Learning you are “at risk”: seniors’ experiences of nutrition risk screening

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Abstract Nutrition risk screening can help identify community-dwelling older adults who may benefit from nutrition education and interventions to improve food intake. Research has shown, however, that older adults who are found “at risk” through nutrition screening commonly do not see themselves at risk, and many do not follow through with accessing recommended nutrition services. Thus, the purpose of this qualitative study was to examine older adults’ experiences of learning they were at risk through nutrition screening and to identify what influenced their perspectives and responses to their screening results. Face-to-face interviews were conducted with 22 older adults who had screened at risk (SCREEN II® scores < 54) through a nutrition screening process conducted by mail. Participants received their screening results in a personalized letter before the interview, along with some recommendations to help improve food intake and decrease their nutrition risk. Interviews were transcribed and analyzed for

themes. When participants reflected about receiving their screening results, some described feeling surprised or even upset by the message that they were at increased risk, whereas others felt unconcerned or reacted with heightened attentiveness to their nutrition. They also began to rationalize their screening score and found ways to explain away their risk. The message that they were at increased risk was poorly understood and not well received because it contradicted their perspective: they felt they were doing the right things, they saw room for improvement rather than seeing themselves at risk, and they tended to make comparisons that helped support the view that they were not truly at risk. Further, even though participants saw room for improvement, they described barriers to change and commonly felt that the recommendations were more applicable for others than themselves. Strategies to improve communication of nutrition screening results and recommendations are discussed to help seniors better understand their risk and take steps to improve their nutrition.

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Introduction

Nutrition has an important role in healthy aging, yet community-dwelling older adults may have poor food intake due to a wide range of physical and psychosocial factors (American Dietetic Association 2005; Payette and Shatenstein 2005). Nutrition screening is commonly used in this growing population to identify those who are at risk for nutrition problems. Unlike screening for a specific disease such as breast cancer, screening for “nutrition risk” is a less clearly defined target. Numerous screening

instruments have been developed for use in older adult populations, each identifying nutrition risk in different ways (Green and Watson 2006; Donini et al. 2007; Phillips et al. 2010). However, regardless of the choice of instrument used for nutrition screening, to be identified “at nutrition risk” means to be considered someone who could benefit from further nutrition assessment and interventions (Lacey and Pritchett 2003).

When selecting a screening instrument, it is important to consider not only the specific population it was designed for, but also the process of its development (Keller et al. 2000). Moreover, screening tools need to identify those at risk with good sensitivity and specificity, and have reproducible results. Validated screening instruments that are recommended for community-dwelling older adults include the Mini Nutritional Assessment (MNA®), the Malnutrition Universal Screening Tool (MUST), and Seniors in the Community: Risk Evaluation for Eating and Nutrition (SCREEN II®) (Phillips et al. 2010).

SCREEN II® is a short nutrition screening questionnaire developed in Canada which can be easily completed by independent-living older adults (Keller et al. 2005). For increased practicality in community-level screening, this tool does not require measurements of height or weight or any laboratory data. It includes sixteen items which are outlined in Fig. 1, and up to four points can be scored for each item (lower scores indicate increased risk). The total number of points that could be obtained on the screening tool is 64, and scores of <54 are considered indicative of being at risk for nutrition problems. Scores of 50–53 reflect mild to moderate nutrition risk, and the risk increases as scores drop beyond this level.

SCREEN II®, and its forerunner SCREEN I®, typically identify *early* nutrition risk as the screening items focus on reported weight change, food intake, and challenges that could decrease one’s intake (Keller 2007). Other screening tools which include anthropometric measurements and biochemical data are designed to identify older adults at greater nutrition risk, showing some evidence of more advanced nutrition problems. Thus, the prevalence of “nutrition risk” identified with SCREEN II® is typically higher than that identified by other tools for older adults. The main advantages of SCREEN II® are that it can be quickly and easily completed by seniors in the community with or without assistance and may be used as a first step for health promotion initiatives in this population.

