

Review Article

Barriers to Healthy Eating in the Elderly; A National and Global Perspective

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Abstract

Background: Healthy eating promotes health and reduces the risk of chronic disease. Despite the fact that the federal government has set forth guidelines to achieve an adequate diet, Americans are not meeting the recommended nutritional intakes. National data show that those aged 65 years of age and older eat the most nutritious diets when compared to younger cohorts. However, this is the only age cohort whose nutrient intake did not improve from 1999 to 2016. To fully understand how to improve nutritional intake among older individuals, it is important to consider barriers to eating healthy unique to this population.

Aim: In this review, we present an up to date overview of the literature pertaining to healthy eating among the elderly and barriers unique to this population.

Results: While studies show the general population tends to find time, cost, and lack of motivation as barriers to healthy eating, the barriers unique to the age cohort of 65 years of age or older tend to be more social, habitual, or health related.

Conclusion: It is important for health care providers to understand barriers toward optimal nutrition when planning care and interventions to maintain and improve nutritional status among older individuals.

INTRODUCTION

Healthy eating promotes health and reduces risk of chronic disease [1-3]. The federal government is responsible for informing the public with respect to up to date scientific evidence pertaining to nutrition, diet, and health. The 1990 National Nutrition Monitoring and Related Research Act stipulated that the U.S. Departments of Health and Human Services (HHS) and Agriculture (USDA) jointly publish a report with evidence-based information regarding nutritional guidelines for the general public. These are commonly referred to as the Dietary Guidelines for Americans (DGA) and must be reviewed, revised, and published every five years. The DGA are created to help guide individuals select a healthy, nutritious diet. The most recent guidelines are the 2015-2020 DGA [4].

While the DGA are considered the gold standard, there are additional standards for healthy eating set by the federal government. In 1976, congress created the Office of Disease Prevention and Health Promotion (ODPHP) to lead disease prevention and health promotion efforts in the United States. An office within the Department of Health and Human Resources, the ODPHP creates health initiatives, one of which is Healthy

People 2020. Healthy People 2020 provides a comprehensive set of 10-year national goals and objectives for improving health. Included in these goals are seven objectives related to diet quality that echo the recommendations in the DGA. Healthy People 2020 set goals for Americans aged 2 years and older to increase consumption of fruits, vegetables, whole grains, and calcium with specific emphasis to add variety to vegetable consumption. Healthy People 2020 also set goals to limit consumption of solid fats, added sugars, saturated fats, and sodium.

Despite dietary guidelines, Americans are not meeting recommended nutritional intakes. This is apparent based on assessments using the Healthy Eating Index (HEI). Originally developed in 1995, the HEI is a standardized tool that uses a scoring system to evaluate diet quality. Points are accrued if nutritional intake meets the dietary guidelines for foods that are considered healthy and if the dietary intake of foods with constituents deemed unhealthy is low. The highest score achievable is 100 points. The HEI is updated every five years to correlate with the most recent dietary guidelines. For example, a diet that met the 2010 DGA would result in a HEI-2010 score of 100. If one were to attempt to attain the diet quality

recommended by Healthy People 2020, an HEI-2010 score of 74.1 would be accrued [5].

What We Eat in America (WWEA) [6], data provides evidence that Americans fail to meet the DGA. WWEA is a report summarizing two 24-hour dietary recall periods from data collected as part of the National Health and Nutrition Examination Survey (NHANES). The 2015-16 data suggest Americans on average accrue an HEI score of 58.7. Although the HEI score has been roughly stable over the past 8 years, it falls below both the US DGA HEI score of 100 as well as the score of 74.1 that would be achieved by adherence to the Healthy People 2020 guidelines. When stratified by age, the age cohort with the highest HEI-2015 score is the 65 years of age and older group. While this age group had a HEI-2015 score of 64, it was only 9.8% higher than those of all adults aged 18-64 years of age, who on average scored 58.3. However, despite this age cohort having the highest HEI-2015 score, it was the only age cohort whose HEI scores decreased from 1999 to 2016 [7].

A healthy diet is important for those 65 years of age or older for many reasons. One particular reason for this age group to meet the recommended nutritional requirements is to help maintain and improve mobility. The first known study evaluating the association between diet quality and disability was published in 2012. Investigators used data from the 1999-2004 NHANES survey including self-reported measures of disability such as activities of daily living, lower extremity mobility, and general physical activities. The study showed that older adults with higher HEI-2005 scores were less likely to experience lower extremity mobility trouble and disability with general physical activities. Overall, the odds of lower extremity mobility disability were lower for those with higher HEI-2005 scores than those with lower HEI-2005 scores [8].

