

**THE CONSUMPTION OF PROTEIN-RICH FOODS IN OLDER ADULTS: AN
EXPLORATORY FOCUS GROUP STUDY.**

RL Best, KM Appleton

Queen's University, Belfast, Belfast, BT9 5BP.

Correspondence Address: Dr KM Appleton, Psychology, DEC, Bournemouth University, Poole House, Fern Barrow, Poole, BH12 5BB. Tel: +44 (0)1202 965985; Fax: +44 (0)1202 965314;
Email: k.appleton@bournemouth.ac.uk

Acknowledgements:

This work was completed as part of a Doctorate in Philosophy, undertaken by Rachael Best and funded by a Northern Ireland Department of Education and Learning: Programme for Government PhD Scholarship under the supervision of Dr. Katherine Appleton. Grateful thanks are also extended to all group leaders and participants who took part.

ABSTRACT

Objective: Many older adults consume inadequate protein for their needs. This study explored the factors associated with the consumption of high-protein foods in older adults.

Design: Participants over the age of 65 years (N=28) took part in one of four focus group discussions on meat, fish, eggs, dairy products, nuts and pulses. Discussions were audiotaped, transcribed, and analyzed using thematic content analysis.

Results: Numerous and various reasons for the consumption and non-consumption of high-protein foods were reported. Many of these reasons result from reductions in chemosensory, dental and physical abilities, and changes in living situation in the older population, and have impact specifically on high-protein foods due to their often hard, perishable and need-to-be-cooked nature, and high cost.

Conclusions and Implications: Further work is required to establish the importance of each of these reasons in relation to protein intakes, to prioritise those of likely greatest impact for increasing intakes.

Key Words: older people; dietary protein; focus groups; thematic content analysis

INTRODUCTION

A growing body of evidence suggests that dietary protein needs may increase with age¹. Higher dietary protein intakes have been associated with the preservation of skeletal muscle mass and the reduction of effects of age-related sarcopenia^{1,2}, higher bone mineral content, reduced fracture risk, and reduced risk of bone loss¹, reduced risk of heart disease, lower blood pressure, and improved wound healing¹. Current knowledge, however, indicates that many older adults may not be consuming adequate amounts of dietary protein^{3,4}. Despite this knowledge, there is a lack of research on reasons for low protein intake in older individuals. This study aimed to explore the reasons for consumption and the non-consumption of high-protein foods in older adults. The work was exploratory, thus focus groups were used⁵.

METHOD

Participants

Participants were recruited via a research database of people aged 65 years and over, and from groups of older people who met regularly as community groups. Participants were included in the study if they were: 65 years and over, able to participate fully, able to provide informed consent, and able to travel to the location of the focus group. Few exclusion criteria were employed to allow exploration of as many issues as possible. The study was approved by the Research Ethics Committee of the School of Psychology, Queen's University, Belfast, prior to commencement. All participants provided informed consent prior to their involvement.

Focus groups

Focus groups were conducted based on recommendations by Morgan⁵, Kreuger⁶, and Barrett and Kirk⁷. Each focus group lasted for approximately one hour. Only high-protein foods were discussed, and due to the varying properties of these foods, relevant foods - meat, fish eggs, dairy products,

nuts, and pulses, were introduced and discussed separately. Discussions were opened and maintained using open questions and pictures of the foods as prompts. Discussion was closed when all foods had been discussed to exhaustion. All discussions were audio taped for transcription and analysis. Demographic details - gender, age, living status, perceived weight and residential postcode were also requested from all participants at the start of each session. Residential postcode was subsequently used as an assessment of deprivation (the NI Multiple Deprivation Measure per residential area, based on 52 indicators of income, employment, health and disability, education, skills and training, proximity to services, living environment and crime and disorder)⁸. Group sizes ranged from 6-8 participants, and groups were conducted until sufficient data had been collected to reach data saturation⁵⁻⁷. Refreshments were provided, but no other payment was given.