SCREEN I® was used in the Bringing Nutrition Screening to Seniors (BNSS) project, which studied the process of implementing community-level screening in five locations across Canada. In an evaluation of this initiative, the screening questionnaire was completed by 1,196 older adults, and 39% of the sample was found to be at nutrition risk (Keller et al. 2007). At the time of screening, risk was communicated in-person by a screen administrator, and seniors at risk were given referrals for

SCREEN II® Questionnaire Items

1. Reported weight change in the past six months
2. Weight changed unintentionally
3. Opinion about body weight (more or less than it should be)
4. Skipping meals
5. Limiting or avoiding certain foods
6. Appetite
7. Intake of fruit and vegetables
8. Intake of meat and alternatives
9. Intake of milk and alternatives
10. Intake of fluids
11. Difficulty with swallowing
12. Difficulty with chewing
13. Use of commercial meal replacements or supplements
14. Eating alone
15. Meal preparation (finding that cooking is a chore)
16. Difficulties with grocery shopping

Fig. 1 Questionnaire items included SCREEN II® to identify older adults at risk for nutrition problems

appropriate nutrition services such as an assessment with a Registered Dietitian, meal programs, or grocery shopping assistance. However, such referrals were declined by over half of the seniors who received them, and denial of risk was a common reason for not pursuing these services.

Denial of nutrition risk has also been observed in hospitalized older adults. In the United States, Callen (2004) interviewed ten hospitalized seniors who were found to be at nutrition risk through screening, and none of the participants believed that they were at risk. In fact, these seniors expressed that they had a good diet and could not think of what they could do to eat better.

Optimistic bias is a commonly observed tendency for people to view their own risk as less than that of their peers (Klein and Helweg-Larsen 2002). It has been found that people tend to believe their intake of “unhealthy” foods is less than average, and that they have less chance of gaining weight or developing heart disease as compared to others (Raats and Sparks 1995). Optimistic bias can help seniors preserve their self-image and cope against worry (van der Pligt 1996), yet perceptions of wellness can be falsely reassuring.

Angus et al. (2005), interviewed people at high risk for coronary heart disease and found they had a hard time

connecting the concept of heart disease risk with their everyday physical experiences, describing heart disease as a “sneaky, silent disease.” Participants described waiting for the big event—a heart attack—to convince them of their need for change. “Nutrition risk” tends to be similarly hidden, often unaccompanied by tangible signs. Those who are found to be at nutrition risk may only vaguely understand what this means, as even health professionals conceptualize nutrition risk in different ways.

In light of the observation that older adults who are found to be at “nutrition risk” commonly deny their risk, and this can hinder behavior change and uptake of recommended nutrition services, there is a need for further research on seniors’ experiences of nutrition risk screening. Understanding the experience of learning one is at nutrition risk through screening can help determine more effective ways to communicate nutrition screening results and recommendations. Using descriptive phenomenology, the purpose of this study was to examine:

- 1) What is it like for seniors to learn they are “at nutrition risk”?
- 2) What influences seniors’ perspectives of their nutrition screening results and how they respond to them?

Methods

Inclusion criteria and recruitment of interview participants

In this qualitative study, seniors at nutrition risk were interviewed one-on-one about their experience of screening and receiving their screening results and recommendations. The inclusion criteria for participating in the interviews were independent-living men and women at least 55 years of age who were English speaking, showed no obvious cognitive impairment, and were identified to be at nutrition risk based on SCREEN II® scores less than 54. The interview participants were recruited through several steps as outlined in Fig. 2.

The first steps of recruitment were conducted by mail through the Guelph-Wellington Seniors’ Association (GWSA). The GWSA has a membership of about 3,000 older adults and runs a variety of programs located at a local seniors’ recreation center. Most members have good physical mobility and participate in various activities at the center. A random sample of 150 members was mailed a short letter explaining the study along with two study questionnaires: the screening tool (SCREEN II®) and a short questionnaire we created to collect basic demographic and diet knowledge and attitude information (DKAQ).

Fig. 2 Recruitment process

Sixty-one seniors of the 150 (41%) voluntarily returned their questionnaires by mail. Their screening questionnaires were scored and 38 (62%) were found to be at nutrition risk (scores <54). All 61 seniors who returned their questionnaires received a personalized letter by mail which showed their screening score, outlined any nutrition concerns that were identified, and provided some recommendations. The letters were personalized from a basic template, including only relevant information based on each person’s screening score and responses to individual questions on the screening questionnaire. Figures 3 and 4 show examples of how the screening score and identified nutrition concerns were presented to people at risk versus those who were not considered to be at risk.

