

### Abstract

*Everyone Needs Folic Acid (Folic Acid)* is a 14-slide program that highlights the role of folic acid in health for everyone and shows how to make sure that dietary intake includes recommended amounts. Low-income persons were recruited using a Facebook ad with key words targeting persons with limited economic resources. Participant comments and survey responses about *Folic Acid* were positive. Item responses revealed all slides were rated as acceptable, but responses to open-ended items suggested revisions would make the slides more salient for low-income persons, e.g. showing more folic acid foods and adding supplement dosages. These revisions have been incorporated into the program as posted on the NEEDs Center website. Additional evaluation of the revised *Folic Acid* program is in progress and will be added to this report as findings are available.

### Background

*Everyone Needs Folic Acid (Folic Acid)* was developed to help low-income families appreciate the role of folic acid in health for all age groups: infants, pregnant women, women wishing to become pregnant, nursing mothers, adults and the elderly. This report details the evaluation of *Folic Acid* to assess efficacy for use with the targeted audience. This study was approved by The Pennsylvania State University Internal Review Board for the Protection of Human Subjects.

### Study Design

Subjects were directed to view *Folic Acid*, then complete a survey that explored program content and process features.

### Recruitment

Subjects were recruited using a Facebook ad, also called an impression (Figure) targeted to persons between the ages of 18 and 55 years inclusive, who live in Pennsylvania, speak English and who noted “like” on their Facebook page that included any of the following key words: Welfare, minimum wage, food bank, WIC, Supplemental Nutrition Assistance Program (SNAP), food stamps, food stamp kids, I need more money, I need more cash, or currently unemployed. Data were screened for duplicate computer IP and email address.

### Figure. Facebook Impression (Ad)

Is Folic Acid for you?

[pennstate.qualtrics.com](http://pennstate.qualtrics.com)



Earn \$15 gift card instantly for your thoughts on a Penn State research lesson: Folic Acid

Facebook estimated reach of this ad (or impression) as 201,380 potential respondents. 795 clicked on the ad; 14% (n=119) initiated the survey. 67% of unique respondents starting the survey, completed the evaluation (n=73).

### Data Collection

Data were collected using an online survey with Qualtrics (Provo, UT) and hosted on a Penn State server for 17 calendar days. Item strategies included Likert scales, heat map, ratings (via star or slider scales), and comment box.

Participants completed questions about demographics, (including SNAP-Ed Education and Administration Reporting System items), cognitive behavior and food-related practices, viewed a *Folic Acid* video loop, and then answered a post-viewing evaluation.

## Results

### Respondent Demographics

Most respondents were White with post-high school education. Supplemental Nutrition Assistance Program (SNAP) and medical assistance were the most frequently utilized assistance programs; in all 29% used at least 1 assistance program in the past year ([Table 1](#)). The majority of households had 2 or more children under the age of 18. Low-income was defined as using at least one assistance program OR reporting sometimes (33%), often (15%) or always (10%) worrying about money for food, 51% of the follow-up sample were classified as low-income.

### Attitudes About *Folic Acid*

Respondents' attitudes were assessed by rating agreement using a scale from 1 (Strongly disagree) to 7 (Strongly agree) with 3 statements: 1) . . . helped me think about folic acid and the role it plays in being healthy; 2) Including folic acid in the diet is important for everyone; and 3) My family needs more folic acid. Mean scores of 5 or higher with a mode of 7 across all 3 items indicated a positive attitude toward the program. The majority of the respondents (89%) reported a score of 5.5 or higher for the item indicating their agreement that folic acid is important for everyone.

### Opinions About *Folic Acid*

Seven program characteristics or learner responses were listed: Program is easy to read; I learned a lot; This program was helpful; This show was interesting; I understood the information; I liked the pictures in the program; and, I would like to see more like this one. Participants were asked to select all that were

TRUE for them, thus more than 1 item could be checked. The average number of items each respondent selected as TRUE for them was  $4.6 \pm 1.9$ . A majority confirmed that the program was easy to read (90%), helpful (66%), and understandable (87%).

