

**Canadian Foundation for Dietetic Research  
Dietetic Research Event – JUNE 6- 9, 2007**

**Dietetic Research and Experience-sharing Abstracts 2007**

Welcome to the 2007 abstract collection. It has been my pleasure to serve as this year's abstract chair. Perusing the abstracts and attending oral and poster presentations at our national conference are always highlights for me. These abstracts tell us much about trends in dietetic practice, practice issues dietitians face, and where our strengths and gaps are when it comes to research.

Here are a few of my observations and questions having reviewed this year's abstracts:

**Apples and oranges!**

These abstracts are a clear reminder of the amazing diversity of our profession. While this diversity is something to celebrate, it does pose some challenges for us, as we attempt to communicate with each other (and to others) about our roles.

**How might we increase participation?**

Typically, less than 100 dietitians submit conference abstracts each year. As a profession we need to explore how we can get more dietitians involved.

**Community, community, community**

There are many new community-based nutrition initiatives and expanded roles for dietitians in this practice area.

**Practical issues benefit from a research-based approach**

Many of the issues we face in practice do not have clear solutions. Using a research approach and sharing findings with others help to shape practice. You don't have to be an academic researcher to contribute to practice in this manner.

I would like to acknowledge the other members of this year's BC-based Abstract Review Committee for their contributions: Susan Barr, Theresa Cividin, Gail Hammond, Frances Johnson, Heather Lovelace, Ryna Levy Milne, Monica McAuley, and Catherine Morley. I would also like to thank the Canadian Foundation for Dietetic Research for their continued promotion and support of dietetic research in Canada – a special thanks to Isla Horvath and Diana Sheh.

I hope these abstracts serve to inform and inspire you.



Karol Traviss, MSc, RD  
Abstract Chair, 2007

**Canadian Foundation for Dietetic Research**  
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*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

**POSTER RESEARCH PRESENTATION ABSTRACTS – SERIES A - THURSDAY JUNE 7, 2007**

**Community-based Nutritional Care**

**Addressing nutrition risk in community dwelling seniors through a nutrition screening program using SCREEN™ at a downtown Calgary seniors' centre**

*K Boyd\*, S Graham, and L Slauenwhite. Calgary Health Region, Calgary, Alberta [E]*

**Purpose:** The Nutrition Screening Initiative was implemented to identify and address nutrition risk among seniors attending programs at the Kerby Centre with the goal of increasing the participants' capacity to make healthy choices and access nutrition resources prior to the development of serious negative outcomes. **Process:** The coordinated efforts of senior-serving agencies in Calgary interested in ensuring the nutritional health of seniors resulted in the implementation of a program to connect at-risk seniors to existing community-based services. Nutrition risk of participating seniors was assessed by trained volunteers using the validated SCREEN™ tool. Volunteers offered participants referrals to appropriate services for their risk and specific nutrition-related concerns. Services included provision of printed nutrition education materials and referral to community-based services or registered dietitian. Community-based services for seniors included transportation, grocery shopping, meal delivery and meal preparation services. All participants referred to services were followed-up via telephone to ensure access to and appropriateness of the service to which the seniors' was referred. An evaluation was conducted with participating seniors, volunteers and service providers. **Project Summary:** 6.5% of participants were found to have no risk, 85% indicated moderate risk and 8.5% had high risk. 36% of participants questioned indicated that nutrition screening helped them to identify problems with their eating and nutrition. A majority of participants questioned reported improved eating habits since participating in nutrition screening. 12% of participants were referred to a community-based service. **Recommendations & Conclusions:** Further expansion of this program to a broader population of seniors will promote wellness, independence and a vital, active lifestyle through nutrition education before illness and disability occur.

**The need for a program of home-based nutrition services in British Columbia**

*C Morley\*, Consultant, West Vancouver, BC; J Macdonald, Dietitians of Canada, Vancouver, BC; D Cunningham, Consultant, Victoria, British Columbia [R]*

**Objectives:** The objectives of this project were to provide evidence on the importance of home-based nutrition services, to ascertain the current state of affairs regarding client needs for home-based nutrition services in British Columbia and the availability of these services, and to propose solutions to address any identified gaps. **Methods:** The number of dietitian full time equivalents (FTE) providing home-based nutrition services in Home and Community Care (HCC), Health Services for Community Living (HSCL), and other programs was compared to the need for these services (estimated by applying the percent of these populations at nutritional risk to the numbers of clients receiving HCC services in the health regions, and the number of children living with disabilities registered with Ministry of Children and Family Development programs). **Results:** Home-based nutrition services are wholly inadequate in BC to

address the care gap of clients living at home at nutritional risk. The nutritional risk of HCC clients in BC ranges from 53 to 78% in contrast to international reports of 43 to 51%. An estimated 40,000 adults and 9,000 children are at nutritional risk in BC with only 15 dietitian FTEs providing home-based nutrition services compared to the more than 250 FTEs estimated to meet recommended staffing levels.

**Implications & Conclusions:** An evidence paper based on these findings and outlining the benefits of province-wide, coordinated, and readily accessible home-base nutrition services to address the care gap, to prevent malnutrition, and to minimize the fiscal and social costs associated with malnutrition will support advocacy efforts.

### **Chronic disease management in primary health care: the Hamilton Family Health Team Nutrition Program**

*W Gamblen\*, Hamilton Family Health Team Nutrition Program, Hamilton, Ontario [E]*

**Purpose:** The Chronic Care Model (CCM) is comprised of six interrelated components which promote a high quality of health care to people living with chronic illnesses. This presentation describes how the Hamilton Family Health Team has moved toward integrating this model of care into its Nutrition Program.

**Description:** The Hamilton Family Health Team Nutrition Program integrates 18 registered dietitians into 150 family physicians practices throughout Hamilton, a city of 500,000 people in southern Ontario.

**Project Summary:** Integrating registered dietitians into the primary care setting increases the accessibility of service delivery and enhances care for patients living with chronic illnesses. Dietitians are located directly within the physicians' offices to provide services and include activities that empower and promote patients to manage their own care and include regular follow-up. They work collaboratively with the physicians, nurse practitioners, mental health counselors, several community based organizations and other members of the health care team. Care management decisions made by the dietitians and other team members are based on clinical practice guidelines and patient preferences. Dietitians help to educate the physicians and other team members, thus increasing their confidence, skill level, and efficacy in managing chronic illness. Dietitians chart directly in the physician notes, so everyone has access to the same care plan. Data from every patient referred and seen is collected and stored electronically. This data is then used to monitor performance of the care system and track individual patients or populations as necessary. **Conclusion:** Adopting the CCM of disease management into the primary care setting enables registered dietitians to become prepared, proactive members of the health care team and help patients living with chronic illnesses to cope more effectively.

### **Dental Nutrition Services in Vancouver Community Health**

*B Crocker\*, Infant, Child and Youth Program; P Glassby, T Wyman, Dental Program, Vancouver Coastal Health; and C Morley, Consultant/Researcher, Vancouver, British Columbia [E]*

**Purpose:** The purpose of this project was to assess the needs for a nutrition service to support the Vancouver Community Dental Health Program (prevention and early intervention of early childhood dental caries). Dental caries in extreme cases leads to general anesthetic for some children costing over 10 million dollars annually at BC's Children's Hospital. Early childhood caries is 100% preventable when parents have the knowledge and supports to deal with nutrition, feeding, oral hygiene, and parenting issues.

**Description of Process:** Project components included a literature review, pilot of dietitian-client consultations and record keeping at the dental clinic, chart audit, key informant interviews, and business case development. **Project Summary:** The dental team and community nutritionists collaborated to develop a dental nutrition program model. As a follow up, limited nutrition services have been offered. A waitlist of 67 children resulted, demonstrating the need for nutrition services to management.

Presentation of the business case to managers and directors resulted in funding for short-term dietitian and interpreter positions. Advocacy for a funded dental nutrition program for individualized nutritional care and health promotion services continues. **Conclusions:** Addressing the complex issues of preventing dental caries and promoting healthy eating and hygiene practices with a targeted at risk early childhood population requires a focused team approach with nutrition and dental health professionals working

together. This is an exciting new collaboration for dietitians in community health services. Our experience of systematically documenting the needs of this vulnerable population has led to short-term funding of nutrition services and discussions for the expansion of the program to all service delivery areas in Vancouver Coastal Health.

## Food Security

### Dietitians of Canada position statement on community food security

*J Slater<sup>\*1</sup>, B King<sup>2</sup>. <sup>1</sup>Human Nutritional Sciences, University of Manitoba, Winnipeg, Manitoba, <sup>2</sup>Sudbury and District Health Unit, Sudbury, Ontario [E]*

**Purpose:** Dietitians of Canada has developed a position paper on community food security which recognizes a broader scope of food security, including anti-hunger and anti-poverty work, ecological and economic sustainability, and health and safety of the food supply. **Description of Process or Content:** The author worked with a nine-member expert review committee. A comprehensive literature review was conducted, as well as interviews with key stakeholders. **Project Summary:** The position states: *It is the position of Dietitians of Canada that community food security (CFS) is both an important process and outcome toward achieving food security for Canadians. Community food security exists when all community residents obtain a safe, personally acceptable, nutritious diet through a sustainable food system that maximizes healthy choices, community self-reliance and equal access for everyone. Dietitians of Canada recognizes that community food security has a broad scope, emphasizing systematic and comprehensive approaches to promote food security for everyone, and implicitly recognizes the role of the larger food system in ensuring food security. CFS involves long-term planning with a wide range of stakeholders working toward a healthy, just and sustainable food system.* **Recommendations & Conclusions:** *Dietitians of Canada strongly encourages dietitians to educate themselves about the issues and processes necessary to build community food security, and to advocate individually and through participation in coalitions for the development and implementation of policies and programs that support CFS.* The position provides dietitians with background and understanding of the scope of community food security as an emerging model and goal of food security. It also provides concrete actions in which dietitians can engage to support and advocate for community food security.

### A scale to assess public attitudes toward and perceptions of household food insecurity

*S Cash\*, E Hemphill, and the Growing Food Security in Alberta Steering Committee. Department of Rural Economy and Centre for Health Promotion Studies, University of Alberta, Edmonton, Alberta and Growing Food Security in Alberta, Edmonton, Alberta [R]*

**Objectives:** Food insecurity has been generally defined as the condition where a person does not have an adequate amount of safe, nutritious food that can be acquired in a manner that maintains human dignity, or is threatened by such a situation (World Health Organization, 2006). The purpose of this study was to design and apply a survey instrument that assesses the attitudes and perceptions of the general public toward food insecurity. **Methods:** 150 Edmonton-area respondents completed a survey regarding their agreement with attitudinal and perception statements on food insecurity. Correlation analysis, factor analysis, and Cronbach's-alpha scores were used to refine and validate scales measuring the underlying factors determining variation in responses. Multivariate analysis was used to further relate these factors to demographic characteristics. **Results:** The primary result was the development and validation of a twenty-question research instrument regarding three underlying factors: stigma around food assistance, attitudes regarding individual vs. social responsibility for food insecurity, and perception of need, i.e., the prevalence of the problem. The factor scores vary with the age, gender, and income of the respondents. **Implications & Conclusions:** Many advocates suggest that the most effective way of reducing the prevalence of food insecurity is through progressive policy intervention at the local, provincial and federal levels (Toronto Food Policy Council, 1995). However, this work is often difficult because public attitudes do

not coincide with the statistics and findings from the food security literature. This tool will allow users to highlight attitudinal barriers toward such interventions in their communities.

## School Nutrition

### Development of a survey to determine the acceptance of the Nova Scotia school food policy, school lunch composition and use of healthy choice advertising

*KR Cavan\*, L Grayney, M Daly. Department of Human Nutrition, St Francis Xavier University, Antigonish, Nova Scotia [R]*

**Objectives:** To develop a reliable and valid survey to determine: current intake of foods eaten at school, acceptance of the new school food policy, and understanding of cafeteria healthy choice advertising in the Strait Regional School. **Methods:** 34 male and 33 female students in grade 7 (n=50) and 10 (n=17) consented to participate. Survey validity was determined through literature search, expert review and focus group testing. Reliability was determined using internal consistency and a test-retest method; giving the survey twice, 4 weeks apart. Data are reported as occurrences per 5 day school week. **Results:** The tool was found to be both valid and reliable ( $r = 0.77$ ;  $p < 0.001$ ). Males were more likely than females to purchase their lunches ( $1.58 \pm 1.38$  vs.  $0.50 \pm 0.88$ ;  $p < 0.05$ ). Females consumed more fruit juice ( $2.63 \pm 1.95$  vs.  $1.58 \pm 1.34$ ;  $p < 0.05$ ) and water ( $3.44 \pm 1.70$  vs.  $2.47 \pm 2.1$ ;  $p < 0.05$ ) and bread products ( $3.48 \pm 1.43$  vs.  $2.56 \pm 1.96$ ;  $p < 0.05$ ) than males. Males ate more low nutrient choices ( $3.48 \pm 1.43$  vs.  $2.56 \pm 1.96$ ;  $p < 0.05$ ) compared to females. Healthy eating at school, encouraged by the school food policy, was important to 73% of students; however, just 33% felt the foods currently served were healthy. 70% of students were aware of healthy choice advertising and 42% used it in their food purchase decisions. **Implications and Conclusions:** This tool will be used by the Strait Regional School Board to monitor the acceptance of the school food policy, use of healthy choice advertising, and student lunch composition.

