL, commonly used to help identify B12 deficiency, was only found in 1/128 B12-deficient patients with a documented MCV value.

**Implications & Conclusions:** In these high-risk hospitalized patients, approximately one third of patients were B12 deficient. Congruent with previous studies conducted since the initiation of mandatory folic acid fortification in Canada, B12 deficiency frequently occurred independent of macrocytosis, indicating that MCV is unreliable for detecting B12 deficiency. The correction of macrocytosis by folate allows neurologic damage from B12 deficiency to progress and become permanent if untreated, emphasizing the importance of screening. Therefore, all patients considered to be at high risk for B12 deficiency at admission to hospital should have their levels evaluated and treated, if deficient.

### Evaluation of Nutri-eSTEP Usage

*Vanderhout S\*, Haresign H\*, Randall Simpson JA\* [R]*

**Objectives:** The goal is to assess the level of usage and screening results from the first four months after the launch of Nutri-eSTEP, an online tool used to identify individual degrees of nutritional risk and nutrition education needs in toddlers and preschoolers. As of October 2013, Nutri-eSTEP was launched on the Dietitians of Canada website at [www.nutritionscreen.ca](http://www.nutritionscreen.ca) to provide access and follow-up guidance to all Canadians.

**Methods:** Descriptive analysis of the online Nutri-eSTEP data was conducted using SPSS (version 21.1, IBM Inc, Chicago, IL). Variables included demographics of participants, risk scores, and risk on individual questions.

**Results:** Of 3937 participants completing toddler and preschooler screens, 96% were Canadian of whom 1798 completed the Toddler NutriSTEP® and 1963 the preschool NutriSTEP®. Based on total scores, 74.6% of toddlers and 56.9% of preschoolers were at low nutritional risk. Moderate risk accounted for 11.1% of toddlers and 16.4% of preschoolers, and high nutritional risk was seen in 14.1% of toddlers and 26.6% of preschoolers. For toddlers, particular problem areas included a low frequency of consumption of grains (53%) and meat and alternatives (36%), as well as use of baby bottle (53%). For preschoolers, 51% had a low frequency of consumption of grains, 49% a low frequency of consumption of fruit each day, and 59% watched two hours or more of TV per day.

**Implications & Conclusions:** Nutri-eSTEP was successful in screening a large number of children in Canada in the first quarter since its launch. The data show that the prevalence of toddlers at high nutritional risk was lower than for preschoolers. Low frequency of consumption of major food groups was a concern for both toddlers and preschoolers.

Clinical, primary health care and public health practitioners can use this information to target child nutritional assessment, education and promotion in Canada. Funded by the Canadian Institutes of Health Research

### Grip strength as nutritional assessment tool in long term care

*Pui Chi Cheng\*, Susan J. Whiting, Lilian Thorpe, Thomas Hadjstavropoulos [R]*

**Objectives:** Hand grip strength (HGS) is a new nutritional assessment tool proposed by ASPEN and the Academy of Nutrition and Dietetics and the European Working Group on Sarcopenia in Older People for diagnosis of adult malnutrition. It has been suggested that lower HGS is associated with being less able to conduct activities of daily living (ADL) and with poorer mobility. This research evaluates the use of HGS in long-term care older female adults.

**Methods:** Data over 4 months were obtained from an ongoing walking study in long term care older adults (n = 77). Participants were randomized into one of three treatment groups: 1) Usual care group; 2) Interpersonal interaction group; and 3) Walking program group.

**Results:** At baseline, stronger HGS was significantly correlated with further walking distance in females ( $\beta = 0.232$ ,  $P = 0.036$ ) regardless of cognitive ability. Over the intervention period, HGS was not a significant predictor of walking distance or ADL ability. However, baseline HGS in females was associated with GS over time ( $B = 0.862$ , 95% CI = 0.797–0.927) after controlling for treatment groups and cognitive score.

**Implications & Conclusions:** HGS is significantly correlated with distance walked at baseline. This finding could be used to assess mobility functions of long term care older adults at screening. ADL incorporates different aspects of daily functions, whereas HGS reflects muscle strength, thus it may not specifically correlate with ADL components that require skills beyond strength. Higher HGS remained to be a significant predictor of HGS over time, which may suggest that females with higher initial HGS had greater strength reserve than females with lower initial HGS. HGS remains to be a useful tool in predicting strength reserves in long term care older adults. Dietitians may need to consider changes in strength over time instead of solely relying on strength only at one point in time.

### OTHER

#### Healthy campus nutrition initiative: Using student led community based participatory action research

*Nancy McPherson<sup>1</sup>, Caroline Mullins<sup>\*1</sup>, Donna Epp<sup>\*1</sup>. <sup>1</sup>Brandon University [R]*

**Objectives:** The purpose of this study was to engage post-secondary students in identifying issues and generating solutions related to food services and overall nutrition on campus.

**Methods:** An on-line survey and focus groups were used to identify issues that influence student health and quality of

life. The results of these lines of inquiry were then shared at a student Town Hall meeting where “Improving Nutrition on Campus” was identified as an issue they wished to address. In particular, students were concerned about the nutritional value of the food served, the cost related to healthy eating and the ambiance of the food service environment. A team was formed and a student champion self identified. Faculty acted as facilitators and brought together the students and administrators to further refine issues and generate solutions. Community Based Participatory Action Research (CBPAR) was the process model and the philosophical underpinning to the project.

**Results:** The CBPAR process resulted in students and administrators working together to generate solutions, achieve change and improve nutrition on campus. To date nutrition information is available for menu items offered in the cafeteria, fresh produce is more readily accessible, lunch and supper specials are available at a student identified price point, curriculum changes have included a nutrition and health promotion course offering and the scheduling of the cafeteria hours has improved.

**Implications & Conclusions** The solutions generated were creative and supported by both students and administrators. However, the process is time consuming and many nutritional topics of interest have not yet been addressed such as incorporating local and sustainable food. Continued collaboration is required for positive changes in student health.

### NutriSTEP® is reliable for Internet/Onscreen use

B. Carducci<sup>\*1</sup>, M. Reesor<sup>1</sup>, H. Haresign<sup>2</sup>, L. Rysdale<sup>1</sup>, H. Keller<sup>3</sup>, J. Beyers<sup>4</sup>, S. Paquette<sup>1</sup>, A. O'Connor<sup>1</sup>, J. Randall Simpson<sup>1</sup>. <sup>1</sup>University of Guelph; <sup>2</sup>Dietitians of Canada; <sup>3</sup>University of Waterloo; <sup>4</sup>Sudbury & District Health Unit [R]

**Objectives:** NutriSTEP® questionnaires can screen for nutritional risk in young children. Availability, however, has been limited to paper versions. The objective is to verify the reliability of the preschool NutriSTEP® questionnaire for Internet/Onscreen use.