Since then, additional studies have been published evaluating the association between healthy eating patterns and mobility/disability. One study investigated whether dietary measures were associated with mobility limitation as indicated by difficulty walking 400 yards or going up or down stairs in older British men living in the community. In this study, 7,735 men were recruited from primary care practices as part of a prospective study and their lifestyle and dietary data were collected during the years of 1998-2000 when the men were aged 58-79 years of age. In 2014, they were interviewed again with emphasis on their mobility function. The study found that those men who had mobility limitations at the end of the study were older at baseline, had higher mean body mass index (BMI), and were more likely to report low physical activity. Men who had greater adherence to a healthy diet at baseline, defined by the World Health Organization dietary guidelines, were less likely to have a mobility limitation at follow up. Those men who had high fat and low fiber diets at baseline were more likely to have a mobility limitation at follow up. While the magnitude of these associations was reduced after adjustment for BMI and physical activity, they remained significant [9].

Moreover, specific diet patterns including the Mediterranean and DASH diet (Dietary Approaches to Stop Hypertension) have also been evaluated with respect to risk of developing disability. In one prospective study, participants completed a food frequency

questionnaire which was later evaluated for how closely it aligned with the recommendations of the Mediterranean or DASH diet. The participants were followed for an average of 5.3 years. In this study of 809 persons with a mean age of 80.7 years ± 7.2 years, 54% of the study population developed a disability. The study found that those with the highest tertile scores for the Mediterranean and DASH diet had a significantly reduced risk of developing disabilities [10].

Given the association between healthy diet and risk of disability, the importance of improving nutrition among persons aged 65 and older is paramount as the number of persons in this age cohort has been steadily increasing since 1960, and is projected to more than double by the year 2060. While this age cohort made up only 9% of the population in 1960, it now makes up 15% of the population and is expected to be almost a quarter (24%) of the population in 2060 [11].

Although this age cohort received the highest HEI-2015 scores, the dietary quality is below goal. One aspect of nutrition to understand in this age cohort includes barriers to obtaining nutritious foods. Very little research has focused on the barriers unique to this older age cohort. Most studies on barriers to healthy eating have been completed with surveys among the general population, with the older population's barriers evaluated through subgroup analysis. In order to understand the barriers unique to the older population, a review of the most recent literature was performed.

DISCUSSION

One of the first studies to evaluate barriers to healthy eating in the general population took place in Europe. The authors of the study noted that despite healthy-eating guidelines, only a minority of the European population was meeting the nutritional recommendations of the European Union (EU). Investigators wanted to evaluate population attitudes and perceptions about healthy eating and understand the difficulties that people have or perceive they have in trying to eat a healthier diet. Investigators found that almost 80% of the EU population had some difficulty with eating a healthy diet. The main perceived barriers were related to time: "irregular working hours (24%)" and "busy lifestyle (17%)," and taste: "giving up liked food (23%)." Knowledge was not seen as a major obstacle to trying to eat healthily as it was only selected by 7% of the surveyed population. The study only mentioned older participants once when it referenced "resistance to change" as a barrier to healthy eating in this age cohort who they defined as 55 years of age and older [12].

The concepts of "time" and "taste" as barriers to healthy eating continue to be a theme in current studies. Another study done in Europe that focused on participants living in urban environments also found that "busy lifestyle" and "irregular working hours" were barriers to healthy eating. However, in this study, the most common perceived barrier to healthy eating was "lack of willpower." The participants who said lack of willpower was their major barrier tended to have a lower probability of eating home-cooked meals, fruits, vegetables, and fish. All perceived barriers in this study were positively and significantly associated with fast food consumption, which tends to be quicker to obtain

and contain more fat and is perceived to taste better. This study did not report subgroup analysis based on age; but reported that younger participants were more likely to report taste as a barrier to consumption of fruit and vegetables than older participants [13].

A study performed in Scotland using the Scottish Healthy Survey data also found that “lack of willpower” was a common barrier. It also found differences in barriers among sex. Women were more likely to report “cost of healthy eating” as a barrier and men were more likely to report “not liking healthy foods.” The study found that the probability of meeting the recommended fruit and vegetable intake was reduced by 6.8% in men if they reported not liking fruits or vegetables [14]. A similar study done in Switzerland had similar results. Investigators used the Swiss Health Survey to assess the prevalence of barriers to healthy eating stratified by sex. This study also found “lack of willpower” was a barrier for both sexes. It found that women were more likely to report “price” as their top barrier and men were more likely to report “fondness of good food” as theirs. When they evaluated barriers with age, in both sexes, “fondness of good food” was one of the few barriers to increase in prevalence with increasing age, perhaps suggesting that eating habits are hard to change with age [15].

