



CANADIAN FOUNDATION FOR DIETETIC RESEARCH

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Enhancing Dietetic Practice; Building a Healthier Canada: CFDR Research Makes an Impact

For 20 years, CFDR has been investing in research that contributes to the health of Canadians. By strategically funding projects across the country, we're helping to push the boundaries of nutritional knowledge, improve dietetic practice and public health policies, and provide insight into emerging issues that will shape the future of the profession.

Several CFDR-funded research projects were completed over the past year, in a wide range of areas: from ICUs to First Nation reserves, from infants to the elderly. As you'll see from the results described below, CFDR-funded research has real impact.

A big thank you to the corporations, individuals, and organizations who have contributed to our work. With your support, we'll continue making great strides in the decades to come.

Optimal nutrition in the ICU

Project: How can we optimize nutrition therapy in the intensive care unit? Development of novel assessment tools

Researchers: Rupinder Dhaliwal, Naomi Cahill, Sweta Narasimhan, Lauren Murch and Daren Heyland

Canada has national clinical practice guidelines (CPGs) for nutrition therapy in the intensive care unit (ICU). However, studies show that the average ICU patient gets less than 60 per cent of the calories they need, while provision of protein is also inadequate. Dhaliwal and her colleagues set out to develop assessment tools to better understand the reasons behind this shortfall.

Since attitudes and beliefs play a big role in determining whether healthcare providers follow CPGs, the researchers began by conducting an international survey on the attitudes of dietitians and physicians toward the Canadian Critical Care Nutrition Guidelines.

They discovered strong support for established practices (e.g., use of feeding protocols), as well as for some other practices that are recommended by the CPGs but not routinely achieved in practice (e.g., head of bed elevation). However, certain practices in the guidelines received mixed support. These include arginine supplementation, small bowel feeding, use of pharmaco-nutrients, intensive insulin therapy, hypocaloric parenteral nutrition, and withholding of soybean oil lipids in parenteral nutrition.

Dhaliwal and her colleagues proceeded to develop and administer a questionnaire to identify external barriers to enterally feeding critically ill patients. While these varied from institution to institution, the main barriers were lack of availability of enteral formula or feeding pumps on the unit, staffing issues, feeds being held inappropriately, and conflicting priorities or directives.

In total, the researchers identified 27 barriers. To help local healthcare providers overcome these barriers, they created a set of targeted actions and resources that are currently being refined in a feasibility study. The result should be a valuable toolkit for dietitians, nurses, and physicians wishing to optimize nutrition therapy in their ICU.

Tracking the growth of preterm infants

Project: Validation of a preterm growth chart for the neonatal intensive care unit

Researchers: Tanis Fenton, Roseann Nasser, Reg Sauve, Misha Eliasziw and Denise Bilan

Preterm infants have the highest nutritional needs per kilogram of body weight of any hospital patient. If those needs aren't met, these infants will not grow well, may be smaller than their genetic potential, and, in the worst cases, have neurodevelopmental problems.

However, when it comes to providing optimal nutrition to these tiny infants, dietitians and other healthcare professionals face significant challenges. Preterm infants can handle only limited volumes of fluids. Many have feeding intolerances and medical complications, and the progression to breast or bottle feeding is often difficult.

To evaluate whether these infants are getting the nutrition they need for optimal growth and development, healthcare professionals need standardized growth charts to evaluate their progress. While Fenton's 2003 preterm growth chart has been widely used, it requires further validation.

In this study, Fenton and her colleagues combined in-patient measurements from the medical charts of very low birthweight infants in Calgary and Regina with their post-discharge measurements, as well as descriptive information about the infants' state of health and their nutrition intake. They then compared the infants' growth patterns to the 2003 Preterm Growth Chart.

Their results show that the weight of most infants at 10 weeks post term fell within the percentile curves of the 2003 Growth Chart. The next step will be to assess whether the growth chart can be used to help identify infants at higher risk of neurological problems.

Vitamin D deficiencies in the elderly

Project: Vitamin D intake, status and their link to health in veterans living in long-term care facilities

Researchers: Isabelle Germain and Hope Weiler

Many Canadians don't get the vitamin D they need to maintain good bone health, especially in winter, when sunlight is limited. For the elderly, who are at greater risk of osteoporosis, this can have serious consequences.

Germain and Weiler set out to quantify how much vitamin D the residents in one long-term care facility were receiving. Over the fall and winter, the researchers tracked diet and supplement use in 30 men over the age of 70, all in reasonably good health.

Blood tests revealed that 25-hydroxy vitamin D levels averaged 60 nmol/L. The researchers noted that the large standard deviation in these levels suggests certain residents are at risk of vitamin D deficiency.

