

## Research letter

## Low rate of adequate folic acid supplementation in well-educated women of high socioeconomic status attending a genetics clinic

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**P**ericonceptional folic acid intake can reduce the occurrence of neural tube defects,<sup>1</sup> and supplementation or food fortification is now recommended by many professional groups.<sup>2</sup> Nonetheless, recently reported rates of optimal folic acid supplementation were low, ranging from zero (South America, 1996 data)<sup>3</sup> to 52% (the Netherlands, 1998 data).<sup>4</sup> Worldwide, most women of child-bearing age are exposed to an unnecessary risk of having a child affected by a neural tube defect.

We conducted a survey from April to July 1996 among women attending the genetics clinic at an Ottawa pediatric hospital. All women attending the clinic during the study period were given the option of completing the survey. The survey was completed anonymously by 342 (69%) of the 494 women who were approached; 3 of the respondents were beyond reproductive age. Not every question was answered by every respondent. We compared demographic characteristics and knowledge for women who reported taking folic acid supplementation at the optimal time (at least 4 weeks before the last normal menstrual period and continuing to at least 8 weeks after the last menstrual period), those taking supplementation but at a suboptimal time (too late to reduce the risk of neural tube defects) and those not taking any supplementation. The mean age of the respondents was 34.9 years (range 22–57 years). Most of the respondents were in stable relationships and were employed, and these women were 3 times more likely than typical 30- to 34-year-old Ontario women to have completed postsecondary education.<sup>5</sup>

Although 277/342 (81.0%) of the women were aware of folic acid and 266/342 (77.8%) were taking at least 0.4 mg/day of the vitamin (the minimum recommended dose), only 78 of the 297 pregnant women (26.3%) began supplementation early enough to reduce the risk of neural tube defects.

Our findings confirm that level of education does not correlate with successful folic acid supplementation.<sup>6</sup> Contrary to a previous report,<sup>7</sup> we found no association between socioeconomic status and the use of folic acid, prob-

ably because of the skewed socioeconomic status of our study population.

Women in our study who did not supplement with folic acid believed that dietary intake would be sufficient to meet the recommended daily allowance of folic acid, but it is doubtful that even an optimal nonfortified diet can provide adequate folic acid.<sup>2,8</sup>

Pregnant women were more likely than nonpregnant women to have taken folic acid ( $p < 0.01$ ). Women who took folic acid during a suboptimal period were 4.0 times more likely to report their physician as the primary source of information about folic acid rather than the media (Table 1). Although physicians were an important source of information about folic acid, they must shift their emphasis to preconceptional counselling.<sup>9</sup>

Women with optimal supplementation were 2.4 times more likely to have received information from multiple sources than from a single source (Table 1). This result supports the views of those who advocate increasing awareness among both the public and health care providers of the benefits of folic acid.<sup>4,8</sup> An intense media campaign targeting women in the Netherlands was associated with an increase in optimal folic acid supplementation from less than 1% in 1994 to 52% in 1998.<sup>4</sup> Although the campaign was conducted in a country with a high population density (465/km<sup>2</sup>) and a high rate of planned pregnancies, supplementation remained inadequate for almost 50% of women.<sup>10</sup> Similar increases in adequate supplementation are unlikely in Canada, given its multiple jurisdictions, low population density (4/km<sup>2</sup>) and high rate of unplanned pregnancies.<sup>11,12</sup>

We join others who support the fortification of staple foods (such as flour) with enough folic acid to maximize the number of women who will receive the recommended daily allowance of folic acid and thus to reduce the occurrence of neural tube defects and possibly other malformations. The protective effect of the current level of folic acid fortification (150 µg/100 g) of some flour products available in Canada is unknown,<sup>13</sup> but given that almost 75% of the

**Table 1: Factors associated with taking a folic acid supplement**

Factor	Respondent group; unadjusted OR (and 95% CI)*	
	Folic acid supplementation†	Folic acid supplementation with optimal timing
<b>Good knowledge of folic acid supplementation‡</b>	10.6 (5.7–20.0)	3.8 (0.9–17.3)
<b>Correct identification of sources of dietary folic acid§</b>	3.1 (1.9–5.1)	1.7 (1.4–2.6)
<b>Source of information about folic acid</b>		
Media	1.0	1.0
Family physician	4.0 (1.8–8.9)	0.5 (0.3–0.9)
A friend	2.4 (0.6–8.8)	1.0 (0.4–3.0)
<b>Number of sources of information</b>		
One source	1.0	
Multiple sources	1.6 (0.8–3.0)	2.4 (1.3–4.4)
<b>Education</b>		
High school	1.0	
University	1.9 (1.1–3.1)	1.5 (0.7–3.2)
<b>Marital status</b>		
Married	1.0	
Common law	0.9 (0.5–1.7)	0.6 (0.3–1.4)
Single	0.2 (0.1–0.6)	
Divorced	0.4 (0.1–2.1)	

Note: OR = odds ratio, CI = confidence interval.

\*Unadjusted ORs derived from univariate logistic regression, with each factor considered separately, for taking folic acid at all (analysis for all 342 respondents) and for taking it at the optimal time (analysis for only the 266 respondents who reported taking a supplement).

†Optimal or suboptimal timing.

‡Compared with no knowledge of folic acid supplementation.

§Compared with incorrect identification of sources of dietary folic acid.

women who responded to our survey had inadequate or inappropriately timed folic acid supplementation, this effort would be warranted.

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