

## **CHAPTER VII**

### **CONCLUSIONS**

#### **Introduction**

Through this study, insight was gained about the dairy food related perceptions in a sample of educated, independent living, Caucasian women aged 65 years and older, living in Virginia. Dairy foods were associated with both positive and negative health perceptions which were influenced in part by external factors. Based on this research, recommendations are made to nutrition educators and to the dairy industry for the promotion and development of dairy foods, followed by some suggestions for future research. The objective of these recommendations is to promote dairy food consumption in older women, a long term goal of this research.

The National Institutes of Health Consensus Development Conference on Optimal Calcium Intake (NIH, 1994) made recommendations for a unified public health strategy to improve the calcium intake of Americans. This strategy included efforts by both public and private sectors to implement optimal calcium intake in all Americans. The National Institute of Health (NIH) recommended development of health education materials and programs for the diverse needs of the many multicultural American subpopulations. In the private sector, NIH recommended that manufacturers of food products continue to develop a variety of calcium-rich foods to meet the needs of different populations (NIH, 1994). The recommendations to both nutrition education and the food industry made by this research, supports the public health strategy suggested by NIH.

#### **Major Findings**

Focus group participants represented the targeted population which indicated successful recruiting practices. Women were active, independent living and responsible for purchasing and preparing food. All but one woman reported that they prepared their own meals and most women indicated that they participated in a variety of social activities. All women had received a high school degree, half had attended college, and almost 14% received a graduate degree. Women were aware of various types of dairy foods including low fat items such as skim milk, reduced fat ice-creams, and yogurt. However, a misconception existed among some women that eggs are a dairy food. Almost half of the women reported that they followed a prescribed diet in the socioeconomic survey.

The most prominent theme throughout all focus groups was that the older women were conscious of the fat in their diets and perceived dairy foods to be high in fat. Women expressed an interest in reduced fat products and commonly consumed skim milk, 1% milk and reduced fat ice-creams in attempts to lower fat in their diets. Women liked some reduced fat products such as skim milk, reduced fat ice cream, Alpine Lace<sup>®</sup>, low fat frozen yogurt and 1% milk, but found reduced fat cream cheese and other reduced fat cheese to be unacceptable. A few women identified taste and texture as the altered sensory property, while most women reported that these products generally were not good.

Several women felt dairy foods were high in calories, cholesterol, and sodium though fat content appeared to be the primary concern. One woman in each group reported experiencing lactose intolerance, but it did not appear to be widespread in this sample. Women

commonly referred to lactose intolerance as a milk allergy, then went on to discuss Lactaid<sup>®</sup> leading researchers to conclude that a misconception in terminology existed. Women were familiar with Lactaid<sup>®</sup> type products, though some women felt they were not worth the trouble and the cost.

Women in this study perceived calcium as the predominant positive health benefit of dairy foods and were aware that calcium in dairy foods was important for strong bones. Women recognized that other nutrients were in dairy foods but did not know what those nutrients were, indicating an area for nutrition educators to target. Women also felt that dairy foods were important to consume during pregnancy but could not identify specific reasons.

Women perceived osteoporosis as a realistic threat and used the terms, “brittle bones” and “curved spine” when discussing osteoporosis. Despite the fact that women were aware of calcium in dairy foods, researchers concluded from the timing of women’s comments about supplementation, that osteoporosis prevention was associated with calcium supplements, particularly Tums<sup>®</sup>. This was evident to researchers from the lengthy discussions of calcium supplementation that spontaneously followed the question, “What does the term osteoporosis mean to you?”. Use of calcium supplements was prevalent in this group making it unlikely that they were calcium deficient. It appeared that women were relying on calcium supplements, not dairy foods, to get the calcium they need. By supplementing with Tums<sup>®</sup>, composed primarily of calcium carbonate, women do not receive the additional nutritional benefits of dairy foods such as protein, phosphorus, vitamin D, and vitamin A. This practice also teaches women to rely on pills when the calcium they need could be incorporated into their diets through dairy foods.

