Attitudes, Beliefs, and Barriers Related to Milk Consumption in Older, Low-Income Women

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ABSTRACT

Objective: To determine attitudes, beliefs, and barriers related to adequate milk consumption in low-income women ages ≥ 60 years.

Methods: Nine focus groups were conducted with a convenience sample of 59 women at congregate meal sites in a metropolitan area. Grounded in Social Cognitive Theory, focus group questions were used to explore personal, behavioral, and environmental factors associated with milk consumption.

Results: Key response themes indicated a positive attitude for the taste of milk (except for low-fat), a primary belief that milk was important for bones and health, and a primary barrier of gastrointestinal side effects.

Conclusions and Implications: Knowledge regarding the benefits of milk and the dislike of its taste were not the primary reason for the lack of consumption. Instead, gastrointestinal side effects seemed to be the major barrier to adequate consumption. Future nutrition campaigns should test strategies for lactose intolerance management when communicating with low-income older women.

Key Words: low-income population, milk, older adults, women, calcium (*J Nutr Educ Behav*. 2014;46:554-559.)

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INTRODUCTION

Milk and milk products contribute significant amounts of calcium, vitamin D, magnesium, potassium, phosphorus, vitamin B_{12}, riboflavin, and vitamin A to the diet.[1,2] According to the Dietary Guidelines for Americans (DGA), calcium, vitamin D, and potassium, all nutrients found abundantly in fluid milk, are current nutrients of public health concern.[2] However, many Americans, especially older females, are not consuming adequate amounts of milk and milk products in their diet.[2] Specifically, women age ≥ 50 are drinking only an average of 0.5 cups/d, and the proportion of adults ages ≥ 50 years who drink fluid milk has significantly decreased over time.[1] As a related consequence of inadequate milk and milk product consumption, < 10% of women > 51 years of age are meeting the recommended amount of calcium per day.[3]

Adequate consumption of milk and milk products, especially lower-fat versions, and/or calcium intake has been previously associated with the reduced risk of osteoporosis, high blood pressure, stroke, and some cancers in older adults.[4-8] With the number of adults age ≥ 65 years expected to grow to 20% of the population by 2030,[9] attention to health care and quality of life has become a pressing issue. Steps to prevent and manage disease through non-pharmacological interventions for older adults, such as improvements in diet quality, are now even more urgent.[2] These concerns are further escalated in populations (eg, low-income) who tend to have lower-quality diets[10] and therefore are at a disproportionate risk for chronic diseases.[7,11]

Dislike for the taste of milk, self-perceived lactose intolerance, concern for fat content, lack of knowledge, and lack of concern for meeting calcium needs are reasons cited for why adult women are not consuming the recommended amount of milk and milk products each day.[12-14] Inadequate milk and milk product consumption may also be related to barriers stemming from one's culture and community.[15] To better comprehend the reasons why older, low-income women do not consume adequate milk and milk products, Bandura's Social Cognitive Theory[16] provides a framework for understanding the interaction of behavior, personal factors, and the environment.[17] Furthermore, researchers have noted that addressing an individual's attitude and belief systems is important, particularly in regard to milk and milk product consumption.[14,18] Accounting for attitudes, beliefs, and barriers surrounding milk and milk product consumption in older, low-income women may help provide a more complete picture of their decision-making process regarding consumption of these foods.

Previous data related to milk and milk product consumption habits in

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older adults have been collected using questionnaires.[12-14,18] Although this method is cost-effective and frequently used, a qualitative approach such as the use of focus groups provides an opportunity to elicit thoughtful responses through open-ended questions that may not otherwise be captured in a questionnaire.[19] Focus groups are a key example of formative research, which can be instrumental in developing an effective campaign or intervention.[19] In preparation for a future social marketing campaign, focus groups were conducted with low-income women age ≥ 60 years to determine the overarching attitudes, beliefs, and barriers regarding milk and milk consumption based on personal, behavioral, and environmental factors. Although cheese and yogurt were not completely excluded from the study, the main objective was to focus on fluid milk because (1) consumption patterns of milk and milk products has changed over time with less fluid milk but more cheese being consumed[20]; (2) fluid milk (low-fat or non-fat) is lower in sodium and saturated fat, and therefore more nutritious than cheese; and (3) ample time was needed to focus on and understand behaviors related to 1 milk or milk product because reasons for inadequate consumption may vary across foods or beverages.

