

*Weekly*

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# Use of Supplements Containing Folic Acid Among Women of Childbearing Age --- United States, 2007

Neural tube defects (NTDs) are serious birth defects of the brain (anencephaly) and spine (spina bifida) that affect approximately 3,000 pregnancies each year in the United States ([1](#)). In 1992, the U.S. Public Health Service recommended that all women of childbearing age in the United States capable of becoming pregnant consume 400  $\mu\text{g}$  of folic acid daily to reduce their risk for having a pregnancy affected by NTDs ([2](#)). To assess awareness, knowledge, and behavior related to folic acid among women of childbearing age (aged 18--45 years), CDC analyzed the results of a national survey conducted annually by the Gallup Organization during the period 2003--2007.\* This report summarizes the results of that analysis, which indicated that, among all women of childbearing age, those aged 18--24 years had the least awareness regarding folic acid consumption (61%), the least knowledge regarding when folic acid should be taken (6%), and the lowest reported daily use of supplements containing folic acid (30%). Because women in this age group account for nearly one third of all births in the United States ([3](#)), promotion of folic acid consumption should be targeted to this population.

Since 1995, the March of Dimes Foundation has contracted the Gallup Organization to conduct a series of national, random-digit--dialed telephone surveys of a proportionate stratified sample of women of childbearing age to assess awareness, knowledge, and behavior regarding folic acid. The surveys include multiple-choice and open-ended questions. To assess awareness of folic acid, respondents were asked a multiple-choice question, "Have you ever heard, read, or seen anything about folic acid?" To assess knowledge about folic acid, respondents were asked two open-ended questions, "What have you heard, read, or seen about folic acid?" and "Which vitamins or mineral supplements do you think are important to women of childbearing age?" To assess the source of knowledge about folic acid, respondents were asked an open-ended question, "Where did you learn about folic acid?" To assess behavior, respondents were asked an open-ended question, "What type of vitamin or mineral supplements do you take on a daily basis?" Women who reported taking a daily multivitamin, a prenatal vitamin, or a folic acid only supplement were considered to be taking a supplement containing folic acid. To assess barriers to taking folic acid, respondents were asked an open-ended question, "Why do you not take any vitamin or mineral supplement on a daily basis?" Women who are currently pregnant were not excluded from the sample. For certain survey questions, stratification by pregnancy status provided useful comparative information. In 2007, a total of 2,003 women of childbearing age (18--45 years) were sampled, with women aged 18--24 years being oversampled. The response rate was 32%. Statistical estimates were weighted to reflect the total population of women aged 18--45 years in the contiguous United States who resided in households with telephones. For total results based on this sample of women, the error attributable to sampling

was plus or minus 2 or 3 percentage points (with 95% confidence).

In 2007, approximately 40% of all women surveyed reported daily consumption of a supplement containing folic acid. This percentage is equal to that observed in 2004 and is an increase from 33% in 2005 and from 32% in 2003. Women who were nonwhite, were aged 18--24 years, had less than a high school education, or had a household income of <\$25,000 were the least likely to report daily consumption of a supplement containing folic acid ([Table 1](#)).

Several differences in folic acid awareness and knowledge were observed among age groups. In 2007, approximately 61% of women aged 18--24 years reported being aware of folic acid, compared with 87% of women aged 25--34 years and 89% of women aged 35--45 years ([Table 2](#)). Additionally, women aged 18--24 years were less knowledgeable about the need for folic acid consumption before pregnancy (6%), compared with women aged 35--45 years (16%). In 2007, approximately 42% of women surveyed reported folic acid as the most important vitamin for women of childbearing age. This represented an increase from 30% in 2005. However, differences were observed by age group, with women aged 25--34 years being most likely to mention folic acid (55%), compared with women aged 35--45 years (43%) and women aged 18--24 years (20%).

In 2007, approximately 33% of women who were aware of folic acid reported that they had heard about folic acid from their health-care provider, followed by a magazine or newspaper (31%) and radio or television (23%). Women aged 18--24 years were more likely to hear about folic acid from a magazine or newspaper (25%) or school or college (22%) than from their health-care provider (17%), whereas 37% of women aged 25--34 years and 36% of women aged 35--45 years reported hearing about folic acid from their health-care provider.

Reported daily consumption of a supplement containing folic acid also differed by age group. In 2007, women aged 25--34 years were the most likely to report consuming a daily supplement containing folic acid (47%), followed by women aged 35--45 years (40%) and women aged 18--24 years (30%). Among women who reported not taking a vitamin or mineral supplement on a daily basis, the most common reason was "forgetting" (33%), followed by "no need" (18%), "no reason" (14%), and "already get balanced nutrition" (12%).

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### **Editorial Note:**

In 1998, the Food and Drug Administration mandated that folic acid be added to cereal grain products. A 26% decline in the NTD rate in the United States was observed from the period before (1995--1996) to the period after (1999--2000) fortification ([1](#)). However, racial/ethnic disparities persisted, with Hispanic women having the highest rate of NTDs and the lowest reported consumption of folic acid ([4](#)). A statewide survey conducted annually in California during the period 2002--2006 indicated that Hispanic women had the lowest use of supplements containing folic acid ([5](#)). In addition to the racial/ethnic disparities, differences of supplement use by age have been reported ([6](#)).

