

Abstract

Everyone Needs Folic Acid (Folic Acid) is a 15-slide program that highlights the role of folic acid in health for all persons including pregnant and lactating women. Information is provided to assist in meeting dietary recommendations. Program assessment was accomplished in two stages: Stage 1 focused on the original program and Stage 2 evaluated response to revisions made following the Stage 1 assessment. A Facebook ad targeting low-income Pennsylvanians recruited participants to Stage 1. *Folic Acid* response was positive, but suggestions for a few slides warranted revisions to enhance salience for low-income persons. Respondents from the first evaluation who agreed to be contacted were emailed a survey link to evaluate the revised program. Responses informed final program development. *Everyone Needs Folic Acid* demonstrated face and content validity for SNAP-eligible persons.

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. Prior to use with SNAP-eligible persons, *Folic Acid* was evaluated for usefulness, comprehension and interest. Evaluation occurred in two stages. This report details procedures and outcomes of Stages 1 and 2 and provides support for use of *Folic Acid* with the targeted audience. This study was approved by The Pennsylvania State University Internal Review Board for the Protection of Human Subjects.

EVALUATION STAGE 1

Study Design: Cross-section, Online Survey

After completing an online survey that included food and eating behavior items, respondents were directed to view *Folic Acid* in a video loop, then linked to an online survey about program content and process features.

Recruitment: Facebook Ad

A Facebook ad, also called an impression (Figure) targeted persons between the ages of 18 and 55 years inclusive, who lived in Pennsylvania, spoke English and who noted “like” on their Facebook page that included any of the following key words or phrases: 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



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

Facebook estimated reach potential of this ad to be 201,380. 795 clicked on the ad; 14% (n=110) initiated the survey. Evaluations were completed by 66% (n=73) of unique respondents who started the survey.

Data Collection: Qualtrics Pro

Data were collected over 17 calendar days using an online survey (Qualtrics Pro, Provo, UT) hosted on a Pennsylvania State University server. Item format included Likert scales, heat map, ratings (via star or slider scales), and comment boxes. Participants completed questions about demographics (including SNAP-Education and Administration Reporting System items), cognitive behavior and food-related practices, then viewed *Folic Acid* as a video loop. After viewing the video the desired number of times, participants were directed to an online program evaluation.

Results:

Demographics

Most who agreed to participate were White with some post-secondary education (80%), either overweight or obese (43%) and only 27% were eating competent. Majority of households (53%) had 2 or more children under the age of 18. SNAP and medical assistance were utilized by 28% and 23%, respectively. In all 42% of respondents used at least 1 assistance program in the past year.

Low-income status, defined as using at least one assistance program OR reporting *sometimes, often, or always* worrying about

money for food, was applied to 51% (n=55) of the sample. Post-secondary education of the low-income participants was reported for 75% and 64% were overweight or obese. Only 31% were eating competent. Half of the households had 2 or more children. The most frequently utilized assistance programs were SNAP (40%) and medical assistance benefits (33%). Additional demographic details are available in [Table 1](#), at the end of this report.

Attitudes Toward *Folic Acid* Content

Respondents' attitudes toward program content were rated using a scale of 1 (Strongly disagree) to 7 (Strongly agree) for the following 3 statements: 1) The show 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 for all 3 items indicated a positive attitude toward program content. A score of 5.5 or higher was reported by 89%.

Opinions About *Folic Acid*

Seven program characteristics or learner responses were listed (shown in Table 2): Program is easy to read; I learned a lot; This program was helpful; This show was interesting; I understood the information;

Table 2. Opinion about *Folic Acid*^a

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

^a Table entries are percentages

^b Low-income defined as use of any assistance program OR sometimes, often or always worrying about money for food

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

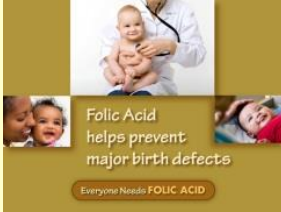

Comments About the Program:

- 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
- The show was very elementary

Why We Need Folic Acid

Benefits and positive effects of folic acid on health and well-being were emphasized in 3 slides. Respondents used a slider bar to rate importance of the intervention message from 1 (Not at all important) to 7 (Extremely important). These 3 messages resonated with respondents. 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 and concepts on the 3 slides were rated as very or extremely important by 78% to 92%.