### Measuring the gap between information and practice: An evaluation of the school nutrition handbook

*J Aussant\*, S Mathews. Nutrition and Active Living, Calgary Health Region, Calgary, Alberta [R]*

**Objective:** The School Nutrition Handbook (SNH) is a resource created for school communities to assist in making positive changes to the nutrition environment. A two phase evaluation assessed the awareness (phase one), satisfaction and outcome (phase two) of the SNH. **Methods:** Awareness and anticipated use data was collected over a six-month period via a web based survey (n= 149). One year later, satisfaction and outcome data was collected by telephone survey from the original group who requested copies of the SNH (n=66). **Results:** Phase one: A wide array of key stakeholders accessed the SNH including health professionals (35%), teachers (17%), parents (22%) and students (13%). The majority of respondents represented the elementary grade level (44%), and intended to use the SNH within the next year (85%). Phase two satisfaction and outcome data indicated that 61% of those who received the SNH had used it. Eighty-six percent of respondents rated the SNH as useful or extremely useful and the “most helpful” sections were the healthy food options (86%) and background (82%) sections. Almost half of respondents (47%) indicated change to school nutrition practices in eight areas including: vending machines (29%), foods sold in cafeterias (24%), food policy creation (17%) and healthy foods sold at special events/sporting days (8%). **Implications and Conclusions:** The popularity of the SNH is encouraging and indicates a demand for information related to school nutrition, particularly related to healthy food options. The usage rate combined with outcome results points to the complexity of change within the school environment and the necessity of commitment by all stakeholders to enhance the school nutrition environment.

### **Nutrition Positive: a school-based program creating a healthy food environment**

*C Chu\*, Public Health Services – Saskatoon Health Region, R Mireles, CHEP Good Food Inc., Saskatoon Saskatchewan [E]*

**Purpose:** Nutrition Positive exists to create and support a healthy food environment in Saskatoon school communities. It is based on three criteria: Curriculum Enhancement, Healthy Food Environment and Healthy Food Policy. **Process or Content:** Nutrition Positive; is a partnership program with CHEP Good Food Inc., Greater Saskatoon Catholic Schools, Public Health Services – Saskatoon Health Region, Saskatoon Public Schools, University of Saskatchewan – College of Pharmacy and Nutrition. The program is based on the community development model. Schools volunteer to participate and determine changes that most appropriately meet their schools' needs. Each school must meet the requirements for all three criteria. Curriculum Enhancement goes beyond the Saskatchewan Learning health curriculum in educating students and parents. This may include integrating nutrition with other subjects, field trips, cooking, newsletters or nutrition fairs. Healthy Food Environment changes the foods served or provided in the schools to healthy alternatives for classroom or school activities, fund-raising, and rewards/incentives. Healthy Food Policy is determined and written by the individual schools. Schools are provided with a Nutrition Positive manual, planning in-service, newsletters, information sharing and a celebration.

**Project Summary:** Nutrition Positive schools implement many innovative ideas to meet the three criteria of Curriculum Enhancement, Healthy Food Environment and Healthy Food Policy. **Recommendations and Conclusions:** The program has expanded each year since its inception and in the 2006/2007 year over 65% of Saskatoon schools joined, thus impacting over 22,000 students in both elementary and secondary schools. We recommend that all schools participate and implement healthy school food policies.

### **Healthy Futures: Promoting healthy lifestyles to children and teens in primary care**

*JK Fowler\*, AC Pender\*, TA Hussey. Hamilton Family Health Team, Hamilton, Ontario [E]*

**Purpose:** Despite increasing awareness among professionals, rates of pediatric obesity continue to rise. A number of initiatives focus on this issue; however, there is little evidence of effective interventions used in primary care. The Healthy Futures project was developed by dietitians to assist in the prevention and treatment of pediatric obesity. From this project, we share strategies used in affecting positive lifestyle changes among pediatric patients in primary care. **Description of the Content:** Weight screening and lifestyle questionnaires were completed. Children, working with the physician and their parents, selected lifestyle goals. The chosen goal(s) were documented on a prescription pad, which both the physician and child signed. Resource packages and dietitian services were also made available. Similar to the national average, it was found that 31% of participants were overweight or obese. The 287 questionnaires revealed that most children and teens did not get enough fruits, vegetables and milk, skipped breakfast, ate in front of the television and consumed too much juice and fast food. The goals chosen on the prescription pad focused on improving these behaviours. Feedback from physicians and participants was positive. **Project Summary:** Healthy Futures provided an innovative approach that can be used by the multidisciplinary team to address the issue of pediatric obesity. The project provided family physicians the tools and knowledge needed to help promote healthier lifestyles.

**Recommendations & Conclusions:** Quick and simple tools to help facilitate healthy lifestyle discussion and goal setting were well accepted methods for addressing pediatric weight management in primary care; long term outcomes on effectiveness have yet to be established.

## Dietetic Practice and Education

### Internationally Educated Dietitians Provide Insight into Intercultural Sensitivity for Dietetic Practice

*A Cuddy, L Buscher\*, J Gingras\*, N Israel, Ryerson University, Toronto, Ontario [E]*

**Purpose:** In a multicultural society such as Canada cultural expression is encouraged. This is contributing to expectations of those in healthcare to demonstrate sensitivity to cultural differences. In Toronto, over 90 different cultures were identified in the last census. IEDs have unique culturally and profession specific knowledge relevant to dietetic practice in Canada, yet similar to dietitians educated within Canada, are challenged with enhancing their intercultural sensitivity for practice in a multicultural environment. **Description of Process:** Within a food system management course, three educational activities were designed to provide opportunities for IEDs to further enhance intercultural sensitivity in Ryerson's Internationally Educated Pre-registration Program (IDPP). These activities were:

- 1) Describing cultural norms generally and food based norms specifically using a questionnaire. The results were shared with all IEDs using the learning management system (LMS).
- 2) Self assessing comfort with counseling clients using food items from a list of "commonly consumed foods". IEDs from successive cohorts add to this list, expanding knowledge of "commonly consumed foods" to include many cultures.
- 3) Researching 3 unfamiliar foods each week and describing how these foods are "generally" used. This provides a large database of foods which are posted on the LMS for information sharing. Foods include therapeutic specialty products, health foods and supplements in addition to "mainstream" and "multicultural" foods.

**Project Summary:** Through information sharing IED can educate one another about various cultural norms and values relevant to dietetic practice. Educators of IED can learn where cultural knowledge gaps exist and focus educational programming which holds promise for applicability across the profession. **Recommendations and Conclusions:** Information sharing holds promise for enhancing intercultural sensitivity across the profession.

### Dietetic volunteer program in a cardiovascular risk reduction clinic

*S Ratner\*, K McQueen, M Yong, J Katalinic. Healthy Heart Program - St. Paul's Hospital, Vancouver British Columbia [E]*

**Purpose:** The Health Heart Program (HHP)/ Risk Reduction Clinic is a multidisciplinary program consisting of a Cardiac Rehabilitation Prevention Program and Lipid Clinic. This nationally recognized program is the referral centre for British Columbia. Nutrition education plays a key component in reducing modifiable cardiovascular risk factors in this moderate to high-risk population. The high patient load, need for patient and professional education and research places high demand on the three Registered Dietitians (RD) of the HHP. **Content:** Nutrition students have been volunteering since 1995. A more structured program was required to meet these high demands and mutually benefit the student, RD and patients. Students were actively recruited from University of British Columbia (UBC) Faculty of Agriculture through the dietetic coordinator and student information website. **Results:** The overwhelming response resulted in >60 applicants received within 48 hours. Twelve volunteers were chosen, by an interview process. Volunteers were asked to commit 4 hours every 2 weeks. Based on interest and education level specific responsibilities were assigned. Duties included: the opportunity to perform literature searches, develop interactive education materials and displays, present monthly cooking demonstrations, organize patient education materials, conduct data entry on dietary outcome measures for research, job-shadowing and provide on-going support for the RD. **Conclusion:** This practical "hands on approach" maximizes the students' education experience. This highly successful volunteer program has provided the RD with a regular dependable resource allowing more time for direct patient care, professional education and research. This in turn supports and benefits the patient in making lifestyle changes and ultimately reducing cardiovascular risk factors.

## Food, Food Service, Public Safety

### Management of an airborne fish allergy in a multi-site cold-plating acute care hospital

*D McKinley\*, Y Jakus, G Lemieux and M Mueller. London Health Sciences Centre, London, Ontario [E]*

**Purpose:** Preventative action taken to minimize risk to admitted obstetric patient presenting with an airborne fish allergy 48 hours prior to serving fish, a first choice menu selection. **Description of Process:** The Obstetric Unit created and enforced a 'fish-free' environment. Initial food service precautions included sealing off patient tray at the central tray assembly site (capacity of 750 trays per meal) and delivering it, off-site, with other patient trays, before developing a detailed plan. Plating of a first choice fish menu item was considered a risk for this patient. Patient food services options included: Alternative 1: Placing a mini-fridge and microwave in the patient room, stocked with compliant items (appliances not available); Alternative 2: Removing fish from the menu (not feasible due to limited time considering inventory and tempering requirements, excessive waste and patient dissatisfaction with already selected fish choices); Alternative 3: Providing the patient with cold meal kits (not feasible due to further patient diet restrictions); Alternative 4: Preparing multiple patient specific meals in a separate location, delivering in a separate cart, serving meals at off times from other hospital patients, eliminating fish meals from all patients on the same unit and removing all fish containing items from the satellite food services operation. **Project Summary:** Alternative 4 was implemented with no adverse patient impact, however near misses occurred. **Recommendations and Conclusions:** 1. Develop procedure for airborne food allergies. 2. Inventory mini-fridge and microwave for patient room deployment. 3. Insure clear communication regarding patient and site requirements. 4. Monitor for compliance. 5. Educate staff regarding food allergen risk. 6. Consult an allergist and risk management. 7. Document actions taken.

### Nutritional and Sensory Attributes of Pulse-Based Pureed Foods

*H Whittick\* & WJ Dahl, College of Pharmacy and Nutrition; RT Tyler, Department of Applied Microbiology and Food Science, College of Agriculture, University of Saskatchewan, Saskatoon, Saskatchewan [R]*

**Objectives:** To determine the suitability of whole pulse flours for pureed food production and to evaluate the effects of ingredient substitution on the acceptability of the developed purees. **Methods:** Ten quick-cooking, pulse-based pureed formulations were developed. Line-spread, spooned weight and particle size tests were used to determine the textural characteristics of the developed purees. A nutrient analysis was carried out on the pulse-based products and products currently used in long term care. Sensory evaluation was also completed with participants including registered dietitians and long term care residents. A five-point scale of aroma, flavour, adhesiveness, cohesiveness and drying of the mouth was rated. Preference tests compared the developed pulse-based purees to similar commercial products. **Results:** Line-spread tests indicated the pulse products had a "pudding-like" consistency. Most spooned weights were within the target range of 10-15 g. Particle size assessment indicated minimal particles greater than 1 mm in diameter. Nutritional analysis indicated pulse-based purees were lower in calories, sugar, fat, and sodium and were higher in protein, fibre and folate than commercial products used in long term care. Mean aroma of purees tested was 4.0 (1=not detectable, 5=clearly detectable) and 96% of panelists rated aroma as acceptable. Mean intensity of flavour was 3.6 (1=no flavour and 5=strong flavour) and 94% of panelists rated flavour as acceptable. Adhesiveness was rated 2.7 (1=not adhesive, 5=very adhesive). Cohesiveness was rated 2.4 (1=not cohesive, 5=very cohesive). Drying of the mouth was rated 3.6 (1=mouth feels dry, 5=mouth feels moist). **Implications and conclusions:** Quick-cooking, nutritionally-dense pureed food products developed using whole pulse powders were texturally appropriate for dysphagic individuals.