**Methods:** Two studies were conducted with parents of preschoolers (3–5 years) in several Ontario Early Years Centres (*Study 1* (n = 63)) and in community and schools in Timmons, Guelph, and Ottawa Ontario (*Study 2* (n = 64)). Parents completed NutriSTEP® either on paper or on a computer for Internet/Onscreen versions. After two weeks, the alternate mode was completed. Reliability was assessed (via SPSS) by: Intraclass Correlations (ICC) and Pearson Correlation (PC) on total and attribute scores (food & fluid intake, growth & development, physical activity & screen time, factors affecting food intake); by Kappa coefficients ( $\kappa$ ) for risk category (low: total score <20; moderate: total score 21–25; high: total score >26) and for individual dichotomized questions; and, by Wilcoxon Signed Rank Test for all response categories on individual questions.

**Results:** For total scores, the ICC for *Study 1* and *Study 2* were 0.94 and 0.91, respectively, with PC of 0.89 and 0.84,

respectively. Attribute scores ranged between 0.69–0.91 (ICC) and 0.70–0.84 (PC) for *Study 1*, and 0.81–0.92 and 0.68–0.85 (PC) for *Study 2*. For individual dichotomized questions, 5/17 (*Study 1*) and 4/17 (*Study 2*) questions were excellent ( $\kappa > 0.75$ ); 11/17 (*Study 1*) and 9/17 (*Study 2*) were adequate ( $0.4 < \kappa < 0.75$ ); 0/17 (*Study 1*) and 2/17 (*Study 2*) questions were poor ( $\kappa < 0.4$ ) in agreement between modes. Kappa between risk categories was 0.576 (p = 0.000) for *Study 1* and 0.500 (p = 0.000) for *Study 2*.

**Interpretation & Conclusions:** Users can be confident with Internet Onscreen versions of NutriSTEP®. Nutri-eSTEP is convenient, accessible and ethical as feedback messages and links to credible resources are provided for improvement. CIHR funded.

### A Look at Canadian Dietitians

Julie Goulet, PhD<sup>\*1</sup>, Lan Wang<sup>1</sup>, Yasmine Léger<sup>1</sup>. <sup>1</sup>Canadian Institute for Health Information (CIHI) [R]

**Objective:** Dietitians are primary care providers who play a leadership role in the management of chronic diseases and the development of health policy. Health human resources (HHR) planning ensures that health services offered by dietitians are available for all Canadians. The purpose of this study is to provide an in-depth picture of dietitians in Canada.

**Methods:** Using data from the Health Personnel Database at CIHI, this study looks at 2002–2011 supply and graduate trends.

**Results:** From 2002 to 2011, every province, with the exception of Saskatchewan, experienced increases in the number of graduates. In 2011, there were 548 graduates from Canadian Dietetics programs. 29% of them were from Ontario, a growth of seven percentage points since 2002 (22%), though Ontario's population remained stable (39% of Canadian population). New graduates represented 9% of the 10,141 dietitians in Canada in 2011. Newfoundland and Labrador and Ontario attracted two to three times more new members than that of their number of new graduates while Prince Edward Island and Nova Scotia inflow represented 15% and 81% of their 2011 graduates respectively. During the 10-year period, all provinces experienced an increase in density of dietitians per-100,000 population. In 2011, national average was 29; with Nova Scotia having the highest rate (52); Ontario (25), British Columbia (25) and Alberta (27) were below national average; while their populations experienced the fastest growth in the country. In other words, the number of graduates and members is rising; some provinces seem to attract more dietitians than others.

**Implications/Conclusions:** Although the dietitian workforce and number of graduates in Canada are growing faster than the population, distribution and mobility of the workforce will need further investigation. Since dietitians are primary health care providers, monitoring trends will provide valuable information to inform effective HHR planning for dietitians now and in the future.



## Family Health Team Dietitians – the evolution into a Community of Practice

Marg Alfieri<sup>\*1</sup>. <sup>1</sup>AFHTO and FHTRD network [E]

The journey of the Family Health Team (FHT) Dietitians has been extraordinary as from 3 RDs in 2005 we have grown to almost 300 FHT RDs in a cohesive well-organized network. Our mission statement is to provide advocacy and communication for FHT RDs, to provide exemplary patient care, to operate in a transparent fashion, and to share freely all resources and teaching tools. These statements have guided our growth and honed our professional practice. The FHT RD has flourished with our yahoo based list server which has allowed the community of practice to mature and grow. Being able to ask “real time” questions and to be able to share and receive clinical programs e.g. Health You has been invaluable to the FHT RD. The majority of FHT RDs are new grads and the network provides infrastructure of clinical knowledge, resources and mentorship which allow the new grads to be able to succeed in the primary care world. We have evolved from a DC action group into a provincial DC network. Our lessons learned are easily spreadable to other Interhealth professionals. Hence AFHTO is now creating a series of IHP/nursing and admin networks based on the FHT RD network.

## Good intentions, inadequate knowledge: University students would like to eat better, but may not know how

Lisa Doerr, BA, BScFN, MScFN (c)<sup>\*1</sup>, Dr. Paula Dworatzek, RD, PhD, Dr. June Matthews, RD, PhD

**Objective:** Assess university students' knowledge of healthy eating guidelines, intentions to engage in healthy eating behaviours, and self-perceived eating behaviors.

**Methods:** University students (n = 6624) responded to a cross-sectional, online survey using a modified Dillman method.

**Results:** Although students reported high intention to eat more vegetables and fruits (77.9 + 22.3 and 77.2 + 22.3 respectively, where 0 = “definitely not” and 100 = “definitely”) and fewer high-calorie options (70.0+27.2), few students were able to correctly identify Canada's Food Guide recommendations for their age and sex. Only 16% of males ≤18 years and 27% of males >19 years correctly identified vegetable/fruit recommendations (p < 0.05 for age). Females were significantly more knowledgeable than males (p < 0.05), and older females also performed better: 22% of females <18 years and 39% of females ≥19 years correctly identified vegetable/fruit recommendations (p < 0.05 for age). Conversely, more students ≤18 years correctly identified milk/alternative recommendations compared to those ≥19 years (32% of males and 45% of females vs. 11% of males and 22% of females, respectively; p < 0.05), although females still rated higher than males (p < 0.05). Students who had taken a secondary or post-secondary school food/nutrition course (39%) had higher self-perceived knowledge than those who had not (68.2+18.0 vs. 58.3+21.2, where 0 = “very poor” and 100 = “excellent”; p < 0.001), and a higher proportion claimed to meet vegetable/fruit (56% vs. 47%, p < 0.001) and milk/alternative

recommendations (57% vs. 48%, respectively, p < 0.001). These students, however, were no more likely to correctly identify vegetable/fruit guidelines (26% vs. 24%; p = 0.34) or milk/alternative guidelines (32% vs. 31%; p = 0.45) than students who had no formal nutrition education.

**Implications and Conclusions:** Students want to improve their eating habits, but cannot correctly identify dietary recommendations even if they have taken a food/nutrition course in secondary or post-secondary school. Perhaps simpler recommendations are necessary to enable uptake of the message.

