A pilot study for the development of a food skills survey tool

By

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Abstract

It has been hypothesized that a reduction in the awareness of food skills in the Kingston, Frontenac, Lennox & Addington (KFL&A) community may be contributing to the increasing rates of overweight and obesity. To date, a valid and reliable tool for examining the level of food skills among a population has not been created. This study sought to create such a tool through achieving face validity from key stakeholders, content validity from an expert panel and construct validity through factor analysis. Upon ethics approval, the validated tool was piloted among a selected number of residents in the KFL&A County through a telephone survey company, CCI Research. Results were examined and a Cronbach’s alpha was used to measure the internal consistency of the tool. This tool will contribute to subsequent studies that aim to identify gaps in food skills among targeted populations. Future studies may also use the data to guide individualized food skills education programs for residents.
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Disclaimer

This study was completed in accordance with the requirements and guidelines set by the Ontario Public Health Standards and Kingston, Frontenac, Lennox & Addington Public Health. Modifications were made according to the needs of the health unit.
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Chapter 1: Introduction

A major component to healthy lifestyle is healthy eating. A healthy diet has been shown to prevent against many long-term health concerns such as overweight and obesity, heart disease, cancer and diabetes (Andreyeva, Michaud, & van Soest, 2007; Barker, Kirtland, Gregg, Geiss, & Thompson, 2011; Dirani et al., 2011; Field et al., 2001; Hirani, 2011; Lin, Liu, Chang, & Nowalk, 2006; Salameh & Barbour, 2011; Zhang, Zhang, Zhang, & Wang, 2011). Poor nutrition also plays an indirect role in many international health care costs by way of its effects on body mass index. Overweight body condition and obesity account for up to six percent of all costs of the health care system internationally (World Health Organization, 2003), thus causing a financial impact on health care systems at local, provincial national and international, levels.

Obesity, in particular, has led to the deaths of 9.3% of Canadians in 2002 (Katzmarzyk & Ardern, 2004), which represents over 4000 deaths that could have been prevented through dietary changes and other lifestyle modifications. Furthermore, the impact of obesity on co-morbidities continues to rise contributing to the increasing trend of Type II Diabetes and other chronic diseases (Flegal, Graubard, Willilamson & Gail, 2005). Given this evidence, obesity is set to take the place of smoking as the next top preventable health issue (Mokdad, Marks, Stroup & Gerberding, 2004). As such, targeting causes of obesity, such as dietary modification, offers promise for public health initiatives.

In response, Canada has constructed guidelines to prevent and manage overweight and obesity trends in both children and adults (Lau, Douketis, Morrison, Hramiak, Sharma & Ur, 2006). On a local level, multiple initiatives are currently being used to prevent obesity, including physical activity guidelines, dietary guidelines and the use of good food baskets (KFL&A Public Health, 2008). Despite these efforts, overweight and obesity statistics among KFL&A residents

Internationally, studies completed in Scotland and Australia advocate for personalizing programs related to dietary changes, which have proven to be well received and successful among participants (Broughton, Janssen, Hertzman, Innis & Frankish, 2006; Stead, Carahe, Wrieden, Longbottom). Further research is needed to determine the learning needs of KFL&A residents and how these needs fluctuate among various populations residing in the area. By assessing the needs of the population, public health units are better able to individualize food skills programs to hopefully produce the same successful results as other countries.

**Food Skills**

Obesity and weight gain are most commonly caused by a lack of caloric expenditure and poor dietary habits (WHO, 2003). For the purposes of this study, dietary habits will be focused on in greater depth, specifically of food skills. Food skills, as defined by the Ministry of Health Promotion (2010) represent the necessary abilities needed for the knowledge, planning, conceptualization, preparation and perception of food. A number of studies also support these ideas when discussing food skills (Fordyce-Voorham, 2011; McLaughlin, Tarasuk, & Kreiger, 2003; Oogarah-Pratap, Bholah, Cyparsade & Mathoor, 2004; Porter, Capra, & Watson, 2000; Stead et al., 2004). Each of these abilities will be described further through operational definitions as defined by the Ministry of Health Promotion (MoHP). These definitions will be consistent for the purposes of this proposal as well.
Operational definitions.

Knowledge. As defined by the MoHP (2010), knowledge of foods is an ability related to food skills. This type of knowledge includes nutritional knowledge, label reading, food safety, food varieties, ingredients and substitutions to ingredients (MoHP, 2010). Nutritional knowledge entails understanding the vitamins and nutrients needed to sustain a healthy lifestyle and where to find these nutrients. This definition is indirectly supported through a variety of studies examining food choices (Bassett, Lloyd, & King, 2003; Marchand-Martella, et al., 1991; Mead, Gittlesohn, De Roose, & Sharma, 2010; Porter, et al., 2000; Sharma, Gittlesohn, Rosol & Beck, 2010; Vargas, Sichieri, Sandre-Pereira, & da Veiga, 2011). Label reading entails the ability to read a nutritional label and understand how to determine the nutritional value to the food. Understanding food safety is important for the storage, preparation and handling of food. Lastly, food skills can be acquired through an understanding of which foods can be exchanged within a given recipe and understanding the variety of ways food can be used to acquire optimal nutritional value.

Planning. Planning is an understanding of the way meals can be organized to offer nutritional value (MoHP, 2010). This ability also focuses on being able to budget while shopping for desired healthy food items as well as understanding the preparation needed, inclusive of time and skill to make food items (MoHP, 2010). Planning of meals also consists of teaching food skills to children, to ensure that they are able to continue to make proper healthy food choices throughout their lives (MoHP, 2010). Due to the decreasing need to create meals from fresh food products, families are often lacking in this skill (Oogarah-Pratap et al., 2004).

Conceptualizing food. Through creating meal ideas with leftover food and adjusting recipes to fit the needs of an individual, the conceptualization of food is accomplished (MoHP,
Conceptualizing food requires creativity and awareness of food varieties (MoHP, 2010). Given the rise in use of ready-made meals, this has become an endangered skill (Alexy, Sichert-Hellert, Rode, & Kersting, 2008; Johnson-Down, Ritter, Starkey, Gray-Donald, 2006; Milligan, et al., 1998; Northstone & Emmett, 2005; Pryer et al., 2001; Pryer & Rogers, 2009).

**Preparation technique.** The preparation techniques used to accomplish optimal food skills encompass mechanical techniques and preparing of meals (MoHP, 2010). Preparing meals involves chopping, mixing, blending, cooking and following recipes. By exercising these techniques meals can be safely and creatively prepared (MoHP, 2010).

**Food perception.** Food perception is seen among individuals who use their senses to guide their cooking techniques (MoHP, 2010). By using texture, taste and smell to guide cooking methods, food skills can assist in creating and consuming healthy and appealing meals (MoHP, 2010).
Chapter 2: Overview of the literature

Literature Review

The databases CINAHL, OVID, QCAT, Cochrane, Social Sciences Citation Index (SSCI) and ERIC databases were searched for relevant literature. Key words used included “food skill*”, “cooking skill*”, “food preferences”, “food industry” and “convenience foods”, where “*” represents wildcard operator. Using these keywords, a total of 101 articles were found. The review was limited to studies related to food skills published after 2000. One older study was accepted due to the limited amount of research in that specific area. After a review of study abstracts, 41 were found to be relevant and of the 41, 39 remained completing a critical appraisal of the studies using the Davies and Logan’s (2008) tool for critiquing quantitative research. This search is represented in Appendix A. The remainder of studies (n=52) were either hand selected from reference lists or found through a search of the grey literature using the Google search engine. The evidence attained from this search is presented in the following literature review.

Food Skills

The promotion of healthy eating in Canada offers a promising effect for its population’s dangerously rising obesity rate. As such, the role of food skills can offer major suggestions for public health interventions and is likely the cause of Canada’s increasing awareness to the issue (Chenhall, 2010). Studies currently examining factors related to food skills expose four main influences: Socio-economic status (SES), food preference, knowledge and planning, and lack of exposure to cooking related to the food industry.
Socio-economic status.

Socio-economic status has shown many conflicting links with food skills. Multiple studies have shown a positive correlation between food skills and income (Broughton, et al., 2006; Homenko, Morin, Eimicke, Teresi, & Weinstock, 2010; Stead et al., 2004). Through a cross-sectional study design, Broughton et al. (2006) measured the amount of food insecurity in 142 Canadian households with children aged 2-5 years old. The results showed that parents who reported food insecurity also lacked the funds to be able to budget groceries and kitchen appliances. The participants also self-identified as having household food insecurity related to their low-income status. Many studies reference “food insecurity” as the limited and insecure access of sufficient, safe, nutritious and desired food as well as insecurity related to meal preparations (Tarasuk, 2005), which directly affects the planning component of food skills.

To further support the link between SES and food skills, Boylan et al. (2011) examined cross-sectional data of 21326 men and women across multiple countries (Czech Republic, Russia, Poland and Finland). They identified that families with high SES were significantly more likely to purchase and consume fresh fruits and vegetables than moderate to low SES families. This connection stems from the knowledge component of food skills, which would show that populations also recognize that fresh fruits and vegetables are also healthy choices. This finding remained consistent across the four European countries examined in the study. The results showed that those individuals with higher SES were more likely to make healthier food choices, however their results were not consistent internationally, with Poland offering a direct contradiction to the finding. Healthy food choices were compared using the World Health Organization (WHO) dietary guidelines. The study demonstrated that Polish citizens with higher SES were less likely to have made healthy food choices. These limited results could be
attributed to varying ideas of “healthy eating” among the various countries and no consistent tool to measure the variables.

Contrary to these findings, a Canadian study conducted in Toronto, Ontario examining food security through secondary analysis for 153 women in families found that low SES participants were resourceful when preparing meals from scratch, thus showing evidence of high food skills (McLaughlin, et al., 2003). Although those with higher income were able to offer more complex meals and preparations, the difference was not statistically significant. A plausible explanation for this finding may be associated with the higher income families being able to afford higher quality food and kitchen utensils to prepare meals with. Despite this, low SES families prevailed in the knowledge and planning food skills domain.