Analysis

Each discussion was fully transcribed by one researcher. Transcripts were then analyzed independently by two researchers using thematic analysis to identify separate themes.

Interpretations were discussed and themes agreed upon.

RESULTS

Twenty-eight adults (one male, 27 female) took part in four focus groups. Ages ranged from 65–93 years (mean=81 years). Twenty-three participants lived alone. All participants perceived themselves as normal weight (N=16) or overweight (N=12). Deprivation scores ranged from 3.12 – 37.64, with a mean of 13.94, indicating that the majority of the sample lived in areas of low deprivation.

Reasons for both the consumption and non-consumption of protein-rich foods, with example quotes for each reason, are provided in Table 1. Nineteen themes were agreed upon, with an initial inter-rater agreement of 83%. All disagreements were resolved with an agreement of 1. Themes are

organized as: product-based, environment-based, or cognitive-based reasons, but many reasons are a result of an interaction among categories.

DISCUSSION

Product-based reasons

Several product-based reasons emerged for both the consumption and non-consumption of high protein foods. None of these reasons were specific to older adults or high-protein foods, but effects may be magnified in older adults and for some foods. Taste, texture and odor, for example, may be increasingly important for older adults due to chemosensory losses that occur with age, and eating difficulties associated with the loss of natural teeth and wearing dentures^{9,10,11}. Some individuals described how the high-protein foods discussed did not taste as they used to, e.g. *'All I would say is that food just doesn't taste the same anymore'*. Participants also mentioned biting, chewing and swallowing difficulties as factors that led to the reduced intake of certain foods, particularly meat and nuts, due to texture. These difficulties are common in older people with impaired dentition¹⁰, and can lead to a specific reduction in the consumption of protein-rich foods such as meat and nuts¹¹. Freshness, quality and safety were also important for high-protein foods from animal sources. Participants indicated a preference for purchasing meat from a butcher where reliable information on quality, origin and production could also be gained. Consumers often believe freshness and quality to be an indicator of food safety¹².

Product-based reasons for consumption are often resistant to change. Reasons for non-consumption that may be magnified as a result of losses in (chemosensory and dental) abilities however, may be amenable. Studies have shown that flavor enhancement can facilitate food consumption in older adults¹³, and that various methods of preparing and cooking foods, such as mincing and boiling, can make hard foods easier to eat¹⁴.

Environment-based reasons

The environment-based reasons identified largely represented barriers to the consumption of high-protein foods. Many again are not specific to older individuals, but may be magnified in this population as a result of age-related decreases in ability and living situation. Convenience, for example, was referred to in relation to ease of preparation or consumption, as opposed to time, and efforts to cook food were considered particularly to affect consumption in those with physical impairments, such as arthritis¹⁵. Restricted mobility, including access to shops, was also prominent in this population, although only a minority of individuals in this sample reported relying on help from others. Restricted mobility and disabilities affecting food preparation and cooking have been previously associated with inadequate nutritional intake in older adults¹⁶. Restricted mobility and disabilities are particularly prevalent in the older population, and may be particularly detrimental also to the consumption of high-protein foods, as many of these require cooking.

Living alone was also mentioned as a barrier to eating well. Similar results are reported elsewhere: Older women, when lonely, reported less enjoyment of their meals, and of cooking, and were at risk of developing unhealthy eating habits¹⁷. Older men living alone also described themselves as lazy when it came to cooking, reported increased use of ready meals¹⁸, and may possess inadequate cooking skills¹⁹. Living alone is again of increasing prevalence with age. Spoilage and waste were also problematic for those living alone, as was cost, particularly in relation to multi-buy promotions. One individual commented, *'In some butchers now everything's cheaper if you buy a lot'*. This is consistent with findings from another study²⁰. Living alone, spoilage and cost were also mentioned particularly in relation to high-protein foods, due to the common need for cooking most high-protein foods, their often perishable nature, and often high cost. Price of meat has previously been

identified as a determinant of meat consumption²¹, and has been reported as prohibitive for purchase and consumption by older people²².