## PATIENT SERVICES

### Tablet use in long term care homes to show meal choice options to residents

A. Khalsa<sup>1</sup>, G. Sandhu<sup>1</sup>, M. Biasutti BSc<sup>2</sup>, J. Oulton, RD<sup>\*2</sup>.

<sup>1</sup>Internationally Educated Dietitian Pre-Registration Program, Chang School of Continuing Education, Ryerson University, Toronto, Ontario; <sup>2</sup>J. Oulton and Associates, Ancaster, Ontario [R]

**Objective:** To determine the potential for reducing food and labour costs in a long term care (LTC) facility by using tablets to present meal choices instead of physical show plates.

**Methods:** Two candidates were recruited from a university nutrition program. Cost of labour and food used for physical show plates were measured over a three-day period in a 265-bed LTC facility. Menu costing was based on food supplier data and labour costing on current staff schedules and wages. The length of time required to prepare and present show plates was extrapolated to estimate the annual labour cost. Presentation of show plates using tablets was trialed over a separate five-day period. Acceptance of the tablets by 17 out of 26 (65.4%) staff and 21 out of 160 (13.1%) residents was determined by a focus group and a feedback form respectively.

**Results:** An estimated 152 hours per year are spent preparing show plates which represents a labour cost of \$3,242 and food cost of \$17,393.47 totalling \$20,625.47 annually. Comparatively, purchasing six tablets costing approximately \$3,000 (\$500 per tablet), is a one-time cost for the facility. In the five-day trial of the tablets, 94% of staff and 81% of residents believed tablets to be beneficial in replacing show plates. All (100%) residents interviewed found the pictures on tablets to be visually clear.

**Implications & Conclusion:** Findings of this pilot study suggest there is potential for a reduction in food and labour costs using tablets to present meal choice instead of physical show plates in LTC facilities. Savings realized by this initiative could be redirected to quality improvement elsewhere such as in food quality, meal appearance, and increased menu variety. Recommendations for successful tablet implementation include installing tablet anti-theft software, utilization of staff sign-out sheets, provision of training, and staff education on tablet photography.

## The Implementation of an Inter-Professional Model of Patient Care in an Academic Health Sciences Center

Ginette Lemire-Rodger, RN, PhD<sup>1</sup>, Josee Bertrand, RD, MA<sup>\*1</sup>, Salma Debs-Ivall, RN, MSN<sup>1</sup>. <sup>1</sup>The Ottawa Hospital

**Introduction:** With the increasing demand for healthcare services and the insufficient supply of health human resources to address the needs, innovative approaches to deliver care are necessary. The Ottawa Hospital Inter-Professional Model of Patient Care (TOH IPMPC©) is one of four building blocks in TOH's system redesign and appears to be the first of its kind. TOH IPMPC© is a set of guiding principles that are centred on concepts of collaboration, accountability, patient involvement in decision-making, and inter-professional communication. They are flexible enough to be utilized in a variety of health care settings, patient populations, and inter-professional teams.

**Purpose:** To describe the development, implementation process, and preliminary evaluation findings of TOH IPMPC©.

**Methods:** TOHIPMPC© was created by patients and health-care providers. It has been implemented with 98 teams across a large academic health science center. Each team reflected on the guiding principles and decided on how these principles are actualized within the team. The team then developed an Action Plan around the changes to be implemented to meet the guiding principles.

**Outcomes:** A research team has utilized qualitative and quantitative research methodologies to evaluate the model at baseline, 6 months, and 12 months post-implementation. The preliminary findings support an enhanced quality of patient care through improved inter-professional collaboration, staff well-being and organizational climate.

**Conclusion:** Over 5000 nurses and health professionals, including dietitians, have participated in the implementation. Enhancement in empowerment, job satisfaction and recruitment and retention is anticipated. The findings have an impact on clinical practice, research, education and administration.

## PROFESSIONAL STANDARDS AND SKILLS

### Programme de soutien pédagogique aux superviseurs de stages: formations sur le raisonnement clinique et l'approche réflexive

France Nolin<sup>\*1</sup>, Danielle Lepage<sup>1</sup>, Édith Painchaud<sup>1</sup>, Jocelyne Parent<sup>1</sup>, Annie Vallières<sup>1</sup>. <sup>1</sup>Département de nutrition, Université de Montréal

L'équipe des coordonnatrices de stages du département de nutrition de l'Université de Montréal offre une série d'activités de formation pédagogique en vue de permettre aux superviseurs de stage d'exercer leur rôle de façon optimale. Les formations conçues pour nos superviseurs portent sur le raisonnement clinique et l'approche réflexive: Comprendre le raisonnement clinique pour mieux le soutenir; L'approche réflexive, essentielle au raisonnement professionnel. Les objectifs des formations sont les suivants: 1. Comprendre le

processus du raisonnement clinique et les différents niveaux d'expertise 2. Identifier le type de difficulté de raisonnement clinique 3. Savoir intervenir avec le stagiaire en difficulté 4. Comprendre l'approche réflexive et les outils ou moyens pour la développer 5. Savoir encourager l'introspection et donner une rétroaction constructive 6. Connaître les catalyseurs et les étapes du processus réflexif. Suite à ces formations, un sondage a été effectué auprès d'environ 20 superviseurs de stages qui y ont assisté, portant sur les apprentissages réalisés et l'impact des formations sur leur rôle de supervision et d'encadrement des stagiaires. Les résultats de ce sondage seront disponibles d'ici avril 2014 et pourront être présentés au congrès de juin.

## SCHOOL NUTRITION

### Consumption of flavoured and unflavoured milk in children attending schools with school milk programs

Carol Henry<sup>1</sup>, Sarah L Finch<sup>\*1</sup>, Susan J Whiting<sup>1</sup>, Gordon A Zello<sup>1</sup>, Hassan Vatanparast<sup>1</sup>. <sup>1</sup>Carol Henry College of Pharmacy and Nutrition, University of Saskatchewan: (306)966-6377 [R]

**Objective:** To quantify patterns of milk consumption, comparing milk flavour choice, by grade, and gender among elementary school children who attend schools with established milk programs.

**Methods:** Using beverage waste to quantify consumption of 1% unflavoured and 1% chocolate milk, eight elementary schools (grades 1–8) with existing lunchtime milk programs were recruited for a 3week study. Milk cartons were collected for each grade and gender, and milk consumption measurements were performed daily.

