



CANADIAN FOUNDATION FOR DIETETIC RESEARCH

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Nutrition research – Making a Difference

Each year, CFDR funds research that expands our knowledge of food and nutrition and contributes to the overall health of Canadians. The five research articles we describe below — all published in 2008 — are very tangible examples of how the Foundation is 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.

A big thank you to all the donors whose contributions helped to make this work possible. With your ongoing support, CFDR can continue to fund research of this caliber and impact.

Canadian Dietitians’ Attitudes Toward Functional Foods and Nutraceuticalsⁱ

Functional foods and nutraceuticals have been piquing public interest with their promises to improve health and protect against chronic diseases. But how do dietitians feel about these so-called “super foods” and “pharma-foods”?

In an open-ended telephone survey of 151 Dietitians of Canada members, Guelph researchers Judy Sheeshka and Bonnie Lacroix found that participants from all areas of practice agree that dietitians need to become knowledgeable about these products.

They also overwhelmingly agreed that dietitians are the most appropriate professionals to make recommendations about functional foods — conventional foods that offer health benefits beyond their basic nutritional functions.

When it came to nutraceuticals — food extracts sold in medicinal form — opinion was more divided. Some dietitians saw them as similar to vitamins and therefore within their professional scope of practice. Others said they were closer to pharmaceuticals and therefore best prescribed by doctors or pharmacists.

What about labeling these products? So long as health claims were scientifically proven and regulated by government, 60 per cent believed they should be permitted. Others worried that health claims could confuse the public and might lead some people to consume dangerous amounts.

As the line between foods, supplements, and drugs continues to blur, these findings will help to shape health policies, regulations, and the role of the dietetic profession.

Nutritional Genomics and Dietetic Professional Practiceⁱⁱ

Nutritional genomics examines how specific nutrients can alter our genes and how genetic variation can affect the way different people respond to the same nutrients. New discoveries in

this field raise many issues for dietitians, according to University of Ontario Institute of Technology's Ellen Vogel and her colleague, Milly Ryan-Harshman.

For example, low-fat diets have traditionally been recommended for people with elevated levels of low-density lipoproteins (LDLs), a well-recognized risk factor for heart disease. However, new research reveals that two forms of LDLs exist. People whose genes produce small, dense LDLs respond well to a low-fat diet. In contrast, if your genes produce large, buoyant LDLs, a low-fat diet actually increases your risk of heart disease.

Similarly, while most obese women can lose weight through diet and exercise, overweight women who have a certain type of B₃-adrenergic receptor gene respond poorly.

Thanks to discoveries like these, it's becoming clear that one size of dietary counselling does not fit all, especially for many metabolism-influenced diseases and conditions like obesity, atherosclerosis, diabetes, and hypertension.

Should Dietary Reference Intakes (DRI) be adjusted to reflect genetic makeup? What new tools will dietitians need to put this information to use? Will only the wealthy be able to afford the health insights that come from genetic testing? Vogel's and Ryan-Harshman's review paper lays out key questions and has begun an important dialogue within the profession.

Body Composition and Resting Energy Expenditure in Muscular Dystrophyⁱⁱⁱ

In both Duchenne and Becker muscular dystrophy (MD), muscle fibres gradually break down, weakening voluntary muscles and, eventually, muscles of the heart and lungs. Providing the right number of calories can help to minimize some of the symptoms of MD by reducing the amount of stress on the heart and lung muscles and improving mobility, as well as reduce the burden on caretakers.

To help dietitians better advise clients with MD, researcher Eileen Hogan studied body composition and resting energy expenditure in four participants with Duchenne MD and two with Becker MD. While it's risky to try to generalize from such a small sample, she found all the subjects had much lower resting energy expenditure than their peers without MD, suggesting the need for a lower-calorie diet.

Body composition also revealed big differences. Three of the four participants with Duchenne MD had less muscle mass in their mid-upper-arms than their healthy peers, and 1.5 to 3.5 times the subcutaneous fat levels. Participants with Becker MD had even less muscle mass and fat in their mid-upper arms compared to their counterparts with Duchenne MD.

This information can help dietitians reduce the significant risks of obesity in early stages of the disease, improving quality of life for boys and young men affected by MD.

Body Composition in Adults with Spinal Cord Injury^{iv}

People with spinal cord injuries tend to pack on more fat than their able-bodied counterparts, putting them at higher risk for heart attack and diabetes. However, most research on risk factors for these conditions has focused on able-bodied adults.

Andrea Buchholz, Lesley Edwards and their colleagues addressed that imbalance, comparing waist measurements and fat measurements in people with and without spinal cord injuries.

The differences were significant. People with spinal cord injuries had a whopping 42 per cent more visceral abdominal fat per centimetre of waist circumference than their able-bodied counterparts. That translates into a significantly higher risk of diabetes and heart attack — one that would be overlooked by relying on reference standards developed in the able-bodied.

Thus even a small increase in waist measurement can threaten the health of people with spinal cord injuries, making weight control a particularly important health goal.

Nutrient Composition of Hindmilk: Nourishing Very Low Birth Weight Infants^v

Ensuring any baby thrives and grows is important, but it's especially vital in the case of very low birth weight infants. For these tiniest of preemies, born less than 28 weeks after conception and weighing less than 1,500 grams, breast milk alone may not be enough to keep them properly nourished. Their nutritional needs are different from full-term babies, and without special supplementation, their growth lags.

That's why it is suggested that clinicians routinely combine hindmilk — the higher-fat, higher-energy milk that is produced after the first few minutes of breastfeeding — with human milk fortifier to boost the protein, mineral, and vitamin content of mom's milk.

To date, however, medical professionals have lacked a detailed nutritional profile of hindmilk. Rosine Bishara, Pauline Darling and their colleagues helped to fill that gap, comparing the composition of foremilk and hindmilk in 24 mothers of very low birth weight babies.

The results revealed higher concentrations of key vitamins and nutrients in hindmilk: retinol (1.6 fold), alpha-tocopherol (1.6 fold), gamma-tocopherol (1.5 fold), and total fatty acids (1.7 fold). Hindmilk also contains more calories than foremilk, but less beta-carotene.

A key finding was that combining hindmilk with human milk fortifier pushes the fat-soluble vitamin content above current recommended upper levels of intake for infants. This may not be a danger: other researchers have found that many preemies need higher vitamin A levels than currently recommended. However, this study suggests that current recommended levels of vitamins A and E for very low birth weight infants should be reassessed, along with the formulation and use of human milk fortifiers.

CINDAR

For more information on these and other nutrition and dietetic research projects, visit CFDR's Canadian Inventory of Nutrition and Dietetic Associated Research (CINDAR), a searchable database on CFDR's website at <http://www.cfdr.ca/cindar.html>.

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References

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- ^v Bishara R, Dunn MS, Merko SE, Darling P. Nutrient composition of hindmilk produced by mothers of very low birth weight infants born at less than 28 weeks' gestation. *J Hum Lact* 2008;24(2):159-167.