There is conflicting evidence to support whether income plays a role in food skills. Although McLaughlin et al. (2003) and Tarasuk (2005) provide evidence to suggest low-income families often excel at food skills, evidence also supports the contrary position (Anderson, 2007; Broughton, et al., 2006; Stead et al., 2004). A potential explanation for the differences among previous findings could also be associated with cultural differences. Of all of the evidence, those who found low-income families to be more skilful were exclusive to North American cultures, whereas the rest of the studies examined residents of the United Kingdom. Overall, the literature review shows there is a gap in evidence supporting a consistent relationship between SES and food skills.

Secondary analysis of the literature has shown that regardless of what educational programs public health offers, low income families still lack the funds needed to purchase healthy foods and understand their preparations (Anderson, 2007; Tarasuk, 2005). This offers
evidence to support the need to become aware of all of a population’s needs prior to engaging in an informative food skills program.

**Food preference.**

Food preference and lifestyle factors also have an effect on food skills related to food choices and meal preparation. International studies have suggested parents prepare meals based on their children’s preferences (Broughton, et al., 2006; Stead et al., 2004). In many instances these foods were fried, high in saturated fats and high in sugars (Raine, 2005; Stead et al., 2004), which then effect dietary choices for the entire family. One American study conducted in Washington examined, 143 children aged 11-15 years old and noted that this preference for high sugar foods often changes after children have finished growing (Coldwell, Oswald & Reed, 2009). Regardless of age, the qualitative data gathered from 16 participants showed that the low-income respondents found healthy food boring, tasteless and unfulfilling (Stead et al., 2004). Raine (2005) also referred to food preferences in her literature review, acknowledging the high preference for high-fat foods. Because of these innate food preferences the knowledge required for food skills is often neglected in favour of the flavour of less healthy foods.

Taste plays a large role in food preferences that guide food skills. In one Korean study, 70 children aged 11-13 years were administered a questionnaire assessing salty food preference and types of foods consumed. Results demonstrated that salt is a taste that has been increasingly desired with the rise of the fast food industry and pre-prepared convenience foods (Kim & Lee, 2009). Due to the exposure of salty foods, evidence supports the likelihood of preferences for higher salt foods (Bolhuis et al., 2010; Hayes, Sullivan & Duffy, 2010; Kim & Lee, 2009; Matsuzuki, Muto & Haruyama, 2008). This presents limitations to controlling food preferences for less salty food given the high salt content of many of today’s foods. These findings offer
insight to the importance of including low salt alternatives to satisfy food preferences while creating healthy meals.

In contrast, there is also evidence to support the diminishing of taste preferences among the population. When completing taste tests at a supermarket, 180 Swedish participants often neglected to identify altered tastes and smells in jams (Hall, Johansson, Tarning, Silkstrom & Deutgen, 2010). This provides a barrier to advocating for the use of sensory preferences in creating unique and desirable food products. Regardless, one Japanese study used the data from a public health survey (n=29103) and used it to demonstrate importance of including sensory preferences in making dietary choices (Matsushita et al., 2009). As such, public health promotional activities should still consider food preference as a factor in building healthy food skills.

Another obstacle to developing healthy food skills factored by food preferences is the reluctance to change food preferences (Alexy et al., 2008). Alexy and colleagues (2008) showed this phenomenon when they collected data on food preferences from 554 German participants who participated in a longitudinal study examining nutrition choices. The data examined included a 3 day nutrition recording. The Dietary preferences have been shown to be influenced by culture throughout evolution, yet given the current environment these high fat dietary preferences are no longer needed, nor healthy, for today’s lifestyle (Krebs, 2009). Although these studies present conflicting data for including food preferences when advocating for healthy food skills, taste preferences are more likely to change when flavour-nutrient associations are taught (Yeomans, Leitch, Gould & Mobini, 2009). Thus, a major area of question for developing health promotion protocols should focus attention on breaking poor dietary preferences by associating
nutrients with favourable flavours. This may offer healthy uses of taste preferences for the development of food skills.

**Knowledge and planning.**

Food skills include knowledge about nutrition, label reading, food safety and food variety. With the implementation of Dutch school programs designed to help students discern healthy from non-healthy foods this specific type of knowledge was attained. These students showed a favourable increase in dietary choices (Temme, van der Voet, Roodenburg, Bulder, van Donkorsgoed, & van Klaveren, 2011; van Assema, et al., 2005). Other studies completed in Australia and the United States also showed that garden programs offered insight to the knowledge and experience with growing and preparing the vegetables (Morgan et al., 2010; Ratcliffe, Merrigan, Rogers & Goldberg, 2011). This insight consistently led to a variety of healthier food choices among the participants. These findings are critical for the development of positive changes in diet and nutritional choices and offer promise to structuring interventions to provide young generations with information regarding healthy food choice.

Home economics courses offer another opportunity to attain knowledge required for food skills. The courses focus on the development of food skills, among other household duties. Congruent with this focus, many studies have shown an improvement in food skills through the incorporation of a home economics course or type of course (Oogarah-Pratap et al., 2004; van Assema et al., 2005). Through the use of questionnaire surveys to both students (n=315) and teachers (n=18), Oogarah-Pratap et al. (2004) were able to show that food skills were increased among those taking a home economics class. Of note, a statistically significant increase in food skills was recognized among male students of a home economics course suggesting that home economics do have a valuable impact on food skill development. Despite this, since 1983 there
has been a steady drop in home economics students, and of those who did take it, most were females (Federation of Women Teachers’ Association of Ontario, 1983). Home economics was never a mandatory course in Ontario, but it was mandatory in other provinces across Canada (Deschambault, 2009; Smith, M.G. & de Zwart, M.L., 2011). Home economics, now termed Family Studies, continues to be at risk for poor enrolment due to the vast array of courses students can choose from. In 1989, when a credit in social science and humanities was a mandatory component of a high school diploma, Family Studies was one of 22 options available in the social science and humanities subject heading needed to achieve a high school diploma (Ontario Ministry of Education and Training, 1989). In 1999, when requirements for a high school diploma changed, Family Studies remained in the Social Science and Humanities subject heading, however it then also competed with subject headings such as English, third languages, Health and Physical Education, Arts, Business and Science and Technology (Ontario Ministry of Education and Training, 1999) for electives. Given the limited choices available for student electives, family studies is at risk for going unnoticed.

Elbel, Kersh, Brescoll and Dixon (2009) also showed that there is a need for teaching food label reading. After the implementation of mandatory food labelling in the state of New York, caloric consumption remained elevated among the 1156 low SES participants. The study reviewed the receipts of the purchases made by participants and a survey was used to compare reasons participants chose fast foods. A probable explanation for this could be the lack of knowledge regarding food labelling to begin with. If the participants were given the knowledge to read food labels, further research examining participants’ caloric choice could yield contrasting results.
Despite all of the evidence linking a lack of knowledge with poor dietary habits, a study examining dietary choices of medical students found that despite their knowledge, implementation of modification to diet was unlikely (Raza et al., 2010). These findings question whether lack of time contributes to the dietary choices the medical students made. If a lack of time caused them to choose convenience foods over otherwise healthy foods, an explanation could be the type of environment the students are placed in, which brings another key factor in the development of a food skills intervention program – the environment. Furthermore, the findings also suggest that despite having an awareness of healthy foods, knowledge does not always correlate to action. Further considerations must be reviewed.

A research brief completed by Fordyce-Voorham (2011) interviewed 55 food experts such as chefs, home economics educators, nutritionists, dieticians, community educators, homemakers and specific young participants. Themes discussed recognized that gaps in knowledge, information, skills and resources were limitations to the development of food skills. The groups recognized that knowledge regarding fresh and nutritional foods as well as different cooking methods stood as a barrier to skill development. Furthermore, the ability to read and understand food information, referred to as “food literacy” was also a barrier to choosing appropriate and healthy foods. Participants also recognized that without proper skills, individuals were at risk for poor shopping skills, meal planning and development. Lastly, without resources such as motivation, parental involvement and community involvement, individuals are less likely to practice food skills. However, given the fast pace of today’s meal preparation (Raine, 2005) it is possible that children do not have their parents’ food skills to model after, nor do they receive the skill development through optional nutritional economics classes, which are not always utilized (Oogara-Pratap et al., 2004).
Without home economics, it is also more likely that children will follow the dietary habits of their families when choosing and preparing their own meals. When 112 Dutch children were asked to pretend to purchase whichever foods they wished in a make-believe grocery store, the overweight children were more likely to purchase higher caloric dinner meals, snacks and drinks (Snoek, Sessink & Engels, 2010). The researchers conclude that this link may be associated with children independently continuing the dietary habits of their families that led them to their overweight status originally. Other studies linking childhood obesity with parental preferences for foods offer consistent data (Coesens, De Mol, De Bourdeaudhuij & Buysse, 2010; Pearson, Ball, & Crawford, 2011; Raynor et al., 2011; Sweetman, McGowan, Croker, & Cooke, 2011).

In a qualitative evaluation study examining an intervention on food skills for mothers with mental illness (n=6), improvements in dietary intake, food selection and preparation and grocery expenditure were observed (Bassett et al., 2003). These changes were noted during focus groups and were seen after the participants were educated on the use of an individualized tool to use for these activities. Similarly, other studies found that by creating individualized programs for individuals with mental health deficiencies food skills were considerably increased (Bassett, et al., 2003; Marchand-Martella, et al. 1991; Porter et al., 2000). These studies, once generalized, can offer insight to the possibility of individualizing programs to improve the comprehension of a variety of participants. However, to ensure individualization, limitations in food skills must first be identified through a type of evaluation.

Lack of exposure to cooking related to the food industry.

The conceptualization of food skills encompasses creative thinking about leftovers and alterations of recipes as well as organizing meals, budgeting, food preparation and teaching
cooking to younger generations (MoHP, 2010). Due to the fast-paced nature of today’s lifestyle, processed and ready-made foods are likely to dominate grocery lists (Stead et al., 2010) and contribute to decreasing food skills. This presents an issue for food skill interventional programs which aim to avoid these processed, less nutritional foods. An understanding of the impact of processed foods could be better represented through future studies.

Alongside fast paced lifestyles, convenience foods have become increasingly popular among various populations (Alexy et al., 2008; Blake et al., 2011; Johnson-Down et al., 2006; Milligan, et al., 1998; Northstone & Emmett, 2005; Pryer et al., 2001; Pryer & Rogers, 2009). Convenience foods are pre-prepared products that may be frozen, canned or instant, hot or cold, or all-in-one-meals that are purchased in a store and eaten at home (Alexy, Libuda, Mersmann & Kersting, 2011). In a longitudinal study involving 586 participants, Alexy et al. (2011) discovered that the increase in the use of convenience foods contributed to changes in males’ and females’ changes in body fat percentage and increasing body mass indexes (BMI), respectively. These findings offer insight to one of the plausible causes of increasing rates of obesity.