Recommendations were provided with the screening results as applicable. For example, those who indicated they had a low intake of fruits and vegetables received information based on Canada’s Food Guide to Healthy Eating and tips to help improve their intake from this food group. In addition to dietary recommendations, seniors

Fig. 3 Example of a results summary for older adults at nutrition risk (SCREEN II® scores <54)

Dear _____,

Thank you for participating in the “Nutrition Risk Perception among Community Living Seniors” study. The questionnaire that you recently completed was designed to identify nutrition issues or concerns in older adults. A higher score means fewer concerns.

You scored 49 / 64 on this questionnaire, suggesting that you currently have a few issues that place you at increased risk. You reported that:

- You feel your weight is more than it should be
- You sometimes skip meals
- Your usual intake of fruit and vegetables is less than recommended
- Your usual intake of meat, eggs, fish, poultry, or other meat alternatives is slightly less than recommended
- Your usual intake of milk products is slightly less than recommended
- Your usual intake of fluids is less than recommended
- You sometimes find cooking a chore

(Recommendations followed)

Fig. 4 Example of a results summary for older adults not at nutrition risk (SCREEN II® scores $\geq$ 54)

Dear _____,

Thank you for participating in the “Nutrition Risk Perception among Community Living Seniors” study. The questionnaire that you recently completed was designed to identify nutrition issues or concerns in older adults. A higher score means fewer concerns.

You scored 55 / 64 on this questionnaire, suggesting that you currently have a healthy diet overall. However, you reported that:

- You feel your weight is more than it should be
- Your usual intake of fluids is less than recommended
- You sometimes find cooking a chore

(Recommendations followed)

received information for self-referral to community services such as meal programs or nutrition counseling with a Registered Dietitian when appropriate.

When the seniors returned their questionnaires, they were asked to provide a phone number to be contacted if they were interested in being interviewed for the study. Twenty-seven of the seniors at risk provided their phone number and they were contacted and invited to participate in a face-to-face interview about their nutrition screening experience. Twenty-two of these seniors volunteered to be interviewed (58% of those at risk). Interviews with 5–25 people are recommended for phenomenological research (Creswell 2007).

Interview process

One interviewer completed data collection over a three-month period. The semi-structured, face-to-face interviews

took place either in the participant’s home or at the local seniors’ recreation center 1–2 months after screening. The interviews were approximately 45–60 min long. A copy of SCREEN II® and the participant’s results and recommendations letter was brought to the interview to aid recall of the experience of completing the screening questionnaire and receiving the results. After reviewing the screening questionnaire together and having some discussion about what nutrition risk meant in general to the participants, the focus shifted to the feedback letter and what it meant to be told one was personally at increased risk. The interviewer asked what it was like to receive the screening results, and participants commented on their screening score, the nutrition concerns that were identified in their letter, and the recommendations they received. The interview guide is shown in Fig. 5. The interviews were digitally recorded and transcribed verbatim.

Qualitative analysis

Phenomenology is a methodology aimed at describing and understanding a lived experience (Creswell 2007), and in this study the focus was on seniors' experiences of learning they were at nutrition risk. The analysis followed a phenomenological approach described by Moustakas (1994). One key process of this approach was regular reflective journaling, where effort was made to “bracket” or recognize and lay aside prior personal and professional knowledge as well as expectations based on previous interviews; the aim was to approach each interview freshly, as if it were the first. The goal of bracketing is rarely if ever fully achieved (Moustakas 1994), but the reflective process enabled a clearer view of the similarities and differences in the participants' experiences.

The analysis proceeded inductively, without the use of a pre-existing framework or code list. The interviews were coded, first giving attention specifically to all details describing what the experience was like for participants to learn they were at nutrition risk. Significant statements were identified that represented details considered necessary and sufficient for understanding each senior's experience. Common aspects of what the experience was like were grouped to form themes. The focus then turned from details of what the experience was like to possible explanations of why it was experienced that way. The transcripts were coded with attention to conditions and individual perspectives that helped explain each participant's response to his or her screening results, and these influences were then grouped to form themes. Individual and collective descriptions of the seniors' experiences of learning they were at risk were then written, elucidating the

themes and showing how they were related. Two other members of the research team reviewed the transcripts and the corresponding written descriptions for several participants to check that the themes were well supported.