Table 3. Rating the Importance of the Intervention Message ^a

			
Mean	6.22	5.94	6.23
Standard Deviation	1.11	1.85	0.98
Median	7.0	7.0	7.0
Range (1-7)	2-7	1-7	3-7


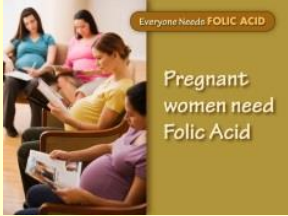

^a Respondents rated the importance of the message using a scale of 1 (Not at all Important) to 7 (Extremely Important)

Who benefits from taking folic acid?

Respondents viewed 3 slides about who benefits from folic acid and used a slider bar (from 1 [Not at all well] to 7 [Extremely well]) to rate how well they thought the message was presented. The majority of slide messages

were rated at very well or extremely well (Table 4) with a mean of 5 or higher for all 3 slides. However, one participant was negative about message presentation for all 3 slides, assigning each a rating of 1 (not at all well). Participants suggested revisions to these messages to enhance program benefit; revisions are described on page 6 of this report.

Table 4. Rating Message Effectiveness of Slides Denoting the Benefits of Folic Acid ^a

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

^a Respondents rated how well the message was presented using a scale of 1 (Not at all well) to 7 (Extremely well).

Sources of Folic Acid

Several slides emphasized good sources of folic acid. Respondents used a 7-point star rating system to rate how they felt about each of 5 slides; more stars meant a more positive rating. Four of the 5 slides were well received (Table 5) with a mean rating of 5 or more stars for at least 60%. A slide depicting a multi-vitamin bottle was less positively received with a mean rating less than 5 stars; 18% of respondents rated this slide with 4 or fewer stars.

One slide depicted an elderly couple eating a bowl of cereal. Viewers were directed to click on the area of the slide that first caught their attention. This “hot spot” rating strategy indicated that attention was directed to the seal image “100% Daily Value of Folic Acid”. Only 13% of respondents directed their attention to the enriched ready-to-eat cereal as a source of folic acid, suggesting the slide be revised.

Table 5. Appeal of Slides Showing Sources of Folic Acid ^a

					
Mean	5.56	5.58	4.85	5.60	5.70
Standard Deviation	1.44	1.49	1.69	1.39	1.55
Median	6.0	6.0	5.0	6.0	6.0
Range (1-7)	2-7	2-7	1-7	2-7	1-7

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

Are you getting enough folic acid?

Respondents provided comments after viewing a slide with the message “Are you getting enough folic acid?”

- It is a great slide, it reinforces the need for folic acid throughout our lives.
- liked the photos on the slide
- Different ethnic backgrounds of people and that men are included. . .
- It is very well designed in balance and cross-cultural diversity.

Respondents wanted to see healthier food choices, such as dark greens, with a more obvious connection to folic acid noting:

- It would be helpful if they were all eating food that was rich in folic acid.
- Focus on less processed food. . .
- It makes it seem like I can eat fast food and carbs and still get folic acid”.

End of Study Survey Comments

At survey closure respondents were invited to provide additional comments. Many commented that the program was easy to follow, informational and useful. Statements of program support included:

- 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.
- It is a great program and I will think of folic acid in feeding the various types of food for my family
- 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 folic rich foods, and add detail on vitamin sources of folic acid. Other themes that emerged from these comments included 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. Comments supported showing more natural sources of folic acid on one specific slide with processed food sources.

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 video loop speed was too slow and that the statement, "Everyone needs Folic Acid," on every slide was redundant and annoying.

Evaluation Summary

Overall, results indicated that although the original program was well received, revisions would improve the salience and interest levels of the target audience. Suggested improvements were to provide dosage information, increase pictures of folic acid rich foods and to decrease message redundancy.

EVALUATION STAGE 2

Background

Six *Folic Acid* slides were revised based on Stage 1 evaluation findings. Stage 2 is an evaluation of the revised *Folic Acid* program.