Researchers believed that the prevalent use of calcium supplements could be due, in part, to the predominant belief that dairy foods are high in fat although this line of probing was not done directly. Other negative health perceptions such as sodium, calories, and cholesterol could also play a role. Women understood the positive benefits of calcium but did not want the fat found in some dairy foods like cheeses, so they turned to supplements. Some evidence was found that women had misconceptions that they could not get enough calcium through dairy sources which motivated them to take Tums<sup>®</sup> as an alternative.

A prominent factor in health practices in these older women was their physicians. Physicians instructed some women to watch fat intake and take calcium supplements such as Tums<sup>®</sup>. Women felt that doctors did not want them to consume dairy foods because of the fat content, when in reality, many low fat and fat free dairy products would meet their needs. Women in this study also received nutrition information from literature and were aware of the Food Guide Pyramid and Nutrition Facts labels on food. It was evident that women influenced one another by offering suggestions and hints for lowering fat in the diet; however, physicians were the primary influence. For this reason, doctors must play a role in educational efforts in order for changes in dairy food consumption to be made in this population.

Environmental influences associated with dairy foods were related to package size, ease of opening, and visibility of expiration dates. As single adults living alone in most cases, women felt that large containers of foods like cottage cheese and low fat ice creams were too big. Purchasing such products was associated with spoilage and wasted money. Women reported that they would purchase these products more often if they were available in smaller containers. Further difficulties with packaging were related to ease of opening. Pull-around tabs on plastic milk carton tops and zip pack cheeses were examples of products women found difficult to open. Expiration dates were commonly reported to be too hard to find and too small

to read. Women also expressed confusion over “Use By” and “Sell By” labeling on dairy foods. Participants also reported that other older women might have problems with cost.

### **Recommendations for Promotion and Development of Dairy Foods**

Results of this study indicate a need for changes in size and packaging of dairy products to better suit the demands of the elderly market. Older women recognized themselves as an important, rapidly growing consumer group. This indicates that they would be receptive to products designed with consideration for their needs as both single adults and senior citizens. Considering the almost 20 million women aged 65 and older in the United States in 1995 and the estimated increase to over 33.5 million by the year 2025 (U.S. Bureau of the Census, 1995), products designed to satisfy this age group could reach a potentially large market. Increased dairy sales would result in a larger profit for the dairy industry. Sloan (1997) reported that consumers over 50 already represent a \$900 billion dollar market for the food industry.

Development of products for an elderly market and effective promotion of these products would result in increased calcium intake which is necessary to offset bone loss in the elderly. The National Institutes of Health (1994) stresses the importance of meeting recommended dietary intake of calcium at all life stages and stated that individuals with a regular intake of dairy food can meet the minimum calcium requirements. Increased dairy intake would be important for the prevention of osteoporosis because of calcium’s role in enhancing bone building and decreasing parathyroid hormone secretion which decreases bone turnover. This would mean decreases in osteoporosis related health care costs which reached 10 billion in 1991 (Avioli, 1991). Costs are expected to increase to \$60 billion by the year 2000 (McBean et al., 1994) and will continue to increase as the number of elderly adults rises. Quality of life for the elderly adult would also improve, as osteoporosis related fractures can lead to fear, loss of independence, and depression in the elderly (Osteoporosis Consensus Conference, 1989).

In many cases, targeting the older population would mean changes in product size and packaging alone. In this study, 86% of the non-institutionalized older women lived alone. Women complained that packaging was not designed for single people and resulted in spoilage and wasted money. According to these women, if cottage cheese and low-fat ice creams were more readily available in small containers, older women would purchase them more frequently. Food manufacturers could produce cottage cheese in single serve, 8 ounce containers to meet this need. Pints of low-fat ice creams and yogurts also could be more prevalent. Should these products be developed, they could be marketed as products designed for the single adult. Such products would be beneficial to a wide range of single households, not only the elderly but also young adults.