Solutions or resolutions to many of these barriers are possible. Some participants reported solutions of their own devising, e.g. freezing to increase convenience or prevent spoilage, food sharing, or making use of meal services and care-givers. Many of the comments however, suggest that external help may also aid intakes: cooking classes and meal clubs to encourage interaction and skill development; suitable bus routes to improve accessibility; special offers on individual items, as opposed to multi-buys. Studies employing environmental changes have demonstrated success: Meal delivery schemes have resulted in increased food and nutrient intakes²³, as has eating in groups or family style settings, compared to eating alone^{24,25}.

Cognitive-based reasons

Cognitions about foods are well reported as major drivers of food choice²⁶. Health information, food crises, and previous experiences affect consumption across the population²⁷, but older adults may be more greatly affected due to increased exposure, low levels of education, and an increased awareness of their own frailty and the importance of health²⁸. One individual stated, *'I think as you become older you become more careful about what you eat, and what it does to your body.'*

Medical constraints may also particularly affect older people, and various health conditions were mentioned as reasons for avoiding or eating less of some of the foods discussed. Similar results have also been found in the literature²⁹.

Interventions focussing on changing cognitions through information provision and education have resulted in positive dietary change in older populations when nutrition messages are clear, short,

simple and targeted to specific needs³¹. Information on replacements for foods that are cut out for medical reasons may also be beneficial.

In summary, several reasons for the consumption and non-consumption of high-protein foods were reported. Many of these reasons resulted in detriments in consumption due to reductions in chemosensory, dental and physical abilities, and changes in living situation in the older population, and have impact specifically on high-protein foods due to their often hard, perishable and need-to-be-cooked nature, and high cost. Further work is required to establish the importance of each of these reasons in relation to actual consumption, such that interventions are developed to address those reasons of greatest likely impact on protein intakes and protein status in this population.

This study is limited in generalizability. The population studied was small and unrepresentative of the general UK older population. Men, older individuals, individuals living in deprived areas and those with disabilities or functional limitations are particularly under-represented. All participants also volunteered for a discussion on food and diet, and thus may be more interested in these topics than the majority of the population. The use of representative populations or special sub groups in future research would clearly be of value.

Implications for Research and Practice

Further study is now needed to establish the importance of all identified reasons for the consumption of protein-rich foods, in relation to protein intakes. This will highlight those reasons of greatest relevance to those with low intakes. Interventions can then focus on the reasons of greatest likely impact.

References

1. Chernoff R. Protein and older adults. *J Am Coll Nutr*, 2004; 23: 627S-630S.
2. Paddon-Jones D, Rasmussen BB. Dietary protein recommendations and the prevention of sarcopenia. *Curr Opin Clin Nutr Metab Care*, 2009; 12: 86-90.
3. Layman DK. Dietary guidelines should reflect new understandings about adult protein needs. *Nutr Metab*, 2009; 6: 12.
4. Kim J, Wilson JM, Lee S. Dietary implications on mechanisms of sarcopenia: roles of protein, amino acids, and antioxidants. *J Nutr Biochem*, 2010; 21: 1-13.
5. Morgan DL. Focus Groups as Qualitative Research (2nd ed.). Qualitative Research Methods Series, Vol. 16. Sage Publications: Thousand Oaks. 1997.
6. Kreuger RA. Focus Groups: A Practical Guide for Applied Research. Sage Publications: Thousand Oaks. 1994.
7. Barrett J, Kirk S. Running focus groups with elderly and disabled elderly participants. *Applied Ergonomics*, 2000; 31: 621-629.
8. Northern Ireland Statistics and Research Agency. Northern Ireland Multiple Deprivation Measure 2005. Belfast: The Stationary Office. 2005.
9. Cowart BJ. Development of taste perception in humans: Sensitivity and preference throughout the life span. *Psychol Bulletin*, 1981; 90: 43-73.
10. Sheiham A, Steele JG, Marcenes W, Finch S, Walls AWG. The impact of oral health on stated ability to eat certain foods. *Gerodontology*, 1999; 16: 11-20.
11. Sheiham A, Steele JG, Marcenes W, Walls AWG. National Diet and Nutrition Survey: People aged 65 years and over. Report of the oral health survey. London: Stationary Office. 1998.
12. Becker T, Benner E, Glitsch K. Consumer perception of fresh meat quality in Germany. *Brit Food J*, 2000; 102: 246-266.
13. Henry CJ, Woo J, Lightowler HJ, et al. Use of natural food flavours to increase food and nutrient intakes in hospitalized elderly in Hong Kong. *Int J Food Sci Nutr*, 2003; 54: 321-327.