Table 1. Focus Group Questions

Personal factors
Why do you drink milk?
Is there anything that ever prevents you from drinking milk?
Do you have any specific health concerns related to drinking milk?
Do you have any specific health concerns related to not drinking milk?
Behavioral factors
What beverages do you drink most often?
When do you typically drink milk?
Do you use milk in other ways in addition to drinking it by itself?
Environmental factors
Do your friends or family drink milk?
Do you make your own meals?
Is milk available during your meals to drink?
Do you have any problems with milk spoiling?

METHODS

Participants and Recruitment

A convenience sample of low-income women age ≥ 60 years was recruited from 7 congregate meal sites in an Indiana metropolitan area during the summer, 2010. Recruitment sites were included only if they also were previously approved Supplemental Nutrition Assistance Program–Education eligible sites, based on the population attending or living at congregate meal locations. The authors selected this target population because preliminary research indicates that women age ≥ 51 years are more likely to have diets lacking in calcium and are more likely to take a calcium supplement than their younger adult counterparts.[3,21] Once women expressed interest in participating, they were contacted by phone to schedule a time for the focus group. Inclusion criteria for the study were: female and minimum age of 60 years, participation in a congregate meal program and/or residence in low-income apartment housing, and ability to speak English. The Purdue University Human Subjects Institutional Review Board deemed this study exempt. Informed consent was not required as part of this exemption.

Procedures

The authors developed a set of 11 focus group questions (Table 1) to explore personal, behavioral, and environmental factors related to milk and milk product consumption, based on the key constructs of Bandura's Social Cognitive Theory (SCT).[16] Questions reflected personal factors (eg, health concerns), behavioral factors (eg, beverages frequently consumed), and environmental factors (eg, availability of milk) that have been previously related to milk consumption in adults and were included in a previous formative research study targeting the same audience.[12,13,18,21] The 3 interacting domains of SCT (personal, behavioral, and environmental factors) have been recognized in explaining human behavior[17] and were a focus of previous research exploring factors associated with calcium and milk and milk product intake.[22,23] Additional questionnaires were used to quantify attitudes toward the taste of milk and milk products (Table 2) and general demographic characteristics. The interviewer read these questionnaires aloud at the beginning of each focus group.

Using the focus group facilitation techniques of Krueger and Casey,[19] an experienced focus group moderator led each group and another researcher assisted the moderator in taking notes. Focus groups were audio-taped. Each participant received a small gift as an incentive for her time, worth < $10. After the ninth focus group, the primary researcher or focus group moderator determined that saturation was met, as indicated by the repetition of key responses and the lack of new information reported during the latter focus groups.

Data Analysis

Focus group audio tapes were transcribed verbatim by 1 team member and verified by the lead researcher (A.M.). The study team, consisting of 4 members, independently analyzed the transcripts using the classic analysis strategy with standard word processing software, as described by Krueger and Casey.[19] Question response themes were coded and summarized for frequency among focus groups by each team member. Overarching themes related to milk and milk product consumption were derived from the transcripts. Once all transcripts were analyzed, the study team convened to discuss common findings and confer major response themes specific to beliefs and barriers related to milk consumption (Table 3).

