

8-1-2001

## Consumer Understanding of the Food Guide Pyramid and Dietary Guidelines

Cynthia Reeves Tuttle

*University of Maryland*, [ct88@umail.umd.edu](mailto:ct88@umail.umd.edu)



This work is licensed under a [Creative Commons Attribution-Noncommercial-Share Alike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/).

---

### Recommended Citation

Tuttle, C. R. (2001). Consumer Understanding of the Food Guide Pyramid and Dietary Guidelines. *The Journal of Extension*, 39(4), Article 7. <https://tigerprints.clemson.edu/joe/vol39/iss4/7>

This Feature Article is brought to you for free and open access by the Conferences at TigerPrints. It has been accepted for inclusion in The Journal of Extension by an authorized editor of TigerPrints. For more information, please contact [kokeefe@clemson.edu](mailto:kokeefe@clemson.edu).



August 2001 // Volume 39 // Number 4 // Feature Articles // 4FEA5



PREVIOUS  
ARTICLE



ISSUE  
CONTENTS



NEXT  
ARTICLE

## Consumer Understanding of the Food Guide Pyramid and Dietary Guidelines

### Abstract

The Food Guide Pyramid and the Dietary Guidelines are tools commonly used in nutrition education. The Pyramid has become a highly visible marketing tool, and related consumer awareness is quite high. The study reported here compared perceived consumer awareness of these tools with consumers' ability to relate the information they impart. The results indicate that, although awareness and perceived knowledge of the content of the tools is high (100%), the ability to identify food groups, appropriate number of servings, and dietary guidelines is surprisingly low and not consistent with their perceptions. These findings indicate important areas of emphasis for Extension nutrition education efforts.

### Cynthia Reeves Tuttle

Nutrition Extension Specialist and Assistant Professor  
Department of Nutrition and Food Science  
University of Maryland  
College Park, MD  
Internet Address: [ct88@umail.umd.edu](mailto:ct88@umail.umd.edu)

### Introduction

The Food Guide Pyramid and Dietary Guidelines are the foundation tools of nutrition education provided by Extension professionals and others across the United States. The Food Guide Pyramid has now been adapted for vegetarians and preschoolers, and modified to represent popular Chinese, Italian, and Mexican foods in this country, and further adaptations of it have become foundation dietary tools for many other countries, as well. The Food Guide Pyramid is also highly visible as a marketing tool for the food industry. It is seen in television advertising and is often prominently displayed as part of food packaging.

Awareness of the Food Guide Pyramid rose from 33% to 43% between the 1994 and 1995 Health and Diet Surveys, and it was recognized more frequently than either the Dietary Guidelines or the 5-A-Day program of the National Cancer Institute. In addition, 58% reported awareness of the Food Guide Pyramid according to the 1995 Nutrition Trends Survey of the American Dietetic Association.

The Dietary Guidelines are probably not used as frequently in nutrition education as the Food Guide Pyramid, but they are also a foundation tool and are reviewed and revised by a committee of nutrition professionals every 5 years. With such wide use and visibility of these popular nutrition education tools, educators may be tempted to assume that consumers are intimately familiar with the concepts being promoted. Do consumers really understand how to apply these concepts to their own eating behaviors?

### Methods

Observational data collected during a nutrition promotion class for a group of university administrative staff indicated a lack of understanding among these participants, a disconnect between their awareness of these tools and their perceived ability to apply them to their own lives.

Although this was a basic nutrition class, the intent was not to spend a great deal of time on topics that were already familiar to the target audience, so a pretest was devised to determine their current knowledge of the Food Guide Pyramid and the 1995 Dietary Guidelines. (The 2000 version of the Dietary Guidelines was not yet available at the time of this study.) The assumption was that

participants would have had multiple exposures to both of these nutrition education tools due to their wide availability and use in the media, and more recently as a part of food packaging and promotion.

All participants were asked the following questions at the beginning of the session.

- "How many of you know the food groups and serving sizes of the Food Guide Pyramid?"
- "How many of you know the Dietary Guidelines?"

One hundred percent of all participants raised their hands in response to each question, indicating that awareness was high. Although the author recognizes that peer responses may have influenced the responses of some participants, most people seemed to be very familiar with both tools.