**Results:** All participating schools offered 250 mL milk cartons for sale to students. In those schools, an average of  $9.80 \pm 0.80\%$  of students participated in the school milk program consuming an average of  $236.9 \pm 1.7$  mL of milk per day. The overall percentage of students choosing chocolate milk versus unflavoured milk was greater ( $91.12 \pm 1.77$  vs.  $8.9 \pm 1.02\%$ , respectively,  $p < 0.001$ ), however, once purchased, both chocolate and unflavoured milks were consumed to the same extent. No significant difference was found in amount per serving consumed in mL or percentage of students who chose to consume milk by gender for both chocolate and unflavoured milk choices. While more of the younger (grades 1–4) vs. older (grades 5–8) purchased milk ( $11.10 \pm 0.81$  vs.  $8.36 \pm 0.74\%$   $p = 0.02$ ); older children consumed more of the milk bought compared to the younger children ( $245.72 \pm 1.27$  vs.  $228.17 \pm 1.2$  mL  $p < 0.001$ ).

**Implications and Conclusions:** This study highlights the popularity of chocolate milk for school children. Providing chocolate milk at school may increase the number of children who meet their daily calcium requirements. School have removed chocolate milk from milk programs citing concerns relating to increased sugar and caloric content over unflavoured milk. Additional research is required into whether

lower sugar formulations of flavoured milk are accepted by children.

### What is in students' packed lunches: Not what parents report

DL Hawthorne<sup>\*1</sup>, LA Macaskill<sup>1</sup>, LJ Martin<sup>1</sup>, JMH Luk<sup>1</sup>, J Hutchinson<sup>1</sup>, MI Salvadori<sup>2,3</sup>, JA Seabrook<sup>2,3</sup>, PDN Dworatzek<sup>1,4</sup>. <sup>1</sup>Division of Food and Nutritional Sciences, Brescia University College, Western University, London, ON; <sup>2</sup>Department of Paediatrics, Schulich School of Medicine and Dentistry, Western University, London, ON; <sup>3</sup>Children's Health Research Institute, London, ON; <sup>4</sup>Schulich Interfaculty Program in Public Health, Schulich School of Medicine and Dentistry, Western University, London, ON [R]

**Objectives:** To compare parental perceptions of the amount of food packed in school lunches to the amount actually packed and to identify parental barriers to packing a healthy lunch.

**Methods:** Parents (n = 321) completed self-administered surveys, which were tested for content validity. Unobtrusive direct observation of their child's packed lunch was conducted at school.

**Results:** The majority of parent respondents (96%) reported that packing a healthy lunch was 'important/very important/of the utmost importance'. Parents packed significantly more mean portions of sugar sweetened beverages, grain products and snacks than reported ( $0.9 \pm 0.7$  vs.  $0.6 \pm 0.7$ ;  $1.5 \pm 1.0$  vs.  $1.4 \pm 0.6$ ; and  $2.0 \pm 1.4$  vs.  $1.3 \pm 0.7$ , respectively;  $p < 0.05$ ), while significantly fewer mean portions of fruits, fruit juice, vegetables, milk/alternatives, and meat/alternatives were packed compared to that perceived ( $0.8 \pm 0.6$  vs.  $1.3 \pm 0.6$ ;  $0.3 \pm 0.8$  vs.  $0.7 \pm 0.7$ ;  $0.4 \pm 0.7$  vs.  $0.9 \pm 0.7$ ;  $0.6 \pm 0.6$  vs.  $1.2 \pm 0.6$ ;  $0.4 \pm 0.4$  vs.  $0.8 \pm 0.6$ , respectively;  $p < 0.05$ ). Notably, parents perceived to pack 113% more vegetables, 110% more meat/alternatives, and 65% less snacks than actually packed. Two-thirds (67%) of parents identified their child's food preferences as a barrier to providing a packed lunch. Other barriers identified by 40% and 30% of parents included time and finances, respectively. Only 10%, 7%, and 7% of parents perceived transportation, access to fresh produce, and lack of nutrition knowledge, respectively, to be barriers to packing lunches. Moreover, 98% of parents reported their level of nutrition knowledge to be 'adequate/good/very good'.

**Implications & Conclusions:** Despite parents' perceived adequacy of nutrition knowledge and importance placed on packing a healthy lunch, students' lunches are not as healthy as parents report. Strategies to improve packed lunches should reframe the message to address identified parental barriers rather than focus on improving nutrition knowledge.

### Evaluation of Ontario's School Food and Beverage Policy: Are Competitive Foods an Issue?

RM Hanning<sup>\*1</sup>, H Luan<sup>2</sup>, RF Valaitis<sup>1</sup>, TA Orava<sup>1</sup>, R Ahmed<sup>3</sup>. <sup>1</sup>School of Public Health and Health Systems, University of Waterloo, Waterloo ON; <sup>2</sup>School of Planning, University of Waterloo, Waterloo ON; <sup>3</sup>Cancer Care Manitoba and

Department of Community Health Sciences, University of Manitoba [R]

**Objectives:** As part of our comprehensive evaluation Ontario's School Food and Beverage Policy (P/PM 150) in Region of Peel (2012–3), parents and school staff who participated in focus groups expressed concern that students would leave school property to opt for alternative food choices. We now examine student behaviours and opportunities in relation to competitive food retail.

**Methods:** Using Geographic Information System (GIS), we identified the number of food outlets (convenience store, fast-food restaurant, full-service restaurant) within 500m and 1000m buffer zones of all 362 Peel schools in 2012. Consenting grade 6–10 students within 31 randomly selected schools completed a web-based 24-hour diet recall (WEB-Q) and food behaviour questionnaire (n = 2075, age 13.4±1.6 years (X + SD)).

**Results:** The average number of the specified food outlets was high (4.76 and 25.58 within 500 and 1000 m) with a maximum of 36 and 65 fast-food restaurants, respectively. On the day of the WEB-Q, 87% of students ate lunch at school. Lunch intakes of students who ate at a restaurant/take-out (n = 84, 4%) were significantly higher than other students (n = 1991) for energy (978 vs 760 kcal) sodium (1556 vs 1173 mg) and sugar (44.3 vs 40.1 g) (95% confidence intervals, data adjusted for age and gender). Habitually, 39.1% of students purchased cafeteria or school program food at least once a week, but 42.1% did so rarely; 13.6% purchased from vending weekly, but 65.8% did so rarely. Of elementary and secondary respondents, 22.5% and 57.1% reported ever eating at a fast food restaurant/take-out during the school day.

**Implications & Conclusions:** There are many opportunities for students to purchase food in school neighbourhoods. Such foods provide higher amounts of energy, sodium and sugar than other options and may present a health risk. Supported by Region of Peel Public Health

### UNDERGRADUATE EDUCATION AND DIETETIC INTERNSHIP

#### Web-based practice education segments for use in the internship component of an integrated dietetics program

K Traviss<sup>\*1</sup>, T Kafka<sup>1</sup>, K Vogt<sup>1</sup>, K Dick<sup>1</sup>, H Woodward<sup>1</sup>, G Ly<sup>1</sup>, E MacMillan<sup>1</sup>. <sup>1</sup>The University of British Columbia, Vancouver, BC [E]

**Purpose:** To: (1) produce accessible and affordable web-based segments to educate geographically dispersed preceptors and interns on sound approaches to practice education, and (2) to provide dietetics student project assistants (SPAs) with a rich educational experience.