Respondent provided positive comments, e.g., "I like the clean feel of the presentation and that it's easy to read and understand – great for quick info deployment;" "More people should be aware of this information;" "I wish I knew more about folic acid when I was younger;" with one noting "The show was very elementary." Eating competence status did not appear to be related to opinion about *Folic Acid*. Additional evaluation findings are in [Table 2](#).

### Response to the Specific Slide Messages

Benefits and positive effects of folic acid on health and well-being were emphasized in 3 slides.

Slides on why we need folic acid

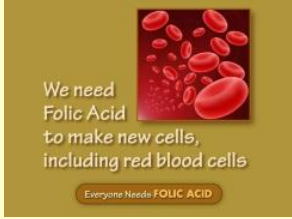
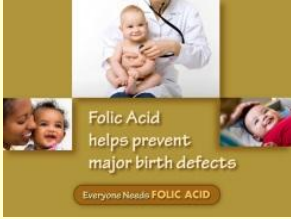

- ◆ We need folic acid to make new cells, including red cells
- ◆ Folic acid helps prevent major birth defects
- ◆ Women need folic acid even before they are pregnant

These 3 messages resonated with respondents. A slider bar was used to rate the importance of the intervention message from 1 (Not at all important) to 7 (Extremely important). All slide messages were viewed by the majority as either very important or extremely important ([Table 3](#)) with means for all slides higher than 5 (very important). From 88% to 92% rated the slide concepts as very important (score of 5).

### Who benefits from taking folic acid?

Respondents viewed three slides about who benefits from folic acid and rated how well they thought the message was presented.

**Table 3. Rating the Importance of the Intervention Message <sup>a</sup>**

			
<b>Mean</b>	6.22	5.62	6.23
<b>Standard Deviation</b>	1.11	2.25	0.98
<b>Median</b>	7.0	7.0	7.0
<b>Range (1-7)</b>	2-7	0-7	3-7

<sup>a</sup> Respondents rated the importance of the message using a scale from 1 (Not at all Important) to 7 (Extremely Important)

#### Slides depicting benefits

- ◆ Pregnant women need folic acid
- ◆ Breast feeding women need folic acid
- ◆ Folic acid may help prevent high blood pressure, heart disease, and cancer

A slider bar was used to rate how well the message was presented from 1 (Not at all) to 7 (Extremely well). All slide messages were rated at very well or higher (Table 4); mean presentation scores were higher than 5 (Very well) for all slides. The percent of scores at 5 (Very well) or higher ranged from 72% to 88%.

#### Sources of Folic Acid

Several slides emphasized sources of folic acid. Respondents viewed 5 slides about sources of folic acid and rated how much they liked the slides.

#### Slides about sources of folic acid

- ◆ Folic acid is found in citrus fruits and juices, tomatoes and tomato juice.
- ◆ Greens including salad greens are a great source of folic acid.
- ◆ Multi-vitamins are a good source of folic acid.
- ◆ Peanuts, seeds, and beans are rich in folic acid
- ◆ Whole grains, enriched grains, and breads are a great source for folic acid.

Respondents used a slider bar to rate feelings about each of the 5 slides by using a 7-point star rating system (more stars meant a more positive rating). All slides were well received (Table 5) with a mean rating of 6 or more stars, with the exception of the slide depicting the vitamin bottle, which received 4.8 stars. The proportion of scores at 5 or higher ranged from 60% to 88%.

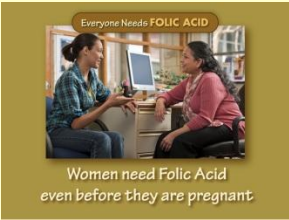
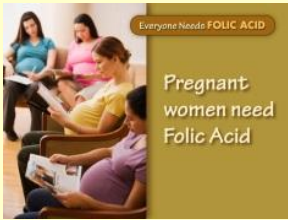

A “Hot spot” rating strategy directed respondents to view a slide depicting an elderly couple eating breakfast, then to click on the area of the slide that first caught their attention. Results suggested that attention was directed to the seal “100% Daily Value of Folic Acid” with less emphasis on the message of enriched ready to eat cereals.