After these initial questions, each participant was given a piece of paper that contained a series of seven blank lines with the title "Dietary Guidelines" at the top and a blank triangle titled "Food Guide Pyramid" divided accordingly, at the bottom of the page. Participants (Consumers) were then asked to fill in food groups and their serving sizes within the Food Guide Pyramid and to list the Dietary Guidelines. Using methodology similar to Guthrie and Derby, any answer within the serving range for each food group was accepted as correct. Only 10 of the 18 participants submitted the pretest form, resulting in an approximate 60% response rate.

The same pre-test, including the initial questions, and a subsequent post-test were then conducted during a mandatory nutrition training for EFNEP Assistants in Maryland. These paraprofessionals provide nutrition education to low-income families throughout the state on a daily basis, and the curriculum they use relies heavily on teaching concepts related to both the Food Guide Pyramid and the Dietary Guidelines. EFNEP Assistants often have minimal formal education, are peers of the people to whom they are providing services, and are generally trained in nutrition by supervising Extension Educators and Specialists.

## Results

The results for the Food Guide Pyramid were decidedly better than for the Dietary Guidelines among both groups. In the first group of consumers, 70% of respondents were able to correctly identify at least four food groups. However, none of the respondents were able to provide correct number of servings for the food groups, and only one respondent correctly identified where the food groups were located within the pyramid. Forty percent simply listed the food groups at the side of the pyramid and didn't attempt to try to categorize them within the pyramid itself (Table 1). None of the Consumer respondents were able to name any of the Dietary Guidelines (Table 2).

**Table 1**  
Consumer Responses to the Food Guide Pyramid

<b>Food Groups* (N=10)</b>	<b>No. Identified Correctly N(%)</b>	<b>No. with Correct Servings N(%)</b>
Fat/Sweets	4 (40)	0
Dairy	7 (70)	0
Meat/Protein	6 (60)	0
Fruit	8 (80)	0
Vegetable	7 (70)	0
Grain	8 (80)	0

\*Percents rounded to nearest whole number

Among the EFNEP group, 100% of the 26 participants also responded positively to both questions when asked verbally at the start of the session. Awareness was quite high because these tools are very familiar to the EFNEP Assistants.

However, when asked to complete the pretest, only 27% of the EFNEP Assistants were able to correctly list four or more of the Dietary Guidelines. Fifteen percent listed two of the guidelines, 19% identified only one, and 38% of the participants were unable to list any of the Dietary Guidelines on the pretest.

**Table 2**  
Identification of Dietary Guidelines

<b>No. Guidelines Identified Correctly*</b>	<b>Consumer Pretest N (%)</b>	<b>EFNEP Pretest N (%) N=26</b>	<b>EFNEP Post- Test N (%)N=27</b>
7	0	0	3 (11)
6	0	2 ( 8)	6 (22)
5	0	3 (11)	6 (22)
4	0	2 ( 8)	5 (18)

3	0	0	3 (11)
2	0	4 (15)	2 ( 7)
1	0	5 (19)	1 ( 4)
0	10 (100)	10 (38)	1 ( 4)

\*Percents rounded to nearest whole number

On the Food Guide Pyramid, approximately 92% of the respondents were able to correctly identify the dairy, fruit, and vegetable food groups; 88% correctly identified meat and grains/cereals; and 76% correctly identified the fats/sweets group. Identification of the correct number of servings was 50% for the dairy group, 69% for the meat group, 31% for the fruit group, 53% for the vegetable group, and 65% for the breads and cereals group.

The participants were also asked to specify serving sizes for preschool children, because the training session focused on this age group. (A preschool child-size serving for the bread, vegetable, or fruit group is 2/3 of an adult-size serving and for the milk or meat group is 1/2 of an adult-size serving.). None of the respondents were aware of differing serving sizes for this age group.

Following the training on the use of these dietary tools with preschool children and their parents, the post-test results indicated some improvement. The number of posttests submitted was 27. (One person arrived late and was unable to complete the pretest.) Fifty-five percent were now able to correctly list five or more of the Dietary Guidelines, 38% were able to list between two to four, and only 7% listed zero or one of the guidelines.

On the Food Guide Pyramid, approximately 88% of the respondents were able to correctly identify the dairy, fruit, and meat food groups; 85% correctly identified vegetables and grains/cereals; 77% correctly identified the fats/sweets group; and 7% did not complete the pyramid. Identification of the correct number of servings was 63% for the dairy group, 74% for the meat group, 52% for the fruit group, 59% for the vegetable group, and 74% for the breads and cereals group.