**Process or Content:** With the guidance of a dietitian advisory committee, SPAs conducted a needs assessment to identify priority practice education topics, guiding principles for segment development, and viable online platform and tool



options. They then initiated production, dissemination and evaluation of segments.

**Project Summary:** A literature/document review and key informant consultation revealed consistency in key practice education topics. Guiding principles for online segment development included integration of: (a) adult learning principles, (b) design concepts for eLearning, (c) appropriate use of language and tone, (d) options for self paced and directed learning, and (e) evaluation mechanisms. Two priorities for initial segments are: (1) orientation to internship modules and forms (which articulate learning and evaluation requirements aligned to the Integrated Competencies) and (2) setting the stage for success in a placement. To date, three segments have been developed, two narrated graphic presentations (complete) and one video (in final production). Segment and evaluation survey links are publically posted on the program's website. Feedback on segments to date has been positive overall; suggestions provided are being utilized in the planning of future segments. Project procedures have been documented to enable continued student involvement in segment development beyond the current project period.

**Recommendations & Conclusions:** With professional support and guidance, SPAs took a lead role in the development of accessible and affordable web-based practice education segments aligned to user needs. Project involvement has enhanced SPA professional and technical skills, as well as their knowledge of practice education principles. We would encourage other internship programs to involve students in the planning and delivery of practice education initiatives.

### Surgeons' post-lower gastrointestinal surgery diet ordering practices and rationale

N Vander Linden<sup>\*1</sup>, N Pothier<sup>2</sup>, L Ostler<sup>2</sup>, C Morley<sup>3</sup>. <sup>1</sup>Acadia University Dietetic Internship Program; <sup>2</sup>South West Health District Health Authority, Yarmouth, NS; <sup>3</sup>Acadia University, Wolfville, NS [R]

**Objectives:** There is substantial evidence that early feeding following lower gastrointestinal (GI) surgery is safe, well tolerated and can increase patient recovery, increase patient satisfaction, and can decrease post-operative complications and hospital costs. Recent research suggests that current traditional diet ordering practices are long held beliefs/traditions rooted in humour-based medicine rather than evidence-based practice. Objectives of this project were to gain an understanding of Yarmouth Regional Hospital (YRH) surgeons' diet ordering practices post-lower GI surgery and rationale for the continued use of traditional post-operative diets.

**Methods:** Interviews were conducted with four general surgeons at YRH. Responses to each question were transcribed and categorized to learn about diet ordering practices and the rationale for these orders.

**Results:** Diet ordering practices were inconsistent; each surgeon had a preferred diet ordering process. Rationale for current practices was based on what a surgeon had learned from

their preceptors (the passing along to students without questions) and their personal experiences rather than on evidence.

**Implications & Conclusions:** Three out of four YRH surgeons were in favour of and would support early feeding practices; they agreed that this change would require education and support for implementation and acceptance by staff. Gaps in communication must be addressed and a multidisciplinary approach, consistent with the ERAS model, was considered essential to change of practice.

### The history of dietetics education in British Columbia

C Morley<sup>\*1</sup>, L Cullen<sup>2</sup>, K Traviss<sup>3</sup>, C Atchison<sup>4</sup>. <sup>1</sup>Acadia University, Wolfville NS; <sup>2</sup>Langara College, Vancouver BC; <sup>3</sup>University of British Columbia, Vancouver, BC; <sup>4</sup>HealthLink BC, Burnaby, BC [R]

**Objectives:** The objectives were to document the history of dietetics education in British Columbia (BC), and to make recommendations for historical research in dietetics education. Our goal was to inform education planning in BC and to establish methods for conducting similar histories in other provinces/territories.

**Methods:** Information gathering included a search for print/archival/online resources about/used in dietetics education, key informant interviews with home economics historians, university and internship educators, and UBC and dietetic internship graduates.

**Results:** Periods in the evolution of dietetics education in BC were: *Initiation/start up* (~1928–1940); *Expansion and Standardization* complying with Canadian Dietetic Association standards and guidelines (~1940–1990); and *Contextual-adaptation* (1990 to present). In the latter, national standards have formed the basis of programs that have evolved relative to local contexts, workforce needs, consultations with practitioners, and interpretation of evidence. Key dates and developments: implementation of a three-month 'on the job' training program at Vancouver General Hospital for Home Economics graduates from universities in Eastern Canada and the United States (in response to the demand for clinical dietitians) (1928); convocation of the first UBC Home Economics graduates (1946); first internship accreditation (1948); implementation of the revised UBC program featuring a province-wide internship with eight core sites (versus multiple independent internship programs), and a '2+3' model (versus a '4+1' approach) (2004); and fluctuations in practicum duration over time (from three months to 52 weeks and then to 39 weeks). Practical training/internship as a fifth academic year expanded the number of dietitians graduating and enabled student loan eligibility.

**Implications & Conclusions:** These findings reflect social shifts that occurred in the initiation and development of professions dominated by women in Canada, and the creativity and adaptability of dietetics educators. The challenges locating archival material emphasize the importance of recording the history of the profession.

## Encouraging reflection and information/experience-sharing through a dietetic internship blog

T Cividin<sup>\*1</sup>, E Cabrera<sup>1</sup>. <sup>1</sup>Vancouver General Hospital, Vancouver, BC [E]

**Purpose:** A blog was introduced in 2010 to encourage reflection and information/experience-sharing among the VCH dietetic interns. Over the past 4 years the blog has changed to meet the changing needs of the students and the program.

**Process:** The VCH Dietetic Internship Blog was developed as part of the UBC Dietetics Program Education Module. Initially, the internship coordinators selected timely topics and wrote and published new posts monthly for the interns to respond to. After our first survey of interns, we changed the blog in 2012–13 by 1) asking the interns to write one blog post each, 2) decreasing the number of topics posted, and 3) removing the unused resources section. We required interns to reflect upon each post and respond with at least two comments. At the end of the year, we surveyed the interns on their thoughts of the blog and its use as a tool for communication, learning, and reflection.

**Project Summary:** All respondents (n = 7) rated the blog posts and discussion as moderate or highly relevant to their learning needs and objectives during internship. The majority (n = 6) felt that one blog post per month was manageable and had applied their learnings from the blog discussions to their practice. Five had shared information from the blog posts with other interns, dietitians, family or friends. Additional insights were obtained from responses to the questions: “What did you like most about the blog?” and “What did you like least about the blog?”

**Recommendations & Conclusions:** A dietetic internship blog has served to prompt reflection, discussion and information-sharing. Interns are meeting the expectations for participation. We plan to continue the blog within the intern Education Module.