Study Design: Same sample post-test

The revised program was evaluated by the sample used in Stage 1.

Recruitment:

All Stage 1 completers consented to further study involvement. 73 email invitations were sent; 1 email was undeliverable and reminder emails were sent on 2 occasions to non-responders. Stage 2 (recruitment results are shown below:

Recruitment reach	n=72
Clicked on link	n=57 (79%)
Started survey	n=53 (74%)
Completed survey	n=50 (69%)

Data Collection: Qualtrics Pro

As in Stage 1, data for Stage 2 were collected using an online survey with Qualtrics (Provo, UT) and hosted on a Penn State server. The survey remained open for 12 calendar days. Revised slides were evaluated with survey items similar to those used in Stage 1. Participants recalled items from the original study, viewed the new program and evaluated the revised slides.




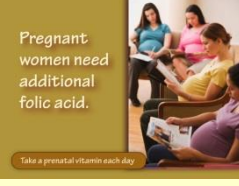


Results:

Who benefits from taking folic acid?

Respondents chose “original” or “revised” from 3 pairs of slides about who benefits from folic acid. The revised slide was chosen for 2 of the pairs (Table 6). The original slide (Women need Folic Acid even before they are pregnant) slide was preferred by Stage 2 participants.

The daily value seal was removed from the slide of a couple eating a bowl of cereal. The “Hot Spot” rating strategy identified that 60% respondents now directed their attention to the ready-to-eat cereal image.

Table 6. Preference Selection of Original versus Revised Slides Denoting Benefits of Folic Acid

Original Slide	Respondent Preference	Revised Slide
 <p>(n=32)</p>	Respondents preferred the <u>original</u> slide (63%) over the revised slide (37%)	 <p>(n=19)</p>
 <p>(n=21)</p>	Respondents preferred the <u>revised</u> slide (58%) over the original slide (42%)	 <p>(n=29)</p>
 <p>(n=19)</p>	Respondents preferred the <u>revised</u> slide (61%) over the original slide (39%)	 <p>(n=30)</p>

Slide: Sources of Folic Acid

As in Stage 1, several slides emphasized sources of folic acid. Respondents compared the original slide depicting a vitamin bottle with 2 new slides options: Option 1 showed a vitamin bottle and enriched flour as sources of folic acid, revised slide 2 showed multiple vitamin type bottles as sources of folic acid. Both revised slides also included the message that folic acid is a B complex vitamin. A 7-point star rating system to indicate how much each slide was liked. As shown in Table 7, the original slide ranked higher than either of the 2 new options. With 5 or more stars in 58% of the cases. Option 1 (enriched flour and vitamin

bottle) received 5 stars or better in 35% of the cases, and the Option 2 (multiple vitamin bottles) received 5 stars or better in 46% of the cases.

Further analyses clarified slide preference for the original slide. Case summary analysis indicated 40% of respondents (n=20) scored the original slide at least 2 points higher than Option 1, and 24% (n=12) scored this Option 2 points higher than Option 2. Only 12% (n=6) scored the Option 2 at least 2 points higher than the original slide. A small percentage (16%) of the respondents gave the same score to all 3 slides (uniform scores ranged from 2-6).













Table 7. Vitamin Bottle Slide Ratings

	Original Slide	Option 1	Option 2
Mean	4.63	3.79	4.38
Standard Deviation	1.69	1.62	1.82
Median	5.0	4.0	4.0
Range (1-7)	1-7	1-7	1-7

Revisions were made to slides as appropriate based on respondent comments, evaluation,

and research team discussions (Table 8). The revised program reflects these changes.

Table 8. Slide Decision Rationale

Original Slide	Decision Rationale	Revised Slide
	Majority of respondents indicated a preference for original slide. Keep <u>original</u> slide.	
	Majority of respondents indicated a preference for revised slide. Keep <u>revised</u> slide.	
	Majority of respondents indicated a preference for revised slide. Keep <u>revised</u> slide.	
	Slide revised to show folic rich foods. Keep <u>revised</u> slide.	
	Revised slide emphasis on cereal bowl. Keep <u>revised</u> slide.	
	Respondents preferred original slide over the 2 alternates. Keep <u>original</u> slide.	