One study has effectively shown a link between convenience foods and obesity (Cornelisse-Vermaat & van den Brink, 2007). In the study, 2551 participants were evaluated based on survey responses and calculated BMI. The findings showed that convenience foods were positively associated with increasing BMI. These results offer evidence to support the need to bring awareness to the frequency of convenience food eating and its negative impact on health. Another study found that people who consumed fast food more than two times per week had greater difficulty with weight loss and weight maintenance than those who didn’t consume fast food (Kruger, Blanck & Gillespie, 2008). This link presents an issue for Canadian
populations, where more than one quarter of the population consumes fast food (Garriguet, 2004).

Advertising also affects the food choices made by a given population and the food industry is well aware of this as evidenced by a study by Adams, Tyrrel and White (2011). In the study, the researchers examined all food commercials appearing on a popular United Kingdom television station. The television commercials frequently involved a primary food as well as an incidental food added to the advertisement. The foods were evaluated based on their nutritional content and compared against the Food Standard’s Agency’s recommended food group intake. Consistently, primary foods were deemed less healthy than any incidental foods found in an advertisement. This type of advertising plays a large role in food choices made. The visual appeal of foods stimulated a hunger state among their participants. Although limited evidence exists regarding the relationship of visual food stimuli through advertising and hunger, these two studies offer a potential link to the food industry’s desire for consumers choosing their unhealthy, processed foods (van der Laan, de Ridder, Viergever and Smeets, 2011).

In addition, the food industry neglects to inform consumers of the impacts of poor nutrition in an effort to continue the sale of their products. In a study performed by Chien-Huang and Hung-Chou (2010), the authors identified that by displaying a health warning on unhealthy foods, participants (n=123) were less likely to purchase and consume the unhealthy food. Although this self-restriction may improve the dietary choices of the general population, health warnings are still not placed on unhealthy food choices.

High-calorie foods are not only consumed in the home but are also often offered and consumed in restaurants. Chefs consistently report that restaurant prepared foods could be prepared with lower calorie ingredients; however the success of these menu options would rely
on the taste preferences of consumers (Obbagy, Condrasky, Roe, Sharp & Rolls, 2011). From surveys conducted with 438 chefs, 38% agreed that the biggest barrier to implementing low calorie foods on a menu is low consumer demand. Other factors include cost of healthy foods and staff training (Obbagy, et al., 2011). These results identify that if consumers were more likely to select meals with less calories, the option to do so would more likely exist. As such, it is important for food skill initiatives to also incorporate meal choices that can be made outside of the home.

**Overview**

Although there is a major gap in the literature regarding surveillance data related to food skills, it is clear that there are many factors contributing to the levels of food skills among various populations. The evidence supports that a lack of food skills could be a major preventable link to overweight and obesity. As such, a major public health endeavour lies in creating an interventional program focused on building food skills specific to population needs. In an effort to do this, the use of a survey tool has been proposed as a means of gathering data on food skills. Although there are two surveys that have been used to gather this type of information in Canada (Canadian Diabetes Association, 2010; Vanderkooy, 2010), neither of the surveys have been scrutinized for reliability and validity to ensure scientific rigor. This lack of scrutiny limits the survey tools to be accepted for application to communities. The survey conducted by the Canadian Diabetes Association focused on program evaluation questions and therefore could not be reworked. The survey created by Vanderkooy and the Waterloo Region used many jargon terms that were not appropriate for use in a credible survey tool. Furthermore, after consultation with the partnered health unit it was found that the questions did not cover the depth of topics
required to assess all food skills. Thus, the first draft of the survey was created by the researcher based on the literature review.

**Research Purpose**

The purpose of this study is to create a valid and reliable tool for assessing food skills. This tool will contribute to the credibility of subsequent studies for examining the food skills. Using a multi-phase approach, this study sought to develop a valid and reliable survey tool that could be used to evaluate the gaps in knowledge related to food skills. This understanding will help to guide subsequent food skills interventional programs offered to communities based on their identified needs.

**Chapter 3: Methods**

**Design and Analysis**

This study aimed to create a food skills survey tool by using a pilot evaluation design. A multi-phase approach has been used to guide the process of the study as indicated by the timeline found in Appendix B. The first phase consisted of achieving face validity of a survey tool created based on the literature review, the second phase consisted of achieving content validity for the tool and the third phase consisted of a pilot of the survey tool. Each phase aimed to gain rigor to lend credibility to the tool.

**Phase One: Face validity**

Face validity is referred to as the degree an instrument looks as though it is measuring the appropriate variables (Boynton & Greenhalgh, 2004; Polit & Beck, 2008; Zumbo & Rupp, 2004). In the first phase, a presentation was conducted at KFL&A public health unit. An advisory committee consisting of nurses and dieticians was requested to provide feedback on the
survey tool. Considerations regarding the suggestions during phase one was made. Alterations to revise the survey tool were completed according to the recommendations made by the KFL&A advisory committee.

In this phase of the study, partner stakeholders, inclusive of Leeds Grenville Public Health and Hastings Prince Edward County Public Health, were approached for feedback about survey questions. Through the use of these field experts, face validity was attained to ensure the level of food skills among residents will be measured for credible interpretation. Comments generated from these partners were then used to further modify the survey tool. The survey tool was then resubmitted to the KFL&A advisory committee to confirm credibility of modified tool. Modifications were made based on the input of public health units. If public health units disagreed on questions, the questions were altered or discarded until agreements are reached.

**Population Sampling and Setting.**

To achieve face validity, I went to each of the respective health units on a predetermined date to address face validity. A letter informing key stakeholders of the discussion groups was sent to the respective health units two weeks in advance. Discussion sessions were held at each of the health units to decrease travel for participants and increase response rates. Key stakeholders for this project included public health nurses and dieticians who were informed of the event by their managers. The project was promoted to other managers through the KFL&A Chronic Disease & Injury Prevention program manager. Based on staff directories of each of the units, it was expected that teams focusing on healthy eating were comprised of 4-8 public health dieticians and nurses. Thus, in total 13 participants were included in phase one of the study.
Recruitment.

In phase one, employees of KFL&A as well as neighbouring health units were chosen from the chronic diseases and injury prevention programs. The employees consisted of registered nurses and registered dieticians. These stakeholders received a letter two weeks in advance of the discussion group. The letter notified participants where the discussion was to take place and included a date and time. The respondents were also made aware that the discussion was audio taped to ensure all information is collected. Furthermore, light snacks and refreshments were provided as a token of appreciation for the time spent for the study.

Feasibility of Study.

Managers of the chronic diseases and injury prevention programs of the public health units identified key stakeholders. The manager of the chronic disease and injury prevention program at KFL&A contacted each manager. Due to the high relevance and interest in the topic in accordance with the Ontario Public Health Standards, it was estimated that there would be a high response rate among health units.

Phase two: Content validity

Content validity examines the degree to which a tool has an adequate number of sample items that measure a given construct (Polit & Beck, 2008). By ensuring content validity is achieved, researchers can be certain that the questions asked in the survey adequately represent the constructs on a universal level. Content validity was achieved by selecting expert reviewers (Grant & Davies, 1997; Polit & Beck, 2008). The expert panel consisted of 10 experts in content and instrument development (Slocumb & Cole, 1991). Reviewers rated the survey questions on a scale of one to four based on content, clarity and comprehension. Questions that did not rate higher than a three by the experts were revised or removed from the survey (Rubio, Berg-Weger,
Content validity index (CVI) was calculated by counting the number of items rated as a three or four and dividing it by the total number of items (Davis, 1992; Grant & Davis, 1997). A CVI value of at least 0.8 was desired to achieve validity (Davis, 1992). The questions were then analyzed through a factor analysis to ensure construct validity.

Population sampling and setting.

Field experts in content and survey development were chosen through current research experts at KFL&A and through the study’s supervisors and Queen’s University. The experts were contacted by phone or e-mail to ask if they would be willing to review the survey tool. Once their agreement was achieved, they were sent the information letter (Appendix E) and the survey tool either via e-mail or post-mail to the contact addresses provided. The entire package provided for the experts included a cover letter, the information letter, the survey, a response card and a self-addressed and stamped envelope for survey return as recommended by Dillman (2000).

Recruitment.

Field experts were recruited through networking with key informants such as professors at Queen’s University, the research department at KFL&A and through hand selection of credible authors in the field. Upon their agreement to participate, the survey was distributed to their stated contact addresses. Participants to be recruited were experts in food skills and survey development.

Feasibility of study.

During phase two field experts were contacted at Queen’s University as well as KFL&A and other public health units. These experts were chosen based on their experience with research,
survey tools and knowledge in food and nutrition. To ensure at least 10 participants were achieved for expert analysis, e-mail was used to access experts outside of the geographical area. When possible, face-to-face interactions were held to ensure all aspects of participant’s comprehension and clarity is identified.

**Phase Three: Pilot the tool and determine internal consistency**

Pilot studies are small scale studies used to design or offer preliminary information for future studies (Arain, Campbell, Cooper & Lancaster, 2010). Generally, the goals of these studies focus on the testing of methods and feasibility as well to offer descriptive results to justify a larger, full scale study (Arain et al., 2010; Hertzog, 2008; Thabane et al., 2010). Given this definition, a pilot study was used to examine the reliability of the proposed food skills survey of this study.

Although a variety of results are often anticipated from questionnaires, specifically for those constructed for a generic population, the variability should be linked to participant response and not which researcher administered the questionnaire. Therefore, reliability can be defined as the consistency in which an instrument measures the targeted variable (Boynton & Greenhalgh, 2004; Polit & Beck, 2008; Zumbo & Rupp, 2004). By ensuring reliability, the consistency of the items on the survey tool was optimized. Internal reliability was achieved through measuring for Cronbach’s alpha on scaled questions where appropriate, a value of at least $\alpha=0.70$ was desired to be achieved to ensure internal consistency (Polit & Beck, 2008).