Table 2. Participants' Attitudes Toward Taste of Milk and Milk Products (n = 58)

Attitude	Strongly Disagree, n (%)	Disagree, n (%)	Neither Agree or Disagree, n (%)	Agree, n (%)	Strongly Agree, n (%)
I like the taste of milk	2 (3)	3 (5)	4 (7)	22 (38)	27 (47)
I like the taste of yogurt	6 (10)	7 (12)	4 (7)	22 (38)	19 (33)
I like the taste of cheese	2 (3)	0 (0)	1 (2)	25 (43)	30 (52)

RESULTS

A total of 59 women participated in 9 focus groups, with an average of 6 women/group. Participants were on average 73.8 ± 8.1 years of age, with a high school degree or less education (72%). Most women were non-Hispanic (98%) and black (56%). The majority of women reported having children (83%), grandchildren (80%), and great-grandchildren (66%).

Attitudes Toward Taste

Most women liked the taste of milk and milk products (Table 2). One important exception was a negative attitude toward non-fat and low-fat milk. Several women referred to lower-fat fluid milk as "blue milk," "colored water," "watered-down milk." As stated by participants:

> *I don't want 2% or skim or whatever you are saying. It all looks like chalk water.* (FG1, white participant)

> *I drink nothing but whole milk when I drink milk because I have a friend that drinks, like [sic], skim milk and it is just like water and it is really gross to me.* (FG3, black participant)

Attitudes toward lower-fat milk could sometimes be altered, but not always, when accompanied by a physician's recommendation, as indicated by some participants:

> *I am the type of person that anything the doctor tells me that is going to help me, I am willing to try and most of the time I eat it.* (FG2, black participant)

> *I was told to drink low-fat milk, but I don't like it.* (FG3, white participant)

Beliefs

The primary belief or reason cited for milk consumption was "good for bones/osteoporosis prevention/good for you/health" and often, what the doctor recommended (Table 3):

> *I drink it because I got osteoporosis and the doctor says it will strengthen my bones. That is why I keep on drinking it.* (FG3, white participant)

However, the value of milk at an older age was sometimes questioned.

> *I think when you get older you don't feel that milk is that valuable to you. You know it is valuable to children, but as you get older you feel that it is not valuable to you.* (FG8, white participant)

Other commonly cited reasons for drinking milk included its calcium content. Nutrient components of milk other than calcium (eg, vitamin D) were rarely or never mentioned.

Some negative beliefs, although mentioned less frequently, included perceived high cholesterol and the sugar content of milk and its potential to cause weight gain.

Barriers to Consumption

Barriers to milk consumption were primarily related to personal factors such as gastrointestinal issues and perceived lack of benefit at an older age (Table 3). Of these, the primary barrier cited for not consuming milk were real or perceived gastrointestinal

Table 3. Participant Beliefs and Barriers Regarding Milk and Milk Product Consumption

Participant Beliefs	Participant Barriers
Positive	**Barriers that prevented consumption**
Good for bones/osteoporosis prevention	Gastrointestinal side effects
Good for you/health	Not raised on milk/not a habit to drink milk
Tastes good	Do not need/value milk at older age
Has calcium	Run out of it/forget to buy it/unable to go to store to purchase
	Do not like it/taste
Negative	**Barriers that may or may not prevent consumption**
Causes gas, diarrhea, bloating	Cost
Could increase blood cholesterol	Spoils/sours
Questionable treatment of how cows fed/treated	
Could cause weight gain	
Contained sugar	

Note: In descending order of reported frequency.

side effects including gas, bloating, and diarrhea. Regardless of race, participants repeatedly mentioned negative associations with the consumption of milk products, particularly fluid milk:

> *I like milk but it don't [sic] like me.* (FG2, black participant)

> *If I know that I am going to be out in public I won't drink it because it will make you gassy. I don't want to be doing that in front of people.* (FG2, black participant)

> *If I am going somewhere, I won't have my cereal because I can't get too far from the restroom.* (FG7, white participant)

> *You know we have that bad digestive track anyway and as we get older, the milk products give us a lot of gas. That is why in a sense we go to different products than milk.* (FG7, white participant)

Although some behavioral (lack of habitual intake) and environmental themes (cost and milk spoilage) emerged during analysis, they appeared to have less of an influence on milk consumption.