Even though the participants had a copy of the children's food guide pyramid with the correct number of servings and comparable serving sizes to refer to at the time of the posttest, only 26% of the respondents were able to correctly identify the number of servings for preschoolers for the dairy, meat and grain groups. Four percent correctly identified the preschool serving size for the fruit and vegetable groups.

**Table 3**  
EFNEP Assistants' Responses to the Food Guide Pyramid

Food Groups*	No. Correct Groups (Pre) N=26 N (%)	No. Correct Groups (Post) N=27 N (%)	No. Correct Svgs. (Pre) N(%)	No. Correct Svgs. (Post) N(%)	No. Correct Child Svgs. (Pre) N(%)	No. Correct Child Svgs. (Post) N(%)
Fats/Sweets	20 (77)	21 (77)	-	-	-	-
Dairy	24 (92)	24 (88)	13 (50)	17 (63)	1 (4)	7 (26)
Meat/Protein	23 (88)	24 (88)	18 (69)	20 (74)	1 (4)	7 (26)
Fruits	24 (92)	24 (88)	8 (31)	14 (52)	0	1 ( 4)
Vegetables	24 (92)	23 (85)	14 (53)	16 (59)	0	1 ( 4)
Grains	23 (88)	23 (85)	17 (65)	20 (74)	0	7 (26)

\* Percents rounded to nearest whole number

## Discussion

Extension nutrition educators are often called upon to provide a variety of informative nutrition classes, but the exposure may be limited to one session with limited time available for conducting pre- and post-tests. As a result, educators may be providing these sessions without adequate knowledge of the skills, behaviors, or knowledge of their target audiences. Many educators may assume that certain knowledge, especially that which has existed for some time or is widely disseminated via the media, such as the Food Guide Pyramid and the Dietary Guidelines, is universally known.

EFNEP Assistants often see their clients several times during the course of their program, and therefore have a greater opportunity to assess the knowledge, attitudes, and behaviors of their participants and tailor their sessions accordingly.

The Maryland EFNEP program currently uses the Eating Right Is Basic 3 (ERIB3) curricula, with supplementary materials, to provide nutrition education to low income families in this state. The 24-hour dietary recall is effectively serving as the pre- and post-test. In addition, there is a 10-question pre- and post-behavior checklist administered upon entrance to the program and again at the end of the program, which is generally 8 to 12 months later.

The 24-hour recall tries to gauge improvement in dietary practices as a result of the EFNEP nutritional intervention program. The behavior checklist is designed primarily to assess the participants' behavior changes over the course of the program, but not actual changes in their base knowledge or understanding of the concepts presented during the lessons. There is a clear opportunity for the development and use of additional evaluation tools within the Maryland EFNEP program in order to better assess the changes in knowledge, attitudes and behaviors of the participants.

The Food Guide Pyramid appears to be familiar to most people; however, when asked to provide detail on the food groups and appropriate number of servings, the skills of the consumer group of office administrators and the EFNEP paraprofessionals were not equal to their perceived knowledge of the dietary tool. Anecdotally, this also seemed to be a surprise to the respondents.

Although a high percentage were able to correctly name at least four food groups, for many in the consumer group, the pyramid design didn't seem to be associated with this knowledge, and it may even have been confusing. A large percentage of the respondents listed the food groups outside of the pyramid, and there was no apparent connection made between the shape of the pyramid and the increasing number of servings in each group from the top to bottom of the pyramid. Indeed, listing of appropriate numbers of servings appeared to be beyond the ability of all of the consumer respondents.

In 1998, Guthrie and Derby reported the results of their analysis of changes in consumers' knowledge of Food Guide Pyramid recommendations. Table 4 compares their results obtained from the 1994-95 Diet and Health Knowledge Survey with those reported by the EFNEP Assistants (post-tests).

**Table 4**

Comparison of 94-95 Diet and Health Knowledge Survey Results with EFNEP Assistants

<b>Food Groups</b>	<b>DHKS 94-95 % Serving Correspondence</b>	<b>EFNEP Asst. % Serving Correspondence</b>
Dairy	59	63
Meat/Protein	60	74
Fruits	74	52
Vegetables	55	59
Grains	8	74

The difference in the consumer response could have been due to the small sample size, but may be indicative of a lack of knowledge among certain groups, nonetheless. Results listed in Table 4 are comparable for all food groups except Grains, where there appears to be a much greater awareness of the number of servings among the EFNEP Assistants than among average consumers.