Ethics

Clearance was received from the University of Guelph Research Ethics Board. Informed consent was implied for all seniors who voluntarily returned their questionnaires in the recruitment stage. Informed written consent was obtained from all interview participants.

Results

Participant characteristics

The interview participants included 13 women and 9 men, and 15 (68%) were aged 75 or older. A significantly greater proportion of the interview participants were age 75+ than those who screened at risk but did not take part in an interview ($\chi^2 (1) = 5.48, p = .019$). Those who were younger may have been busier with activities or vacationing during the summer months when the interviews took place, explaining why those who volunteered to be interviewed tended to be older. Half of the interview participants had education beyond high school. Most participants lived with their spouse or one of their children, while eight (36%) lived alone. These proportions were consistent with those found at risk who did not participate in an interview. Screening scores for the 22 interview participants ranged from 41 to 52 out of 64 (mean score = 47.3);

Fig. 5 Interview guide

Semi-structured interview guide

- Why were you interested in completing the nutrition questionnaire sent to you?
- What was it like to answer the nutrition questions?
- How did filling out this form affect how you thought about your diet?
- This form you completed is used to identify older adults who have nutrition risk.
What does “nutrition risk” mean to you?
- What was it like to receive your screening results and learn that you are at nutrition risk?
- How did you feel about the recommendations you received?
- What did you decide to do regarding your screening results?
- Do you think it would be valuable for others to participate in screening?

there was no significant difference in scores from those at risk who were not interviewed.

What was the experience like for seniors to learn they were “at nutrition risk”?

Two themes describe what it was like for the older adults when they saw their screening score and read that they were at increased nutrition risk: the experience entailed *reacting to the news* and *rationalizing the results*. Specific ways that participants reacted to and rationalized their results are described below in more detail. Note that the order within these thematic descriptions does not reflect the frequency or relative importance of the various types of emotional reactions and ways of rationalizing their results. The qualitative analysis methods did not aim to quantify but rather identify and describe observed commonalities and variations within the participants’ experiences.

Reacting to the news

Participants had various initial thoughts and emotions as they reacted to the news that they were at nutrition risk. Some seniors were very *surprised* by their results. One woman said, “I was initially kind of shocked that I scored...you know, I thought it would be higher.” In some cases, participants were so surprised by their screening results that they felt *upset*. For example, a woman who believed she had very good eating habits stated, “I put it (her results letter) back in the envelope. Sort of forgot it...I was a little bit upset when I got it.” Other participants reacted by feeling *unconcerned*, as revealed by a woman who responded, “Well, it doesn’t really bother me.” Participants also reacted by showing *attentiveness*. For example, one man said, “It’s a matter of...something we should know about and do something about.” Some participants’ initial reactions included a combination of the thoughts and feelings described above.

Rationalizing the results

Participants also rationalized their results when they learned they were at nutrition risk. For some seniors, this process occurred by reading and *affirming* certain nutrition concerns identified in their letter. For example, a woman said, “I looked to see what...where I wasn’t scoring and ah then I could see...I wasn’t getting the proper quantities [of food from different food groups].” Some participants explained away their risk by *adding context*. A woman considered the situations in which she and her husband skipped meals and stated, “It’s not a continual practice or we don’t do it for any particular reason other than we’re in a hurry or you’ve had a late breakfast or we’ve been out for

breakfast.” Other seniors explained away their risk by *noting inaccuracies*. A man said, “I felt that little applied to me probably because I had not properly completed the questionnaire.” Rationalization processes were also evident through the *lingering questions* that some seniors raised about their score. One woman asked, “So in what way do you feel I...I’m not doing the right things?” The older adults typically rationalized their screening results in more than one of these ways.

What influences seniors’ perspectives of their nutrition screening results and how they respond to them?

Three major influences can help explain why participants reacted to the news that they were “at risk” and rationalized their screening results the way they did: (1) they felt they were *doing the right things*, (2) they *saw room for improvement* rather than seeing themselves at risk; and (3) they *made comparisons* which supported the view that they were not truly at risk. These three influences on the seniors’ perspectives of their screening results are described below. They also give insight into some barriers to change among seniors who screen “at risk.”

