



UNIVERSITY
OF WOLLONGONG
AUSTRALIA

University of Wollongong
Research Online

Faculty of Science, Medicine and Health - Papers

Faculty of Science, Medicine and Health

2013

Baby leafy green vegetables: providing insight into an old problem? An exploratory qualitative study examining influences on their consumption

Anne-Therese McMahon

University of Wollongong, amcmahon@uow.edu.au

Linda Tapsell

University of Wollongong, ltapsell@uow.edu.au

Peter Williams

University of Wollongong, peterw@uow.edu.au

Jennifer Jobling

University of Sydney

Publication Details

McMahon, A., Tapsell, L., Williams, P. & Jobling, J. 2013, 'Baby leafy green vegetables: providing insight into an old problem? An exploratory qualitative study examining influences on their consumption', *Health Promotion Journal of Australia*, vol. 24, no. 1, pp. 68-71.

Research Online is the open access institutional repository for the University of Wollongong. For further information contact the UOW Library: research-pubs@uow.edu.au

Baby leafy green vegetables: providing insight into an old problem? An exploratory qualitative study examining influences on their consumption

Abstract

Issue addressed: Populations in many developed countries continue to fail to meet vegetable consumption recommendations despite ongoing health promotion activities supported by public health policies. Novel ways to encourage vegetable consumption may help address this concern. The aim of the present study was to describe female consumers' perceptions about leafy green vegetables and identify consumption issues. Methods: Three age-stratified semistructured focus groups were conducted with 23 female participants. Food shopping habits, reported consumption and/or knowledge, and the perceived benefits of and/or issues associated with the consumption of leafy green vegetables were explored. Focus groups were transcribed verbatim. Two researchers examined each transcript in conjunction with accompanying observers' notes. Content and thematic analysis was conducted to identify final themes. Results: Three key themes were identified: (1) food selection is influenced by time limitations, convenience factors and quality considerations; (2) the repertoire of vegetables is influenced by acceptability within households, familiarity and culinary confidence; and (3) connection with nutritional value is influenced by existing beliefs and knowledge of the nutrient content of leafy green vegetables. Variations found on self-reported intake and acceptability were related to life stage and needs. Conclusions: Leafy green varieties were perceived as important contributors to a healthy diet. Key barriers to consumption identified in the thematic review related to time constraints, culinary skills and variations in nutritional knowledge. So what?: Primary awareness of vegetables as being critical to a healthy diet has been established. Future health promotion activities could focus more on convenience, nutrient quality and versatility of leafy green vegetables, and other similar vegetables, as a way to increase total consumption.

Keywords

leafy, baby, influences, examining, study, consumption, qualitative, their, exploratory, problem, old, into, insight, providing, vegetables, green

Disciplines

Medicine and Health Sciences | Social and Behavioral Sciences

Publication Details

McMahon, A., Tapsell, L., Williams, P. & Jobling, J. 2013, 'Baby leafy green vegetables: providing insight into an old problem? An exploratory qualitative study examining influences on their consumption', *Health Promotion Journal of Australia*, vol. 24, no. 1, pp. 68-71.

Title: Baby leafy green vegetables – providing insight into an old problem? An exploratory qualitative study examining influences on their consumption”

Authors: **Ms Anne –Therese McMahon BSc MNutrDiet GCert (Comm) APD**
Smart Foods Centre, School of Health Sciences,
University of Wollongong
Northfields Avenue
Wollongong NSW 2522 Australia

Professor Linda Tapsell BSc DipNutrDiet MHPEd PhD FDAA
Smart Foods Centre, School of Health Sciences
University of Wollongong NSW 2522 Australia

**Associate Professor Peter Williams BSc (Hons) DipNutrDiet MHP PhD
FDAA**
Smart Foods Centre, School of Health Sciences,
University of Wollongong NSW 2522 Australia

Associate Professor Jennifer Jobling BAgSci(Hons) PhD
Faculty of Agriculture, Food and Natural Resources
The University of Sydney
Sydney, NSW 2006 Australia

Correspondence: (Ms Anne-Therese McMahon)

School of Health Sciences

University of Wollongong NSW 2522

Email: amcmahon@uow.edu.au

Not for publication

Tel: 61 2 4221 4829

FAX: 61 2 4221 4844

Word Count: 1490 (not including abstract, acknowledgments, references or tables)

Running Title: Leafy green vegetables - a possible solution?