## Dietary Intake

### Validation of a web-based school survey for dietary intake assessment of children and adolescents

*J Toews\*, D Royall, P Driezen, L Hogsden, R Hanning. Population Health Research Group, University of Waterloo, Waterloo, Ontario [R]*

**Objectives:** The web-based Food Behaviour Questionnaire developed at University of Waterloo includes a 24-h diet recall, food frequency questionnaire and questions addressing knowledge, attitudes, intentions and food-related behaviours. The survey, which has been used with over 10,000 Canadian students, has undergone a number of revisions since it was developed in 2001 and initially validated. The purpose of the current study was to a) evaluate the survey and b) validate the web-based 24-h recall. **Methods:** a) Cognitive interviews were conducted with dietitian experts (n=11) and target users (n=21 grade six students), using “think aloud” techniques. b) Grade 6–8 students (n=204) from multi-ethnic Toronto schools, completed the web-based 24-h recall and subsequently underwent one-on-one diet recall interviews with trained dietitians. **Results:** a) Users provided positive feedback on the web-based survey. Suggestions pointed to including more foods, more photo images for portion estimation, and improved student feedback compared to Canada’s Food Guide. b) Energy and nutrient intakes were significantly correlated between the web-based and dietitian-administered 24-h recalls ( $p < 0.001$ ) for the entire student sample as well as within gender and within grade. Intraclass correlation coefficients were  $> 0.5$  for energy and macronutrients, although the web-based survey underestimated energy (-10.5%) and carbohydrate (-15.6%) intake ( $p < 0.05$ ). Specific foods were identified that accounted for much of this discrepancy because of omission or underestimation of portion sizes. **Implications & Conclusions:** The web-based survey is appealing for dietitians, researchers and students alike and is valid, relative to 24-h dietitian-administered recalls, for dietary assessment of student populations. Revisions are being made based on this evaluation. (Supported by the Ontario Ministry of Health Promotion)

### Diet quality is associated with specific meal environments in grade six, seven, and eight students from Ontario and Nova Scotia

*SJ Woodruff\*, RM Hanning. Health Studies and Gerontology, University of Waterloo, Waterloo, Ontario [R]*

**Objectives:** Family meals have recently been associated with improved dietary profiles and healthy body weights among children and adolescents, yet very little is known beyond the impact of the frequency of family meals. The purpose of this research, based on 24h recall, was to describe specific aspects of the breakfast, lunch, and dinner environments (where the food was purchased, who prepared the meal, where the meal was consumed, and who it was consumed with) and to determine if particular clusters of environmental factors were associated with diet quality. **Methods:** The web-based *Food Behaviour Questionnaire* was used in school surveillance of grade six, seven, and eight students from Northern Ontario (n=340), Southern Ontario (n=1785), and Nova Scotia (n=793) over the 2005-06 academic school year. Diet quality was investigated using the Healthy Eating Index-Canadian. Cluster K-means procedures were used to classify observations about the four meal environment variables into groups. **Results:** A total of 3, 6, and 2 clusters of meal environments were identified for breakfast, lunch, and dinner, respectively. Compared with eating breakfast or dinner prepared/consumed at a restaurant or fast food outlet, higher diet quality ratings were associated with consuming breakfast at home with others (OR=0.74,  $p=0.37$ ), and dinner at home, prepared by themselves or family members and consumed with family members or alone (OR=1.96,  $p < 0.001$ ). **Implications and Conclusions:** This is the first study to describe specific meal environments of Canadians in grades six, seven, and eight. Meals that were prepared/consumed in the home were generally associated with improved diet quality ratings. S. Woodruff was supported by a Doctoral Student Award from the Danone Institute of Canada.

## Research Methodologies

### Development of a quality appraisal tool for assessing research papers

*MJ Cooper\*, SM Farnworth, L Dumais, Nutrition Evaluation Division, Health Canada, Ottawa, Ontario [R]*

**Objectives:** In the winter of 2005, the Trans Fat Task Force was asked to develop recommendations and strategies for reducing processed Trans Fats in Canadian foods. An element of this work involved the development of a study appraisal tool to assess the methodological quality of the papers gathered from a literature review used to support these recommendations. **Methods:** An eight-page checklist was developed based on a review of existing checklists/scales/research for the assessment of both randomized and non-randomized studies. This checklist was developed to further remove any ineligible papers and to appraise study quality. Applying pre-selected inclusion/exclusion criteria, 63 papers were assessed. The appraisal component of the checklist addressed issues of internal validity (14 questions; e.g. sample size, appropriate statistical tests, etc.) and clinical applicability (7 questions; e.g. population appropriateness). Each paper was independently assessed by two reviewers and an overall assessment (Good, Fair, Poor) of all appraised studies was determined and the inter-rater agreement was calculated using Kappa Statistics (K) and percentage agreement. **Results:** The kappa value for the inter-rater agreement of assessing the overall quality rating of each study was  $K = 0.14$  (poor) with a 65% agreement. The relatively poor agreement between the reviewers was partially reflected by the subjective nature of the process and the need to refine the tool to best reflect methodological quality. Five of the questions regarding internal validity and two questions reflecting clinical applicability had no reflection on the quality appraisal of papers. **Implications and Conclusions:** In order for the tool to be utilized with a broader application, further work needs to be conducted to refine the checklist to reflect only questions that truly assess methodological quality.

### A systematic review of nutrition knowledge and behaviour change assessment instruments

*J Wegener\*, E Desjardins, R Hanning. University of Waterloo, Waterloo, Ontario [E]*

**Purpose:** Canadian community developers, evaluators, researchers and community practitioners need access to nutrition knowledge assessment instruments (NKAI) and nutrition behaviour assessment instruments (NBAI) to measure the impact of activities, programs and policies aimed at promoting healthy eating. Yet, access to valid and reliable measurement tools is currently limited. Moreover, the evidence of the effectiveness of these tools in measuring change in knowledge or behaviour has not been systematically reviewed. **Description of Process or Content:** A series of research questions have been identified to help assess the availability and accessibility of NKAI and NBAI with documented validity, reliability, effectiveness, plausibility and practicality within the published and gray literature. A multi-step systematic review of the literature was conducted including: 1) Question and concept map development; 2) Database selection; 3) Search development and application; 4) Extended search methods; 5) Citation storage; 6) Establishment of inclusion/exclusion criteria; 7) Selection by journal title and abstract; 8) Reliability of selection; 9) Article retrieval; 10) Selection by full text; 11) Reading and evaluating articles; 12) Coding article information; 13) Selection of instruments for synthesis; 14) Drawing conclusions and identification of gaps in the literature. **Project Summary:** The process of the systematic review of NKAI and NBAI is discussed. **Recommendations & Conclusions:** Mobilisation of findings to those interested in measuring the impact of nutrition-related activities, programs and policies could help support evaluation and outcome reporting of these interventions/ projects for funding and accountability. As the scope of nutrition-related research broadens to include environmental interventions, these tools will also be of interest to social scientists, geographers, epidemiologists and public health researchers. Leadership in initiating the review was provided by Dietitians of Canada.

## Relating Eating Well with Canada's Food Guide to food consumption and nutrition surveys

*I Rondeau\*, M Vigneault and M Villeneuve. Health Canada, Food Directorate, Ontario, Ottawa [E]*

**Purpose:** To develop a methodology to assess dietary adherence of the Canadian population against the guidance provided in Canada's Food Guide (CFG). **Description of Process or Content:** The classification of foods and recipes into CFG groups as well as Food Guide (FG) serving size assignments was developed using the guiding principles and thresholds from work previously conducted with the Canadian Nutrient File (CNF). To extend the decisions from the CNF to foods and recipes reported in a nutrition survey, a number of additional steps were required. Reported foods were coded either as basic foods or as recipes with ingredients. Each recipe was examined to determine whether it should be classified as a whole, in single food guide groups, or as a recipe where the ingredients would be classified in the respective food guide groups. Once all food and recipes were assigned to a FG group, the number of servings had to be calculated. For all food groups, the number of servings were calculated directly by dividing the grams consumed by the FG servings size. Day to day variability of servings consumed in each food guide group had to be taken into account when calculating population usual intake distributions. **Project Summary:** This approach was used for two provincial nutrition surveys, with the 1992 version of CFG. This same strategy will also be used to evaluate the Canadian Community Health Survey (CCHS 2.2) data in regard to compliance to the new CFG 2007. **Recommendations & Conclusions:** This approach will provide valuable information on dietary compliance of Canadians to the guidance provided in CFG.

## Nutrition and Health Education

### Innovative application of intranet technology to enhance staff awareness of nutrition issues and dietitian services in a multi-site healthcare organization

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**Purpose:** In February, 2005, the members of the newly-formed Website Committee initiated the development and implementation of a specific site for Clinical Nutrition Services on the Providence Health Care (PHC) Intranet. The Committee's goal is to highlight the dietitian's professional role and to provide accurate yet engaging nutrition information to PHC staff. **Process or Content:** PHC operates three hospitals and three residential facilities and employs nearly 8,000 staff and physicians. The Website Committee launched the first phase of the intranet site in April, 2006 to communicate the mission and services of PHC dietitians. This initial phase highlighted standards of care, areas of service, contact information, interdisciplinary involvement, professional achievements, and information about the internship program. Subsequently, the Committee chose to broaden the site in order to take a more innovative and active role in health promotion for PHC staff. New features include seasonal recipes, 'recipe makeovers', a tip of the month, a nutrition advice column, recommended cookbooks, nutrition quizzes, and reputable online nutrition resources. The second phase of the site was launched in October, 2006 and advertised to PHC staff through email, a newsletter, and an online scavenger hunt. **Project Summary:** Staff can currently access fifteen different topics on the Clinical Nutrition Services intranet site. Visitors from all PHC sites expressed satisfaction in having access to nutrition information that is easy to navigate, informative, practical, up-to-date, and fun. **Recommendations & Conclusions:** Intranet technology is a cost-effective, time-efficient platform that enables dietitians to promote their work and endorse staff wellness initiatives within an organization of any size.

### Community Nutritionists' Evaluation of Nutrition Education for Community Health Nurses and Teachers

*H Yeung\*, B Crocker, and M Kurrein. Infant, Child and Youth Program, Community Health Services, Vancouver Coastal Health, Vancouver, British Columbia [E]*

**Purpose:** To learn program evaluation skills and implement an evaluation of community nutrition services as described in the Vancouver Community Nutrition Program logic model. **Description of Process:** Three community nutritionists participated in a seven-month program evaluation course offered by the Vancouver Coastal Health Research Institute. During this course, community nutritionists developed and implemented a program evaluation for one aspect of their nutrition practice. The community nutritionists evaluated the program logic model goal of enhancing clients' healthy eating practices through the provision of in-service education sessions to other professionals. The evaluation project completed during this course included a review and evaluation of using nutrition education to train community health nurses and teachers to use health promotion nutrition information with their clients and students respectively. An evaluation framework, ethics application and dissemination plan were developed and implemented. A time series design, including pre- and post-tests, was used to assess knowledge, attitudes, beliefs, and changes in confidence and abilities to answer nutrition questions and access reliable nutrition information. Data gathered from the evaluation was collated to evaluate the impact of these education sessions. **Project Summary:** The seven-month program evaluation course provided the community nutritionists with a venue to review their program logic model (to be presented at the Dietitians of Canada conference) and to evaluate one aspect of their practice. **Recommendations & Conclusions:** This program evaluation will help community nutritionists in planning future nutrition education sessions for other

professionals. Also, the experience of participating in the program evaluation course has increased community nutritionists' confidence to continue to evaluate other components of their program.