The EFNEP Assistants were more knowledgeable of the food groups within the Food Guide Pyramid and their associated numbers of servings than the consumers in this study, although training is still needed as to how numbers of servings and serving sizes may differ for specific target groups.

On the surface, knowledge of the Dietary Guidelines was virtually nonexistent among the consumer group and minimal among the EFNEP Assistants. Anecdotally, many participants in both groups actually recognized the individual guidelines as they were discussed during the sessions. For example, most were aware of the recommendations to reduce fat and sodium in their diets; however they did not seem to associate the title, "Dietary Guidelines," with the recommendations themselves.

## **Conclusions**

Although awareness of the Food Guide Pyramid and the Dietary Guidelines appears to be high among consumers and EFNEP Assistants, greater emphasis needs to be placed on conveying the content of these tools and helping people to apply them to their own eating behaviors. This study was limited both by the small sample size and the ability to translate the result to a population other than that studied. Nonetheless, it raises questions as to consumer awareness of these dietary tools versus their understanding and ability to apply them in their own lives.

EFNEP Assistants have a unique opportunity to provide ongoing nutrition education to their clients, but these results illustrate the need for ongoing training and support around the basics of both the Food Guide Pyramid and the Dietary Guidelines for our "frontline" nutrition paraprofessionals. More research should be conducted to determine whether these results may be representative of the larger population. But it appears that there is a strong disconnect between awareness of these popular nutrition tools and the ability to actually understand and apply the information contained in each tool to an individual's dietary knowledge and subsequent behaviors.

The results of this study may have further implications for teaching of the recently released 2000 Dietary Guidelines because there were a number of changes from the 1995 edition. The number of

guidelines increased from seven in 1995 to 10 in 2000. Two of the 1995 guidelines were actually separated into a total of four separate guidelines, and only one new guideline was added, "Keep food safe to eat."

The impact for consumers and nutrition educators, however, is that there are more guidelines to remember than ever before. In order to try to address this and make them more memorable to consumers, they have been clustered into three groups: Aim for Fitness, Build a Healthy Base, and Choose Sensibly. This grouping theme also organizes the guidelines into an easy-to-remember "ABC's for good health" format.

Extension faculty can start to bridge the gap between awareness and knowledge of the Food Guide Pyramid and Dietary Guidelines by developing and using simple pre- and post-tests directly related to the topics being taught. This will allow them to assess the knowledge and skill base of their target populations and the effectiveness of their sessions. Greater use of activities, more applied examples, and increased use of food models or actual foods for serving sizes during educational sessions may also help to reinforce the concepts inherent in the application of these well-recognized, but perhaps underused, dietary tools among the general population.

## References

American Dietetic Association. (1995). 1995 nutrition trends survey: Executive summary. Chicago, IL: American Dietetic Association.

Cornell University. Vegetarian Food Guide Pyramid. Available: <http://www.news.cornell.edu/photos/vegdietyramid300.GIF>

Dietary Guidelines Review Committee. (2000). Available: <http://www.ars.usda.gov/dgac/>

Guthrie, J. F. & Derby, B. (1998). Changes in consumers' knowledge of food guide recommendations, 1990-91 versus 1994-95. *Family Economics and Nutrition Review* 11(4):42-48.

Levy, A. S. & Derby, M. M. (1995). Food label use and nutrition education survey: Selected results prepared for the dietary guidelines advisory committee. Paper prepared for the dietary Guidelines Advisory Committee, Washington, DC (March).

USDA. (2000). Dietary Guidelines. Available: <http://www.nal.usda.gov/fnic/dga/>

USDA. (1999). Preschool Food Guide Pyramid. Available: <http://www.usda.gov/cnpp/KidsPyra/index.htm>

*Copyright © by Extension Journal, Inc. ISSN 1077-5315. Articles appearing in the Journal become the property of the Journal. Single copies of articles may be reproduced in electronic or print form for use in educational or training activities. Inclusion of articles in other publications, electronic sources, or systematic large-scale distribution may be done only with prior electronic or written permission of the [Journal Editorial Office, joe-ed@joe.org](mailto:joe-ed@joe.org).*

If you have difficulties viewing or printing this page, please contact [JOE Technical Support](#)