Some women cited that they were just not raised drinking milk or not in the habit:

> *I think milk is one of the things that you have to be raised up drinking, so milk should become a habit because you are used to it.* (FG4, black participant)

The cost of milk was also a deterrent to consuming milk for some women, but not all:

> *I run out of money so I simply just sit up there with cereal and I will just eat it dry. I will just have to wait.* (FG7, white participant)

> *I think it is just like gasoline; you know it is there, that is the price. You either pay it or stay home. You don't like the price sometimes just like I don't like what I pay for bread either.* (FG8, white participant)

Milk's perishable quality was mentioned but not a primary barrier to consumption:

> *I usually freeze mine. I buy it cheaper by the gallon and then fill a quart bottle and put the rest in the freezer, when it is time to use it then it doesn't have a chance to spoil.* (FG5, white participant)

> *When my milk is sour I usually keep it sometimes and make (corn) bread with my milk.* (FG4, black participant)

The questionable treatment of cows and hormones in milk were sometimes mentioned but did not appear to be a primary barrier to consumption. Cow's milk was the primary focus of the study; however, other types of milk were sometimes mentioned, such as soy and almond milk. Yet, women who drank or used alterative milks often still purchased or consumed cow's milk for specific uses such as on cereal.

Most women were in charge of their own meal preparation and did not report a strong influence of others on their milk consumption. Although milk was often available during meals either at home or away, several women mentioned that they did not drink milk when eating out.

Other beverages were commonly consumed more than milk, such as water, coffee, iced tea, soft drinks, and juice. When consumed, participants drank milk or added it to foods in the morning (eg, with cereal), with dinner, with desserts, during cooking, or before bed (eg, sleep aid). Women who drank milk only with sweet foods did not drink milk if they had to limit the corresponding sweets.

> *I can't have the sweets, so after I eat my dinner, there is no dessert so I don't fool [sic] with the milk.* (FG4, black participant)

Other Milk Products

Although fluid milk was the primary focus of the study, some data were captured about other milk products, such as cheese and yogurt. Most women liked the taste of cheese (Table 2).

Concerns regarding cheese consumption included its cost, fat content, and perceived link to constipation. Several participants expressed their concerns about cheese:

> *Why don't we say it out loud? Cheese is constipating; [we] might as well say it.* (FG1, white participant)

Yogurt tended to be a milk product that women either liked or did not. Compared with milk and cheese, it received lower scores regarding attitudes toward taste (Table 2). Some women mentioned that they were not accustomed to eating yogurt and did not have it growing up:

> *Most yogurt is something they came out with in the later years and most people our age tend to use stuff that was already brought out. We shy away from it even though it is good for you.* (FG4, black participant)

Others perceived yogurt to be a diet food. Negative perceptions were sometimes related to yogurt's fermented qualities, as indicated by a participant:

> *Yogurt smells like baby vomit.* (FG6, white participant)

However, many of the women consumed and enjoyed certain yogurt products, particularly those with live active cultures and/or added fruit.

DISCUSSION

Consistent with Social Cognitive Theory, several personal, behavioral, and environmental factors were identified as possible barriers to milk consumption. Real or perceived symptoms of lactose intolerance were implicated as a major barrier to fluid milk consumption during all focus groups, regardless of participants' race. Although lactose intolerance was not assessed or diagnosed in participants, it has been indicated that lactose intolerance is more prevalent in minority populations and may increase with age.[24] Yet, some reports have found the increased age relationship with lactose intolerance to be inconclusive.[25] Lactose intolerance may exist in some older adults; however, small amounts of lactose have been

found to be tolerated among those who cannot fully digest lactose.[24,25] Individuals who have real or perceived lactose intolerance may opt to eliminate or limit milk or milk products from their diet.[25] In response, specific strategies are recommended to help individuals include milk or milk products in their diet even when they experience symptoms of lactose intolerance. These include consuming low-lactose or lactose-free milk, consuming small amounts of milk with food, taking the lactase enzyme before consuming milk and milk products, consuming calcium-fortified alternatives such as soy beverages or other calcium-rich foods, and consuming yogurt or hard cheese.[2,25,26] It remains to be seen what educational and behavioral approaches to increasing milk consumption are most effective and feasible,[25] particularly among older, low-income women.