The concept of taste as a barrier was not unique to European studies. In a U.S. study, investigators looked at barriers to fruit and vegetable intake in an urban low-income population and focused mainly on African Americans. Facilitators of food intake included taste or flavor and cravings which often promoted fast food intake. The study population reported they did not prefer vegetables, which was perceived as a barrier. Perhaps unique to the urban environment, participants in this study also reported “lack of convenience” and “lack of availability” as barriers for consumption of fruit and vegetables. In subgroup analysis, older adults also said that fast food stores were ubiquitous in the neighborhood which facilitated fast food intake. The subjects also noted that cost and finances were barriers to all foods [16].

The concepts of time, convenience, and lack of motivation were also noted in an online survey performed in Australia targeting young males. Their most common barriers to eating healthy food included ease of access to unhealthy foods, lack of time to cook and prepare healthy foods, and lack of motivation to cook [17].

While the barriers to obtain and consume nutritious foods tend to be time, convenience, and lack of motivation in the general population, older adults share these barriers in addition to even more barriers that are unique to their age cohort. More often, the additional barriers to healthy eating tend to be more social, habitual, or health related. A summary of the barriers in the general population and the additional barriers found in the cohort of 65 years of age or older is shown in Table 1.

For example, a 2008 study evaluated barriers and facilitators of fruit and vegetable consumption among participants in the U.S. The study participants were recruited from rural North Carolina and urban parts of Connecticut. The study created twelve focus groups, six in each region, separated based on age (18-50 and ≥ 50 years of age) and ethnicity (Caucasian, African American,

Table 1: Common barriers to obtaining healthy nutrition.

General population	Unique to Age > 65 years Cohort
Time (irregular working hours, busy lifestyle)(12,13,17,18)	Lack of cooking skills(19)
Taste(12–16)	Resistance to change(12,20)
Lack of will power(13–15,17,20,24)	Dental or gastrointestinal tract disease(19,21–23)
Cost(14–16,18,21–24)	Change in social support(19,22,23)
Convenience of fast foods(16,17,24)	Eating alone/loneliness(21–23)
Lack of availability of healthy foods(16,18)	Impaired mobility and difficulty getting to food sources(22–24)
	Vision impairment(22)
	Lack of knowledge of food services available(22)
	Diseases that affect dietary intake(23)

or Hispanic). The study found that common facilitators for fruit and vegetable consumption in all participant groups included family traditions, health benefits, and advice from physicians. The predominant barriers included inaccessibility, cost, and time. When the analysis was done according to age, the study found that both young and older participants identified cost as a major barrier. However, while the younger participants noted that fruits and vegetables cost more than other food items, the older participants meant that fruits and vegetables now sold in the supermarkets cost more compared to prior free, home grown fruit and vegetables. Both younger and older participants said that their upbringing and family influence were paramount on impacting their fruit and vegetable consumption [18].

There are a few studies available that focus on barriers to healthy foods specifically in the older population. One of the first studies done to evaluate barriers to healthy eating in this age cohort was published in 2004. Investigators wanted to learn more about barriers to healthy eating, focusing on energy intake and food choice among older men living alone. The study population was recruited from an urban region in England and the ages of the participants spanned 62-92 years of age. The investigators found that men who reported good cooking skills also reported better physical health ($p < 0.01$) and consumed more vegetables than men with poorer cooking skills ($p < 0.05$). Interestingly, energy intake was negatively correlated with cooking skills ($p < 0.05$) suggesting that those who had worse cooking skills consumed more energy. The authors hypothesized that it was due to the fact that those who cook were more likely to be cooking vegetables which tend to be less energy dense. Regarding qualitative statements, reasons for not eating fruits and vegetables included two men indicating they had eaten more when their wives were alive and one participant unable to eat fresh fruit secondary to a gastric ulcer [19].