14. Kossioni A, Bellou O. Eating habits in older people in Greece: The role of age, dental status and chewing difficulties. *Arch Gerontol Geriatr*, 2011; 52: 197-201.
15. Kelsheimer HL, Hawkins ST. Older adult women find food preparation easier with specialized kitchen tools. *J Am Diet Ass*, 2000; 100: 950-952.
16. Wylie C, Copeman J, Kirk SFL. Health and social factors affecting the food choice and nutritional intake of elderly people with restricted mobility. *J Hum Nutr Diet* 1999;12: 375-80
17. Gustafsson K, Sidenvall B. Food-related health perceptions and food habits among older women. *J Adv Nurs*, 2002; 39: 164-173.
18. Moss SZ, Moss MM, Kilbride JE, Rubenstein RL. Frail men's perspectives on food and eating. *J Aging Stud*, 2007; 21: 314-324.
19. Hughes G, Bennett KM, Hetherington MM. Old and alone: Barriers to healthy eating in older men living on their own. *Appetite*, 2004; 43: 269-276.
20. Meneely L, Strugnell C, Burns A. Elderly consumers and their food store experiences. *J Retail Consumer Sci*, 2009; 16: 458-465.
21. McCarthy M, O'Reilley S, Cotter L, de Boer M. Factors influencing consumption of pork and poultry in the Irish market. *Appetite*, 2004; 43: 19-28.
22. Winter Falk W, Bisogni CA, Sobal J. Food choice processes of older adults: A qualitative investigation. *J Nutr Educ*, 1996; 28: 257-265.
23. Gollub EA, Weddle DO. Improvements in nutritional intake and quality of life among frail homebound older adults receiving home-delivered breakfast and lunch. *J Am Diet Ass*, 2004; 104: 1227-1235.
24. McAlpine SJ, Harper J, McMurdo ME, Bolton-Smith C, Hetherington MM. Nutritional supplementation in older adults. *Brit J Health Psychol*, 2003; 8: 57-66.

25. Nijs KAND, de Graaf C, Siebelink E, Blauw YH, Vanneste V, Kok FJ, van Staveren WA. Effect of family-style meals on energy intake and risk of malnutrition in Dutch nursing home residents: A randomized controlled trial. *J Gerontol A Biol Sci Med Sci*, 2006; 61: 935-94
26. Roininen K, Tuorila H, Zandstra EH, Vehkalahti K, Stubenitsky K, Mela, D.J. Differences in health and taste attitudes and reported behaviour among Finnish, Dutch and British consumers. *Appetite*, 2001; 37: 33–45.
27. The American Dietetic Association. Position of the American Dietetic Association: Total diet approach for communicating nutrition information. *J Am Diet Ass* 2007; 107: 1224-32
28. Rousset S, Boirie Y, Droit-Volet S. Change in protein intake in elderly French people living at home after a nutritional information program targeting protein consumption. *J Am Diet Ass*, 2006; 106: 253-261.
29. Horwath CC, Govan CH, Campbell AJ, Busby W, Scott V. Factors influencing milk and milk product consumption in young and elderly women with low calcium intakes. *Nutr Res*, 1995; 15: 1735-1745.
30. Chernoff R. Nutrition and health promotion in older adults. *J Gerontol: Series A*, 2001; 56 (suppl 2): 47-53.
31. Sahyoun NR, Pratt CA, Anderson A. Evaluation of nutrition education interventions for older adults: a proposed framework. *J Am Diet Ass*, 2004; 104: 58-69.