Participants were given the opportunity to respond to the survey via telephone. A telephone survey was used based on the requests of the local health unit. Participants were contacted via the survey company utilized by KFL&A, CCI Research. This mode of data collection was in accordance with the methods used most frequently by KFL&A. Furthermore,
KFL&A intends to use a telephone survey as the method of data collection in future studies related to food skills. To ensure confidentiality, coding was completed to maintain anonymity and confidentiality of respondents. After the tool was piloted it was returned to KFL&A for final recommendations and alterations on the survey.

**Population sampling and setting.**

This pilot study targeted a generic population for data collection. Studies advocate for the use of at least ten percent of a sample size of a population (Lackey & Wingate, 1998), while others support the use of approximately 30-40 participants for tool reliability in a pilot study (Hertzog, 2008). Most researchers agree there is no exact sample size calculation for pilot studies (Thabane et al., 2010), but that they should be large enough to serve the purpose of the study. However, given that this study relies heavily on the psychometric properties of the proposed survey tool, 10 respondents per item were used as recommended by Polit and Beck (2008). This sample size had been chosen based on the premise that it will ensure a sufficient amount of feedback. Therefore, the total number of respondents was reliant on the total number of questions in the tool \((n=37)\). Telephone calls were made by a survey company, CCI Research until the required numbers of respondents were achieved. Randomisation of the Kingston population was completed by CCI Research by a random digit dial of the census division. CCI Research works alongside Survey Sampling International to achieve a directory of both residential and mobile phone numbers. To ensure private and unlisted numbers are also included, random-digit-dialling is also used.

To be included in the pilot study, participants had to be residents of the Kingston, Frontenac and Lennox & Addington counties. Participants were 18 years of age and older and
were able to understand English to respond to the survey. Participants were excluded from the pilot study if the inclusion criteria were not met.

**Recruitment.**

Participants were recruited for this study through the directories of residential phone numbers provided by CCI Research. CCI Research continued to telephone residents until the required number of surveys had been completed. CCI Research obtained the numbers through random-digit dialling for the Kingston census division. Random-digit dialling was also used to ensure numbers that are private or not listed were included. Appreciation for participation was done through CCI Research upon completion of the survey. CCI Research expressed appreciation on behalf of the research team, KFL&A and Queen’s University at the end of the call.

**Feasibility of study.**

Survey phone calls for piloting the tool started in November 2011 and completed by December 2011. Data analysis began in January 2012. A complete timeline can be found in Appendix B outlining these deadlines. Funding for the study was through KFL&A Public Health.

**Conceptual Framework**

The conceptual framework used for the study was Nola Pender’s Health Promotion Model (HPM) (2006). This model focuses on steps that are directed toward the development of resources to maintain or enhance well-being (Polit & Beck, 2008). Appropriately, this framework provided structure for the development of a tool to assess food skills, which will benefit well-being by encouraging healthy diet habits. This model was used to help guide the format of the questions as well as to interpret the results.
Credibility of Pender’s HPM.

Pender’s revised HPM has consistently shown to be a trusted and reliable framework throughout health science literature among a variety of populations (Blacconiere & Oleckno, 1999; Fano, Tyminski, & Flynn, 2004; Ho, Berggren, Dahlborge-Lyckhage, 2010; Ronis, Hong, & Lusk, 2006; Srof, Veslor-Friedrich, 2006), and even in tool development (Chung, Chao, Chou, & Lee, 2009). Given its consistent validity for use in health science literature and its topic relevance, the HPM had been chosen as the structural format of the study. An outline of this conceptual framework can be found in Figure 1.

The model has likely become widely accepted as it is simple, generalizable, empirically precise and derivable. Pender’s model is simple to understand due to the precision in definitions of key concepts and its links between the concepts (Alligood & Tomey, 2010). The model is also highly generalizable across life spans and among a variety of cultures. Numerous studies have been done in cultural and diverse populations which have successfully supported the use of the model (Alligood & Tomey, 2010). This strengthens the choice for HPM in the use of this study because no exclusions related to culture have been made. Despite some limitations (discussed below), the model has also been scrutinized by Pender and other researchers for validity (Pender, Murdaugh & Parsons, 2006). The revised model has thus offered great empirical precision in the literature (Alligood & Tomey, 2010), thus offering credibility to the current study. Lastly, Alligood and Tomey (2010) discuss the current rise in health promotion and the applicability of the HPM to health promotion. These four factors provided a solid foundation for the guidance of the proposed assessment tool which focused on health promotion.
Limitations to Pender’s HPM.

Despite its credibility, the model has been subject to criticisms regarding population generalizability. In their study examining the validity of the HPM on adolescents, Srof and Veslor-Friedrich (2006) found the model to poorly reflect the extent of relationships between factors in the framework. They argued that the model did not account for the relationship that situational and interpersonal influences had on teens. The study drew on Erikson’s Stages of Development (1964) to show that during the adolescent phase, new relationships are forming with friends, family and society. These new relationships thus tend to play an important role in the behaviours the teens choose. Given that Pender’s HPM does not account for these relationships effects on perceived self-efficacy and perceived barriers to action, Srof and Veslor-Friedrich (2006) argue some relationships for this population are not accounted for in the model. However, due to the inclusion criteria of respondents being over the age of 18, this critique did not apply to the current study.

After a critical review of the model, Peterson and Bredow (2009) also found limitations to the revised HPM. They argue that the lack of using fear of disease or prevention of diseases could be limiting the medical application of the model. They draw an example of a client attempting to change health behaviours but still having a dual motivation of preventing disease. The HPM limits the relationship this dual motivation may cause because it does not account for prevention of the disease as a factor involved in health promotion. Peterson and Bredow (2009) also suggest that the model is limited in providing methods for intervention and credible analysis of groups. However, these limitations are not applicable to the current study because this study focused on an assessment rather than an intervention and only individual food skills were assessed. Ultimately, the tool will help individualize training sessions based on the overall
response of each community member from the sample. A final criticism Peterson and Bredow (2009) discuss is Pender’s attempt to explain the concept of health promotion through only eleven factors. However, although health promotion is summarized into eleven concepts, each of the concepts is explained in Pender’s model and each is given relationships to account for connections between the concepts to enrich the definition.

Instrument

Question development was guided by Pender’s Health Promotion Model as the framework for the food skills survey tool development (Figure 1). Figure 2 identifies which concepts of food skills were linked to areas of the framework. Individual characteristics and experiences examined questions about the use of convenience foods, the value of a home cooked meal and personal factors such as socio-economic status, education, employment and age. Behaviour-specific cognitions and affects examined situational and interpersonal influences related to family choices, knowledge, food security and how confident participants felt using food skills. Lastly, behaviour specific questions were assessed through questions related to time for preparing meals given that time is a competing preference with respect to food skills. Although questions related to body mass index, grocery store tours, use of food banks, and religion and culture were also included in the first draft to further assess the domains of Pender’s model, they were removed after consultation with key stakeholders.

The proposed instrument consists of a set number of Likert-scale type questions ranging from strongly disagreeing to strongly agreeing. The Likert-scale design was chosen based on its acknowledged reliability for bringing order to responses regardless of particular attitudes or complexes (Miller & Salkind, 2002). Although previous studies have suggested the use of negative questioning to limit response-bias (Boynton & Greenhalgh, 2004), Polit and Beck
(2008) provide evidence suggesting that this technique is no longer necessary, and it actually has the potential for causing confusion among respondents. As such, questioning was presented in a logical format using simple wording. The survey was written at a six reading level according to the Flesch-Kincaid Grade Level, to optimize understanding among participants (Communicating with patients, 1998; Mead, McKinney & Barnas, 1994; Safeer & Keenan, 2005; Weiss, 2007). This style not only ensured clarity among participants but it has previously contributed to higher response rates (Brinberg & McGrath, 1985; Dillman, 2000; Miller & Salkind, 2002; Polit & Beck, 2008; Zumbo & Rupp, 2004). The survey took approximately 15 minutes to from start to finish.

Figure 1. Pender’s Health Promotion Model Template
Figure 2. Pender’s Health Promotion Model as the framework for food skills survey tool development.
Ethics

Ethics approval was obtained from the Queen’s University Research Ethics Board. An information letter was provided to the public health participants (Appendix C) and the general population were read the information letter located in Appendix E over the telephone. Informed consent was implied based on the participant’s agreement to participate.

Respondents were reminded of their right of refusal at any time during the study. The refusal did not affect the respondent in any way. However, once surveys were submitted, withdrawal from the study would not be possible given the anonymity of the study’s methods.

The study’s design did not pose any harm or threat to individuals participating in the study. Furthermore, respondents did not benefit from their completion aside from an expression of appreciation from Compustat upon survey completion. By participating in the study, respondents were able to contribute to the development of a tool that will be used to individualize food skills learning programs and benefit the population.

Discussion

Potential limitations.

One major limitation to conducting to a full study is the likelihood of low response rates which would thus leave a small sample size. Having a small sample size would seriously affect the generalizability and the statistical significance of the study; however this study aims to pilot a tool for future studies where greater sample sizes may be achieved by other means. In addition, the tool is only available in the English language, thus limiting its availability to other language populations.
Implications of research.

Previous research has shown that participants respond best to individualized programs. By creating a valid and reliable survey tool to assess the levels of food skills among community members, public health units will be able to tailor interventional programs to best suit the populations and topics in need of an intervention. The results of the survey could also assist in the development of a more personalized public health promotional activity that targets individual stakeholders. If proven effective, these programs could contribute to the fight against poor nutrition and obesity for not only those involved in the program, but also on the health care system’s financial burden of citizens who are overweight and obese.
Chapter 4: Results

Introduction

Over the span of two months, the proposed survey for this study was brought forth to three different health units and a provincially driven collaborative committee focusing on food skills. The three health units that participated in the study were Kingston, Frontenac, Lennox & Addington Public Health (KFL&A), Hastings and Prince Edward Counties Health Unit (H&PEC) and Leeds, Grenville and Lanark District Health Unit (LG&L). All three of these health units participated in face-to-face group discussions facilitated by the primary researcher, whereas the provincially driven collaborative committee contributed to a group discussion via teleconference.