### **Nutrition Education Needs & Preferences of Three Consumer Groups: Phase 1 Findings**

*C Morley and C Rocheleau, NutritionLink Services Society, Vancouver, BC, D MacLellan, UPEI, Charlottetown, PEI, T Cividin\*, Vancouver General Hospital, Vancouver, BC, K Traviss, UBC, Vancouver, British Columbia [R]*

**Objectives:** The objectives of phase 1 of this four phase study were to clarify definitions of three previously-identified categories of consumers, and to assess perceptions about the impact of health status on consumer nutrition education needs and preferences. **Methods:** An online survey was developed, pilot-tested, and administered to dietitians in June 2006; recruitment was via a Dietitians of Canada broadcast email. **Results:** Dietitian respondents (n=443) were from across Canada and had varied durations of practice experience. Most had experience working with all three consumer categories: 'life the same' (those whose ability to eat was not affected by their condition) (395; 89%), 'life altered' (those whose ability to eat was drastically affected) (390; 88%), and 'well' (343; 77%). Many stated that the definitions needed rewording to enhance clarity. Most felt that health status category was either a somewhat or very important predictor of type of nutrition education (information, skills, emotional) needed (401; 91%) and preferred mode of education delivery (383; 86%). However, many respondents commented on additional factors to consider and the need to individualize approaches. In the general comments section, respondents expressed strong interest in the topic and identified a variety of concerns related to the challenges of providing nutrition education with little formal evidence-based preparation. **Implications & Conclusions:** Findings from this phase were used to develop a national online consumer survey (phase 2) which is currently being administered. Phases 1 and 2 results will inform phase 3, development of dietitian practice guidelines.

### **Nutrition Intervention in Kidney Stones An Innovative Educational Program**

*M Cushing\* and K Wiens. Department of Urologic Sciences, Vancouver General Hospital, Vancouver, British Columbia [E]*

**Purpose:** Dietary factors play an important role in kidney stone formation, and dietary modification can reduce the risk of stone recurrence. Dietary intervention can be the primary tool for stone prevention in the management of patients with kidney stones. If left untreated, those who have formed one kidney stone have a 50% chance of forming additional stones within 10 years. There seems to be a lack of dietitian involvement in stone management despite the fact that nutrition intervention has such a large impact. **Description of Process or Content:** We have developed a comprehensive education program for patients with kidney stones. This program consists of group and individualized nutrition counseling as well as patient education handouts. The program highlights the various types of kidney stones and the dietary factors that are specific to each type, with calcium oxalate stones being the most common. There is a close working relationship with the staff urologists which allows access to detailed metabolic investigations and allows for close monitoring and follow-up of patients participating in the program. Individual sessions include patient-centered nutrition assessment, education and counseling by a registered dietitian that is tailored to the individual patient based on urinary profile and stone type. Group sessions focus on general healthy eating guidelines with a discussion on the different stone types and the dietary strategies to avoid recurrence of these stones. **Project Summary:** Dietary intervention is an important and vital component in the management of kidney stones. We feel that there exists a void in dietitian involvement in this area. **Recommendations & Conclusions:** With appropriate education, patients can exercise some control over stone disease and reduce their chances of forming stones through dietary modifications.

## **Make it HAPPEN: an intervention program for overweight children and their families**

*K Hall\*, K Watson-Jarvis, C Clark, JC Johnston, L McCoy, (on behalf of the Make it HAPPEN Advisory Committee). Calgary Health Region, Calgary, Alberta [R]*

**Objective:** This presentation describes evaluation results of an intervention program for overweight children and their families. **Methods:** Children 6-12 years old with a body mass index (BMI)  $\geq$  85<sup>th</sup> percentile for age and sex were referred to an eight-week community-based program. The program focused on building family capacity for healthy eating, active living and healthy self-esteem. It included individual family assessments, weekly education sessions for children and parents, and follow-up support to maintain lifestyle change. Measurements taken at program entry and completion included weight, height, blood pressure, eating habits, physical activity, self esteem, readiness to change, and child's quality of life. The results from 13 consecutive programs are described. **Results:** Between February 2005 and September 2006, 134 children registered and 112 children completed the program, yielding a 16% attrition rate. An average of 10.3 children participated per group, 60% were female, average age was 10 years. After the eight week program, the average BMI-for-age percentile for the group decreased from 97.5 to 97.1 (N=70, Z=-.2, p=0.006), physical activity increased (p=0.042), child quality of life increased, both self-reported (p=0.012) and parent-reported (p=0.001), self-esteem was maintained (p=0.38). Blood pressure screening suggested as many as 40% of families need to follow up with their family physicians. No changes were detected in eating habits, and readiness to change. **Implications and conclusions:** An eight-week community-based program focusing on building family capacity for healthy lifestyles yielded improvements in BMI and quality of life. Overweight children should be screened for hypertension. Follow up measures are needed to assess if outcomes are maintained over time.

## **Getting the message out: sources of nutrition information accessed by men with prostate cancer – a pilot study**

*K Wiens \* and M Cushing. The Prostate Centre at VGH, Vancouver, British Columbia [R]*

**Objectives:** To explore nutrition information preferences of men with prostate cancer and the effectiveness of these messages in promoting dietary change. **Methods:** Men in attendance at a prostate cancer-specific nutrition education session were asked to complete the study questionnaire. This study was approved by the UBC Behavioral Research Ethics Board and Vancouver Coastal Health Research Institute. **Results:** Data analysis was based on 21 completed questionnaires. Average age of respondents was 70 years; the majority (74%) were retired and married. The most common treatment modalities included radical prostatectomy (44%), radiotherapy (35%) and androgen deprivation therapy (35%). Common comorbidities included hypertension (22%), osteoporosis (17%), diabetes (9%) and high cholesterol (9%). The majority of respondents were obtaining their nutrition information from support groups (61%), newspapers or magazines (43.5%), with print materials and family and friends both at 35%. Subjects preferred to receive nutrition information from group sessions and print materials equally (35%) followed by individualized consultation (26%). Registered dietitians were identified as the preferred source of nutrition information (57%) followed by medical doctors (22%). The most commonly used supplements included Vitamin D (48%), calcium (39%), and multivitamin supplements (35%). Reduced saturated fat (57%), increased fish consumption (57%), and incorporation of lycopene (52%) were the most common dietary modifications. **Implications & Conclusions:** These findings suggest that men with prostate cancer use a variety of modalities to access nutrition information. This group would benefit from group sessions lead by registered dietitians to provide them with consistent and current nutrition information. Our goal is to use this information to refine our prostate cancer-specific nutrition education classes to better meet the needs of the clients.

## Consumer use and interpretation of trans fat information on food labels

*S Ellis\*, NT Glanville, L Mann, J Fraser Arsenault, I Blum. Mount Saint Vincent University, Halifax, Nova Scotia [R]*

**Objectives:** Trans fat information has recently been added to food labels in Canada, but little is known about if and how consumers use this information to make food-purchasing decisions. Thus, this research aimed to examine use and interpretation of trans fat information on food packages by adult shoppers in the Halifax area. **Methods:** All participants (n=244) who approached an in-store table at one of three Atlantic Superstore locations were invited to complete an 11 question interviewer-administered questionnaire, developed and face-validated by the researcher. Data were analyzed using chi-square and one-way ANOVA to examine the relationship of age group, gender, grocery shopping habits, household size, and source of nutrition information to awareness, use, and interpretation of trans fat information. **Results:** Nearly all participants (98%) were aware of trans fat and most had at least a basic knowledge of the relationship to cardiovascular disease. Most participants (82%) reported using information on food packages to reduce trans fat intake and the Nutrition Facts panel (60%) was most commonly used. Although consumers were generally attempting to limit trans fat intake, males and participants under 40 were less likely to be doing so ( $p<0.05$ ). Many participants (75%) correctly interpreted the '0 trans fat' claim as "low in a certain type of fat"; however, some regarded foods with this claim as a healthy choice (65%), low in fat (19%) and/or low in calories (16%). **Implications & Conclusions:** Nutrition professionals should target messages to reduce trans fat intake towards male shoppers, especially those under 40. While general knowledge level was good, further education is required to help consumers process trans fat information on the Nutrition Facts panel.

## A community educators' manual for effective nutrition education delivery for persons living with HIV/AIDS

*K Spec\*, C Wedemire, L Cindrich, L Jankola, D Billey and P Wahl. Nutrition Education Exchange Program, AIDS Vancouver, Vancouver, British Columbia [E]*

**Purpose:** This nutrition education program has been designed as a guide for community educators so that they may deliver engaging, relevant nutrition education to all persons living with HIV/AIDS. This program aims to provide innovative methods to educators running existing community programs serving this population in order to address the chronic poor nutritional status facing many persons with HIV/AIDS. **Process or Content:** Community leaders and educators may use this manual as a guide and basis for implementing a nutrition education program that is an adjunct to regular community programming serving persons with HIV/AIDS. The manual is complete with background nutrition information, participant nutrition newsletters, complete lesson plans and engaging activities to guide a client centered, participatory learning style. Nutrition education in this manual encompasses; nutrition basics such as identifying and recognizing the importance and distribution of carbohydrates, protein and fat; symptom management addressing common HIV related complications effecting nutritional status such as wasting, oral thrush, diarrhea and dry mouth; vitamins and minerals found to be of particular importance to this population such as calcium, vitamin D and iron. Also addressed are practical, inexpensive, nutritious meal design ideas using some of the most common food bank items. **Project Summary:** A community based education approach to program development allows the Nutrition Education Exchange Program to be incorporated into and enhance any community program serving persons living with HIV/AIDS. **Recommendations & Conclusions:** The Nutrition Education Exchange Program manual provides effective and relevant nutrition education programming that can be incorporated into any existing community program serving persons with HIV/AIDS.

### **The NSEPP wellness program: promoting healthy lifestyles**

*Z Ursuliak, H Milliken, H Sandeson, J Palmer\* Capital Health, Dartmouth, Nova Scotia [E]*

**Purpose:** The Nova Scotia Early Psychosis Program (NSEPP) is a specialized mental-health program for young adults who are experiencing first episode psychosis. Many take atypical antipsychotic medications which have metabolic side effects, including diabetes, weight gain and dyslipidemia. A multi-disciplinary NSEPP Wellness Program was developed in 2006 to help clients improve all aspects of health: mind, body (including improved nutritional status), emotions and spirit. **Description of Process or Content:** The Wellness Program is a 12 week, group program covering Healthy Eating, Physical Activity/Recreation, Stress Management and Cognitive Behavioral Therapy. There are 8 to 10 participants per group and facilitators include dietitians, an occupational therapist, a recreation therapist, a peer motivator and a psychiatrist trained in enhancing motivation. The healthy eating sessions offer a variety of didactic and hands-on interventions promoting healthier food choices. Participants learn the basics of healthy eating, menu planning, meal preparation and grocery shopping on a budget. Various foods are sampled and strategies to incorporate these into their own diets explored. Problem solving the obstacles that prevent healthy lifestyle changes occurs in the cognitive behavioural group. The effectiveness of the program in promoting healthy lifestyles is evaluated through pre- and post- outcome measures, including psychological measures, physical health parameters, health behaviour measures and metabolic parameters. **Project Summary:** The NSEPP Wellness Program provides participants with practical skills and knowledge to make healthy lifestyle changes. Initial program evaluation indicates that the attendance rate and level of client satisfaction are high. **Recommendations and Conclusions:** The NSEPP Wellness Program is an innovative model for assisting with the physical and mental health challenges faced by those recovering from psychosis. Program evaluation through pre-and post-intervention outcome measures has significant research potential.

### **3 Cheers multicultural health promotion nutrition demonstration project: formative evaluation**

*J Silzer\*, V Kiss. Child and Women's Health and Healthy Living, Calgary Health Region, Calgary, Alberta [R]*

**Objectives:** To evaluate the utilization of a health promotion model to provide nutrition information, support and resources to a prenatal and early postnatal refugee population in an informal drop-in environment. Program delivery occurs through a collaborative community-based partnership. **Methods:** Focus groups were conducted in three languages with program participants in February 2006 and data was collected through telephone interviews with key informants representing the program partnership. Cultural barriers and facilitators in outreach activities, cultural appropriateness of nutrition resources and services, access to project services, changes in nutrition knowledge and health promotion behaviours of program participants and social isolation of group participants were some of the indicators that were qualitatively assessed. **Results:** Issues regarding translation, facilities and transportation were noted as potential outreach barriers. Visuals, actual foods or food models, hands-on participant involvement, group discussion (sharing of experiences), demonstration, drama, and tailoring sessions to the learning needs identified by participants were validated as appropriate outreach strategies with this ethno-cultural population. Increased access to prenatal services and information, as well as increased knowledge and participation in healthy eating and other specific health promotion behaviours among refugee participants were noted. Food security and nutritional intake was enhanced through the provision of milk and juice coupons, food hampers, prenatal vitamin and mineral supplements, and snacks at the drop-in. Project partners and program participants identified a reduction in social isolation among group members. **Implications and Conclusions:** The project has achieved positive health and social outcomes for the target group. An enhanced food preparation component ("Cooking Circles") and parenting programs have been added based on needs identified by program participants.