Interestingly, these levels didn't fluctuate with the seasons, perhaps because residents spend little time outside, even in milder weather.

Health Canada recommends a vitamin D intake of 600 IU per day for people over the age of 70. The Canadian Osteoporosis Society guidelines are more aggressive, suggesting 800 IU for everyone over 50.

However, the dietary intake of participants in the study provided an average of just 422 IU a day, mainly from milk, cream soups, eggs, fish, and meal replacement supplements. Less than a third of residents received vitamin D supplements, although all fell short of the recommended intake. Germain and Weiler therefore recommend that all elderly residents in long-term care facilities should receive vitamin D supplements.

Losing weight, catching zzz's

Project: Sleeping habits of individuals involved in a weight management program

Researchers: Tamara Marsden, Paula Brauer and Tracy Hussey

Research has shown a link between obesity and sleep problems. In part, that's because obesity increases the risk of sleep apnea, but that's not the full story.

To investigate this link further, Marsden, Brauer and Hussey recruited overweight and obese participants enrolled in a group healthy living program developed by the Hamilton Family Health Team. Called the "Healthy You" program, it focuses on lifelong lifestyle change rather than weight loss.

Using questionnaires, pedometer readings and body measurements, the researchers examined whether poor-quality sleep was common and whether it influenced eating behaviours, physical activity levels, and weight. Their data revealed that sleep problems were a major issue for 82 per cent of program participants. The 18 per cent who did not report problems were significantly healthier coming into the program than their less-well-rested counterparts.

By the end of the 11-week program, participants controlled their eating better, were less susceptible to hunger, and had lost an average of 0.92 per cent of their initial weight. Overall physical activity decreased, however. While some people improved their sleep and exercised more, most did not.

The researchers point out that sleep quality is rarely assessed in standard weight management programs. For 66 per cent of poor sleepers in this study, their sleep problems had previously gone undiagnosed. These results suggest that sleep problems could be a significant barrier to lifestyle change efforts. Dietitians should therefore consider including sleep evaluation and treatment of sleep problems as a part of a healthy lifestyle program.

Dietary therapy for heart failure patients

Project: Omega-3 polyunsaturated fatty acid supplementation in patients with heart failure

Researchers: Gary Newton, JoAnne Arcand

Heart failure is a condition in which the heart becomes too weak to pump enough blood to the body. As a result, patients feel tired and short of breath, and their feet, ankles, and legs swell.

Heart failure is linked to activation of the body's sympathetic nervous system. Since polyunsaturated fatty acids can block this activation, Newton and Arcand decided to test their potential as a dietary therapy. Intriguingly, previous studies have shown that heart failure patients consume less than the recommended amount of omega-3 polyunsaturated fatty acids.

In the current 12-week double blind trial, the researchers measured the impact of omega-3 supplements on noradrenalin levels, the ability of the heart to pump blood and the patient's ability to exercise. While the study is not yet complete, positive results could point the way to a valuable dietary therapy for patients with heart failure.

Assessing iron deficiency in vulnerable toddlers

Project: Validation of a semi-quantitative food frequency questionnaire to assess iron intake in Low German speaking Mexican Mennonite (LGSMM) toddlers in Southern Ontario

Researchers: Janis Randall Simpson, Andrea D'Ambrosio and Amanda Dyck

Across Canada, many toddlers aren't getting all the iron they need. Lack of this mineral can affect cognitive and motor development, immune function, and the capacity to exercise.

Public health workers suspect the risk of iron deficiency is particularly high within the Low German Speaking Mexican Mennonite (LGSMM) communities of Southern Ontario. LGSMM children are typically weaned off breast milk and introduced to cow's milk and table foods at a young age. Meanwhile, language barriers, low levels of education, poverty, and unfamiliarity with the food products available in Canada make choosing healthy foods more difficult.

To create a tool for assessing the iron status of toddlers in these communities, Randall Simpson, D'Ambrosio and Dyck developed a culturally sensitive food frequency questionnaire. They began by conducting focus groups to identify common foods within the LGSMM community. They then used that information to adapt existing food frequency questionnaires aimed at young children.

The researchers tested their questionnaire on 22 LGSMM toddlers, aged 12 to 36 months, over the course of a month. Multiple-pass 24-hour recalls validated the questionnaire, while test-retest reliability proved good. Thanks to their work, public health agencies now have a culturally specific tool to assess iron intake on a population basis in these vulnerable toddlers.