Once all of the feedback from the public health staff was incorporated into the survey, the survey was sent to experts in food skills and measurement developments ($n=11$). The experts had two weeks to return their feedback regarding the content, comprehension and clarity of each item on the survey. Based on their ratings, content validity index (CVI) was determined on a per item basis as well as an overall survey rating. The experts were recruited on provincial ($n=6$), national ($n=4$) and international ($n=1$) levels to ensure the survey could be generalizable among different populations. The total expert review panel consisted of those who were prepared at the doctoral level ($n=8$) and those who were currently working towards the completion of a doctoral degree ($n=2$). These experts specialized in both food skills and healthy eating ($n=9$) and measurement development ($n=1$).
Phase one

**Kingston, Frontenac, Lennox & Addington Health Unit (KFL&A).**

The KFL&A Health Unit focus group was held on September 19, 2011 at the KFL&A office. In total, four Registered Dietitians and one Public Health Nurse attended the group. Once informed consent was obtained from the participants, an audio recorder was started to ensure the discussion could be recorded and reflected upon for review at a later date. The one-hour-long discussion involved assessing each potential survey question.

Based on the feedback from the health unit it was determined that the literacy level of the survey needed to be decreased. It was also identified that the demographic-style questions would need to be moved to the end of the survey to ensure a higher response rate. The participants also felt that examples needed to be included for certain health and diet related concepts, specifically, “pre-packaged meals”, “well-balanced meals” and “basic stock”. Participants also felt that skill-testing questions, such as those related to nutritional knowledge and food safety should not be included in the survey. They suggested replacing the skill-testing questions with questions that dealt with the same topic but were formatted in a way that encouraged self-efficacy.

Participants also noted that some questions could be combined such as questions pertaining to cooking abilities involving stirring, mixing and blending. It was determined that these questions were too similar for the general public to differentiate. It was also thought that terms related to religion and culture/race needed to be more generalized and that terminology for these topics should be reviewed for biased language. These items were then reviewed and ultimately removed from the survey.
In addition to the original survey provided, participants identified three more topics they felt needed to be addressed. Participants suggested that questions related to sources of cooking knowledge would be necessary to identify how people had previously learned to cook, if at all. It was also noted that questions related to “staple ingredients” would offer more insight regarding the stock of basic ingredients in homes. Public Health staff felt that it would also benefit the survey to include questions related to planning. They identified that their population of interest frequently sources time as a limitation to planning and preparing a meal. The discussion finalized with participants expressing concern regarding the lack of value the general population may place on cooking a homemade meal. As such, it was suggested to add a question pertaining to value to the beginning of the survey.

**Hastings and Prince Edward Counties Health Unit (H&PEC).**

The Hastings and Prince Edward Counties (H&PEC) Health Unit focus group was held on October 3rd, 2011 at the H&PEC health unit office. In total, four Registered Dietitians attended the group discussion. Once informed consent was obtained from the participants, an audio recorder was started to ensure the discussion could be recorded and reflected upon for review at a later date. The two-hour-long discussion involved assessing each potential survey question.

In general, the participants recommended that CCI Research should request to speak to the primary person responsible for cooking meals at the start of the discussion. The participants then requested that the order of questions be reworked and that transition statements be used between topics to represent a logical flow for the survey. One participant noted that too many options to choose from per question may result in a bias referred to as recency effect. Recency
effect is a tendency for respondents to select from among the first answers presented (Dillman, 2000).

It was also noted that questions needed to be reworked for clarity due to awkward wording in the original version. Participants also explained the need for more definitions throughout the survey, specifically “pre-made meals” and “healthy meals”.

Participants also felt that the survey had many questions related to meal preparation and grocery shopping but no indication of whether these assessments focused on healthy meals and food choices. It was also noted that the three day recall questions were appropriate; however the timeline should be applied for all recall questions throughout the survey. Participants also felt that given the nature of the recall questions, the time of week the survey is piloted should be considered to include two weekdays and only one weekend day. It was also identified that the Likert scale used for the survey required a revised definition for each number. Participants identified that “2= mildly unconfident” and “4= reasonably confident” were too similar. In response, the scale was changed to identify 1 as representing not confident and 5 representing very confident.

Specific questions targeted throughout the survey dealt with additions of choice answers and clarification of questions. An example of this includes the addition of “including transit time” with questions regarding grocery shopping. Participants also felt that the population often questioned whether or not services provided by public health are free. As such, it was recommended that questions about interventions should discuss the cost of the services. In addition, skills were added to the confidence scale questions; these skills included grilling, stewing, braising, canning, pasta rolling and casseroling. However, it was also noted that many
of these terms were more “culinary terms” as opposed to basic food skill terms. Some questions were removed from the survey related to their lack of representation for basic food skills. An example of this could be found in the question related to using senses to determine when meat has finished cooking. Participants felt this did not accurately portray how health units advocate food safety. Another question dealing with where participants find recipes was removed because it was determined health units would likely not use this information.

Finally, for the demographic questions, participants suggested comparing questions with those previously validated on the Community Health Survey conducted by Statistics Canada. As such, questions related to gender, marital status and age were re-evaluated and adjusted according to Statistics Canada.

**Leeds, Grenville & Lanark District Health Unit (LG&L).**

The Leeds, Grenville & Lanark (LG&L) District Health Unit interview was held on October 11th, 2011 at the LG&L health unit office, with one Registered Dietician. Once informed consent was obtained from the participant, an audio recorder was started to ensure the discussion could be recorded and reflected upon for review at a later date. The fifty minute long discussion involved going through each question and commenting as needed.

In general, it was determined that timelines needed to be more specific on certain questions. The dietician also noted that questions about immigration, employment status and body mass index (BMI) were not only invasive, but that they also did not contribute to what the purpose of the survey represents. A lack of clarity was also determined on a few questions which were then reworded to ensure simplicity and understanding.
The discussions also lead to the request of more definitions or examples in the survey. In particular, a definition of a homemade meal was included in the first question and an example of a “well-balanced plate” was given to define a well balanced meal. Other questions were clarified by including more examples and changing the wording of questions.

The dietician noted that the survey also lacked some key concepts. In specific, it was recommended that questions about the use of store flyers and recipes, access to kitchen tools and influences on cooking should be included to ensure all elements of food skills were to be evaluated.

**Provincially driven collaborative committee.**

The provincially driven collaborative committee focus group was conducted via teleconference on October 19th, 2011, with two Registered Dietitians and one Public Health Nurse. Once informed verbal consent was obtained from each participant, an audio recorder was started to ensure the discussion could be recorded and reflected upon for review at a later date. The one-hour-long discussion involved going through each question and commenting as needed. In addition, one Registered Dietician reviewed the survey and provided her feedback via electronic mail. Consent was also obtained to use her insight for the purposes of face validation.

In general, the committee found the readability level of the survey too high. They also suggested reworking the order of the questions to represent a more logical format. In addition, for some concepts commonly used in public health, such as “staple foods”, it was requested that a more layman’s term be used for the general population. To further clarify terms, participants recommended that the surveyors receive a copy of definitions to be able to read to the survey participants should there be any confusion with wording.
To increase the comprehension of the survey, one committee member noted that it may be best to include open ended questions. However, upon discussion among members it was determined that including open ended questions may compromise the quantitative analysis of responses. Participants also felt that the Likert scale wording was difficult to understand and that other terms should be used to describe ratings. Participants recognized that certain questions under the Likert scale rating could be grouped together as “ability” questions, and suggested that this be done to increase logical flow of the survey. It was also determined that these questions required a sort of “not applicable” response. As such, each question was examined and the option for “not applicable” was added appropriately.

Specific changes were requested of the wording of questions. These changes demonstrated more clarity and specificity related to timing, examples and specific formats of foods (i.e. canned vegetables). It was also determined that when assessing the use of convenience foods, the question should not be limited to just eating convenience foods at home. It was also decided that when assessing the ability to preserve foods, canning should not be given as an example given it is considered an advanced food skill. However, freezing was included in the ability to preserve foods as an example as well. It was also determined that when basic foods are being discussed, seasoning should also be included. Participants also identified that not everyone cooks meat due to diet preferences; therefore the addition of “meat alternatives” was requested on certain questions. Lastly, participants felt that options should be included in answer choices that account for those participants who do not own the kitchen utensils needed for some of the food skills evaluated.

In addition to the changes recommended, participants also felt that certain aspects of food skills needed to be explored in greater depth. In particular, questions about food safety,
confidence in cooking different foods, ability to read, transportation, and financial considerations were all considered relevant to the study. Furthermore, one participant felt that the assessment of whether or not participants had access to a garden that supplies food would be a significant focus. Another participant noted that it would be relevant to discover if those surveyed would be interested in a tour of their grocery store to identify and understand relevant information related to the foods supplied at supermarkets. Lastly, one participant noted that it would be valid to ask the population which element of food skills they feel they need to improve on to ensure they are preparing healthy, nutritious meals. All other participants in the group agreed on the individual recommendations.

Phase 2: Content Validity Index

In total, 10 food skills and measurement experts completed the survey evaluation within the two week deadline after the changes had been made from Phase One. The total expert review consisted of those who were prepared at the doctoral level (n=8) and those who were currently working towards the completion of a doctoral degree (n=2). The data collected during phase two demonstrated a need to reword and discard many questions. Reviewers rated the survey questions on a scale of one to four based on content, clarity and comprehension.

The response from the experts demonstrated a CVI for the survey (S-CVI) of 0.86. Further S-CVI information can be reviewed in Table 1. Upon attainment of content validity the survey was taken to one final focus group at KFL&A to permit an opportunity to review the survey based on expert feedback given the nature of their involvement in the study.
Table 1

*Content Validity Index of Total Survey*

<table>
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<th>CVI Category (Total Survey):</th>
<th>Value</th>
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</thead>
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</tr>
<tr>
<td>Comprehension</td>
<td>0.85</td>
</tr>
<tr>
<td>Clarity</td>
<td>0.81</td>
</tr>
<tr>
<td>Total</td>
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</tbody>
</table>

The original survey is presented in Appendix F. Of the questions that received a CVI of less than 0.8, a few were reworded \((n=8)\) and a few others were removed \((n=3)\). After the analysis, a few changes were made to the wording of questions to ensure clarity \((n=31)\) and some were questions were removed \((n=11)\) based on comments of both expert’s and KFL&A staff in their final review. Many of the comments during consultation with KFL&A questioned the relevance of questions to assessing food skills. Some of the questions \((n=8)\) were also condensed into three questions to decrease the number of questions given the nature of the survey. A complete reference of the CVI totals and comments on each question can be found in Appendix G. The final survey tool is presented in Appendix H.