Another study evaluating perceived barriers to healthy eating in an older adult cohort was published in 2014. The specific aim of the study was to evaluate the association between perceived barriers to healthy eating and adherence to the Mediterranean diet and the associations of health behaviors with perceived

health. It was an observational cross-sectional online survey targeting men and women aged ≥ 50 years of age. The number of perceived barriers to healthy eating was positively associated with BMI ($p < 0.001$) and inversely associated with age ($p = 0.006$) and adherence to the Mediterranean diet ($p < 0.001$). When the researchers further evaluated the data, they found three discrete clusters of barriers. The first cluster's most common barriers to healthy eating included "busy lifestyle," "irregular working hours," and "the belief that healthy eating involves lengthy preparation." The second cluster's barriers included "lack of willpower" and "finding it hard to give up liked foods." Cluster three had few barriers. The participants in cluster two tended to be older, leaner, with relatively fewer numbers of barriers, and had higher adherence to the Mediterranean diet [20].

The most recent study evaluating barriers to healthy diet in this age cohort was completed in Brazil and was published in 2016. The study attempted to identify the factors associated with diet quality in older adults from the city of Pelotas, Rio Grande do Sul state. It was a cross-sectional, population-based study of a sample of the population. The target age cohort was those 60 years of age or older. The study found that men had a two-fold greater chance of having a low-quality diet than women. Those individuals on the lower end of the age cohort, aged 60-69 years of age, had a 1.3 and 1.8 times greater chance of having a low and intermediate quality diet, respectively, than older age groups. Those reporting problems affording food had a 2.5 times greater chance of having low quality diet compared to those participants who did not report this problem. Those with mouth or teeth problems had 3.6 and 2.9 times higher the chance of having low and intermediate quality diets, respectively, compared to those who did not have mouth or teeth problems. Finally, those who ate alone had a 1.4 times higher chance of having an intermediate quality diet compared to those who had meals with others [21].

The themes of social determinants of health were also apparent barriers to healthy eating in a study performed in Singapore. Investigators wanted to assess the malnutrition risk, nutritional knowledge, co-morbidity burden, depression risk, functional status, and awareness and utilization of available food services among older individuals in Singapore on public assistance. The investigators then identified the men who were considered malnourished and interviewed them again with the focus on determining their barriers to healthy eating. Multiple barriers were identified including financial, social, and health related. Barriers to healthy eating included higher prices of healthier foods. These participants often bought canned products due to concern for expense and perishability of fresh foods. These participants were also more likely to be depressed and lonely. Mealtime was no longer viewed as a social activity for them. For those who had impaired mobility and no social support, there was no one who could shop or cook for them. Impaired mobility also made it difficult to use the meal or food vouchers as they were unable to reach nearby food establishments. Health barriers including vision and dental disease impaired their ability to cook and eat, respectively. Finally, some of those who were malnourished were not aware that they were malnourished and were not aware of the various food services available to them [22].

These barriers were echoed in another study where investigators asked community dwelling adults ≥ 75 years of age either malnourished or at risk of malnourishment their thoughts on barriers to healthy food consumption. These participants also stated that chronic health conditions such as irritable bowel syndrome, dental problems, depression, diabetes, and celiac disease affected their food intake. They were also concerned about their level of functioning and degree of independence, both of which influenced their ability to shop and prepare a meal. The factors that shaped their current eating habits included early life experiences such as environment and household composition. When the household composition changed, such as with the death of a loved one, food intake changed, as, for example, the desire and motivation to cook may have decreased. These participants also said that financial capability affected their food intake [23]. Many of these same barriers were found in a similar study in a similar age group in adults living in subsidized housing in Philadelphia, PA. This study also found that these barriers such as food cost and accessibility, physical limitations, desire for convenience, and low self-efficacy to change dietary habits inhibited the participants' motivation to change [24].

CONCLUSION

In the general population, the barriers to healthy eating seem to be related to themes of time, food preference, and lack of willpower. However, the barriers to healthy eating in the older population tend to differ. Time and taste seem to be barriers less often. Instead, emerging barriers unique to this age group develop such as social determinants, health problems, and decreased financial and social support. Moreover, this age population seems to struggle with change more than other age groups as the studies found that "giving up liked foods" and "resistance to change" were barriers unique to this age cohort.

While the U.S. has dietary guidelines to encourage the intake of a nutritious diet, the data suggests that the majority of the U.S. populations are not meeting the recommended guidelines. For older Americans, this can have multiple consequences including worsening of chronic disease and decline in mobility. To help this age cohort achieve a more nutritious diet, it is important to first understand why they are not able to meet the dietary guidelines. This includes understanding barriers to obtaining a healthy diet and stratifying which ones are of most importance so that interventions can be made to help them overcome these barriers. Given the fact that this age cohort is going to expand in the near future, it is imperative that we devote more research toward understanding and mitigating their unique barriers to eating nutritious diets.

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