When specifically marketing products for older adults, focus should be on ease of opening with consideration for potentially poor eyesight and arthritis. Women specifically preferred screw type lids for milk cartons rather than caps with pull tabs. Improvements could also be made on zip-pack cheeses and blocks of cream cheese. A larger black mark on zip-pack cheese would be easier for women to see and would facilitate opening. Expiration dates should be uniformly placed on dairy foods despite the brand and print should be large enough for them to see since spoilage is a big concern. While many women do purchase these products despite difficulties they encounter, improving packaging would be an important step towards recognizing older adults as a growing consumer group which could be an excellent marketing campaign. Products might be promoted as “New, easier to open!” as well as

“Now in smaller sizes!”. If products are designed to meet the needs of older women, they might be more likely to purchase them. This could increase their consumption of dairy foods, the preferred source of calcium in the diet, and would subsequently increase their intake of phosphorus, vitamin D, vitamin A, and protein.

Marketing campaigns should also include promotional information about the nutrient content of dairy foods. Tums<sup>®</sup>, originally developed as an antacid, has been effectively promoted as a calcium supplement; women’s comments suggested that supplements such as this sometimes replace dairy food consumption, and therefore represent competition for the dairy industry. Dairy food advertisements must recognize this and place a stronger emphasis on the nutrient content of dairy foods, particularly the high calcium levels.

### **Recommendations for Nutrition Education**

Nutrition education programs aimed at increasing dairy food consumption and subsequently increasing calcium intake could be an essential component in the prevention of osteoporosis. Results of this study indicate that the current emphasis on lowering fat in the diet has reached older women as dairy foods were often associated with high fat content. In this educated population, most women were aware of lower fat dairy foods and many women commonly used some of these products. Future nutrition education programs for the older women should continue to emphasize low fat dairy foods such as skim milk and low fat yogurts in efforts to promote dairy food consumption. Nutrition educators could work with the low fat theme and promote the use of low fat dairy foods like plain yogurt as substitutions for higher fat foods like mayonnaise and sour cream in cooking. In the course of the focus groups, women often offered such suggestions to each other which were well received by other women. This indicates that a knowledge about such practices does exist in some women and this population is receptive to this type of suggestion. Since women responded well to the focus group’s interactive nature and appreciated suggestions from one another, it might be beneficial to let women share ideas with each other in a nutrition education setting. These ideas could then be supplemented with additional ideas from nutrition educators. Since women prepared their own meals, information should focus on not only selecting dairy foods but also on preparing foods that incorporated dairy products.

The emphasis on dairy foods as important sources of calcium should continue as it is reaching older women. In addition, other nutrients in dairy food should be emphasized such as protein, phosphorus, riboflavin, and vitamin D. Vitamin D plays an essential role in calcium absorption and is essential for proper mineralization of the skeleton (National Research Council, 1989). While humans can meet vitamin D requirements through exposure of the skin to sunlight, elderly adults have only half the capacity to synthesize this vitamin as younger persons (Webb et al., 1988). Phosphorus is an essential mineral that occurs in a 2:1 calcium to phosphorus ratio in bone mass (National Research Council, 1989). Protein rich food sources such as milk are also rich in phosphorus. In the American diet, about half of dietary phosphorus comes from milk and meats. Dairy foods represent an important food source of the nutrients most important to bone health: calcium, vitamin D, and phosphorus. In addition, 38% of the riboflavin in the American diet comes from milk and dairy products (Bennion, 1990).