Key words: qualitative methods, fruit and vegetables, health education, health promotion strategies

Introduction

Vegetables enhance diet quality by providing specific nutrients such as vitamins¹ and non-nutrient biologically-active components such as phytochemicals.^{2, 3} Furthermore higher intakes of fruit and vegetable consumption are linked to risk reduction for various diseases^{4,5} which support the levels of intakes recommended in nutrition policy worldwide.^{6, 7} Policy makers have also acknowledged there is a need to work with the food supply chain more broadly to help achieve these recommendations.⁸ For example, the *Go for 2&5*[®] campaign was supported by a broad range of organisations including food industry groups.⁹ However despite public health promotion, consumption of vegetables continues to fall below recommendations.³ A recent report noted only 8 % of men and 13 % women were consuming adequate vegetable intake,¹⁰ suggesting an urgent need for further intervention.

To aid in the development and implementation of successful interventions a theoretical understanding of behaviour in the social context is useful. Bandura's¹¹ Social Cognitive Theory (SCT) links behaviour with the concept of self-efficacy and the influence of information sources on individuals. These sources include skill development (e.g. culinary proficiency); vicarious experiences (e.g. observing others' food consumption); verbal persuasion often used in health education (e.g. rationale for incorporating foods); and physiological states such as anxiety (potentially triggered by time constraints). Hence, to support change in food consumption behaviour, focusing on these information sources as part of health promotion activities is likely to be useful.

Baby leafy green salad products are examples of forms of nutrient dense vegetables¹² which are relatively new to the Australian vegetable supply. These vegetables have a number of

interesting attributes that may help consumers achieve improvements in vegetable intakes. For instance baby leafy greens can be included in both hot and cold dishes and are available throughout the year. This study aimed to describe female consumers' perceptions of baby leafy green vegetables and identify influences on their consumption.

Methods

Female consumers were recruited via direct approach at a shopping mall servicing low to middle income earners (SEIFA Index for Disadvantage of 1040)¹³ and via an email request to non-professional staff listed within the University of Wollongong's Health Faculty. Inclusion criteria were: female (representing the major grocery buyers dictating food purchase and vegetables specifically)¹⁴, and ability to understand and read English. Participants attended one focus group: 25-34 yrs [F.G. 3], 35-49 yrs [F.G. 2], or 50 + yrs [F.G. 1] and participants were offered a \$50 gift voucher in acknowledgement of their time. The University of Wollongong Human Ethics Research Committee approved the study.

Focus group methodology enabled an exploration of perceptions of baby leafy green vegetables. Upon arrival all participants were asked to complete a non-identifiable questionnaire to provide some basic descriptive data for each group including self-reported weight and height. Groups were conducted in a quiet room with a moderator [AM] and an observer [EW, EN, or DN] as recommended by Krueger.¹⁵ The observer's written record of non-verbal communication was used to help identify individual responses and enrich the final analysis. The semi-structured guide used by the moderator in the focus groups was developed according to elements of Bandura's SCT.¹¹ Key areas of interest were: food shopping habits; reported consumption and knowledge of vegetables; perceived benefits/issues for baby leafy

green vegetables; and credibility and usefulness of nutrition messages for baby leafy green vegetables.

Focus group discussions were digitally recorded and transcribed verbatim with accuracy checked through reviewing the typed transcript against the digital recording. The Qualitative Theory Grounded Approach (QTGA) guided the research data coding and analysis,¹⁶ enabling exploration of the multiple possible explanations of the factors impacting on vegetable choice.¹⁷ Themes were identified through content and thematic analysis performed separately by two researchers.¹⁵ Sub-categories of themes were developed to distinguish variations in responses. All thematic hierarchies and deviant cases were reviewed using QSR Nvivo 7.0 qualitative analysis software. Quotes exemplifying each theme were identified.