## Promoting a healthy feeding relationship in low-income and culturally diverse families

*H Piovoso\*, K Hall, S Galesloot, C Keillor. Calgary Health Region (CHR), Calgary, Alberta [E]*

**Purpose:** The “Picky Eating” Class focuses on ways to develop a healthy feeding relationship with toddler and preschool-aged children and is one strategy employed to promote healthy growth and obesity prevention. This workshop was not reaching low income and culturally diverse groups. Limited literature describes how to apply the feeding relationship message in low-income and/or culturally diverse families. This project’s purpose was to develop, pilot test and evaluate a workshop format for delivering healthy feeding relationship messages to these groups. **Process:** A literature review and focused discussions determined content and format considerations appropriate for applying the feeding relationship in low income and culturally diverse populations, as well as strategies important to supporting target population participation. The Picky Eating curriculum was adapted to have its messages and learning activities portrayed in a manner that supports learning with identified diverse populations. The adapted class curriculum was pilot tested with four agencies servicing low income families and two serving culturally diverse families. **Project Summary:** Low income and culturally diverse families struggle with picky eating in their children. Applying the feeding relationship message in these populations required considering the unique situations families face, such as food insecurity, low literacy, English as a second language, cultural values, food beliefs and family structure. Using a facilitated approach and a Registered Dietitian as workshop facilitator is considered essential to communicate key messages. Consciously addressing accessibility (childcare, transportation) and utilizing relationships with agencies serving these families contributed to successful program delivery. **Recommendations and Conclusions:** Development and delivery of health promotion strategies that specifically target low income and culturally diverse populations is successfully done in partnership with agencies servicing these populations.

## Clinical Research (including Outcomes of Intervention)

### Gastrostomy tube placement at St. Michael’s Hospital in Toronto: a retrospective review of frequency, indications, complications and outcomes

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**Objectives:** To describe the frequency of gastrostomy placements, either endoscopic (PEG) or radiologic (PRG), patient characteristics, indications for enteral support, complications and outcomes as well as to explore factors which influenced complications and outcomes. **Methods:** A retrospective chart review of all patients who underwent initial gastrostomy insertion for nutritional purpose during December 1st 2004 – December 31, 2005. **Results:** Of 136 charts reviewed, 30 patients received PEGs and 44 PRGs over the 13 month period. PRG patients were older than PEG ( $68\pm 19$  vs.  $55\pm 21$  y,  $p=0.008$ ). PEG patients had longer lengths of stay and more ICU admissions, possibly reflecting greater disease severity than PRG patients ( $p=0.029$ ). Four patients with ascites had PRG insertions. The main reason for tube insertion was dysphagia/aspiration (PEG (60%) and PRG (77.3%)). The majority in both groups had gastrostomy tubes for sole nutrition support (96.7% in PEG and 79.5% in PRG). Minor complications were comparable between the two groups (PEG 27% vs PRG 26%,  $p=0.678$ ). There were three cases of major complications, 2 in PEG, 1 in PRG. More PRG than PEG patients died while in hospital (18.2 vs 3.3%,  $p=0.055$ ). There was a difference in the distribution of discharge locations between the PEG and PRG groups ( $p=0.036$ ). **Conclusions:** There was no significant difference in frequency of complications between the PEG and PRG groups. Characteristics such as age, presence of ascites and severity of disease appeared to influence the type of gastrostomy placement.

## **The impact of maternal iron and docosahexaenoic acid status on the cognitive development of their infants at 6 months**

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**Objectives:** It is likely that the quality of nutrition of the pregnant woman will have an impact on the health and development of her child. Several nutrients such as iron and essential fatty acids deserve a special attention since these two nutrients are implied in the brain development and their metabolism is interrelated. The purpose of this study was to evaluate the impact of maternal iron and docosahexaenoic acid (DHA) status on the cognitive development of their infants at 6 months. **Methods:** Pregnant women were recruited at the Dr Georges-L. Dumont Regional Hospital in Moncton from May to September 2005. At 28-32 weeks gestation, dietary habits, family socio demographic background, cognitive profile and iron and fatty acid status were assessed in pregnant women. At six months of age, infant's anthropometric data, feeding practices, iron status and cognitive development were assessed. In total, 64 mothers with their babies completed the study. **Results:** Among this privileged group, no significant relationships were observed between maternal iron and DHA levels and the infant's cognitive development at 6 months. **Recommendations & Conclusions:** Infant cognitive development was not affected by maternal iron and DHA levels at 6 months of age. However, in this small sample, maternal iron deficiency anemia and DHA status was adequate in most women. Nevertheless, cognitive testing should also be performed at 18 months and 24 months, period at which the cognitive development assessment is more reliable and predictive of later infant development.

## **Synbiotic therapy improves quality of life and symptoms of pediatric ulcerative colitis patients**

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**Objectives:** Results of well-designed clinical trials indicate that probiotic and prebiotic therapy may effectively maintain remission in Ulcerative Colitis (UC). The purpose of this study is to evaluate the clinical efficacy and the effect on quality of life (QOL) of synbiotic therapy in pediatric UC patients. **Methods:** Consenting pediatric subjects (8-18 years; n = 9) with UC in remission were provided synbiotic therapy, (Probiotic: *Bifidobacterium longum* R0175  $2.0 \times 10^{10}$  cfu/day; Prebiotic: 15 g/day of inulin) (n = 4) or placebo (maltodextrin + ascorbic acid capsule; 15 g/day of non-resistant maltodextrin) (n = 5) for ten months in a pilot study (Phase I). After ten months, the study was unblinded and synbiotic therapy was administered to eight pediatric subjects (Phase II). QOL was assessed using the Short Inflammatory Bowel Disease Questionnaire (SIBDQ) at study entry and every two months for ten months or until relapse. Subjects kept a daily records of symptoms (stool consistency and frequency, presence of blood and mucous, presence of abdominal pain and overall feeling). **Results:** Phase I scores on the SIBDQ were significantly higher for those receiving the synbiotic therapy versus the placebo ( $p = 0.014$ ). Severe symptoms occurred in 60% of the control subjects, where as subjects receiving synbiotic therapy did not experience severe symptoms ( $p = 0.032$ ). Phase II scores on the SIBDQ were significantly higher post-treatment with synbiotic therapy ( $p=0.034$ ). **Implications & Conclusions:** These finding suggest that synbiotic therapy (*Bifidobacterium longum* R0175 and inulin), when provided in addition to conventional treatment, appears to be a safe and effective strategy for managing pediatric UC in remission.

## **Metabolic inter-relations of choline, betaine and glycine: is choline a source of methyl groups and glycine during pregnancy**

*RW Friesen\*, D Hasman and SM Innis. Nutrition Research Program, Child and family Research Institute, University of British Columbia, Vancouver, British Columbia [R]*

**Objectives:** Choline is essential for normal fetal growth and development. Choline is transported across the placenta, with higher choline concentrations in fetal than maternal plasma. Choline is further metabolized to betaine, and betaine-dependent remethylation of homocysteine and generates dimethylglycine (DMG) and methionine. During pregnancy, glycine is required for protein synthesis and is required for the synthesis of bile salts, purines, porphyrins, creatine and glutathione. Poor glycine status is known to result in increased plasma 5-oxoproline. Because choline crosses the placenta and acts as a source of glycine, via betaine, we questioned if choline may also function as an important source of glycine in development? **Methods:** Blood was collected from healthy pregnant women, and cord fetal blood was collected from their infants at delivery (n=46). A group of healthy non-pregnant women (n=19) were used as controls. High performance liquid chromatography tandem mass spectrometry (LC MS/MS) using isotope dilution was used to quantify plasma choline, betaine, homocysteine, DMG and 5-L-oxoproline. **Results:** Pregnant women had significantly higher plasma choline and 5-oxoproline concentrations than non-pregnant controls, while betaine and DMG concentrations were significantly lower ( $p < 0.01$ ). Choline, betaine and DMG were significantly higher in fetal cord plasma than maternal plasma ( $p < 0.001$ ), and 5-oxoproline concentrations were not statistically different between maternal and newborn plasma. **Implications and Conclusions:** We speculate that choline, via betaine may be a source of glycine and labile methyl groups during pregnancy.

## **Non-Pharmacological Methods Effectively Lower Blood Pressure**

*FL Rooker\*, New Mexico State University, Las Cruces, New Mexico, USA [R]*

**Objectives:** Although more than 100 safe and effective antihypertensive drugs have been approved over the last 50 years research reveals that about 70 percent of people who needed treatment were not receiving it and, of those people being treated almost 70 percent did not have their blood pressure under control. The purpose of this study was to quantify the extent to which selected lifestyle adjustments influenced blood pressure. **Methods:** The English-language literature about hypertension published since 1995 contained in the PubMed/Medline database was reviewed to identify evidence related to lifestyle interventions and non-pharmacological treatments for hypertension. Other relevant evidence was acquired from the reference lists of the articles identified. A total of 34 studies were reviewed. Some of the selected studies included all of the clinics within a specific geographic area; some used a random sample of large populations; others were based on discrete populations. All participants were between the ages of 19 and 80 years or older, and none were limited to selected ethnicities, gender, or age. The number of participants varied between 18 and 23,129. **Results:** Hypertension is uniquely amenable to control with non-pharmacological approaches. There are at least six non-pharmacological approaches that are demonstrated effective in the literature. **Implications & Conclusions:** Objective evidence demonstrates that non-pharmacological interventions (lifestyle modifications) are effective in lowering blood pressure. Costs associated with, and the results of, pharmacological management of hypertension may be improved by consistent emphasis on lifestyle adjustments. Lifestyle adjustments as primary prevention may improve overall quality of life issues for hypertensive individuals and may be particularly appropriate for those without ready access to health care or who may be non-compliant with prescribed medications.

## The impact of dietitians' advice on eating habits of patients with dyslipidemia

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**Background:** As nutrition education is key in reducing modifiable cardiovascular risks, intensive nutrition follow-up was implemented in our clinic to focus on improving nutrition outcomes. **Objective:** To determine whether dietitians' advice impacts the eating habits of dyslipidemic outpatients. **Method:** This retrospective study involved 53 outpatients who attended the Risk Reduction/Lipid Clinic. Medical history, anthropometric measures, dietary patterns and lipid profiles were recorded and analyzed using MS Excel<sup>®</sup>. The differences between initial and 6 week follow up, clinic visits, were compared using 2-tailed paired *t*-test and Chi-square test for parametric and non-parametric data, respectively.  $P \leq 0.05$  was considered statistically significant. **Results:** The mean age was (Mean $\pm$ SD) of 51.1 $\pm$ 10.4 years and 53% were males. Total cholesterol, LDL, HDL, total:HDL ratio and triglyceride before and after the clinic visit were 6.9 $\pm$  2.4 and 6.0 $\pm$ 2.06 mmol/L ( $p < 0.001$ ), 3.9 $\pm$ 1.4 and 3.6 $\pm$ 1.3 mmol/L ( $p = 0.026$ ), 1.3 $\pm$ 0.9 and 1.2 $\pm$ 0.3 mmol/L ( $p = 0.35$ ), 5.9 $\pm$ 1.5 and 5.2 $\pm$ 2.3 ( $p = 0.027$ ), and 3.9 $\pm$ 3.13 and 3.5 $\pm$ 5.3 mmol/L ( $p = 0.54$ ), respectively. Weight and frequency of dining out before and after the clinic visit were 84.1 $\pm$ 16.8 and 83.1 $\pm$ 16.5 kg ( $p = 0.027$ ) and 2.93 $\pm$ 2.5 and 2.14 $\pm$ 2.3 times/week ( $p < 0.001$ ), respectively. More patients consumed <25% energy from fat ( $p = 0.01$ ) and <7% energy from trans and saturated fat ( $p = 0.025$ ), and consumed fish >3 servings weekly ( $p = 0.05$ ) after the clinic visit. **Conclusions:** Nutrition counseling by a dietitian positively affected patient's eating habits to meet the goals for total, trans and saturated fats according to the Adult Treatment Panel III Therapeutic Lifestyle Change Diet. An increase in fish intake and a decrease in dining out was noted. These changes likely contributed to weight loss and improved lipid profile and reinforced the important role of dietitians in this population.