Since physicians were identified as an important influence in women’s health practices. It is important that physicians also be educated on the many nutritional benefits of dairy foods, as described above. Doctors should be encouraged to substitute blanket statements about avoiding dairy foods with educational information on the use of lower fat dairy products when

fat reduction is needed. Women commented that doctors encouraged them to take supplements such as Tums<sup>®</sup> to meet calcium needs. Doctors should also promote the use of dairy foods as calcium rich food choices. The dairy industry could play a role by emphasizing the nutrient content of dairy foods in their promotional campaigns which would reach both elderly consumers and doctors. Researchers also concluded from women's comments on lactose intolerance, milk allergies and Lactaid<sup>®</sup> that women with lactose intolerance had misconceptions about this condition. It is essential for doctors to have a clear understanding of lactose intolerance and milk allergies and pass clear, accurate information on to their patients. When lactose intolerance is suspected, a Lactose Tolerance Test or Hydrogen Breath Test could help confirm suspected diagnosis.

While many women in this study recognized dairy foods' calcium content, most women were taking calcium supplements to meet perceived calcium needs. Emphasis on dairy foods as not only high in calcium, but also high in protein, vitamin D, and phosphorus might decrease frequency of supplement use and return women's focus to dietary sources. Nutrition education efforts need to be made to form a stronger association between dairy foods and osteoporosis prevention. Women need to know that they can get enough calcium through dietary sources. Specific examples of a daily menu plan including dietary calcium sources needs to be provided to demonstrate this principle. Women need to be aware that having a small amount of the full fat products, which they refer to as "the real thing", is not sufficient to meet calcium and other nutrient needs. Women could be encouraged to have a smaller amount of ice cream and then later enjoy a glass of chocolate skim milk as a tasty snack to meet calcium needs. Since women identified doctors as a primary and trusted source of nutrition and health information, their inclusion in nutrition education programs would promote confidence in these women. Doctors in primary care settings could help women recognize low fat dairy foods as alternatives to higher fat products when promoting lower fat diets.

Women need to be educated to differentiate between lactose intolerance and allergies to dairy foods. As mentioned above, doctors could play an important role in educating patients about this distinction. Dairy foods such as hard cheeses, cottage cheese, ice cream and yogurt, contain less lactose than milk and often cause only minor symptoms of lactose intolerance (Miller et al., 1995). Individuals who believe they are allergic to dairy foods, when really they are lactose intolerant may be more likely to avoid dairy foods altogether.

Further nutrition education efforts could focus on reading expiration dates on dairy foods as women expressed some confusion over 'use by' and 'sell by' expiration dates. Nutrition education programs focusing on understanding spoilage and expiration dates would be attractive to these women. Programs could emphasize food safety practices such as storing dairy foods at 7°C(45°F), keeping them covered to avoid contamination, and returning foods to the refrigerator immediately after use (Bennion, 1990). Such programs would be an additional opportunity to promote dairy foods.

Successful nutrition education programs, like dairy products improvements, would play an important role in promoting dairy foods. As previously discussed, such efforts would be economically beneficial to not only the dairy industry but would also reduce the staggering osteoporosis health care costs. Further benefits would be in quality of life improvements resulting from a decrease in osteoporosis related fractures in older women. These two components, nutrition education and development of more suitable dairy products, would work together to ultimately promote dairy food consumption corresponding to NIH's unified public health strategy for the promotion of optimal calcium intake.

## Future Research

Focus groups are a qualitative data collection technique using carefully planned discussions to gather perceptions, feelings, opinions, and thoughts on a topic (Krueger, 1988). Focus groups are useful in exploring opinions and attitudes in a permissive non-threatening atmosphere where participants can respond to comments and ideas of fellow group members (Krueger, 1988). Focus group research also is an effective way to explore ideas and attitudes and it provides richness and new insight that cannot be obtained from quantitative research alone. However, one disadvantage is that results represent the ideas of only a few participants at a particular location and therefore are not generalizable. The specific population in this study was independent living, higher income, non-Hispanic white women aged 65 and over in Virginia. Other elderly populations need to be studied specifically, as food preferences may be affected by educational level, age, income, and cultural factors such as religious beliefs and ethnicity (Briley, 1989). In order to develop strategies for the promotion of dairy food consumption among older women of all education and cultural backgrounds, it is necessary to study low income women, minority women, institutionalized women and other specific subgroups. Responses from these focus groups can then be used to strategically plan nutrition education programs that will be relevant and appealing to each population.