Results and Discussion

Twenty three women 25-79 yrs, who were mostly in the healthy to mildly obese weight range were recruited into one of three age-related focus groups (Table 1). Participants clearly recognised vegetables as crucial foods in achieving a healthy diet, but acknowledged influences upon intake that fell under three major themes and subthemes (Table 2). Importantly these influences are amenable to being addressed. For instance through an adjusted food supply which ensures availability of good quality, easy to prepare vegetables in all popular shopping venues. The thematic findings also link well with other research showing that availability, food quality and lack of knowledge are factors influencing consumption of fruit and vegetables.¹⁸⁻²⁰ Interestingly, baby leafy green vegetables, due to their fragile structure and risk for early degradation post harvest²¹ present specific barriers acknowledged by participants. The particular issue of ‘variations in food quality’ was raised

by all groups, so attention to logistics management to ensure availability of good quality product is essential, possibly leading to less wastage and potential price savings.

Our findings were consistent with previous research on the need to understand social dynamics within households, and the role of members in addressing barriers and changing food behaviours.²² The subthemes identified under the *Food selection* theme and the *Repertoires of vegetable theme* link to key information sources articulated in Bandura's SCT framework. These links provide focal points for health promotion activities. For instance, *time limitations* links to skill development, so providing ideas on how to easily incorporate baby green leafy vegetables into the diet would be a useful strategy. Similarly, *familiarity* links with vicarious experiences, so enabling an opportunity to trial the vegetable in specific recipes at point of purchase may encourage increased consumption.

Education levels, ethnicity and size of the household have also been correlated to the frequency of food-shopping and consumption patterns.²³ These important influences also need to be taken into account in health promotion activities. Larger households tend to shop more regularly in supermarkets as opposed to small grocery stores.²³ It was interesting to note that even with the spread of household sizes from 1-6 people, and relatively narrow socio-economic range, participants also commented on the attraction of supermarket shopping for price advantage and variety. Hence supermarkets may be an attractive venue to stage health promotion activities to encourage vegetable consumption as it appears from our research as well as literature that all socio-demographic groups frequent these venues.

Participants' generally expressed limited understanding of the range of key nutrients provided by baby leafy greens. However, there was some variation in depth of knowledge as noted in the quote reported in Table 2. Lee et al²⁰ reported that lack of knowledge may be a barrier for

consumption, but others have argued that to change consumption behaviour other more specific skills are required such as what serve size makes a portion.²⁴ Hence strategies like addressing preparation time constraints²⁵ and providing a broader perspective on the health properties of vegetables²⁶ may also help increase consumption. Whilst there seems a plethora of choice of strategies, tailoring interventions for specific target groups by incorporating the most appropriate strategies has been recognised as the most effective way to increase fruit and vegetable consumption.²⁷ Baby leafy green vegetables have attributes that enable them to be promoted within many of these strategy approaches. Indeed our study participants recognised these attributes, but emphasised different reasons at different life-stages supporting the need for tailoring the approach. For instance the nutrient density attribute seemed to be more appealing to the older age group (50 + years), whilst the versatility attribute seemed particularly attractive to the 25-35 year age group.

Limited representation from less highly-educated consumers and the gender profile of the participants means caution should be exercised about interpreting the results broadly. However clarification of specific influences for inclusion of baby leafy green vegetables within the diet highlighted the significance of embedded shopping habits and skill base in the kitchen for a group generally considered less at risk. This finding highlights the need to obtain more substantive knowledge about the factors likely to impede the uptake of the central messages about increasing vegetable intake for various groups in society.

Conclusion

This study revealed the complex nature of internal and external influences on increasing vegetable consumption utilising baby green leafy vegetables as an example. Important aspects affecting vegetable selection and consumption were identified in the subthemes.

Quality considerations, relating to what is available in the shopping environment, and cooking skills to confidently include a broader variety in vegetables, are critical aspects likely to impact intakes. Health promotion activities that focus on enhancing specific knowledge, visual reinforcement of options, and skills development align with Bandura's theoretical framework of factors and are likely to influence social practices. Ultimately this offers a direction for promoting and achieving increased consumption of vegetables that is consistent with SCT and consumer preferences.