## Dietetic Practice and Education: New Perspectives

### Implementing a pilot arts module in graduate community nutrition education

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**Purpose:** While several health disciplines have identified value in incorporating the arts into training curricula, Canadian graduate programs in community nutrition, have yet to pursue this educational direction. This is somewhat surprising given the importance of understanding culture, values and social practices in planning and implementing community food and nutrition programs. In order to address this gap, an education module on the arts, health and nutrition was developed and pilot tested as part of a graduate course called "Nutrition Programs and Strategies". **Content:** The module was informed by Schon's model of reflective practice which encourages professionals to develop their own sense of "artistry" in addressing unique practice situations. The module consisted of independent reading, a three hour in-class session, completion of a fieldwork project and an opportunity to share projects with peers and reflect on learning experiences. The in-class session included a mini-lecture and interactive exercise that introduced definitions of art, common forms and functions of art, and examples of arts and health projects. This was followed by two presentations by a health researcher and a visual artist, who shared their art and health work with the students. The module was evaluated using an open-ended pre/post questionnaire that was designed to assess the degree to which program objectives were met. **Outcomes:** Findings indicate that the module brought about "different ways of knowing" and enabled students to acquire new insights into both health and culture. **Recommendations:** Given the high degree of student enthusiasm for this module and the benefits they identified in incorporating the arts into health and nutrition interventions, further development of arts curricula for nutrition professional education is advocated.

### British Columbia dietitians' perspectives on their experiences with weight loss counseling for children and adolescents

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**Objectives:** The purpose of this study was to develop a deeper understanding of the experiences of dietitians' who work with obese children and adolescents, within the context of the increasing prevalence of childhood obesity, the 'war on obesity', the emergence of competing discourses on obesity management, emerging philosophies of weight management and counseling approaches and the trend to evidence-based practice in the dietetics profession. **Methods:** This project used an exploratory and descriptive qualitative design. Between 2004 and 2006, 13 practicing dietitians participated in individual interviews where they discussed their experiences of weight loss counseling with children and adolescents. Grounded theory methodology was used to analyze these interviews. **Results:** Largely, conversations with dietitian informants reflected frustration, doubt and conflict regarding what they should and could be doing with their clients when it came to weight management. They attributed this distress to four primary issues including their experience of inadequate time and resources to do their work effectively, their perception of the client's readiness to make behavioural change, their perception that, as dietitians, they lacked the appropriate counselling skills to be helpful to their clients and finally, their uncertainty about how to best deal with the complex problem of obesity. These experiences impacted informants and influenced the various ways they tried to address their distress while continuing to work in this area of practice. **Implications and Conclusions:** Informant dietitians are feeling unsupported in their work, inadequately trained to support their clients, and uncertain how their profession should best proceed in the treatment of childhood and adolescent obesity. This has tremendous practice, education and research implications for the dietetics profession.

## **Unkept: promises, secrets, and perils within dietetic education and practice**

*JR Gingras, Ryerson University, Toronto, Ontario [R]*

**Objectives:** Little qualitative research exists that explores the intersections between identity, professionalization, social theory, and feminist knowledge within the context of dietetic undergraduate education and practice. The purpose of this study was to understand dietitians' experience of their education and how this experience shaped their dietitian identity in relation to dietetic theory and practice. **Methods:** Autoethnographic (autobiographical writing from within the dietetic culture) and phenomenological (study of lived experience) methods were used to explore the themes under consideration. The researcher, herself a dietitian and dietetic educator, recruited twelve female dietitians to participate in individual interviews where they shared their experiences and reflections on dietetic education and practice. Interview data were analyzed according to Gilligan's Listening Guide, a voice-centred relational method. **Results:** Participants entered dietetics sustained by their passion and what they understood as the promise of being able to positively influence and shape another's nutritional health. Dietitians' lived practice realities were found to be discrepant from this promise. Dietetic education, while not considered solely responsible for generating such promises, operated to sustain or amplify their effects. Melancholic expressions were associated with dietitians' inability to engage in liberatory practice and subsequent desire to leave the profession. An imagined, embodied curriculum offered by the researcher depicted what could result if dietetic students, educators, and practitioners acknowledged the relational and emotional realities of practice. **Implications & Conclusions:** The researcher calls for a renegotiation of what counts as knowledge in dietetic education through self-reflexivity such that 'doing' (dietitian performativity or dietetic practice) emerges from 'being' (identity). Dietitian performativity initiated through critical social discourse begs the question of what it means to be human while embracing the joys, complexities, and contradictions that are dietetic education and practice.

## **Vulnerable Groups and Their Nutritional Needs: Pediatrics, Maternity**

### **Omega 3 fatty acid deficiency among pregnant women: implications for infant development**

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**Objectives:** The n-3 fatty acid docosahexaenoic acid (DHA) is important for neural and visual function. Before birth, DHA is transferred across the placenta. Maternal to fetal transfer of DHA depends on the mother's DHA status, and this in turn depends on her dietary intake of DHA. The major dietary source of DHA is fish, and DHA intakes vary widely among individuals. Whether DHA levels low enough occur in pregnant women to result in delayed development of visual or neural function in infant is not known. **Methods:** We used a prospective intervention with DHA or placebo from 16 wks gestation until term delivery, then measured visual acuity at 60 days postnatal in n=135 infants. Maternal DHA and the n-6 docosapentaenoic acid, which increases in DHA deficiency, were determined in maternal blood at 16 and 36 weeks gestation, and dietary intakes determined. **Results:** Maternal DHA and the DHA/DPA ratio decreased during pregnancy in the placebo group. Women in the DHA intervention group had a 40% higher DHA status at 36 wks gestation than women in the placebo group. Using multivariate regression to control for confounders, the odd ratio (OR) for a visual acuity in the upper quartile was 3.75 in the DHA intervention compared to placebo group, confidence limit (CL) 0.9-17.0. The DHA intake among women who showed a decrease in DHA/DPA during gestation was about 80 mg/day compared to 160 mg/day in women in whom the ratio did not decrease. **Implications & Conclusion:** DHA deficiency is present among some Canadian pregnant women and may pose risk of delayed visual system maturation in infants. Supported by CIHR

## Implementation of a nutrition practice bundle reduces postnatal growth failure in infants born <28 wks gestation

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**Objective:** Postnatal growth failure (PGF) is frequently observed in hospitalized preterm infants. The purpose of this study is to assess the impact of implementing a “nutrition practice bundle” on the prevalence of PGF in infants born <28 wks GA. **Methods:** Infants born <28 wks who were fully enterally fed at 32 wks corrected gestational age (CGA) were included. Data were collected for a baseline cohort of infants (1998-99) and a second cohort (2003-04) following implementation of the nutrition bundle. Bundle included: initiate TPN at birth, accelerate advancement of parenteral protein to 3.5-4.0g/kg/d, initiate enteral feeds with 24 vs. 20kcal/oz preterm formula when breastmilk unavailable, use a higher protein human milk fortifier, restrict use of dexamethasone and increase dietitian staffing.

### Results:

Variable	Cohort 1 (n=111)	Cohort 2 (n=122)	P-Value
Birth weight (BW)	817±176 g	822±171 g	NS
Gestational Age	25.7±1.2	25.7±1.2	NS
Postnatal Days to regain BW	16.4±5.0	10.7±4.5	<0.001
Protein intake (g/kg/d) at 32 wks CGA	3.6±0.5	3.9±0.6	<0.001
Growth velocity (g/kg/d) at 32 weeks CGA	17.9±6.0	18.4±8.2	NS
z-score change birth to 32 wks CGA	-1.52±0.54	-1.25±0.53	<0.001
z-score change birth to 36 wks CGA <sup>1</sup>	-1.63±0.73	-1.35±0.70	0.02
<10th %tile at birth (%)	10(9.0)	8(6.6)	NS
<10th %tile at 36 weeks CGA (%) <sup>1</sup>	65(86.7)	45(72.6)	0.039

<sup>1</sup> n=75 and 64 for cohort 1 and 2, respectively

### Conclusions:

Short-term growth outcomes were significantly improved after implementation of a nutrition practice bundle. Utilization of quality improvement methodology can result in tangible improvements in nutritional outcomes for extremely preterm infants.

## Vitamin/mineral and supplement use by women prior to and during pregnancy and their contribution to total calcium intake during pregnancy

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**Objectives:** Between 62-85% of women take vitamin and mineral supplements during pregnancy, an increase from the pre-pregnant estimate of 25-46%. It is known that calcium-based antacids are commonly used by pregnant women and suggested by doctors to treat pregnancy related heart burn. The purpose of this study was to compare vitamin/mineral supplementation before and during pregnancy and to estimate the contribution of calcium containing antacids to total calcium intake of pregnant women.

**Methods:** From 1100 prenatal attendees, 724 women completed an anonymous report of vitamin/mineral supplement use, calcium containing antacids use, and milk consumption. A sample (264) completed a modified food frequency questionnaire (FFQ) by telephone and provided demographic data. **Results:** Prior to pregnancy, 66% of women took a vitamin/mineral supplement of some kind; 38% were taking a prenatal supplement; 23% reported taking multiple supplements up to 8 types/day. During pregnancy 97% of women took a vitamin/mineral supplement, predominately a prenatal supplement; 40% took 2 supplements/day and 16% ≥3/day. The most commonly used single nutrient supplements were calcium (23%), iron (19%), folic acid (14%) and fish oil (7%). Of the participants who completed the FFQ, 18% had less than the recommended adequate intake (AI) of calcium (median=791mg, mean=762mg,) and 12% >upper limit (UL) (mean=3104mg, median=3076mg) from diet alone. Including supplements 7% remained

<AI (mean=846mg, median=870mg); and 26% >UL (mean=3173mg, median=2987mg). Adding antacids, 5% remained <AI (mean=865mg, median=919mg) and 33% >UL (mean=3252mg, median=3032mg). **Conclusions:** Most women increase their supplement use during pregnancy but may not be achieving recommended intakes. Some may be unaware that the cumulative effect of supplements and antacids exceeds recommended intake, in this case calcium.

## Food, Food Service, Public Safety

### Assessment of food service satisfaction of older adults in a personal care home

*C Lengyel, M Sitter\*, L Timmerman, M Schlichter, L Schlichter, D Korbaylo and B Jestadt. University of Manitoba, Riverview Health Centre, and Winnipeg Regional Health Authority Nutrition & Food Services, Winnipeg, Manitoba [R]*

**Objectives:** Eating is one of the most important aspects of daily living for both cognitively impaired and non-impaired older adults residing in personal care homes (PCHs). The purpose of this study was to measure food service satisfaction of older adults with and without cognitive impairment in a personal care home. **Methods:** Face-to-face interviews, using a 28-item questionnaire, were administered by three trained research assistants to 110 participants (mean age= 81.1 years ; range = 65–98 years). Forty participants had cognitive impairment (36%) and 70 were not cognitively impaired (64%) as determined by Mini-Mental State Examinations (MMSE). The questionnaire addressed three domains in relation to food service satisfaction (Aspects of foods; Aspects of foodservice delivery; and Quality of life) using a 3-point likert scale (less than half the time, half the time and most of the time). For the analysis, the response categories were combined to form positive and negative categories, where  $\geq 75\%$  was the cut-off for high satisfaction in the positive category. **Results:** Overall, participants with and without cognitive impairment were highly satisfied with all three domains with less positive responses in the aspects of foods domain (i.e., food appearance, temperature, taste, food texture, and overall satisfaction). There were no significant differences between the responses of cognitively impaired and non-impaired participants; however, the responses from cognitively impaired participants were generally more positive. **Implications & Conclusions:** Strategies will be developed to further improve the overall food service delivery in PCHs and specifically focus on resident satisfaction with regards to food quality.

### Development of vitamin-fortified pureed foods for long-term care

*J Adolphe\*, S Leydon, SJ Whiting, WJ Dahl\*, College of Pharmacy and Nutrition, University of Saskatchewan, Saskatoon, Saskatchewan [R]*

Nutrient intakes of long-term care (LTC) residents consuming a pureed diet are often inadequate and there is currently no consensus about the best technique to correct the problem. Food fortification is a possible solution. There is currently no definitive technique to determine food fortification levels. The objectives of this study were to determine appropriate micronutrient fortification levels for pureed meat and grain products consumed by LTC residents and to investigate whether there was a taste difference between unfortified and fortified pureed foods. The DRI report on planning describes a formula for planning menus to limit the number of people with inadequate intakes. The formula, Estimated Average Requirement (EAR) plus 2 SD of intake, was used to determine fortification levels. For nutrients without an EAR, Health Canada's recommended method of using a defined nutrient contribution to the total daily intake was used. To test whether the calculated values would increase nutrient intakes without exceeding the tolerable upper intake level, the nutrient values for the hypothetical fortified foods were substituted into food records previously performed in this population. Fortification levels for 11 vitamins and 9 minerals were determined, which allowed for formulation of a vitamin/mineral mix and a vitamin-only mix. Seven grain and meat pureed foods were fortified and triangle sensory tests were performed. Panellists were able to discriminate between the unfortified and vitamin/mineral fortified mix samples ( $p > 0.05$ ). When the vitamin-only fortified foods were subjected to the triangle test, the panellists were unable to

detect a difference ( $p < 0.05$ ). The development of acceptable vitamin-fortified pureed foods is feasible and may be a novel way to increase nutrient intakes in LTC residents.