## Comparison of preferred versus ordered diets for patients recovering from lower abdominal surgery at a rural Nova Scotia Hospital

A Kerr<sup>\*1</sup>, J Redden<sup>2</sup>, C Morley<sup>3</sup>. <sup>1</sup>Acadia University Dietetic Internship Program, Wolfville, NS; <sup>2</sup>Annapolis Valley Health, Kentville, NS; <sup>3</sup>Acadia University, Wolfville, NS [R]

**Objectives:** The objectives of this study were to: (1) assess the trends in post-operative diet progressions by establishing the number of patients prescribed to follow the traditional delayed feeding method (transition through NPO, clear fluid, full fluid, and soft diets) versus the early feeding method (diet as tolerated within 24 hours postoperatively); and (2) compare physician diet orders to patient food preferences during recovery.

**Methods:** Structured interviews were conducted with seven patients who had lower abdominal surgery at Valley Regional Hospital (VRH) to find out whether and what patients felt like eating postoperatively. Diet orders were monitored to determine how patient appetite/preference aligned with their prescribed diets.

**Results:** One patient was fed within 24 hours following surgery, while the remaining six patients followed the traditional diet progression. Patient preferences did not align with prescribed diet orders. Patients who were NPO reported that they would eat if given the opportunity, while those on a regular diet reported that they did not feel like eating. Those who felt like eating during recovery preferred foods they felt they could tolerate (light, soft, and mild foods such as soup and crackers).

**Implications and Conclusions:** The majority of patients followed the traditional feeding method, which suggests that early feeding may not be standard practice at VRH. Regardless of feeding approach (enforced feeding or enforced fasting), diet orders did not align with patient preferences. Being too aggressive in either feeding approach can compromise patient satisfaction. Letting patient appetite guide feeding may be the next step to enhance the recovery experience.

## UNDERSTANDING EATING BEHAVIOUR DURING ILLNESS

### L'enjeu des repas chez les familles avec un enfant ayant un trouble du spectre de l'autisme

Aubé<sup>\*1</sup>, N Jobin<sup>1</sup>. <sup>1</sup>Extenso, Centre de référence sur la nutrition de l'Université de Montréal, QC [E]

**Objectif:** Il existe de nombreuses particularités relatives aux repas chez plusieurs enfants ayant un trouble du spectre de l'autisme (TSA). Bien que de telles particularités semblent fréquentes, peu d'études se sont attardées aux enjeux, défis et inquiétudes des familles relatives à ces particularités. Le projet mené par AlterGo vise à promouvoir les saines habitudes de vie des enfants ayant un TSA. Dans le cadre de ce projet, préalablement à la proposition de stratégies visant à faciliter le quotidien des familles, Extenso a été mandaté pour développer une compréhension plus fine des réalités relatives aux repas.

**Processus:** Afin de tracer un portrait de la situation des repas dans les familles avec un enfant ayant un TSA, un survol de la littérature a permis de développer un questionnaire utilisé lors d'entrevues individuelles téléphoniques (n = 18) avec des mères d'enfants ayant un TSA.

**Projet:** Les particularités relatives au repas qui semblent fréquentes chez un enfant ayant un TSA se présentent généralement sous deux formes. D'abord des particularités comportementales, notamment des comportements atypiques durant le repas comprenant de l'agitation, de la difficulté à rester assis et à se concentrer sur le repas, etc. Ensuite les particularités alimentaires telles que la néophobie, le rejet d'aliments ou de catégories d'aliments, des rigidités, etc. À l'égard de ces particularités alimentaires, il est raisonnable de croire que l'adoption de bonnes pratiques relatives au développement du goût des enfants puisse favoriser, dans plusieurs cas, l'élargissement graduel du répertoire alimentaire des enfants et faciliter la gestion des repas.

**Recommandations et Conclusions:** Les familles d'enfants ayant un TSA pour qui l'alimentation est un défi quotidien

ont besoin d'outils afin de mieux comprendre, gérer, intervenir et se rassurer au sujet de l'alimentation. Les diététistes sensibilisées aux enjeux de ces familles peuvent être des vecteurs de transferts d'information constructive et positive.

## VULNERABLE GROUPS AND THEIR NUTRITIONAL NEEDS

### Food group consumption and the association with changes in living arrangements of older community-dwelling Canadian men: The Manitoba Follow-up Study

CO Lengyel<sup>1</sup>, RB Tate<sup>2</sup>. <sup>1</sup>Department of Human Nutritional Sciences, Faculty of Human Ecology, University of Manitoba; <sup>2</sup>Manitoba Follow-up Study, Department of Community Health Sciences, Faculty of Medicine, University of Manitoba, Winnipeg, MB [R]

**Objectives:** To examine the association between change of frequency of food group consumption and changes in living arrangements over a five-year period among older community-dwelling Canadian men.

**Methods:** The Manitoba Follow-up Study (MFUS), established in 1948 with a cohort of 3,983 healthy men, is the longest-running prospective longitudinal study of cardiovascular disease in Canada. MFUS began examining nutritional aspects of older men in 2000 and 2005 on its annual questionnaire. Response rates for the 2000 and 2005 questionnaires were 79% and 77%, respectively. Seven hundred and twenty community-dwelling men (2000: mean age = 79.0 years; 23% living alone, 77% not alone; 2005: mean age = 84.5 years, 22% living alone, 78% not alone) who returned both questionnaires were included in the analysis.

**Results:** Four living arrangement groups were identified: 1) Alone in 2000 and 2005 (13%); 2) Alone in 2000 and Not Alone in 2005 (10%); 3) Not Alone in 2000 and Alone in 2005 (9%); 4) Not Alone in 2000 and 2005 (68%). Men in stable living arrangements between 2000 and 2005 (#1 & #4) showed a smaller decline in vegetables & fruit consumption (12.1–12.8%) compared to unstable living arrangements (18–20%). Dairy consumption showed a similar trend with 11–14% for stable living arrangements and 16.5% for unstable. Consumption of grain products showed the most decline for unstable living arrangements at 20% compared to stable at 11.4–13.2%. Meat & alternatives consumption showed a different trend where those living alone in year 2005 showed greater decline compared to those living with others, 19–20% vs 10–13%, respectively. Living arrangements that remain stable showed a 12% decline in frequency of daily consumption of grain products compared to a 20% decline for men whose living arrangements change from 2000–2005 ( $p = 0.027$ ).

**Implications & Conclusions:** Changes in living arrangements of older men influence their frequency of food group consumption.

### Municipal child care healthy eating and active living guidelines

Ellen Lakusiak, RD\*, Helen Parker, RN [E]

By improving menus and the eating environment and incorporating physical literacy and activity into daily routines, the City of Ottawa initiated a new approach in the fight against childhood obesity at its municipal child care centres, targeting our city's youngest and most vulnerable children. Beginning in 2012, Ottawa Public Health partnered with City of Ottawa Child Care Services to develop healthy eating and active living guidelines. With an advisory committee, we produced guidelines that were piloted in 5 centres from Feb–July, 2013. The guidelines recommend: That all children are provided with healthy food and a positive eating environment while in care. -That childcare staff act as role models for healthy eating and physical activity. -That all children have a wide range of opportunities to be active while in care. This includes adult-led activities, and time for active free play indoors and out. -That all children, while in care spend less time sitting and more time learning basic movement skills through play. Child care staff were very receptive to the new menus, recipes, eating environment strategies and the ideas for physical activity. Our pilot evaluation indicated that additional resources were needed to support the staff in the full implementation of the guidelines. A sustainable training program, parent engagement strategies and a complete evaluation plan are being developed as a result of our pilot evaluation. All of our municipal centres are now following both sets of guidelines. We will begin offering the guidelines and training to our licensed community child care centres in the Spring of 2014.

