

Sample CFDR Research Proposal

Proposal

A Comparison of Dietary Folate Intake of Older Adults Before and After Mandatory Fortification of Grain Products with Folic Acid in Canada

Area of support addressed:

Identification of vulnerable groups and their nutritional needs

Purpose and specific objectives of the research:

To determine whether fortification of food with folic acid allows older adults in the KFL&A Health Unit area to obtain adequate amounts of folate from food sources and to identify sub-groups who may be at risk for deficiency or excess intake.

Relationship to existing research/ Theoretical/conceptual framework:

In 1990, Health Canada recommended that older adults consume 195-230 mcg folate per day (1). In 1998, the Recommended Dietary Allowance (RDA) for older adults increased to 400 mcg dietary folate equivalents (DFE) and the Estimated Average Requirement (EAR) was set at 320 mcg DFE (2). In addition, the units of measure for folate changed from mcg to DFE, making analysis of dietary intake more complex.

Surveys conducted prior to mandatory fortification of food with folic acid show average intakes for adults 65 years of age and older to be less than 320 mcg DFE, the EAR for this age group (2). In Quebec and Nova Scotia, average intake was 180-254 mcg per day (2) and in older adults living in the KFL&A Health Unit area, average intake was 229 mcg for women and 264 mcg for men (3).

In 1998, Health Canada made addition of folic acid to flour and bread mandatory (4). Although addition of folic acid to cornmeal, pasta, and rice remains optional, most brands of cornmeal, pasta, and pre-cooked rice available in Canada are fortified (Josie Deeks, personal communication). Commercial breakfast cereals and a small number of other foods may also be fortified with folic acid (5).

According to US estimates, mandatory fortification of foods with folic acid is expected to add an additional 70-120 mcg folic acid or 119-204 mcg DFE to the diet of middle-aged and older adults (6). If this estimate is true for older adults in Canada, average intakes may exceed the 320 mcg DFE recommended. But we have no data reporting actual intakes of older adults so whether or not these estimates of intake apply to older adults in Canada is not known. This proposed research will answer this question for a sample of older adults in the KFL&A Health Unit area.

Potential theoretical and practical significance of the proposed research:

Dietitians need to know how much folate older adults are consuming. If intakes are less than recommended, dietitians can suggest ways to increase folate. Evidence that folic acid may reduce the risk for cardiovascular disease, certain types of cancer, and psychiatric and mental disorders serves to emphasize the importance of ensuring older adults consume adequate amounts (2, 6, 7, 8, 9).

Consumption of greater than 1000 mcg DFE is a concern for older adults who have pernicious anaemia or vitamin B12 deficiency by making it difficult to diagnose new cases and possibly causing the associated neuropathy to develop more rapidly (2, 10). While 1000 mcg

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DFE intake is unlikely from food sources alone, it is possible from supplements or food in combination with supplements. Dietitians need to know how much folate and folic acid older adults are consuming from food in order to provide appropriate advice regarding supplement use.

Research design:

In a previous study (3), food intake data were collected from a convenience sample of 103 community-dwelling older adults living in the area served by the KFL&A Health Unit between October 1997 and July 1998. The sample was somewhat younger than the older adult population of eastern Ontario and Canada. The proportion of older adults between 65 and 74 years of age was similar to eastern Ontario and Canada (11, 12, 13) but the proportion of those 75-84 was somewhat over-represented and those over 85 years, under-represented. Our findings for the main outcome of the study, folate intake, will be adjusted to compensate for non-representativeness of the age composition of the convenience sample (14).

Three 24-hour recalls were used to estimate usual dietary intake (15, 16). Diet recalls were analyzed using Food Processor with the Canadian Nutrient File (CNF) (Version 7.2, ESHA Research, Salem, Oregon, 1998) and three-day average folate intake determined (2).

We propose re-analyzing the food recall data already collected. When the older adults consumed a food that was not previously fortified with folic acid but is now fortified, we will substitute the new value to estimate DFE. For this re-analysis, we will use the CNF that reflects folic acid fortification (Josie Deeks, personal communication). Coding protocols will be applied to mixed foods that could contain a folic acid fortified ingredient (17, 18). All folate in the 1997 CNF will be assumed to be in the form of food folate with the exception of commercial breakfast cereals and a small number of other foods that contained added folic acid at that time (5). Food records for the older adults who consumed these fortified foods will be adjusted to reflect the greater bioavailability of folic acid. When folate intake data from the previous study are converted to DFE, we will be able to make direct comparisons with re-analysis data reported in DFE.

Revised DFE intake data will be entered into the existing data file from the previous study that also includes demographic data and information about risk factors for poor dietary intake (SPSS Version 10.0 for Windows, SPSS Inc., Chicago, Illinois, 1999). Descriptive statistics (mean, median, standard deviation) will be used to compare both pre- and post-fortification DFE intake with the EAR recommendations. Cross tabulations will be used to explore relationships between DFE intake and risk factors for poor dietary intake (e.g. eating and living alone, perceived poor health) and demographic data (e.g. age, gender, marital status). This will allow us to identify sub-groups who may be at higher risk for DFE deficiency.

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Timetable for completion of proposed research:

September-December 2002: Data analysis

Prepare coding protocols for data analysis	
Research assistant	35 hours
Principal Investigator	20 hours
Co-investigator	20 hours
Re-analyze 24-hour recalls	
Research assistant	80 hours
Principal Investigator	10 hours
Co-investigator	5 hours
Data entry and analysis	
Research assistant	35 hours
Principal Investigator	10 hours
Co-investigator	5 hours

January-February 2003: Preparation of a final report and presentation for CFDR

Principal Investigator	35 hours
Co-Investigator	35 hours

June 2003: Presentation of results at the CFDR Research Event

 Principal or Co-Investigator

Proposed Budget

Personnel

Principal Investigator	75 hours	\$0.00
Co-Investigator	65 hours	\$0.00
Research assistant	150 hours	
	@ \$20.90 per hour	\$3135.00

Supplies and Services

Office supplies (paper, photocopying)	\$100.00
Mandatory agency overhead @ 10%	\$353.50

Conference Travel

CFDR research event in 2003	\$300.00
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Total: \$3888.50

Brief Description of Research in Non-technical Language

Beginning in 1998, Health Canada required that all flour and bread sold in Canada be fortified with the B vitamin, folic acid. Nutrition surveys conducted prior to 1998 showed that many older adults were not consuming enough of this important vitamin. Have fortified foods solved the deficiency problem? Does consumption of fortified foods put some older adults at risk of consuming too much? We simply don't know.

The purpose of this study is to determine whether fortification of food with folic acid allows older adults living the area served by the KFL&A Health Unit to obtain adequate amounts of this vitamin from food and to identify any sub-groups of older adults who may be at greater risk of deficiency or excess intake. We will use dietary intake data collected from a sample of 103 community-dwelling older adults prior to 1998 and determine how much additional folic acid they would have consumed had they been eating the fortified foods available after 1998. We will also look for relationships between folic acid intake and risk factors for poor dietary intake (e.g. eating and living alone, perceived poor health) and demographic characteristics (e.g. age, gender, marital status).

Dietitians need to know how much folic acid older adults are consuming now that more fortified foods are available. If intakes are less than recommended, dietitians can suggest ways older adults may improve. While excess intakes are unlikely from food sources alone, vitamin supplements may pose a risk for some older adults and dietitians need to caution them to avoid overdoses. This research will provide dietitians with important information to guide the advice they give to older adults.