#### Are you getting enough folic acid

Respondents viewed a slide with the message “Are you getting enough folic acid?” and provided comments.



**Table 4. Rating Message Effectiveness of Slides Denoting the Benefits of Folic Acid <sup>a</sup>**

			
<b>Mean</b>	5.38	5.85	6.04
<b>Standard Deviation</b>	1.66	1.41	1.40
<b>Median</b>	6.0	6.0	7.0
<b>Range (1-7)</b>	1-7	1-7	1-7

<sup>a</sup> Respondents rated how well the message was presented using a scale from 1 (Not at all) to 7 (Extremely well).

Respondents wanted to see healthier food choices with more obvious connection to folic acid, such as dark greens, noting "... it would be helpful if they were all eating food that was rich in folic acid," and "Focus on less processed food//natural sources." One respondent was direct, "It makes it seem like I can eat fast food and carbs and still get folic acid."

Positive comments were made about the range of ethnicities depicted, "I love to see the ... different ethnic backgrounds of people and that men are included," or "It is very well designed in balance and cross-cultural diversity," and "It is a great slide, it reinforces the need for folic acid throughout our lives".

### End of Survey Comments

At survey closure respondents were asked to provide additional comments not elicited by survey items. Many commented that the program was easy to follow, informational and useful with statements of program support e.g., "a great learning tool," "It was very informative. Not overwhelming, but it did give me a lot of ideas on how to get more folic acid into my

diet," and "It is a great program and I will think of folic acid in feeding the various types of food for my family," or "Nice program. It provided helpful information in an easy to understand fashion."

Some comments provided constructive criticism. Viewers identified a need to show recommended dosage, depict iron rich foods, and add detail on vitamin sources of folic acid.

Other themes emerging from these comments indicated a belief that folic acid is important but that we should point out that it is a B vitamin, eliminate pictures of processed food, and discuss correct dosage. One slide in particular showed a lot of processed food and viewers preferred that slides show foods that are better sources of folic acid.

Viewers wanted more slides showing a family atmosphere noting that this is where habits are developed. Additionally, they requested that more men be featured, emphasizing that men, as well as pregnant women need to increase folic acid intake. Several commented that the show was too slow, and that the statement, "Everyone




needs Folic Acid,” on every slide was redundant and annoying. Showing the dosage (400mcg) on the folic Acid bottle slide may be misleading and confusing if taking a multivitamin or if pregnant or if overdosing is possible. All comments and suggestions were incorporated in program revision.

Revisions were made to slides as appropriate: respondent comments, evaluation, and research team discussions (Table 6). The revised program reflected these changes.

## Conclusions

*Everyone Needs Folic Acid*, offered using a digital photo frame platform, has been shown to be useful, informative, and of interest to the target audience. Evaluation outcomes supported revisions to 6 slides to increase the usefulness, comprehension, and interest for low-income adults. These revisions have been made and are included in the posted program. Re-evaluation of *Folic Acid* with these 6 revised slides is in progress.

**Table 5. Rating Appeal of Slides Showing Sources of Folic Acid <sup>a</sup>**

					
<b>Mean</b>	5.56	5.58	4.85	5.60	5.70
<b>Standard Deviation</b>	1.44	1.50	1.69	1.39	1.55
<b>Median</b>	6.0	6.0	5.0	6.0	6.0
<b>Range (1-7)</b>	2-7	2-7	1-7	2-7	1-7

<sup>a</sup> Respondents rated how well the message was presented using a 7 star rating system (more stars meant a more positive rating).