Some of the questions were not evaluated by all of the experts. One expert felt that comprehension and clarity were too similar to be evaluated separately. Consequently, the CVI for the comprehension of each question was evaluated by a nine experts. From the original
survey presented in Appendix F, questions 15 and 39 were not evaluated by two of the experts resulting in a CVI calculation based on fewer respondents. Lastly, one of the experts did not evaluate the content of demographic questions related to the belief that demographics have little content application to food skills. In view of that, the CVI – content for demographic questions was based on the evaluation of nine experts.

**Phase Three: Pilot, Factor Validity and Reliability**

This pilot study was conducted using a survey company, “CCI Research” and delivered via telephone. In total, 370 participants were interviewed in the Kingston, Frontenac, Lennox and Addington counties. The results of the response rate and reliability will are presented. A pilot study with a smaller sample size (n=30) was completed prior to the full execution of the study. Changes to questions were made based on participant feedback of the questions.

**Response rate.**

This study relied on the use of random digit dialing by CCI-Research to contact 370 participants from the Kingston, Frontenac, Lennox & Addington (KFL&A) counties. The calls were placed starting late November 2011 through to the middle of December 2011. The total number of calls placed was 1580. Of these, 1% were business numbers, one percent of the calls asked the surveyor to call back and 11% simply hung up the phone. Ten of the participants were not eligible and therefore were not questioned and 18% of the numbers attempted were no longer in service. Participants also either refused (18%) or asked their number to be removed (1%). Another 1% of those contacted refused before the qualified respondent could participate. Thus, the final response rate for this survey, excluding those that were not in service, not eligible or were business numbers was 29%. This response rate was expected given that a recent review of
the literature suggests that response rates for telephone surveys are declining and generally average to 30% (Lepkowski, 2007).

**Factor validity.**

An exploratory factor analysis was done using an orthogonal varimax method on items 13 through 31 on the survey. The literature supported the inclusion of these items in the survey given their link with one of the five components of food skills: a) knowledge, b) planning, c) conceptualizing foods, d) mechanical techniques and e) food perception. Participants who did not respond on the scale of one to five on the items were discarded resulting in a 273 surveys being used. The results revealed three factors with a eigenvalue of greater than one accounting for 55% of the overall variance between items after rotating. These results remained consistent after matrix rotation. The three factors were conceptualized into a) Mechanical techniques, b) Food Preparation and c) Conceptualizing foods.

**Reliability.**

Given the nature of the questions developed after the validation phase of this study, Cronbach’s alpha could not be used to determine the reliability of this entire survey. During this study, the first few questions (question one through 12) were not analyzed for reliability given their nominal format. Future studies may consider using a test-retest to evaluate the reliability of these questions. A select number of questions \( (n=18) \), questions 13-31 were ordinal items with the exception of a few questions which participants answered “I don’t know” or the question was not applicable to them. These items were analyzed using Cronbach’s alpha.

Factor analysis separated the items into three constructs a) mechanical techniques, b) Food Preparation and c) conceptualizing foods. Given that not all participants responded within the scaled choices (one to five), respondents who answered “I don’t know”, “not applicable” or
refused were removed from the analysis. The remaining surveys (n=273) were analyzed for reliability. Mechanical techniques, Food Preparation and conceptualizing foods had alpha coefficients of 0.865, 0.832 and 0.783 respectively. This results in an overall alpha coefficient of 0.83 for the survey.

Descriptives

The results of the descriptive statistics will be presented through the components of Pender’s Health Promotion Model. Individual characteristics and experiences will be discussed prior related behaviours and personal factors. Behavior-specific cognitions and affect will be discussed perceived benefits of action, perceived barriers to action, perceived self-efficacy, activity-related affect, interpersonal influences and situational influences. Lastly, behaviour outcome outlines variables included in immediate competing demands and preferences, commitment to plan of action and health promoting behaviour. Due to the nature of the study, during phase one some questions focusing on the components of the original proposed conceptual framework were changed or discarded. Thus, not all of the components of Pender’s framework are demonstrated in the survey.

Individual characteristics and experiences.

Prior related behaviour.

Questions on the survey about this component focused on the value of a home cooked meal and the use of convenience foods. The vast majority of the population surveyed said that eating a meal cooked at home was important to them (n=345). Of the 370 participants, 99% agreed that they had basic ingredients available in their home to prepare meals. Most of the
population, 90%, denied the use of convenience foods over the past 3 days, while some identified their use between 1-3 times in the same time frame (n=141).

Table 2

*Prior Related Behaviours*

Is eating a meal cooked at home important to you?

<table>
<thead>
<tr>
<th></th>
<th>Number of participants</th>
<th>Percentage of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>345</td>
<td>93%</td>
</tr>
<tr>
<td>No</td>
<td>21</td>
<td>6%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>4</td>
<td>1%</td>
</tr>
</tbody>
</table>

Basic ingredients are food such as pasta, rice, fresh, frozen or canned fruits and vegetables, meats and seasoning. Do you have some or all of these basic ingredients in your home?

<table>
<thead>
<tr>
<th></th>
<th>Number of participants</th>
<th>Percentage of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>368</td>
<td>99%</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
<td>1%</td>
</tr>
</tbody>
</table>

Convenience foods are pre-packed foods that are bought and prepared easily. For example: Kraft Dinner, frozen chicken fingers. In the past 3 days, how often have you eating convenience foods for breakfast, lunch or dinner?

<table>
<thead>
<tr>
<th></th>
<th>Numbers of participants</th>
<th>Percentage of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 times</td>
<td>219</td>
<td>59%</td>
</tr>
<tr>
<td>1-3 times</td>
<td>141</td>
<td>38%</td>
</tr>
<tr>
<td>4-5 times</td>
<td>9</td>
<td>2%</td>
</tr>
<tr>
<td>More than 5 times</td>
<td>1</td>
<td>0%</td>
</tr>
</tbody>
</table>
**Personal Factors:**

Personal factors can include biological, socio-culture and psychological factors. Questions related to ethnicity and body mass index (BMI) were excluded based on the changes made during phase one and ethical considerations, respectively.

The age of participants in this study ranged from 18 to over 71 years old. Almost half of the population who responded to the survey were between the ages of 41-60 years old (48%). Most of these respondents were female (n=279, 75%). The highest level of education that was completed ranged from some high school to completion of college or university. The majority of respondents had completed college or university (n=194, 52%). The majority of respondents were also employed (57%), however, of the respondents who did state their salary the total monthly family income ranged from less than $1250 (5%) to over $5000 (15%). Almost one quarter (24%) of the respondents did not know or refused to comment on their income. Most of the respondents to the survey were married or living with a partner (n=252, 68%)

![Figure 3. Ages of participants](image-url)
Figure 4. Employment status

Figure 5: Highest Level of Education
Figure 6: Total monthly family income before taxes

Figure 7: Marital Status
Figure 8: Gender of participants

Behaviour-specific cognitions and affect.

Perceived benefits of action.

Due to the nature of the questions after face validity had been achieved, perceived benefits of action were not assessed in this survey. Although questions were presented to public health, it was determined that the objective of the survey was to measure current knowledge of food skills. Perceived benefits of action would offer influences for change, however, the limited literature available on food skills did not offer clear links to this and public health units aimed for a survey that assessed food skills.

Perceived barriers to action.

Due to the nature of the questions after face validity had been achieved, perceived barriers to action were not assessed in this survey. Instead, perceived barriers such as SES, food security and access to foods were assessed as situational influences. It was evident that these perceived barriers were more commonly associated with personal and situational influences.
**Perceived self-efficacy.**

Most participants identified as being very confident in their knowledge and ability for preparing healthy foods. Participants felt very confident in their knowledge of food skills. When assessing food safety, 70% of the participants stated they were confident in their understanding of how to handle, store and prepare foods safely (n=262). A high number of respondents also identified being confident in their ability to read nutrition labels to make healthy choices (n=272). In addition, 60% felt confident using substitutions to make recipes healthier (n=207). Of the 370 respondents, 63% felt they were very confident in their knowledge to change recipes to make them healthier (n=235).

<table>
<thead>
<tr>
<th>Table 3</th>
<th><strong>Confidence in knowledge required to prepare healthy meals</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min.</td>
</tr>
<tr>
<td>Handle, store and prepare foods safely</td>
<td>1</td>
</tr>
<tr>
<td>Read nutrition labels to make healthy choices</td>
<td>1</td>
</tr>
<tr>
<td>Use substitutions in recipes if you don’t have a specific ingredient</td>
<td>1</td>
</tr>
<tr>
<td>Change recipes to make them healthier</td>
<td>1</td>
</tr>
</tbody>
</table>
Table 4

<table>
<thead>
<tr>
<th>Confident ability to perform mechanical techniques of food skills</th>
<th>Min.</th>
<th>Max.</th>
<th>NA</th>
<th>Mean</th>
<th>MSE</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepare foods for cooking chopping, mixing and stirring</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>4.61</td>
<td>0.04</td>
<td>0.78</td>
</tr>
<tr>
<td>Use different methods to cook foods such as boiling, stir-frying, steaming and grilling</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>4.52</td>
<td>0.04</td>
<td>0.80</td>
</tr>
<tr>
<td>Use different equipment for cooking</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>4.57</td>
<td>0.04</td>
<td>0.80</td>
</tr>
<tr>
<td>Preserve food</td>
<td>1</td>
<td>5</td>
<td>12</td>
<td>3.26</td>
<td>0.07</td>
<td>1.42</td>
</tr>
<tr>
<td>Prepare more than one food item so they are ready at the same time</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>4.32</td>
<td>0.04</td>
<td>0.89</td>
</tr>
<tr>
<td>Read recipes</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>4.32</td>
<td>0.06</td>
<td>1.06</td>
</tr>
</tbody>
</table>

Confidence was also seen in knowledge about the preparation of grains (85%), vegetables (94%) and meats including fish and poultry (80%) as shown in table 5.