Acknowledgements

This study was supported by a grant from Applied Horticultural Research. The authors acknowledge the study participants and Dr Eva Warensjö, Deborah Nolan and Elizabeth Neale PhD Candidates for the role in focus groups and analysis.

References

1. Van Duyn MAS, Pivonka E. Overview of the health benefits of fruit and vegetable consumption for the dietetic professional: Selected literature. *J Am Diet Assoc.* 2000;100:1511-21.
2. Van Dokken W, Frølich W, Saltmarsh M, Gee J. The health effects of bioactive plant components in food: results and opinions of the EU COST 98. *Nutri Bulletin.* 2008;33(133-139).
3. NSW Department of Health. *Report on the consumption of vegetable and fruit in NSW:2003.* Sydney: NSW Centre for Public Health Nutrition; 2003.
4. Riboli E, Norat T. Epidemiologic evidence of the protective effect of fruit and vegetables on cancer risk. *Am J Clin Nutr.* 2003;78(Supp 1):559S-69S.
5. Hamer M, Chida Y. Intake of fruit, vegetables, and antioxidants and risk of type 2 diabetes: systematic review and meta-analysis. *J Hypertens.* 2007;25(12):2361-9.
6. US Department of Health and Human Services & US Department of Agriculture. *Dietary Guidelines for Americans. 6 ed.* Washington, DC: U.S. Government Printing Office; 2005.
7. National Health and Medical Research Council(NHMRC). *Dietary Guidelines for all Australians.* Canberra; 2003.
8. Strategic Inter-Governmental Nutrition Alliance(SIGNAL). *Eat Well Australia An agenda for action for public health nutrition 2000-2010.* Canberra: National Public Health Partnership; 2001.

9. Miller MM, Pollard CM. Working with industry to promote fruit and vegetables: a case study of the Western Australian Fruit and Vegetable Campaign with reflection on effectiveness of inter-sectoral action. *Aust NZ J Public Health*. 2005;29:176-82.
10. NSW Department of Health. *The health of the people of New South Wales*. North Sydney NSW Department of Health; 2010.
11. Bandura A. Health promotion from the perspective of social cognitive theory. *Psychol Health*. 1998;13:623-49.
12. D'Antuono LF, Elementi S, Neri R. Exploring new potential health-promoting vegetables: glucosinolates and sensory attributes of rocket salad and related *Diplotaxis* and *Eruca* species. *J Sci Food Agri*. 2009;89:713-22.
13. Australian Bureau of Statistics. *Socio-Economic Indexes for Areas (SEIFA 2006)* 2006.
14. Dumbrell S, Mathai D. Getting young men to eat more fruit and vegetables: a qualitative investigation. *Health Promot J Austr*. 2008;19:216-21.
15. Krueger RA. *Focus groups*. Thousand Oaks, CA: Sage; 1994.
16. Strauss A, Corbin JB. *Basics of qualitative research*. Thousand Oaks, CA: Sage; 1990.
17. Paisley J, Sheeshka J, Daly K. Qualitative Investigation of the meanings of eating fruits and vegetables for adult couples. *J Nutr Educ*. 2001;33(4):199-207.
18. Maclellan DL, Gottschall-Pass K, Larsen R. Fruit and vegetable consumption benefits and barriers. *Canada J Diet Prac Res*. 2004;65(3):101-5.
19. Webber CB, Sobal J, Dollahtie JS. Shopping for fruits and vegetables: food and retail qualities of importance to low-income households at the grocery store. *Appetite*. 2010;54:297-303.
20. Lee E, Worsley A, Crawford D. Australian Adult Consumers' Beliefs about plant foods: a qualitative study. *Health Educ Behav*. 2005;32(6):795-808.
21. Hui YH, Ghazala S, Graham DM, Murrell KD, nip W, editors. *Handbook of Vegetable Preservation and Processing*. NY; 2004.
22. Paisley J, Beanlands H, Goldman J, Evers S, Chappell J. Dietary Change: What Are the Responses and Roles of Significant Others? *J Nutr Educ Behav*. 2008;40(2):80-8.
23. Yoo S, Baranowski T, Missaghian M, Baranowski J, Gullen K, Fishcer JO, et al. Food-purchasing patterns for home: a grocery store-intercept survey. *Pub Health Nutr*. 2006;9(3):384-93.
24. Birmingham B, Armstrong Shultz J, Edlefsen M. Evaluation of a five-a-day recipe booklet for enhancing the use of fruits and vegetables in low-income households. *J Comm Health*. 2004;29(1):45-62.
25. Pollard C, Miller M, Woodman RJ, Meng R, Binns C. Changes in knowledge, beliefs and behaviours related to fruit and vegetable consumption among Western Australian Adults from 1995-2004. *Am J Pub Health*. 2009;99(2):355-61.
26. McMahon AT, Williams P, Tapsell L. Reviewing the meanings of wellness and well-being and their implications for food choice. *Perspect. Pub Health*. 2010;130:282-6.
27. Charlton KE. Two apples and five carrots a day keep the doctor away: Strategies to increase fruit and vegetable consumption. *Nutr Diet*. 2008;65:112-4.