### **In-home compliance with a boil water advisory during a waterborne emergency with high morbidity and mortality**

*BJ Lacroix\* and TL MacLaurin. University of Guelph, Guelph, Ontario [R]*

**Objectives:** To evaluate compliance behaviours of at-risk seniors and mothers (surrogates for children) during a boil water advisory (BWA). There is little qualitative evidence documenting in-home actions Canadians take to reduce exposure when a municipal water supply contaminated with pathogenic microorganisms. **Methods:** A snowball technique was used to recruit additional respondents for the purposive sample in the event case study ( $n = 58$ ). Open-ended responses from preliminary focus groups and 52 telephone interviews were content analyzed by groups (Mothers, Seniors and Others). **Results:** Three indicators for compliance with a BWA as issued included the source of water used (boiled or bottled water), household items discarded because of probable contamination, and documentation of lag times in taking protective action. Forty-two to 70 % of groups used boiled and bottled water as bottled water was not readily available initially. Water-related items (e.g. ice cubes), food-related items (foods that would or would not be further heat-treated) and personal items (toothbrushes) were not uniformly discarded by all respondents, including those with symptoms of illnesses. Noteworthy were the 27 % of Mothers who reported having made changes before the BWA was issued on May 21, 2000 and the number of Seniors (28 %) and Others (36 %) who reported making changes two or more days after the BWA was issued. Respondents reported they were unsure of what to do when the BWA was issued. **Implications & Conclusions:** At-risk Seniors took too long to comply with the BWA thus increasing exposure to pathogenic microorganisms and possible complications. Better ways of disseminating messages and enhancing comprehension can be expected to improve compliance.

### **Food Security, School Health**

#### **“Doing food security off the side of the desk”--An evaluation of a national, bilingual community-based project to build capacity for food security through policy change**

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**Objectives:** This 2005-07 pan-Canadian study evolved from a series of participatory research projects conducted in Nova Scotia. Outcomes include: testing and national dissemination of a bilingual, web-enabled workbook to build capacity to influence policy change entitled “Thought About Food?” ([www.foodthoughtful.ca](http://www.foodthoughtful.ca)); the production of an accompanying bilingual DVD, “Food Security: It’s Everyone’s Business”, and the active involvement of 15 Food Security Mentors (FSMs) affiliated with the Canada Prenatal Nutrition Program (CPNP) and the Community Action Program for Children (CAPC) in implementing food security action plans in communities across Canada. Both community-based programs targeting at-risk individuals/groups are primarily funded through the Public Health Agency of Canada (PHAC). **Methods:** Mixed methods (a series of in-depth individual and focus group interviews with FSMs, combined with document review and synthesis) were used to assess short-term capacity-building outcomes of the participatory research process. **Results:** Findings strongly suggest that project outcomes have strengthened collaborative capacities at local, provincial/territorial and national levels for taking action on food insecurity through policy change. **Implications & Conclusions:** To build the capacities of health systems, community groups, community-based programs and those affected by

health inequities, and to strengthen the leadership role of the PHAC in taking action on food insecurity, CPNP and CAPC must dedicate both staff and resources to building food security through policy change.

### **A garden basket program as an approach to address food insecurity among peri-natal aboriginal mothers in rural Nova Scotia**

*M Daly\*, B MacEachern, KR Cavan. Public Health Services, Cape Breton District Health Authority and Guysborough Antigonish Strait Health Authority, Nova Scotia [E]*

**Purpose:** A Garden Basket Program (GBP) was implemented from July to October 2006 to address food insecurity and to increase vegetable consumption among pre- and post-natal mothers with low incomes. The GBP was facilitated by Elder Field Farm Cooperative (EFFC) in partnership with Central Inverness Community Health Board, Cape Breton District Health Authority, Public Health Services and St. Francis Xavier Nutrition Department. **Description of Process:** A mixture of local fresh organic garden vegetables was delivered weekly to selected clients participating in prenatal programs with Waycobah Health Centre and the Inverness Family Resource Centre. This project was part of EFFC's (a not-for-profit worker co-operative) larger strategy to promote local food systems and reduce food insecurity. In addition to receiving weekly food boxes, clients were invited to program sites for capacity building workshops with information on healthy eating and participatory cooking classes using locally grown foods. **Project Summary:** Engaging the community was found to be challenging. Participants appreciated the GBP weekly deliveries, but unfortunately there was not strong interest in the workshops. The program did provide many additional benefits; trusting relationships were developed with clients and families tried several vegetables for the first time. **Recommendations and Conclusions:** The GBP increased the access of fresh, local organic produce for some low income families. In addition to the weekly deliveries, the program provided additional benefits such as establishing trusting relationships, capacity building, and strengthening partnerships between community organizations involved in addressing food security issues for vulnerable groups.

### **Enabling and Barrier Factors in the Development of Elementary and Consolidated School Nutrition Policies on Prince Edward Island**

*D MacLellan\*, J Taylor, University of PEI, C. Freeze, Department of Health and Social Services, Charlottetown, Prince Edward Island [R]*

**Objectives.** Despite emerging evidence that school nutrition policies are beneficial to children's health, many schools do not have formal policies. The purpose of this study was to identify the enabling and barrier factors in the development of school nutrition policies in PEI elementary and consolidated schools. **Methods:** A document review and in-depth interviews were conducted with members of a School Healthy Eating Policy working group, principals and teachers who were most involved in developing the policies. A purposive sample was recruited based on school size, type and geographic location. Interview transcripts were analyzed using a form of thematic analysis. Emergent themes were then tested between participants and across themes identified through the document review. **Results:** Several key groups and actions enabled the development of nutrition policies. In particular, the principal was identified as an important champion for change, especially when they were able to develop a critical mass of interest for change. The policy working group enabled the policy development process through their ability to bridge the school and nutrition worlds, thereby preparing schools to navigate the change process. This involved: building a case for change, testing policies in a real world setting, integrating healthy eating within school life, offering support to schools, engaging participants in the process and acknowledging the need to weigh the cost and benefits of the proposed change. Resource limitations, competing issues and the use of unhealthy food as a reward were identified as the primary barriers. **Implications & Conclusions:** These findings highlight the need for nutrition professionals to actively engage with school personnel to prepare for policy changes.

## Dietetic Practice and Education: Approaches

### Inter-professional problem-based learning experiences: HIV/AIDS, palliative care and Aboriginal health

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**Purpose:** To provide an opportunity for nutrition students to learn about, with and from other health science students: (1) specific knowledge related to cases studied and (2) skills for effective inter-professional teamwork. **Description of Process:** Twenty-six nutrition students in their fourth year of a 5-year University degree program participated in inter-professional Problem-Based Learning (PBL) modules alongside medicine, nursing, pharmacy and physical therapy students. The modules (two or three two-hour sessions each), centered on fictional cases about HIV/AIDS, palliative care, and Aboriginal Health, were offered in September, January, and February 2006-2007. This unique, innovative, and ambitious approach to learning, implemented at the University of Saskatchewan for the first time, was a radical departure from the conventional series of program-specific lectures and labs. Students were assigned to PBL groups ranging from 6-12 students; each group was led by a non-expert but well trained tutor. Some tutors were local dietitians. Cases were disclosed progressively. Students determined learning issues, conducted independent research between sessions, presented their findings to their groups, and evaluated group process and performance. Surveys of students, and focus groups of tutors and students held separately, were used to evaluate the learning experiences. Partial funding for this project was received from Health Canada, from the Inter-Professional Education for Collaborative Patient-Centered Practice (IECPCP) fund. **Project Summary:** Nutrition students were very pleased with their learning experiences. In particular, the inter-professional aspect and case-based learning were highlights. **Recommendations & Conclusions:** Inter-professional problem-based learning enhances the nutrition program experience and should be strengthened and continued.

### Community health and university partnership: dietetics students teach nutrition in elementary classrooms

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**Purpose:** To design an initiative to: (a) facilitate dietetics student achievement of required competencies, and (b) help address increasing community demand for nutrition education programming in schools. **Description of process or content:** The initiative was framed as an applied assignment within a university professional practice course for year 3 dietetics students. Students participated in a training workshop provided by a nutrition educator and a community dietitian who was also responsible for recruiting public school classroom teachers. Working in pairs, students consulted with their respective assigned kindergarten and grade one classroom teachers prior to preparing a 45-60 minute lesson plan that met the requirements of the provincial health curriculum. Each student pair taught their lesson in two different classes. They obtained performance feedback from the classroom teachers and students, course and workshop instructors, and through post-event peer debriefing. Students submitted their lesson plans and written self-reflections to the university instructor for feedback. The community dietitian kept several lesson plans to share with other teachers, health professionals and university students interested in developing nutrition education lesson plans for this age group. **Project Summary:** Dietetics students gained valuable experience in working with classroom teachers and young students and in preparing and teaching nutrition education lessons. Classroom teachers and their students benefited from the expertise and enthusiasm of the dietetics students. **Recommendations & Conclusions:** A community-campus partnership such as this is an innovative approach to education with potential to benefit all stakeholders: dietetics students, the university, community health services, and participating schools. This activity will continue in future years with expansion to other school age groups.

## **Quality criteria for effective dietary intervention in an elderly community-dwelling clientele with early-stage Alzheimer Dementia: findings from a Focus Group**

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**Purpose:** A nutrition intervention programme was designed for community-dwelling patients in the early stages of Alzheimer dementia (AD), using evidence-based dietetic intervention information. Expert advice was sought to validate the intervention. **Process:** A two-hour Focus Group (FG) was conducted with six experienced dietitians working mainly in homecare with geriatric patients at various stages of cognitive impairment. The study team, composed of two research dietitians and a geriatrician, asked FG participants to reflect on the proposed intervention and provide additional strategies. The discussion was audiotaped and the verbatim transcribed. The transcript was analysed independently by both research dietitians to determine themes using a structured content analysis approach. Commonalities and differences were examined by the two coders, and consensus was reached. **Summary:** Four principal themes emerged from the FG: 1) the need for nutrition leaders within the public community health system; 2) the impact of multidisciplinary and interdisciplinarity on nutrition intervention; 3) tools, methods and resources used in nutrition intervention; and 4) the challenges of dealing with clients who refuse dietary intervention. **Recommendations & conclusions:** Specific points brought forward by FG participants will be presented, and their impact on the planned nutrition intervention strategy will be discussed. The impact of our research findings on clinical practice will also be presented, in light of FG participants' requests that we share knowledge with decision-makers to convince them of the benefits of focused nutrition intervention on patient well-being, institutionalisation and public health, and on caregiver burden.

## **Vulnerable Groups and Their Nutritional Needs: Study Design, Dietary Intake**

### **Stakeholder engagement in intervention design in a community-based nutrition and physical activity promotion intervention targeting disadvantaged mothers in Australia**

*R Hughes\*, E Baillie, S Nalatu. School of Public Health, Griffith University, Gold Coast, QLD 4217 Australia [R]*

**Objectives:** Community-based public health interventions are often criticised because they do not reach those most in need of the intervention. Target group and stakeholder engagement in intervention design and resource allocation decision making is a central theme in community development approaches to public health. This sharing of decision making regarding interventions serves to increase target group participation and ownership of interventions and empower communities to help themselves. This study trialled a process of stakeholder and target group engagement conducted as part of intervention design in a community-based nutrition and physical activity promotion project targeting young and disadvantaged women and infants in the Gold Coast community, Queensland, Australia. **Methods:** Stakeholder engagement was facilitated by a modified nominal group series, that encouraged discussion and assessment by stakeholders about a portfolio of intervention options against a range of assessment criteria reflecting feasibility and effectiveness. The portfolio of interventions were developed based on determinant analysis facilitated by earlier community consultations with stakeholders and the target group, intervention research and service review. Discussions and ratings from each of the nominal group sessions was then analysed qualitatively and quantitatively to assist intervention modification and prioritisation. **Results:** Participants in the stakeholder consultation and feasibility testing process qualitatively identified a broad range of strengths and weaknesses associated with each intervention concept that has supported quantitative ratings of intervention feasibility. This data has assisted prioritisation of intervention planning and implementation. **Implications & Conclusions:** The utility and importance of this shared decision making and stakeholder feasibility testing appears to have contributed to capacity building at a local community.