Table 5

<table>
<thead>
<tr>
<th>Confidence in knowing mechanical techniques required to prepare different types of food</th>
<th>Min.</th>
<th>Max.</th>
<th>NA</th>
<th>Mean</th>
<th>MSE</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cook vegetables</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>4.65</td>
<td>0.04</td>
<td>0.73</td>
</tr>
<tr>
<td>Cook meat including fish and/or poultry</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>4.53</td>
<td>0.04</td>
<td>0.75</td>
</tr>
<tr>
<td>Cook grains</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>4.40</td>
<td>0.05</td>
<td>0.92</td>
</tr>
</tbody>
</table>

Overall, participants also identified a high level of confidence in their abilities related to conceptualization, meal planning and food perception. More than half of the participants (55%) reported being very confident in their ability to use leftovers to prepare new meals. Of the participants who had children and grandchildren, three quarters reported being confident in their
ability to teach their younger generations how to cook (74%). Although 74% of participants rated their confidence in planning a budget and comparing food prices as a 4 or 5, there were decreased confidence levels about planning meals for the week (Table 6). The majority of participants, 67%, reported being very confident in their ability to know when food is done cooking.

Table 6

Confidence in abilities related to conceptualization, meal planning and food perception

<table>
<thead>
<tr>
<th></th>
<th>Min.</th>
<th>Max.</th>
<th>NA</th>
<th>Mean</th>
<th>MSE</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using leftovers to prepare new meals</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>4.25</td>
<td>0.05</td>
<td>1.02</td>
</tr>
<tr>
<td>Teaching children/grandchildren how to cook</td>
<td>1</td>
<td>5</td>
<td>66</td>
<td>4.06</td>
<td>0.07</td>
<td>1.13</td>
</tr>
<tr>
<td>Planning meals for the week</td>
<td>1</td>
<td>5</td>
<td>9</td>
<td>3.49</td>
<td>0.07</td>
<td>1.31</td>
</tr>
<tr>
<td>Comparing food prices to save money</td>
<td>1</td>
<td>5</td>
<td>12</td>
<td>4.15</td>
<td>0.06</td>
<td>1.05</td>
</tr>
<tr>
<td>Knowing when food is cooked</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>4.58</td>
<td>0.04</td>
<td>0.71</td>
</tr>
</tbody>
</table>

Activity-related affect.

Given the nature of the survey questions after face validity had been achieved, no activity-related affect questions were used.

Interpersonal influences.

Interpersonal influences were assessed through question 11 and 12 of the survey. Figure 3 demonstrates how participants first learned to cook. Most participants (83%) identified their families as contributing to their first abilities to learn how to cook, while school and friends had a
lesser impact (2% each). Given their skills, participants were offered a selection of choices that identified what the biggest influence on how foods were prepared was (Table 7). The most commonly selected influences were senses such as taste, smell, presentation and texture (39%) closely followed by health (38%) and family (20%). Table 8 outlines other influences participants chose that were not listed.

![Figure 9. How participants first learned to cook](image)

**Table 7**

*The biggest influences on how you prepare foods*

<table>
<thead>
<tr>
<th>Influence</th>
<th>Number of participants</th>
<th>Percentage of total choices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senses (taste, smell, presentation, texture)</td>
<td>144</td>
<td>39%</td>
</tr>
<tr>
<td>Money</td>
<td>34</td>
<td>9%</td>
</tr>
<tr>
<td>Culture</td>
<td>19</td>
<td>5%</td>
</tr>
<tr>
<td>Question</td>
<td>Option</td>
<td></td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>How did you first learn to cook?*</td>
<td>Learned on my own</td>
<td></td>
</tr>
<tr>
<td></td>
<td>All of the above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>On my own</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Military</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Necessity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trial and error</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4H (Program)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Friends and family</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A little bit of everything</td>
<td></td>
</tr>
</tbody>
</table>

Table 8

*Influences on cooking not listed*
What is the biggest influence on how you prepare foods?*

- Time
- Several of the options listed
- Ease of getting it ready
- Quality
- Picky eaters
- Spent many hours with a dietitian
- Whatever is in the house
- A mixture of everything
- I prefer real food and fresh is important
- Having been raised in the country
- Making sure you cook it properly – don’t overcook or undercook it, though it’s up to how you want it

*Some of the answers have been condensed for redundancy

Situational influences.

Three questions from the survey assessed situational influences on the population. These questions were about: a) food security; b) the number of people the participant was responsible for preparing meals for; and, c) the accessibility to a garden that grows foods and/or herbs. The results of the survey identify that 29% of the participants from the study worry about not having enough money to buy the quality of foods they desire. The survey also showed the majority of people had at least two people they were responsible for preparing meals for, including themselves (Figure 4). Sixty percent of the participants also indicated their accessibility to a garden that grows foods and/or herbs.
**Behavioural outcome.**

**Immediate competing demands and preferences.**

The survey both directly and indirectly addresses the immediate competing demands and preferences of building on food skills. The direct questions focus on time available for practicing food skills. The majority of the respondents stated they spend between 31-60 minutes at the grocery store weekly/biweekly. Further time frames can be seen in Figure 5. The majority of participants (94%) also stated that the meal they spend the most time preparing is dinner (Figure 6). In general, 31-60 minutes was the most common time frame required for making whichever meal took the longest to prepare and cook (55%). Varying time frames for intensive meal preparation can be found in figure 7. Of note, the survey did identify that some participants did
not own the equipment necessary to perform certain food skills. Three participants acknowledged a lack of equipment to preserve foods and one participant noted a lack of equipment to cook grains.

*Figure 11. Time spent in a grocery store*
Figure 12. Most time intensive meal preparation
Summary of Results

The results demonstrate that people found value in consuming a meal prepared at home (93%) and most had the basic ingredients needed to prepare a meal (99%). Although convenience foods were used by 40% of the population, the majority stated that they had not consumed convenience foods in the past 3 days prior to survey administration. People generally felt very confident in their abilities about food perception and mechanical techniques apart from preserving foods where 55% of the population reported lower confidence. Participants also reported being relatively confident in concepts related to their knowledge, conceptualizing of food and planning of meals. The areas that appeared to be less confident in these concepts were
planning meals for the week (n=170), using substitutions in recipes (n=155) and changing recipes to make them healthier (n=132).

The research purpose of this study was to create a valid and reliable tool to assess the level of food skills in the community. Although reliability has only been shown on a fraction of the tool’s questions, both face and content validity (CVI=0.86) have been achieved. Future studies could involve using different psychometric tests to achieve reliability.
Chapter 5: Discussion

The purpose of this study was to develop a valid and reliable tool to assess the level of food skills in the general adult population. This tool will contribute to growing research about food skills and offer a credible way to assess general populations. The first phase of the study was completed at three different sites and also included a teleconference with public health staff from three other sites. In total, the survey was reviewed by representatives from six public health sites across Ontario. The second phase of the study was completed through sending electronic copies of the survey to 11 field experts in measurement development and food skills. Ten of these experts responded and the total content validity index (CVI) was calculated for the survey. The final phase of the study was conducted using a third party survey company, CCI Research. CCI Research used random digit dialling to complete 370 home telephone surveys in the KFL&A counties.

Phase one: Face Validity

There were four meetings that sought to achieve face validity and all of them demonstrated some consistent findings. Common observations that arose included a) the high literacy level of the survey, b) the need for examples to be included to describe specific terms and c) the addition of other topics related to food skills. The literacy level of the survey was then decreased such that the survey questions used simple words, were clear, concise, specific and respectful (Dillman, 2000). Examples were used to describe terms such as “staple ingredients” and “pre-packaged meals” to ensure participants had a clear understanding of the questions presented. Lastly, additional topics discussed included limitations to planning and preparing a meal, the value of a home cooked meal, the use of coupons, ability to purchase foods, influences
on meal preparation and access to kitchen tools. These questions were all added to the survey to represent the key concepts public health staff needed to be assessed.

Additional feedback during phase one resulted in the inclusion of transition phases for the survey and a decreased number of potential answers to choose from per question. The number of answers available per question was decreased to prevent recency effect. Recency effect occurs when participants are more likely to select one of the first answers presented to them, thus creating a response bias (Dillman, 2000). In an effort to prevent this, where feasible, questions with more options to select were “select all that apply” type questions.

There were many benefits to approaching a variety of units for survey feedback. Although KFL&A does cover both urban and rural settings, the analyzed questions focused primarily on urban living after consultation with KFL&A. Hastings and Prince Edward Counties and Leeds, Grenville and Lanark Counties offered more questions related to rural living. Thomas, Hathaway and Arheart (1992) support this approach and advocate for the use of multiple perspectives to evaluate relevant questions when achieving face validity. The use of both dietitian and nurse clinicians when evaluating face validity also offers knowledge related to the consideration of questions (Greeno, 2003). Their insight not only ensured the item was measuring its intent, but they also understood and contributed to the working subject of the question. Although face validity was not the only psychometric test used on the survey, it does offer support for the instrument’s ability to measure its appropriate construct (Polit & Beck, 2008).
Phase two: Content validity

Content validity was used in conjunction with face validity to support the validity achieved in phase one of the study. Independently, face validity often lacks the rigour required for proving the validity of a tool (Downing, 2006), however, with support from other validation tests, face validity can be helpful (Polit & Beck, 2008). Achieving a CVI of greater than 0.80 for the survey would credit the survey with having an appropriate sample of items that covers the food skills construct (Polit & Beck, 2008).

The data collected during phase two demonstrated a need to reword and discard many questions. Questions that received a CVI total of less than 0.80 were automatically reworded or discarded. This step is supported by many authors (Rubio, Berg-Weger, Tebb, Lee & Rauch, 2003; Slocumb & Cole, 1991) who rationalize a CVI value of less than 0.80 representing poor content validity.

Various experts have reviewed CVI and argued for different target values. Several authorities argue that for an instrument to truly credit excellent content validity, a CVI of 0.90 should be achieved (Polit, Beck & Owen, 2007; Waltz, Strickland & Lenz, 2005). Davis (1992) suggests a CVI of 0.80 is considered a strict criterion for an instrument. The current food skills survey achieved a CVI of 0.86 before items were removed or reworded. Future studies could involve a review of the survey with another panel of experts to determine the CVI after the recommended changes were made.

Phase three: Reliability

Given the nature of the questions, only questions 12 through 32 were analyzed for reliability using Cronbach’s alpha. Questions one through 11 were nominal in nature and
therefore could not be appropriately analyzed for internal consistency. Future studies might consider completing a test-retest evaluation on these questions to determine their stability. Demographic questions were not analyzed for reliability because they were not specifically evaluating the food skill constructs of the survey.

A review of the reliability analysis of the scaled questions determined that the removal of questions would not significantly increase the Cronbach’s alpha of the survey. Therefore, none of the questions for the survey were removed.