Similar to findings in this study, previous research confirmed the need to educate older adults about the use of lactose-reduced milk products to increase milk consumption.[13] Education regarding these strategies may help reduce the number of older women who rely on calcium supplements to meet the calcium recommendations. Even though many older women take calcium supplements,[11] recent research has indicated that may be negative health risks may be associated with them.[27] Therefore, consuming a variety of foods, specifically calcium-containing foods, is recommended over supplements to promote optimal health and reduce chronic disease.[6,20,28]

Attitudes toward the taste of fluid milk revealed that participants viewed lower-fat or non-fat milk as "watered down" and not palatable. This attitude toward lower-fat milk should be explored further, because for Americans age ≥ 2 years, the current DGA 2010 recommends "[Increased] intake of fat-free or low-fat milk and milk products, such as milk, yogurt, cheese, or fortified soy beverages."[2] Formative research of the current DGA 2010 consumer messages revealed similar negative findings regarding this message among adults. Specifically, the DGA 2010 consumer message to "switch to 1% or fat-free milk" was ranked as one of the least effective messages by some focus group participants who indicated that they did not like the taste of fat-free milk compared with other fuller-fat versions[29]; this has been previously confirmed in other research.[18]

Knowledge of the benefits of milk products for bone health was known among women in this study's sample; however, other benefits of milk consumption such as reduced high blood pressure were not. Furthermore, other beneficial nutrients found in milk (eg, vitamin D, potassium) were rarely mentioned, if at all. This may provide another educational opportunity to highlight the additional benefits of milk among older adults. Unfortunately, many current milk promotion efforts currently focus on younger children and families and therefore neglect older adults. The benefits of adequate milk consumption by older female adults may include their influence on younger generations, but this remains to be explored. Previous research has indicated that grandparents have considerable impact on their grandchildren's diets,[30] and even more so if a family consists of several generations.[31]

The findings from this study are novel because they may help streamline future educational campaign efforts to increase milk consumption, particularly with a vulnerable population, regarding the key barrier of coping with real or perceived lactose intolerance. Research has shown that perceived barriers are the best targets for communication campaigns.[32] Thus, successful campaigns should identify a key barrier, or perceived barrier, and then target it to move a population toward action. Social Cognitive Theory posits 3 methods to build self-efficacy and counter perceived barriers: (1) feedback, (2) successful experience, and (3) modeling.[33] Therefore, a campaign depicting peers performing an action and overcoming a barrier (eg, drinking milk), could prove to be most effective. Furthermore, unique insights were shared that warrant caution regarding the current emphasis on low-fat milk dietary guidance messages that may be negatively received. Strengths of this study include the ability to delve deeply into the underlying reasons for inadequate milk consumption among older, low-income women to help inform future communication efforts. Limitations include not pretesting the focus group questions for comprehension or for potential researcher bias and including some closed-ended questions. This may have affected understanding of the focus group questions and the depth of participants' answers. Although there was racial diversity within this convenience sample of older women, ethnic and geographic diversity was lacking. Caution should be taken in extrapolating to all low-income, females age ≥ 60 years.

IMPLICATIONS FOR RESEARCH AND PRACTICE

Taste continues to be cited as the primary driver for food choices,[34,35] but it was not the primary cited barrier to fluid milk consumption in older, low-income women within this study. Instead, gastrointestinal-related side effects were the most common reported barrier to milk consumption. Future research should be conducted to determine how to effectively communicate strategies to consume adequate milk and milk products while minimizing symptoms of lactose intolerance.

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