Decreasing insulin resistance with dairy

Project: *The impact of high milk product intake during weight loss on markers of insulin resistance*

Researchers: *Raylene Reimer and Kim Wagner Jones*

Can a high-dairy diet decrease insulin resistance? Previous research has shown that consuming dairy products can prevent weight gain, improve body composition and reduce high blood-sugar levels in obese rats.

Reimer and Wagner Jones set out to translate those results into a clinical human study. To do that, they examined overweight and obese adults randomly assigned to either a low-dairy, low-calcium diet or a high-dairy, high-calcium diet. Both were low-calorie diets, and the dairy products included were low in fat.

Participants in the high-dairy group reported a drop in appetite. This correlates to studies showing that two proteins contained in milk — whey and casein — affect the hormones that regulate appetite.

By the end of 12 weeks, the high-dairy group lost 60 per cent more weight than the control group. Men in the high-dairy group also saw a significant drop in blood sugar levels.

And the impact on insulin? The researchers found a significant drop in the inflammatory marker MCP-1 in participants following the high-dairy diet. Since MCP-1 impairs insulin signalling and glucose uptake, these promising results suggest that a high-dairy diet could potentially reduce insulin resistance, as well as accelerate weight loss.

Cultural barriers to managing diabetes

Project: *An exploration of the impact of cultural beliefs and attitudes towards foods on the acceptance of dietary recommendations for the management of Type 2 Diabetes in a North Eastern Ontario Ojibwe community*

Researchers: *Zsolt Toth*

Diabetes rates in aboriginal communities in Canada are 1.5 to 4 times the national average. While dietary changes can help to manage the disease, local attitudes and beliefs surrounding food may be a barrier to preventing and controlling diabetes in certain aboriginal communities.

Several studies of aboriginal populations have found that food tends to be classified into two groups: healthy, “Indian” food and unhealthy, “white man’s” food.

To probe how these kinds of cultural beliefs and attitudes affect diabetes management, Toth conducted focus groups within a northeastern Ontario Ojibwe community. Five of the focus groups consisted of Ojibwes with Type II diabetes, while one focus group brought together health professionals and lay health educators who work with diabetics in the community.

A number of themes emerged from these focus groups. Many participants stated that poor food choices cause diabetes, and they linked poor health and diabetes to the shift from a traditional diet to a western diet.

A number of participants reported that they changed their diet after their diabetes diagnosis. However, they found the changes difficult to make and to sustain. They view a healthy diet for diabetics as restrictive and unappealing, while traditional foods were seen as time-consuming to prepare. Participants noted the important role that families play in either supporting or sabotaging their healthy diet.

While data from the focus groups are still being analyzed, the results will lead to practical tools to help aboriginal people with diabetes manage their disease through diet. These tools will also improve the cultural competence of diabetes educators working in aboriginal communities.

Where is food security on the Canadian federal policy agenda?

Project: Building capacity for food security through policy change: Exploring food security at the federal level through a systems lens

Researchers: Patricia Williams, Ellen Vogel, Susan Roberts, Anne-Marie Hamelin, John Church, Madine Vanderplatt, Lauranne Matheson, Christine Leblanc, Sharon Taylor, Brenda Yamkowsky and Jen Cody

In 2007, at least 8% of Canadians experienced moderate or severe income-related food insecurity. To explore barriers to national food security policy, researchers conducted key informant interviews (n=16) with influential “insiders” as well as those external to government. Respondents included a committed group of mentors who worked with local communities to tackle food insecurity through the Canada Prenatal Nutrition Program (CPNP) and the Community Action Program for Children (CAPC).

Findings illuminated two major challenges: the evolving discourse on food security, including newer concepts of food sovereignty and community food security, created tensions in finding common ground; the complexity of determining “root causes” resulted in food security being framed as a public policy issue in multiple and at times conflicting ways. Consequently, the issue lacked “a home” at the federal level with various departments, actors and networks working in silos and sometimes at cross-purposes.

The research illuminated significant knowledge gaps related to two community-based programs — CPNP and CAPC. Respondents familiar with these programs noted their lack of visibility and challenges associated with sustainable funding. Findings suggested that CPNP and CAPC had untapped potential in bringing community voices to the policy-making table.

To tackle food insecurity, recommendations called for more partnerships between government, community groups, and academic researchers and a federal food policy grounded in major public policy issues such as health, agriculture and the environment.

Based on their findings, the researchers developed 20 recommendations for the federal government, national stakeholder organizations, and community groups to address the barriers to food security in Canada.

To see abstracts for these and other research projects visit the Canadian Inventory of Nutrition and Dietetic Associated Research (CINDAR) at <http://www.cfdr.ca/cindar.html>.

Written by Julie Stauffer, MSc.