Doing the right things

From the participants’ perspective, they were doing the right things to eat well and be in good health. All of them pointed out their *good habits and strengths*. After reviewing the screening questionnaire, one man stated, “...I’m eating good, compared to how you want people to eat. Yeah, well I eat loads of vegetables and so I found it ah...I am doing things right.” Participants were trying to eat well by limiting “bad” foods and cooking with the “right” foods, and tended to view their habits positively. Seniors felt they were also doing the right things by *watching their health* in other ways, such as monitoring their weight, exercising, or going for regular check-ups. For example, a man stated:

I feel I am not at risk, but I might be wrong. But I count on the medical profession to let me know if they see that there is something wrong. If my weight drops or whatever, then I hope they will ring bells and say “Hey!”

In connection with watching their health, some participants were *following specific advice* they had received. A woman described going to the diabetes clinic where she saw a dietitian and nurse, and she explained, “...they’re quite happy as long as I do what I’m supposed to do, that’s read the labels. And that’s what they stress and for me it’s the carbs.” Following specific dietary advice gave assurance that they were doing the right things.

Participants tended to see their screening score as an evaluation of how well they were doing the right things. In light of their relatively positive view of their food choices and actions to watch their health, they commonly reacted with surprise or even felt upset. They began rationalizing their nutrition screening results because the score and message that they were at increased risk conflicted with their point of view.

Further, some participants did not think they would be doing the right things by eating certain foods recommended in their screening results letter. Participants with diabetes were hesitant about eating more fruit, and seniors with high cholesterol had concerns about eating eggs or red meat. A participant who was recommended frozen meal options because she often found cooking a chore responded by saying, “I will never buy a frozen dinner. There’s no way I’m going to touch that because of the chemicals.” Without further guidance, participants felt that such recommendations were not personally applicable.

Seeing room for improvement

Although participants tended to focus on ways they were doing the right things, they also typically acknowledged some *poor habits or downfalls* in their lifestyle. One woman said, “I was eating fairly good, but I could be better. Yeah. There was...in other words, there was room for improvement.” Seniors had specific behaviors they wanted to change, such as not drinking enough water, skipping meals, binge eating, or snacking too much in the evening. Many were *considering or making changes* at the time of the interview. For example, a man stated, “So I keep thinking to myself, now one of these days I have to start, not dieting but watching what I eat and watching how much I eat.” Seniors also were aware of room for improvement in light of *special challenges* such as food intolerances, chewing problems, or not feeling hungry or thirsty. A man commented, “Yes, the biggest problem is my appetite. You know, I just don’t feel like eating.”

Participants did not see themselves at increased “risk” nutritionally, but readily identified that their eating habits could be better and that there were challenges to overcome in their efforts to eat well. Furthermore, some seniors reacted with attentiveness to the message that they were at risk because they had certain health concerns or knew of areas where they could be making changes.

Yet, while seeing room for improvement, readiness to change and self-efficacy for change were often lacking. Food dislikes or low interest in trying new foods kept some seniors from starting to eat particular food choices that were recommended in their screening results letter. A man with low intake of milk products said, “I’ve never had soy milk in my life, so I wouldn’t know what it tastes like. And

if I don’t know, I wouldn’t buy it.” And although participants were generally trying to eat healthy, they talked about their desires for certain non-nutritious foods and making allowances for these. Some of the older adults also showed reluctance to change longstanding habits in cooking methods. As one woman stated, “You have to have fat on meat to cook it anyway. But see, there is my upbringing.” Some seniors saw limits in their personal ability to make changes, especially if they had difficulties such as low appetite or lack of thirst. Others saw limits in their ability to start eating certain recommended foods if those foods were disliked by others in their household. Other practical concerns such as food cost or waste also limited the desire to make changes. Thus, although room for improvement was recognized, there were many potential barriers to change.

Making comparisons

The participants saw that there was room for improvement rather than seeing themselves truly “at risk,” and this perspective was reinforced as they compared themselves *to others* including family members, friends, and even the general population. A woman commented, “I don’t feel I’m as much at risk as...as the community at large. And that’s what bothers me are the people out there. They’re far more at risk I feel.” While making comparisons, some seniors also identified with others, normalizing difficulties with eating well. Participants also compared their personal dietary *behaviors over time*, typically looking back and noting ways they had made improvements since retiring or after receiving a diagnosis. A man commented, “And now you have more time to ah...I guess you say...you do it properly. Sometimes before if you’re working, you’re rushing all the time.” Participants also considered and compared their risk in light of *health criteria* that they associated with the concept of nutrition risk such as being overweight or underweight or having a particular health problem. Seniors who were concerned about their weight or a diagnosed condition tended to interpret their risk in light of these issues. For example, a woman stated, “Nutrition risk. Um, one thing I think of right off the bat, and this applies to myself—I have a little osteoporosis.”