Original Program Recall

Stage 2 respondents were asked if they had applied any of the information from the original program; 72% (n=53) of the respondents indicated they had applied information to themselves or their family.

- They ate more whole grains and fresh vegetables;
- increased leafy greens;
- added more whole grain;
- read more labels than previously; and
- now take folic acid and vitamin supplements.

When asked if they recalled any information about the original program: 27% indicated yes, they remembered a lot, 45% indicated they remembered some, and 28% indicated little or no information recall.

Majority of commenters recalled that:

- Everyone needs folic acid.
- Folic acid can be found in leafy greens and whole grains
- it is important for pregnant women.
- Men and women need folic acid.
- It is found in most enriched foods.

Recommending *Folic Acid*

Stage 2 respondents were asked if they would recommend the program on folic acid: 96% indicated they would and that they would offer to:

- co-workers, family and friends
- women of child-bearing age, everyone, since everyone needs folic acid
- friends and family planning on having babies
- young pregnant women and teens

Respondents also made suggestions about where to show the program:

- welfare offices
- hospital waiting rooms
- physician and pediatric offices
- libraries
- counseling offices.

Conclusions

Everyone Needs Folic Acid, offered using a digital photo frame platform, has been evaluated by the target audience and shown to be useful, informative, valuable and of interest to the target audience. Queries about original program content in a subsequent evaluation indicated retention and application of information in *Everyone Needs Folic Acid*. Assessment of the program, which was revised according to participant input, demonstrated that respondents valued the information. A 2-stage evaluation demonstrated revisions to 4 of the original slides increased usefulness, comprehension, and interest for low-income adults. Recall comments indicated retention and application of information presented in the program. These revisions have been made and are included in the posted program. This program is available to view or download at www.needscenter.org/projects/neframes/#foliceng.

A manuscript related to this report is published in the *Journal of Medical Internet Research: Research Protocols*. Access at: <http://www.researchprotocols.org/2013/2/e27/>

Table 1. Folic Acid Evaluation: Respondent Demographics ^{a,b,c}

		Completers (n=73)	Attriters (n=4)	Program Assistance (n=32)	Eating Competent (n=29)	Not Eating Competent (n=48)
Mean Age y (SD)		36.7 (12.0)	24.7 (1.3)	35.4 (11.4)	35.3 (10.2)	39.9 (11.9)
BMI	Underweight	1	N/A	0	3	0
	Normal	34	75	41	43	29
	Overweight	20	25	9	10	25
	Obese	45	N/A	47	37	43
Assistance Program Use	Supplemental Nutrition Assistance Program	27	50	69	31	27
	Medical Assistance Benefits	22	50	56	24	23
	Women, Infants, and Children	19	50	50	28	16
	Low Income Home Energy Assistance Program	16	25	41	17	16
	Medicaid	11	25	28	17	8
	Food Bank or Food Pantry	11	25	28	17	8
	Cash Assistance Benefits	8	25	22	14	6
	Temporary Assistance for Needy Families	7	N/A	16	10	4
	Medicare Part D-Prescription Drug	7	25	19	7	8
	Expanded Food and Nutrition Program	3	N/A	6	7	0

		Completers (n=73)	Attriters (n=4)	Program Assistance (n=32)	Eating Competent (n=29)	Not Eating Competent (n=48)
Education	Less than high school	0	0	0	0	0
	High School Graduate or GED	20	25	28	10	27
	Some college or 2-year degree	51	25	59	66	41
	4-year college degree	20	50	6	14	27
	Post-graduate college	8	N/A	6	10	6
Number of children per household	1 child	39	67	47	43	40
	2 children	32	33	26	21	40
	3 or more children	22	N/A	22	29	15
Eating Competence	Not eating Competent	62	60	63	N/A	N/A

^a Numbers may not sum to 100 because of missing data

^b All column data are from full sample with exception of Attriters

^c Table entries are percentages with the exception of mean age.

Return to Report