Table 1 Interview schedule for focus groups

- 1.** Identify the key consideration points for food shopping in the various groups
- 2.** Clarify what might be important to those individuals and why
- 3.** Identify if vegetables and in particular leafy green vegetables(baby spinach and rocket) feature as part of the food choice selection and if there is any perceived health benefit
 - a.** Potentially rank examples of different vegetables in terms of their perceived potential health benefit and discuss why/why not considered healthy
- 4.** If vegetables do not feature as part of the food choice selection if there are any reasons why that might be the case
 - a.** Explore any perceived barriers to vegetable intake
- 5.** Identify if there is any knowledge about how leafy green vegetables specifically baby spinach and rocket are produced and if there is any perceived impact on products benefits
- 6.** If not already identified draw out if there is any perceived issues
- 7.** Look at examples of nutrition messages on nutrient content, nutrient function and health benefits of leafy green vegetables

Table 2 Descriptive characteristics of the total sample of participants (n=23).

Characteristics	20-34 years	35-49 years	50 + years*
Number	7	6	10
<i>Marital Status</i>			
Single/widow/divorced	3	6	5
De facto/ Married	4		5
<i>Children living at home</i>			
None	4	2	4
One - Three	3	4	6
<i>Education</i>			
Secondary			2
Technical College	1	2	3
Tertiary	6	4	5
<i>Body Mass Index*</i>			
18-24.9	6	2	4
25-29.9		3	2
30-35	1**		2**
35-40		1	1

* One participant 50 + years did not provide weight details

** Mildly obese with BMI=31 for these participants

Table 3 Hurdles and opportunities for consumption of leafy green vegetables

Three Main Themes	Sub-themes	Archetypical quote*
A. Food selection	A (i) time limitations	“I don’t have time to be running up to Shell Harbour Square(<i>shopping mall</i>) or somewhere else just to get fruit and vegies” F.G. 1.
	A (ii) convenience factors	“I just go to Woolworths(<i>supermarket</i>) because I get everything from the one spot, I probably do have the time I just don’t see the point in going to two different places” F.G. 3
	A (iii) quality considerations	“ I do like quality, I find the vegies are really fresh(<i>at the green grocer</i>) and they are priced right you know” F.G. 2
B. Repertoires of vegetables	B (i) acceptability within households	“Rocket we don’t really use as much because it is peppery, (<i>child’s name</i>) doesn’t really like it” F.G. 3
	B (ii) familiarity	“I had a recipe with baby spinach in it and I thought what the hell is baby spinach’ F.G. 1
	B (iii) cooking skills	“I feel intimidated by vegetables, I know that sounds really stupid” F.G. 3
C. Connection with nutritional value	C (i) existing belief about vegetables	“start your children off the earliest age you can on all our vegetables” F.G. 1
	C (ii) knowledge of nutrient content	“I would have no idea what is good about baby spinach and rocket, I just (<i>think</i>) that generally they are good foods”F.G.3
	C (iii) believability	“I actually do think this(<i>baby spinach</i>) has got folate and what not and so that’s why I have it”F.G.1

* Note 25-34 yrs [F.G. 3], 35-49 yrs [F.G. 2], or 50 + yrs [F.G. 1]