Having concerns about body weight or health problems before nutrition screening led some seniors to react to their screening results with heightened attentiveness. On the other hand, some seniors were unconcerned by the news that they were at increased risk because they felt their risk was comparatively low and they were not experiencing signs of poor health that they associated with nutrition risk. Consequently, they tended to think that the recommendations they received with their screening results were more applicable for others. As one man commented, “The

recommendations were good for the average person, but like I said, I believe that I eat and watch my diet quite well.”

Discussion

Nutrition screening results need to be communicated in a way that older adults understand their risk and are effectively encouraged to take steps to decrease their risk. In this study, the message seniors received that they were at increased risk was poorly understood and led to varied initial emotional reactions and efforts to rationalize or explain away their risk. The message contradicted their perspective: they felt they were doing the right things, they saw room for improvement rather than seeing themselves at risk, and they tended to make comparisons that supported the view that they were not truly at risk.

Trust in health messages appears to be higher when information is congruent with prior ways of thinking (White et al. 2003). The mental models approach to risk communication suggests that risk should be presented using people's health beliefs and understanding of risk as the starting point (Morgan et al. 2002). Thus, in light of the findings of this study, we recommend some simple changes to how screening results are communicated when using SCREEN II®. These changes are described below and demonstrated in a new tool for communicating screening results which is shown in the appendix (Supplementary material).

Participants tended to see their screening score as an evaluation of how well they were doing the right things. We recommend removing the score altogether as well as the term “at risk,” as they can be confusing and may lead to negative initial reactions. It is not imperative that older adults know their actual score or level of risk but where they can make some helpful changes. We recommend first explaining what they are doing well and where there is room for improvement based on their responses to questions directly pertaining to food intake. Seniors' responses to the remaining screening questions can be described as special challenges that older adults commonly experience, and that these challenges can make it harder to eat well and/or can increase the chance of nutrition problems. Breaking down the results in terms of intake and special challenges is advised because seniors may perceive having more control over their food and fluid intake than some of the challenges they experience such as low appetite or eating alone.

Not only was the message of being at nutrition risk poorly understood, but also the accompanying nutrition recommendations tended to have little impact. Even though participants saw room for improvement in their diets, they often did not report trying specific foods, tips, or services

recommended in their results letter. Barriers to change that the seniors described are in agreement with Gustafsson et al. (2005) who found that disinterest in food changes, poor appetites, food habits and preferences, and ambivalence about the benefits of change influenced how seniors responded to nutrition advice. McKie et al. (2000) also identified scepticism as a key barrier to older adults' willingness to follow nutritional guidance.

When providing nutrition recommendations, tailoring advice to suit individual needs and preferences using a client-centered approach is encouraged (MacLellan and Berenbaum 2007). The recommendations we provided by mail were not highly tailored for the participants; thus, individualized nutrition counseling in person or over the phone or providing nutrition education in a small group setting post-screening is likely to be more effective for behavior change. In this study we did not aim to examine the influence of face-to-face interaction or understanding of the recommendations on behavior change.

In the recruitment steps of this study, a surprisingly high percentage of those who completed and returned their screening questionnaires were found to be “at risk” (62%). This may be due to non-response from healthier seniors who were busy or away from home during the recruitment phase which took place early in summer. Even so, participants in this study thought they were in relatively good health and believed they ate well compared to others. Of the 38 seniors who screened “at risk”, over one-third were considered to be at mild to moderate nutrition risk with scores between 50 and 53 on their SCREEN II® questionnaire.

A limitation of this study was that interview participants were not representative of seniors with low income or diverse cultural backgrounds. Future research that focuses on frail community-dwelling older adults, those with low income, and cultural minorities should examine and compare their experiences of nutrition risk screening and their perspectives of their screening results. Perhaps these sub-populations of community-dwelling older adults may react differently to their screening results and be less inclined to explain away their risk. Particularly, older adults who are less healthy may be more likely to see themselves “at risk.” The new approach we suggest for communicating nutrition screening results as shown in the appendix (Supplementary material) also remains to be evaluated. Different modes of providing nutrition recommendations post-screening (written vs. one-on-one or group settings) also need to be tested.