Although year-to-year variation has been observed over time, the percentage of women of childbearing age who reported consumption of a daily supplement containing folic acid increased overall from 28% in 1995 to 32% in 2003 ([6](#)) and to 40% in 2004 and 2007. One of the *Healthy*

*People 2010* objectives is to increase to 80% the proportion of all women of childbearing age who consume 400  $\mu\text{g}$  of folic acid daily to reduce their risk for serious birth defects (objective no. 16-16a) (7). Thus, although progress has been made toward this goal, approximately 60% of women of childbearing age surveyed in 2007 were still not consuming a daily supplement containing folic acid. Women aged 18--24 years have the highest rate of unintended pregnancies in the United States (8) but remain the least aware of and knowledgeable about folic acid and the least likely to report consuming a supplement containing folic acid. These findings warrant the continued promotion of folic acid consumption among all women of childbearing age and especially among women aged 18--24 years. Folic acid education that promotes consumption of folic acid from various sources (e.g., supplements containing folic acid and fortified foods), in addition to foods rich in folate, can increase the possibility of all women consuming the recommended daily amount of 400  $\mu\text{g}$  (9).

The findings in this report are subject to at least two limitations. First, the low response rate of 32% increases the risk that response bias might have affected the results. Results should be interpreted with caution and in the context of other surveys. For certain questions, recall bias also might have affected results. Second, the survey was limited to households with landline telephones, and the results might not be representative of all households. Whether this limitation would result in overestimates or underestimates in various results is not predictable.

The findings in this report indicate that women aged 18--24 years identified schools or colleges and magazines or newspapers as their primary sources for folic acid information, so these two channels might provide important opportunities to reach this population. Research has indicated that women in this age group are more likely to respond to folic acid messages that do not focus on pregnancy or infants (10). Innovative and effective messages tailored to women aged 18--24 years are needed to help change behaviors, increase awareness and knowledge regarding folic acid consumption, and ultimately reduce the incidence of NTDs.

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foundation for national birth defect prevention campaigns. *J Health Commun* 2007;12:733--57.

\* The 2006 survey included only women aged 18--35 years and therefore was excluded.

**Table 1**

**TABLE 1. Percentage of women aged 18–45 years who reported taking a supplement containing folic acid daily,\* by survey year and selected sociodemographic characteristics — United States, 2003–2007†**

Characteristic	2003 (N = 2,006) (%)	2004 (N = 2,012) (%)	2005 (N = 2,647) (%)	2007 (N = 2,003) (%)
<b>Race</b>				
White	34	43	36	40
Nonwhite	28	31	23	36
<b>Ethnicity</b>				
Hispanic	29	38	27	38
Non-Hispanic	33	40	34	40
<b>Age group (yrs)</b>				
18–24	25	31	24	30
25–34	34	39	36	47
35–45	35	46	37	40
<b>Education</b>				
Less than high school	21	19	20	29
High school	28	32	31	36
College (any)	37	48	35	48
<b>Annual household income</b>				
<\$25,000	24	30	27	32
\$25,000–\$39,999	31	40	28	39
\$40,000–\$49,999	39	48	37	43
≥\$50,000	38	46	38	43
<b>Pregnancy status</b>				
Pregnant	82	81	90	93
Not pregnant	30	37	31	37
<b>Total</b>	<b>32</b>	<b>40</b>	<b>33</b>	<b>40</b>

SOURCE: Gallup Organization.

\* Based on response to an open-ended question, "What type of vitamin or mineral supplements do you take on a daily basis?"

† Statistical estimates were weighted to reflect the total population of women aged 18–45 years in the contiguous United States who resided in households with telephones. For total results based on this sample of women, the error attributable to sampling was plus or minus 2 or 3 percentage points (with 95% confidence). The 2006 survey included only women aged 18–35 years and therefore was excluded.

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**Table 2**

**TABLE 2. Percentage of women aged 18–45 years reporting awareness, knowledge, and behavior related to folic acid, by survey year and age group — United States, 2003–2007\***

Survey year/ Age group (yrs)	Awareness <sup>†</sup>	Knowledge <sup>§</sup>	Behavior <sup>¶</sup>
<b>2003 (N = 2,006)</b>			
18–24	73	8	25
25–34	82	11	34
35–45	81	10	35
<b>Total</b>	<b>79</b>	<b>10</b>	<b>32</b>
<b>2004 (N = 2,012)</b>			
18–24	70	10	31
25–34	80	14	39
35–45	80	11	46
<b>Total</b>	<b>77</b>	<b>12</b>	<b>40</b>
<b>2005 (N = 2,647)</b>			
18–24	72	5	24
25–34	88	9	36
35–45	87	8	37
<b>Total</b>	<b>84</b>	<b>7</b>	<b>33</b>
<b>2007 (N = 2,003)</b>			
18–24	61	6	30
25–34	87	12	47
35–45	89	16	40
<b>Total</b>	<b>81</b>	<b>12</b>	<b>40</b>

SOURCE: Gallup Organization.

\* Statistical estimates were weighted to reflect the total population of women aged 18–45 years in the contiguous United States who resided in households with telephones. For total results based on this sample of women, the error attributable to sampling was plus or minus 2 or 3 percentage points (with 95% confidence). The 2006 survey included only women aged 18–35 years and therefore was excluded.

<sup>†</sup> Based on response to a multiple-choice question, "Have you ever heard, read, or seen anything about folic acid?"

<sup>§</sup> Based on response to an open-ended question, "What have you heard, read, or seen about folic acid?"

<sup>¶</sup> Based on response to an open-ended question, "What type of vitamin or mineral supplements do you take on a daily basis?"

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