### Making every bite count: Menu planning strategy to meet micronutrient recommendations in long-term care

I Lam<sup>\*1</sup>, L Duizer<sup>2</sup>, H Keller<sup>1</sup>. <sup>1</sup>Department of Kinesiology - Physiology and Nutrition, University of Waterloo, Waterloo, ON; <sup>2</sup>Department of Food Science, University of Guelph, Guelph, ON [R]

Research suggests micronutrient (vitamin and mineral) deficiencies may exacerbate symptoms of dementia, depression, infections, osteoporosis, and other prevalent conditions in Long-Term Care (LTC). Current LTC menus may not meet micronutrient recommendations due to discrepancies between Canada's Food Guide (CFG) and DRI recommendations. A micronutrient-focused, food-first approach to menu planning may address this gap by emphasizing nutrient-dense foods (i.e., Super-menus).

**Objectives:** To determine 1) if selected LTC menus currently meet older adults' micronutrient and CFG recommendations, and 2) the potential of meeting micronutrient recommendations through food alone with strategic menu planning.

**Methods:** Regular, non-therapeutic menus (week 1, all meals) from diverse LTC homes ( $n = 5$ ) across Canada were analyzed for micronutrient content using Food Processor and Canadian Nutrient File. EaTracker was used to assess compliance with



CFG. Site dietitians provided home recipes/portion sizes, and reviewed menu analyses. Five super-menus based on common foods in LTC were created and analyzed for comparison.

**Results:** Menus' nutrient content varied significantly across homes. Micronutrients of greatest concern across all menus were vitamins D ( $8.90 \pm 5.29 \mu\text{g/d}$ ) and E ( $5.13 \pm 1.74 \text{ mg/d}$ ). Folate, magnesium, and potassium were also below recommended values. Weekly average of menus met CFG recommendations, but did not meet Vegetable and Fruits, and Grain Product servings on a daily basis. Super-menus of equal food volume met recommendations for all micronutrients but vitamin D and potassium, through incorporation of herbs/spices, examination and use of micronutrient-dense ingredients, and food preparation methods to enhance availability of micronutrients.

**Implications & Conclusions:** Except for vitamin D and potassium, meeting micronutrient requirements is possible with creative and deliberate menu planning. However, there is a need for increased focus and education on micronutrient qualities of food and best practices in food preparation methods. Cost of menus was not considered, but is a likely determinant of nutrient density.

### **Barriers to self-management of diabetes: a pilot ethnographic study among Iranian patients in Toronto**

Mahsa Jessri<sup>\*1</sup>, Mary L'Abbe<sup>1</sup>. <sup>1</sup>Department of Nutritional Sciences, Faculty of Medicine, University of Toronto, Toronto, ON, Canada M5S 3E2 [R]

**Objectives:** According to the World Health Organization, the Middle Eastern, sub-Saharan Africans and Indians will experience the greatest relative increase in type 2 diabetes rates in the next 25 years. The Middle Eastern communities (Iranians and Arabs) are the fastest growing groups to influx into Canada and several studies have identified communication difficulties as potential barriers to their health care use. No previous study has explored the root causes for ethnic disparities in diabetes care among Iranian immigrants. The objective of this study is to explore the diabetes self-management experiences, beliefs, and barriers identified by Iranian patients living in Toronto.

**Methods:** The original study aims to conduct 4 single-sex focus groups with 20–40 Iranian patients with type 2 diabetes mellitus recruited from the diabetes education centers of North York General Hospital and Mackenzie Health in Toronto. This abstract reports the results from a pilot, audiotaped focus group which included 5 female patients with type 2 diabetes mellitus. Data were transcribed in Farsi to preserve the linguistic authenticity and content analyses were inductive and manual to capture the emerging issues.

**Preliminary Results:** Findings revealed several internal (such as language and communication barriers; low health literacy; cultural beliefs; and psychological stress from diabetes symptoms, lack of glycemic control, disease progression, and lack of self-control over dietary habits) and external barriers (such as lack of family support in Canada, and high cost of

medications and self-monitoring) that could potentially influence health care professionals' ability to provide effective care for Iranian patients.

**Implications & Conclusions:** Culturally competent diabetes care with Iranian immigrants requires consideration of the social context of disease management. This pilot study is the first step towards development of realistic patient-centered diabetes education programs that consider acculturation effects, family support and importance of culturally-sensitive dietitians and other health care professionals.

**Funding support:** M.J. is supported by the CIHR Vanier Canada Graduate Scholarship and the CCO/CIHR Fellowship in Population Intervention for Chronic Disease Prevention (PICDP).

## **WELLNESS AND PUBLIC HEALTH**

### **Prevalence of risk factors associated to Muscle Dysmorphia in a sample of high-school Mexican male students and its relationship with anthropometric indicators**

TJ Saucedo-Molina<sup>\*1</sup>, ME Donjuan-López<sup>1</sup>, RM Guzmán-Saldaña<sup>1</sup>, TL Fernández-Cortés<sup>1</sup>. <sup>1</sup>Instituto de Ciencias de la Salud. Universidad Autónoma del Estado de Hidalgo, México [R]

Muscle Dysmorphia (MD) is recognized by researchers as a set of symptoms that may be characteristic of a psychological disorder in which the individual wants to become more muscular.

**Objective:** The main purpose of this study was to evaluate the prevalence of risk factors associated to Muscle Dysmorphia (MD) and its relationship with anthropometric indicators in male high-school students from Hidalgo, Mexico.

**Methods:** A cross-sectional descriptive correlational design was carried out in a sample of 165 late adolescents between 15 to 19 years old ( $X = 16.4$ ;  $SD = 0.09$ ). Three valid and reliable self-report questionnaires were applied: Drive for Muscularity Scale, Brief Questionnaire for Risky Eating Behaviors and Risk factors associated to Eating Disorders Scale. Body dissatisfaction was measured with a nine body images scale. To calculate Body Mass Index (BMI), each subject was weighted and measured. Waist circumference (WC) and body fat percentage (BFP) were also measured.

**Results:** In total sample 15.6% had symptoms of MD; 7.3% reported risky eating behaviors; 46% were dissatisfied in the sense to be more robust. Not one significant correlation was found between risk factors associated to MD and anthropometric indicators. However, positive correlations between MD and sociocultural factors were found ( $p < 0.01$ ).

**Implications & Conclusion:** Even though the data obtained do not demonstrate the diagnosis of MD, it shows the presence of the characteristic symptoms in the sample.