Since lifelong consumption of dairy foods is essential for prevention of osteoporosis, it is crucial that future research focus on the perceptions and motivations of various other age groups such as teenagers, college students, and middle age adults. It would be beneficial for such research, whether quantitative or qualitative, to include a survey of dairy food consumption in order to assess where participants fall on a continuum of dairy food intake. While it has been demonstrated that women commonly consume inadequate amounts of dairy foods, those women who frequently consume more dairy foods may have very different responses.

Qualitative research, such as focus groups, can be both time consuming and expensive; for this reason, conducting focus group research does not permit a large number of subjects. However, focus group research is only one step in the process of trying to understand factors that motivate women to consume or not consume dairy foods. The qualitative data generated from focus group research, can be used to assist in the design of quantitative research tools such as a questionnaire (Stewart et al., 1994). Focus groups themes can easily be transformed into a series of statements. Women could rate each statement on a scale ranging from 'strongly agree' to 'strongly disagree'. An example of a theme based statement could be: "I avoid cheese because it is high in salt." or "I can get the calcium I need through dairy foods." Future research with older women and dairy foods utilizing quantitative methods, such as the development of questionnaires for surveys, will allow researchers to study a larger group of people. Focus group research to identify important themes is a natural precursor to this type of survey method because it helps to develop themes that might be missed if quantitative research was used alone.

Future research on dairy food attitudes and older women should explore the prominent issue of calcium supplements that was found in this research. While it is apparent that supplement use in various forms is common among this group of older women, it is important to further understand if women are using supplements to replace dairy foods and if this behavior actually results in decreased dairy food intake. It would also be important to explore the extent of supplement use in this and other subpopulations of older women. This could be done through a quantitative survey.

If focus groups are to be used for future research with older women, modification of the procedure is needed. Literature on the focus group method commonly focuses on the average adult population with little emphasis on the older population. While 7-10 participants may be an ideal number of middle age adults, a smaller number of participants appears to work better for older populations. Krueger (1988) suggests that focus groups with more than twelve people limit each person's opportunity to share experiences and insight. In this research, a similar phenomenon was seen in the group of only ten women. In addition, hearing losses made it difficult for women to hear when seated at a large table with as little as nine participants. Mini focus groups of 4-6 participants are becoming increasingly popular (Krueger, 1988) and it is likely that this size group would be more appropriate for older adults. With this number of participants, a smaller table could be used, minimizing hearing difficulty and promoting participation.

Introductory activities with predetermined responses such as the food choices activity, as well as brainstorming activities such as listing dairy foods, were very effective with this age group. These activities initiated a range of discussion topics and identified key themes early in the focus group. Very general questions such as reflecting on lifecycle changes and thinking of situations where you would change dairy food intake were less effective and elicited little discussion. As women considered themselves to be an important consumer group, questions that recognized this relationship were very effective. Women responded well to the question, "How do you think the food industry could improve dairy foods to make them more desirable to you and your friends?" This type of question allowed women to share their opinions and generated a great deal of discussion. Consideration should also be made for the unique needs of the elderly population when conducting focus group discussions. Women had difficulty removing the adhesive backing on name tags and handwriting was sometimes difficult to read. It might be more effective to have pre-prepared cardboard name tents that the moderator can write the names on, thus eliminating embarrassment and enabling the moderator to easily identify participants by name. It is also necessary to read any written materials, such as the socioeconomic survey, out loud to participants to facilitate its completion and ensure that all questions are understood.

Taking into consideration these modifications, focus group research was used to effectively elicit perceptions and attitudes associated with dairy food consumption in this sample of older women. Some of the themes found in this study, such as problems with product size and ease of opening, may also apply to other food products. In several instances, women included comments about other types of food products such as difficulty opening bags inside cereal boxes. It is likely that this type of research would be equally effective in studying other food and health related topics.

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