## Reflections on nutrition and health research within immigrant populations: opportunities and challenges

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**Purpose:** Within the past quarter century, human mobility has increased and is associated with high levels of immigration and cultural diversity in industrialized countries. Despite this trend, little research has been conducted on immigrant health issues in general and nutritional considerations in particular.

**Process or Content:** Through an analysis of immigrant health and nutrition publications in various research databases (medline, psychlit, socfile, science direct), conceptual, methodological and empirical challenges and strategies regarding the definition of immigrant groups, suitability of design, sampling issues, definitions of constructs under study, measures, and data collection are discussed.

**Project Summary:** The majority of immigrant nutritional health research thus far has been approached using mainstream measures and methods. This approach overlooks the diversity of immigrant groups, a factor that can negate any significant findings. As a result, many of the presently held ideas about immigrant health may be distorted through inappropriate research procedures. Specific methodological challenges regarding the definition of immigrant groups, suitability of design, sampling issues, definitions of constructs under study, measures, and data collection are discussed in detail. As a result, valuable explanatory models, measures, and data are lacking, representing a considerable research gap.

Opportunities to promote cultural sensitivity in future research and promote effective communication among researchers, policy-makers and service providers, with the goal of improving understanding of the complexities of immigrant health and improving nutritional health outcomes, are discussed.

**Recommendations & Conclusions:** Culturally sensitive nutrition and health research has the potential to fill this gap, providing accurate knowledge to policy-makers and health service providers, who in turn create legislation and programs that affect the health of immigrants.

## Dietary intake in the Inuvialuit population in the Northwest Territories for a chronic disease intervention program

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**Objectives:** Inuit and Inuvialuit peoples have increasing rates of obesity and a rapidly changing diet from traditional to Western. The aim of this study is to assess dietary intake and to highlight foods for a community based multi-institutional intervention program aimed at reducing risk of chronic diseases in Inuvialuit. **Methods:** Inuvialuit adults were randomly selected from two communities in Northwest Territories to provide 24 hour recalls. **Results:** Forty eight men and 53 women (mean age yrs: 45 and 52 respectively), completed the recalls (approx. 80% response). We present results for both communities combined. Mean energy intake was 2380 kcals for men and 1805 kcals for women. Intakes of many key nutrients including fibre (mean intake 10.5g men and 8.1g women), calcium (mean intake 489mg men, 354mg women) and vitamins A, D and E were much lower than recommended. Intake of fruits and vegetables was low. A traditional food, caribou, was a significant contributor to the overall diet and was reported over 50 times (by 44% of the sample at least once) on the day of the recalls. The most frequently reported foods were all non-nutrient dense and included coffee, tea, sugar, margarine and sweetened drinks. **Implications & Conclusions:** This program will promote nutrient-dense traditional foods, fruits and vegetables, and decreased consumption of high fat, high sugar processed foods and drinks and will be evaluated pre- and post-intervention using a Quantitative Food Frequency Questionnaire and other instruments developed specifically for this population.

## Dietetic Practice and Education: Policy, Standards

### Policy Development: Scope of Practice for Registered Dietitians in Ontario Caring for Clients with Dysphagia

*S Behari\* College of Dietitians of Ontario, Toronto, Ontario [E]*

**Purpose:** This policy development was initiated when Registered Dietitians (RDs) in Ontario asked the *College of Dietitians of Ontario* (CDO) for more clarity concerning their scope of practice in the area of Dysphagia. The intent of this policy is to clarify and set out expectations rather than set standards. The principles inherent in the policy and development can inform any RD who has questions about their scope of practice. **Description of Process:** In focus groups, Ontario RDs who care for clients with Dysphagia, reviewed and validate the role statement and competencies described in, “*The role of the Registered Dietitian in Dysphagia Assessment and Treatment – A discussion Paper*” (Dietitians of Canada, 2005). A broader paper consultation engaged more Ontario RDs and provided feedback on issues such as the knowledge and skills required to practice, limits and conditions of an RD’s practice and opportunities to develop competency in this area of practice. The findings from these consultation resulted in the College Council’s approval of three policy statements to clarify an RD practice in Dysphagia. The first policy statement is: “Dysphagia is a nutrition related disorder and, therefore, aspects of Dysphagia screening, assessments, treatment and management are within the scope of practice of RDs in Ontario.”

**Recommendations and Conclusions:** RDs who perform any task/function related to Dysphagia must assess whether they are competent to do so safely and effectively from the professional and client points of view. This can be achieved by: acquiring the knowledge and skills to work in this area; focusing on the needs of the client; utilizing all skilled professionals available; and educating employers about the resource implication to provide care and attain competence.

### New tools to develop medical delegations and directives encourage interprofessional care

*B Cantwell\*, College of Dietitians of Ontario, Toronto, ON and PM Ponesse, Consultant in Health Services and Policy to the Federation of Health Regulatory Colleges of Ontario, Toronto, Ontario [E]*

**Purpose:** Registered dietitians are ready to assume broader responsibility for nutrition related care where they currently may not have the legislative authority to proceed. Ontario’s health regulatory model of title protection, registration and “controlled acts” supports interprofessional care by recognising overlapping scopes of practice. Tools to understand the overlapping areas of competencies and to facilitate the transfer of authority that enables better care are needed. **Process or Content:** Ontario regulators came together to build consensus on how to address the transfer of authority required in law by health professionals to provide the best care by the most appropriate care provider. The Federation of Health Regulatory Colleges of Ontario’s working group on Authority Mechanisms and Controlled Acts met between Fall 2004 and Winter 2007 to examine and clearly understand the differing and intertwining legal responsibilities of Ontario’s regulated health professionals. Learning was shared with dietitians across Ontario in 27 educational sessions by the College of Dietitians of Ontario to 650 (24%) members. **Project Summary:** The resulting Interprofessional Guide gives an overview of Ontario’s legislative framework for interprofessional collaborative practice; it contains clear definitions and clarifies requirements for delegation and orders in different settings. The Guide provides a systematic approach to assessing performance readiness, templates for developing medical directives and medical delegations.

**Recommendations & Conclusions:** Registered Dietitians now have a clear format to guide them in acquiring the required authority through medical directive, delegation or orders to practice more fully within their scope of practice in various work settings in Ontario.

## Medico-Legal Documentation Among Inpatient Dietitians at St. Michael's Hospital

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**Purpose:** The Department of Professional Practice at St. Michael's Hospital strives for excellence in both the medical and legal aspects of a client record. Record Keeping guidelines are clearly outlined by the College of Dietitians of Ontario (CDO) and as such, adherence to such standards may protect dietitians from litigation. **Description of Process:** Chart audits were used to evaluate adherence to the standards of documentation outlined by both the CDO and St. Michael's Hospital. On a monthly basis, 100 charts were evaluated and compiled into a quarterly report. Information on four main domains was captured (authorization, assessment, intervention and discharge). In the legal components of documentation, three main issues were identified. Under the Public Hospitals Act, treatment requires a physician order. Treatment could be defined as implementing a therapeutic diet or the provision of education in regards to the nutritional management of a medical condition. Therefore, in most circumstances, a written consult order is required. Written orders, consent and discharge education were aspects of authorization that dietitians routinely scored below standard. In regards to the medical domains, dietitians consistently scored well, although one identified area for improvement included the documentation of a complete description of education provided to clients. Reports were disseminated to the dietitians at a workshop to enhance and address documentation issues. **Project Summary:** Clear record keeping guidelines are not enough to ensure dietitians are documenting in a manner to protect them from medical or legal risks. **Recommendations & Conclusions:** Routine chart audits help to identify issues requiring timely intervention to improve documentation practices and protect registered dietitians from clinical and legal risks.

## Determinants of Food Choice, Dietary Intake

### Family, gender, life-stage, and ethnicity: social identities and food choice processes

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**Objectives:** Studies of food choice processes have shown that what individuals eat is affected by their family, gender and life-stage roles. Little is known, however, about the influence of differing social roles in food decision-making in diverse ethnocultural groups. The purpose of this study was thus to examine food decision-making in families from three ethnocultural groups: Punjabi British Columbians (PBC), African Nova Scotians (ANS), and European Canadians living in British Columbia (EBC) and Nova Scotia (ENS). **Methods:** A total of 46 families (12 PBC, 13 ANS, 11 EBC, 10 ENS) were recruited to this qualitative study. Data collection included individual interviews with 3 or more members of each family aged 13 or older and participant observation of a grocery shopping trip and a family meal. Verbatim transcripts and field notes were coded and analyzed using constant comparative methods. **Results:** Gender was a highly salient determinant of food practices, with women in all groups being responsible for most household food work and for overseeing the healthfulness of what family members eat. Identity within the family was also a determinant of food practices, particularly in struggles between parents and teenaged children around autonomy and individualized food choices. Ethnocultural identity was relevant to food practices in the minority ethnocultural groups, as individuals sought ways to balance expression of ethnic identity through food with other concerns such as nutrition. **Implications & Conclusions:** Individual and household food practices reflect and reproduce social identities. Nutrition counsellors need to be attentive to the ways food practices are embedded in gendered, life-stage and cultural identities of the people with whom they work.

## **Dietary intake of grade six to ten students in a remote, sub-arctic first nation community: variation across three seasons**

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**Objectives:** To describe dietary intake of grade six to ten youth living in a First Nation community in northern Ontario across three seasons. **Methods:** Data were collected using a web-based survey, which included self-reported height and weight and a 24-hour dietary recall, during three seasons (November, May, and July). Nutrient intake and food group consumption (unpaired) was compared across seasons by gender. **Results:** Seventy-seven students aged 14.1±1.9 (mean ± SD; girls) and 13.0 ± 1.5 (boys) contributed a total of 133 recalls in November (n=63), May (n=45), and July (n=25). Data from November classified 37% of youth above the 85<sup>th</sup> percentile of BMI-for-age (CDC). Overall, seasonal differences in protein intake and Meat and Alternatives (p<0.05) were found for boys with reported intakes highest in November. In girls, added sugar, iron and folate intakes were highest in November (p<0.05). Traditional foods were consumed by only 27% of students in November (16% of energy), 9% in May (23% of energy) and 0% in July, and thus students consumed primarily market food. Consumption of “other” foods was very high in boys (median=6.8 servings) and moderate in girls (median=3.5 servings). Across seasons, 31% of students consumed cola pop on the previous day, 33% had pizza, and 20% ate French fries or poutine, accounting for 15%, 18%, and 25% of the energy intake of consumers, respectively. **Implications & Conclusions:** Differences in dietary intake across seasons suggest that traditional foods make an important, albeit modest, contribution. Given the high consumption of energy-dense, nutrient-poor market foods, strategies to enhance dietary intake including emphasis on traditional foods seems warranted. **Acknowledgements:** *This study was funded by CIHR.*

## **Evaluation of an Online Tool for Assessment of Nutrient Intake and Activity Levels**

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**Objectives:** Given the emphasis on adopting healthier lifestyles, there is a need for Canadians to have easy access to practical and reliable tools to help assess their diet and physical activity levels. This study evaluated the design and ‘usability’ of an online tool ([www.EATracker.ca](http://www.EATracker.ca)) to self-evaluate diet and activity. **Methods:** Experts (dietitians and physical activity specialists representing various practice areas across Canada) and EATracker users (consumers) were recruited. Audio-taped telephone interviews were conducted using cognitive interview techniques while interviewees were logged onto EATracker. Specific probes were built into the interview regarding clarity of instructions, ability to find foods and activities, usefulness of the personalized feedback and suggestions for improvement. **Results:** Eleven experts and 31 consumers were interviewed. Overall, EATracker was seen as an extremely useful tool. The major challenge identified by experts and consumers, was the time and difficulty in correctly selecting and entering foods into the Eating Diary. Consumers had difficulty estimating food serving sizes resulting in low reported energy intakes. The personalized feedback in the Daily Assessment was generally felt to be very impressive, however consumers required clearer information on how their nutrient intake compared to Dietary Reference Intake standards. The ability to track and file information over several days was felt to be very practical and encouraged frequent visits to the web site. **Implications & Conclusions:** Recommendations were provided to improve the design, the search functions and user feedback provided by the EATracker tool. Implementation of these recommendations, combined with current advice from the new, *Eating Well with Canada’s Food Guide* have modified EATracker to better meet users’ needs.