Table 1: Reasons for both the consumption and non-consumption of high protein foods

Reason	Example Quotes
Product-based reasons	
Liking	<i>'I just think it's (meat) nice', 'I just don't like them (eggs)'</i>
Taste / flavour	<i>'It's tasty', 'There's more flavour', 'It's tasteless', 'It's bland'.</i>
Texture / biting, chewing & swallowing difficulties	<i>'Steak's too tough. There's an awful lot of chewing to do', 'I do love a lamb chop. They're nice and tender, especially when you have false teeth', 'I suppose for some people who have chewing or swallowing difficulties. They have to grind everything down – puree everything.'</i>
Appearance	<i>'I wouldn't eat it (meat) if there's any blood',</i>
Odor	<i>'I can't stand the smell of fish at all'.</i>
Freshness	<i>'I love fresh things', 'If you get it (fish) that day when it's fresh, it's beautiful',</i>
Quality	<i>'I buy my meat from the butcher's. It's more expensive but I prefer the quality.'</i>
Food safety / food origins	<i>'Your own butcher will guarantee where it has come from', 'I will trust the RSPCA, and if it puts its stamp on and says this is inspected and yes they are free range eggs, then I will buy them and eat them. But I won't eat somebody else saying these are free range eggs'.</i>
Environment based reasons	
Convenience	<i>'Yoghurts are handy, there are no dishes'</i>

Efforts to cook	<i>'You have to (cook). Nobody else will do it for you', 'Sometimes you feel like you can't be bothered but you just have to do it.'</i>
Living status	<i>If it's a family you can cook a big chicken, but if you're on your own you wouldn't cook one. Well I wouldn't anyway.', 'I find you forget (to eat) sometimes, or you eat for the sake of eating.'</i>
Spoilage and wastage	<i>If you're on your own and you buy the likes of a block of cheese from the shop, and before you know it's starting to go off'.</i>
Availability	<i>I can't get it (tripe) round here. I never see it', 'You can't get fresh fish here. You have to go to Comber to get fresh fish'.</i>
Cost and financial difficulties	<i>Meat is not cheap. Lamb is not cheap. Chicken is about the cheapest', 'When I see the price of meat I just say that's it. What I would do is I would buy less'.</i>
Mobility	<i>I can't walk the same. I can come up here to the shops, and I can go down the road. But if I'm going to Forestside (shopping centre) somebody takes me', 'There's an awful lot who can't move about the kitchen to do anything. So they're dependent on dinners being made for them.'</i>
Cognitive-based reasons	
Nutritional knowledge / health beliefs	<i>I eat meat because it's good for you, and fish is good for you', 'I don't think you should eat a lot of it (egg) because of the cholesterol.'</i>
Medical constraints	<i>'I have high blood pressure and red meat was one of the things I was told not to eat a lot of', 'I take soya milk</i>

	<i>instead of normal milk as I have a problem and that suits me better.'</i>
Negative reports / food scares	<i>'I knew a butcher's wife, and she'd never eaten sausages all her life, and I asked her why? She said if you seen the things they put in sausages you wouldn't eat them either', 'Now they've changed the thing about eggs. Eggs were supposed to be bad for you – for cholesterol – and now they say they're good', 'You get so many (health messages). One says this and the other says something else and you get to the stage where you just ignore them.'</i>
Previous experience / upbringing and habit	<i>'I never liked it (liver)', 'Oh I love the yolk. Remember when you were children and you used to have the soldiers (strips of toast) and dip them into the yolk'. 'I'm just used to it (eating meat). It's habit', 'Well it was just what I was brought up on'</i>

32.