Nutrition risk screening with a simple validated questionnaire such as SCREEN II® can be the first step of widespread health promotion initiatives for community-dwelling older adults. A major key to success, however, is that the screening results are communicated clearly and accompanying recommendations are perceived to be

personally applicable and in-line with each senior's needs and preferences. This study illustrates the importance of understanding the experiences and perspectives of older adults to improve communication of health and nutrition messages.

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References

- American Dietetic Association (2005) Position paper of the American Dietetic Association: nutrition across the spectrum of aging. *J Am Diet Assoc* 105(4):613–633
- Angus J, Evans S, Lapum J et al (2005) "Sneaky disease": the body and health knowledge for people at risk for coronary heart disease in ontario, Canada. *Soc Sci Med* 60(9):2117–2128
- Callen B (2004) Understanding nutritional health in older adults. *J Gerontol Nurs* 30(1):36–43
- Creswell JW (2007) *Qualitative inquiry & research design: choosing among five approaches*, 2nd edn. Sage, Thousand Oaks
- Donini LM, Savina C, Rosano A, Cannella C (2007) Systematic review of nutritional status evaluation and screening tools in the elderly. *J Nutr Health Aging* 11(5):421–432
- Green SM, Watson R (2006) Nutritional screening and assessment tools for older adults: literature review. *J Adv Nurs* 54(4):477–490
- Gustafsson K, Ekblad J, Sidenvall B (2005) Older women and dietary advice: occurrence, comprehension and compliance. *J Hum Nutr Diet* 18:453–460
- Keller HH (2007) Promoting food intake in older adults living in the community: a review. *Appl Physiol Nutr Metab* 32:991–1000
- Keller HH, Hedley MR, Brownlee SW (2000) The development of seniors in the community: risk evaluation for eating and nutrition (SCREEN). *Can J Diet Pract Res* 61:67–72
- Keller HH, Goy R, Kane S-L (2005) Validity and reliability of SCREEN II (seniors in the community: risk evaluation for eating and nutrition, version II). *Eur J Clin Nutr* 59:1149–1157
- Keller HH, Haresign H, Brockest B (2007) Bringing nutrition screening to seniors in Canada (BNSS) process evaluation. *Can J Diet Pract Res* 68:86–91
- Klein CTF, Helweg-Larsen M (2002) Perceived control and the optimistic bias: a meta-analytic review. *Psychol Health* 17(4):437–446
- Lacey K, Pritchett E (2003) Nutrition care process and model: ADA adopts road map to quality care and outcomes management. *J Am Diet Assoc* 103:1061–1072
- MacLellan D, Berenbaum S (2007) Canadian dietitians' understanding of the client-centered approach to nutrition counseling. *J Am Diet Assoc* 107:1414–1417
- McKie L, MacInnes A, Hendry J, Donald S, Peace H (2000) The food consumption patterns and perceptions of dietary advice of older people. *J Hum Nutr Diet* 13:173–183
- Morgan MG, Fischhoff B, Bostrom A, Atman CJ (2002) *Risk communication: a mental models approach*. Cambridge University Press, New York
- Moustakas C (1994) *Phenomenological research methods*. Sage, Thousand Oaks
- Payette H, Shatenstein B (2005) Determinants of healthy eating in community-dwelling elderly people. *Can J Public Health* 96: S27–S31
- Phillips MB, Foley AL, Barnard R, Isenring EA, Miller MD (2010) Nutritional screening in community-dwelling older adults: a systematic literature review. *Asia Pac J Clin Nutr* 19(3):440–449
- Raats MM, Sparks P (1995) Unrealistic optimism about diet-related risks: implications for interventions. *Proc Nutr Soc* 54:737–745
- van der Pligt J (1996) Perceived risk, comparative optimism and behaviour. In: Georgas J, Manthouli M, Besevegis E, Kokkevi A (eds) *Contemporary psychology in Europe: theory, research, and applications: proceedings of the IVth European congress of psychology*. Hogrefe & Huber Publishers, Seattle, pp 91–102
- White MP, Pahl S, Buehner M, Haye A (2003) Trust in risky messages: the role of prior attitudes. *Risk Anal* 23:717–726