## Breastfeeding and formula feeding in relation to obesity among grade 5 children in Nova Scotia

Melissa Rossiter<sup>\*1</sup>, Cynthia K Colapinto<sup>2</sup>, Mohammad K Khan<sup>3</sup>, Patricia Williams<sup>1</sup>, Jessie-Lee McIsaac<sup>4</sup>, Sara FL Kirk<sup>4</sup>, Paul J Veugelers<sup>3</sup>. <sup>1</sup>Mount Saint Vincent University, Halifax, NS; <sup>2</sup>CHU Ste.-Justine, Montreal, QC; <sup>3</sup>University of Alberta, Edmonton, AB; <sup>4</sup>Dalhousie University, Halifax, NS [R]

**Objective:** Breastfeeding has been rigorously studied as factor in childhood obesity prevention. Few studies have examined whether combination feeding – breast milk and formula – also has a preventive effect on obesity. This study aimed to investigate the relationship between breastfeeding duration, combination feeding and overweight and obesity among Canadian school children.

**Methods:** We used data from a 2011 cross-sectional, population health study (n = 5560), which included self-reported infant feeding behaviours, a food frequency questionnaire and measured height and weight. Multilevel regression methods were used to examine the association between breast feeding duration and overweight and obesity adjusting for socioeconomic status, diet quality and physical activity.

**Results:** Twenty-two percent of children were overweight and 12% were obese. Approximately one-third of children were breastfed for less than one week or never. In the adjusted model, children who were only formula fed or who were combination fed for less than 6 months were more likely to be overweight or obese, when compared to children who were only breastfed (OR 1.28, 95% CI 1.04–1.57 and OR 1.34, 95% CI 1.08–1.66, respectively). When overweight and obese were examined separately, children who were only formula fed were more likely to be obese than children who were only breastfed (OR 1.56, 95% CI 1.10–2.21). The variable ‘combination fed for less than six months’ was not significant.

**Implications and Conclusions:** Breastfeeding, in the absence of formula feeding, appears to have a protective effect on childhood obesity. Exclusive breastfeeding is recommended for infant feeding; however, many mothers introduce formula to their infants early in life. This practice, in combination with breastfeeding, did not appear to be associated with obesity and may be more desirable than formula feeding alone. Innovative strategies are needed to promote exclusive and longer breastfeeding duration as part of a comprehensive strategy for preventing childhood obesity.

## Nutri-eSCREEN™ two years later: users and nutrition risk profiles

Heather H Keller<sup>\*1</sup>, Helen Haresign<sup>2</sup>. <sup>1</sup>Schlegel Research Chair, Nutrition & Aging, University of Waterloo; <sup>2</sup>Dietitians of Canada [R]

**Objectives:** Nutrition risk is common in Canadian older adults. Nutri-eSCREEN provides the first opportunity for older adults to identify their nutrition problems and receive credible guidance for self-management.

**Methods:** Anonymously collected data between January 1, 2012 and December 31<sup>st</sup> 2013 were extracted. Descriptive

and bivariate analyses were completed with SPSS v 22. Comparisons were made by gender and age group including users less than 50 yrs.

**Results:** Of the 14134 users, most were female (81.2%), first time users (91.5%) and from Ontario (56%) and Canada (93%). A large portion of users were under the age of 50 (40.6%), with 36.1%, 14.9%, 6.4% and 2.1% in the 50–64 yrs, 65–74 yrs, 75–84 yrs and 85+ yrs groups respectively. Younger users had increased likelihood of finding the site by an internet search, whereas older users had learned about the tool from a health professional ( $X^2 = 442.06$ ,  $p < 0.0001$ ). Less than 20% had no risk (16.8%), 18.9% had moderate risk and 64.2% had high risk, as the average Nutri-eSCREEN score was 45.72 (out of 64) S.D. 8.4. There was no difference in mean scores by gender, however with increasing age there was increased risk (e.g. 85+ yrs mean = 38.19 S.D. 12.1;  $F = 110.1$   $P < 0.0001$ ). Yet, 64.5% of <50 yrs were at high nutrition risk. Common (>40% reported) risk factors were weight change, limiting foods, low intake of food groups, eating alone, and having challenges with cooking. Significant differences by items were identified by gender (e.g. women less satisfied with weight) and age group (e.g. appetite).

**Implications & Conclusions:** Nutrition risk is common in middle-aged and older adults. The high proportion of users less than 50 yrs suggests a desire for a similar tool specific to the adult age group. Future work needs to determine if Nutri-eSCREEN raises awareness and stimulates users towards changed behaviors.

## Overweight and obesity are associated with lower vitamin D status in Canadian children and adolescents

LS Greene-Finestone<sup>\*1</sup>, S Brooks<sup>2</sup>, SJ Whiting<sup>3</sup>. <sup>1</sup>Public Health Agency of Canada, Ottawa, ON; <sup>2</sup>Health Canada, Ottawa, ON; <sup>3</sup>University of Saskatchewan, Saskatoon, SK [R]

**Objectives:** This study aimed to examine the magnitude of the relationship between weight status and 25-hydroxyvitamin D (25[OH]D), while controlling for possible confounders.

**Methods:** Plasma 25(OH)D from 3,381 youths, 6–17 years, from the Canadian Health Measures Survey, cycles 1&2 (2007–2009; 2009–2011) was used. Sex-specific multiple linear regression and logistic regressions examined the independent relationship of overweight and obesity (OW/OB) with 25 (OH)D level and the odds of 25(OH)D <40 nmol/L and <50 nmol/L, respectively.

**Results:** Two-thirds of the sample was of normal weight, almost 20% was overweight and 16% of males and 10% of females were obese. The risk of vitamin D deficiency (<30 nmol/L) was 6%; inadequacy, estimated by levels <40 nmol/L, was 15% (19% for teenagers) and 70% had levels >50 nmol/L, consistent with achieving the Recommended Dietary Allowance. In adjusted analyses, OW/OB in males and females was independently associated with lower 25 (OH)D. Non-white race, winter season, and non-use of vitamin D supplements were also independently associated with lower 25(OH)D level for both males and females. For females

lower income, lack of daily milk consumption and an interaction between BMI group and milk consumption were significantly associated; OW/OB females with low milk consumption had significantly lower levels of 25(OH)D. For 25(OH)D < 40 nmol/L, the OW/OB OR for males was 2.72 (95% CI = 1.4 – 5.29). For 25(OH)D < 50 nmol/L, OW/OB ORs were 2.24 (95% CI 1.49 – 3.36) for males and 1.46 (95% CI 1.13 – 1.87) for females, respectively.

**Implications & Conclusions:** Adequate vitamin D in childhood and adolescence is necessary in order to achieve optimal bone growth and peak bone mass. This study confirms the inverse association between adiposity and serum concentrations of 25(OH)D in Canadian youth and the independent association of OW/OB to 25(OH)D level and vitamin D status after adjustment for other factors.