**Table 6. Original and Revised Slides Compared**

Initial Slide	Original Slide Evaluation	Revised/Replacement Slide
	Add recommended dosage for pre-pregnant women	
	Add reminder to take prenatal vitamin	
	Add message to continue to take vitamin each day	
	Change photo to show folic rich foods	
	Emphasize enriched ready to eat cereals give you the folic acid you need. De-emphasize info on seal	
	Confusing message. Show folic acid as part of a multi-vitamin and note it is a B-vitamin (two new slides are used to convey the message)	

**Table 1. *Folic Acid* Evaluation: Respondent Demographics** <sup>a,b,c</sup>

		Full Sample (n=109)	Completers (n=74)	Low Income <sup>d</sup> (n=55)	Attriters (n=4)	Program Assistance (n=32)	Eating Competent (n=30)	Not Eating Competent (n=49)
<b>Mean Age y (SD)</b>		36.14 (11.9)	36.7 (12.0)	36.3 (11.8)	24.7 (1.3)	35.4 (11.4)	35.3 (10.2)	39.9 (11.9)
<b>BMI</b>	Underweight	0.9	1	4	N/A	0	3	0
	Normal	25	34	33	75	41	43	29
	Overweight	14	20	22	25	9	10	25
	Obese	29	45	42	N/A	47	37	43
<b>Assistance Program Use</b>	Supplemental Nutrition Assistance Program	28	27	40	50	69	31	27
	Women, Infants, and Children	21	19	29	50	50	28	16
	Cash Assistance Benefits	9	8	13	25	22	14	6
	Temporary Assistance for Needy Families	6	7	9	N/A	16	10	4
	Medical Assistance Benefits	23	22	33	50	56	24	23
	Medicaid	12	11	16	25	28	17	8
	Medicare Part D-Prescription Drug	8	7	11	25	19	7	8
	Low Income Home Energy Assistance Program	17	16	24	25	41	17	16
	Expanded Food and Nutrition Program	3	3	4	N/A	6	7	0
	Food Bank or Food Pantry	12	11	16	25	28	17	8

		Full Sample (n=109)	Completers (n=74)	Low Income <sup>d</sup> (n=55)	Attriters (n=4)	Program Assistance (n=32)	Eating Competent (n=30)	Not Eating Competent (n=49)
<b>Education</b>	Less than high school	0	0	0	0	0	0	0
	High School Graduate or GED	21	20	26	25	28	10	27
	Some college or 2-year degree	50	51	49	25	59	66	41
	4-year college degree	22	20	22	50	6	14	27
	Post-graduate college	8	8	4	N/A	6	10	6
<b>Number of children per household</b>	1 child	41	39	46	67	47	43	40
	2 children	32	32	35	33	26	21	40
	3 or more children	21	22	15	N/A	22	29	15
<b>Eating Competence</b>	Not eating Competent	73	62	69	60	63	N/A	N/A

<sup>a</sup> Numbers may not sum to 100 due to missing data

<sup>b</sup> All column data is from full sample with exception of Evaluation Non-Completers

<sup>c</sup> Table entries are percent with the exception of Row 1

<sup>d</sup> Low-income defined as sometimes, often or always worry about money for food OR any program use

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**Table 2. Opinion about *Folic Acid*<sup>a</sup>**

	<b>All program viewers (n=69)</b>	<b>Low income<sup>b</sup> (n=48)</b>	<b>Program Assistance (n=32)</b>	<b>Eating Competent (n=42)</b>	<b>Non-Eating Competent (n=27)</b>
<b>The program is easy to read</b>	90	87	84	93	88
<b>I learned a lot</b>	49	51	53	45	52
<b>The program was helpful</b>	66	67	59	62	69
<b>This show was interesting</b>	39	46	38	35	42
<b>I understood the information</b>	87	84	78	90	85
<b>I liked the pictures in the program</b>	53	53	47	41	61
<b>I would like to see more programs like this one</b>	47	53	53	31	56

<sup>a</sup> Table entries are percent<sup>b</sup> Low-income defined as use of any assistance program OR sometimes, often or always worrying about money for food"[Return to Report](#)