Internal consistency was chosen to evaluate the survey based on its widespread use (Polit & Beck, 2008) and feasibility. Due to funding limitations, the survey could not be rerun to determine stability. Regardless, the use of internal consistency is widely accepted as an effort to reduce sampling bias of items in a survey (Polit & Beck, 2008). That is, internal consistency ensures that the variability of responses to each item is decreased. By determining the Cronbach’s alpha, the results were able to show that the different questions in the survey reliably measured the action and planning constructs of food skills.

Future studies could complete a test-retest reliability to determine the stability of this survey. This would be appropriate given that the items used are not expected to change over time; that is once a respondent has truthfully chosen an answer that best represents their perceptions, it is unlikely that they will respond differently at a later date without an intervention. It was determined that equivalence would not offer the same level of reliability to this survey, given that observers are not evaluating subjective data. There should be no response differentiation between observers if the survey is executed correctly.
Conceptual framework

The results of the study indicate that a modified version of Pender’s Model of Health Promotion may offer a more suitable base for understanding the factors that contribute to food skills. Although Pender’s model did offer evidence to support all of the questions asked in the survey, the survey did not require all the elements of Pender’s model. Specifically, after face and content validity had been achieved perceived benefits and barriers to action could not be accounted for. This could suggest another modified version of Pender’s Model of Health Promotion (HPM) or perhaps questions could still be used from the original survey to meet the elements of Pender’s HPM. Similarly, participants offered no items that might address activity-related affect to food skills.

Given the context of the survey questions, few questions may be explained through perceived benefits and barriers to action. Specifically, having health as an influence to cooking choices may be perceived as a benefit, however, given the nature of the question it was more appropriately labelled as an interpersonal influence. Interpersonal influences are guided by family, peers, providers and include support and models (Polit & Beck, 2008). Due to the majority of influences listed (family, media, health) it was determined influences were more interpersonal in nature rather than perceived benefits. Similarly, perceived barriers could be seen through time limitations and financial abilities, however, these questions were more accurately represented by the situational construct in of Pender’s model. They are more closely identified as options (i.e. “how much time do I have to make this meal”) and demands (i.e. financial demands). Each of the other questions were well supported within the concepts of the model. Furthermore, some of the questions from the survey were able to correlate with multiple sections
of the HPM. However, to ensure clarity the questions have been separated into their most respective constructs of the survey.

Descriptives

**Individual characteristics and experiences.**

**Prior related behaviour.**

Questions about prior related behaviours examined the value of home cooked meals and the use of convenience foods. It was clear that participants valued a meal cooked at home. This shows that participants’ prior behaviours support favourable desires for home cooked meals. To value a home cooked meal, participants most likely have experienced it before participating in the study. This is further supported by most participants (99%) having basic ingredients too cook with in their homes. However, in future studies this question should be reworded to reflect those participants who have more than one of spices, pasta, rice, fresh, frozen or canned fruits and vegetables and meats. As the question currently reads, participants could answer, “yes” to only a limited supply of any of these ingredients. By possessing the basic ingredients needed to create a home cooked meal, participants demonstrated the abilities to know and understand ingredients needed to make a meal. The majority of participants had not eaten convenience foods in the past three days. This data supports that people are generally cooking with basic ingredients as opposed to convenience foods. This indicates favourable ideals given that convenience foods are a limiting factor to the development of food skills (Alexy et al., 2008; Blake et al., 2011; Johnson-Down et al., 2006; Milligan, et al., 1998; Northstone & Emmett, 2005; Pryer et al., 2001; Pryer & Rogers, 2009).
**Personal factors:**

Personal factors affecting food skills were best identified in the demographics questions. Most of the participants that responded were over the age of 41 years (81%). Furthermore, of these, 33% were over the age of 60 years old. This result may be explained by the relatively high rate of residents over the age of 40 in the KFL&A region (54%) ([Population by age and sex facts and figures.](#)2011). Of the 159 participants who reported they were not employed, 135 of them were 51 or older offering retirement as a possible justification for the relatively high unemployment rate. Furthermore, 75% of the participants were female. The difference in gender participation is likely not related to KFL&A demographics where 51% of the population are female ([Population by age and sex facts and figures.](#)2011), but could represent a higher participation of females preparing meals. Consistent findings were shown in a previous food skills review (Engler-Stringer, 2010). With women being the primary respondents, it is clear that they are still more likely to be responsible for preparing meals given this person was requested at the start of the survey. This could also suggest that the respondents may have been female homemakers, thus also reasoning the relatively higher level of food skills noted in the survey. Thus, it may be beneficial to include this as a type of employment to determine its plausibility. Given that the unemployment rate was so high in the survey and there were still participants under the age of 60 who responded, this may attest to the relatively high levels of food skills. Most participants also acknowledged that they were married or living with a partner (68%), which contrasts with the 2006 census that reported 81.3% of KFL&A residents being married or living with a partner ([Family structure facts and figures.](#)2008). No comparable literature was found regarding marital status and levels of food skills.
Previous studies have indicated varying relationships on food skills and socio-economic status (SES) (Anderson, 2007; Broughton, et al., 2006; McLaughlin et al., 2003; Stead et al., 2004; Tarasuk, 2005). Despite the relatively high level of respondents who were not employed, the total monthly family income before taxes varied. Generally, the number of participants who had monthly incomes between $1251-$2000, $2001-$3000, $3001-$4000 and $4001-$5000 was equal (13-15% each). Most of the respondents also had some level of college or university completed (52%). This could represent consistency in describing inconsistency between food skills among high and low SES. In this study, despite the range of SES the level of food skills remained relatively high.

As previous studies suggest, these demographic factors can be linked to the level of food skills. This is further supported by Pender’s Health Promotion Model, which suggests that personal factors can influence a given behaviour such as food skills. Given personal factors are unlikely to change, through understanding them, future skills can be modeled to promote healthy behaviours that compliment the population’s personal factors.

**Behaviour-specific cognitions and affect**

*Perceived self-efficacy.*

Perceived self-efficacy was evaluated based on how confident participants felt completing a given food skills task. Generally, participants felt confident in their food skills abilities, often rating their confidence a level 4 or higher. This finding could be influenced by social desirability bias, particularly given that when the survey was conducted, the surveyors specifically requested speaking with the primary person responsible for meal preparation.
Furthermore, the respondent may have felt that compared to those in the home that did not prepare meals, the “meal preparer” was quite confident in completing the assessed skills.

The skills that participants had the least amount of confidence in, listed from lowest to highest (as rated on a scale of one to five where five was the most confident) were; a) preserving food (3.26), b) planning meals for the week (3.49), c) using substitutions in recipes if you don’t have a specific ingredient (3.60) and d) changing recipes to make them healthier (3.80).

Preserving food was not a skill well assessed in previous studies, however one study conducted also showed consistent findings where fewer adults reported good preserving food skills (Vanderkooy, 2010). Furthermore, participants may have found the specific examples given in the question to be challenging (i.e. canning, dehydrating and smoking).

Planning meals was also not a topic that has been closely analyzed in food skill studies. However, in this study the question referred to planning meals for the week. It may be that participants did not plan meals a week in advance; however it could also demonstrate that participants lack the understanding of how to do this.

Pender’s Health Promotion Model supports how perceived self-efficacy can influence a participant’s execution of practicing food skills. Without the confidence in these abilities it might be deduced that participants lack the desire to attempt learning these skills, perhaps due to limited funding or even general interest. As the model suggests, these concepts should link in an effort to lead to a conclusive and positive health behaviour change. Previous studies have shown that without understanding and appreciating the ultimate end goal of preparing healthy meals, participants are less likely to attempt a skill, particularly when finances were limited and food may go to waste (Wrieden et al., 2007).
Interpersonal influences.

Pender’s Health Promotion Model is based on social cognitive theory, which suggests that behavioural change can be rationalized within the context of larger social constructs (Srof & Velsor-Friedrich, 2006). Many influences on preparing meals and cooking, which included interpersonal influences, or those influences based on the family preferences (Broughton, Janssen, Hertzman, Innis, & Frankish, 2006; Stead et al., 2004), feasibility support (Anderson, 2007; Claro & Monteiro, 2010; Tarasuk, 2005) and modeling (Coesens, De Mol, De Bourdeaudhuij, & Buysse, 2010; Pearson, Ball, & Crawford, 2011; Raynor et al., 2011; Snoek, Sessink, & Engels, 2010; Sweetman, McGowan, Croker, & Cooke, 2011). The results of the survey suggest that these factors had influenced participants, particularly given that 83% of the participants listed their families as where they first learned to cook. This is consistent with Pender’s Health Promotion Model which explains the expectations and influences of families as having a major effect on the behavioural change.

Despite the overwhelming family influence on how participants learned how to prepare meals, it was clear that taste, smell, presentation and texture as well as healthy eating choices were the predominant influences on cooking. Although this does not offer a direct link with Pender’s Model taste, texture, smell and presentation were supported in the literature (Stead et al., 2004). Health was also identified as a major influence on preparing meals for participants. Although this finding is promising given initiatives lead by public health to encourage healthy eating and food skills (Ministry of Health Promotion, 2010), it may also be related to a social desirability bias.
Situational influences.

Pender describes situational influences as those factors in the external environment that contribute to behaviors related to health promotion (Pender, Murdaugh, & Parsons, 2006). This survey examined several factors in the external environment that may have affected the development of food skills. Results identified that 29% of participants worried that they did not have enough money to buy the quality of foods they desired. Despite this finding, levels of food skills remained relatively high which has been previously supported in other Canadian literature (McLaughlin, Tarasuk, & Kreiger, 2003). This finding also brings concern regarding the increasing reports of food insecurity of this region where two years ago only 11.4% of the population reported food insecurity (Food security facts and figures, 2009).

The majority of participants also noted that they were responsible for preparing meals for two or more people however, the greatest number of participants said they prepared meals for two people including themselves. The number of older participants in the survey could influence this finding, as their children may no longer be relying on the primary provider for meals.

Lastly, the accessibility of a garden that grows foods and/or herbs was examined. Previous studies have shown that children who are taught the benefits of a food-supplying garden often grow to appreciate healthy foods (Morgan et al., 2010; Ratcliffe, Merrigan, Rogers, & Goldberg, 2011). The results demonstrate that more than half of the participants surveyed (60%) have access to a food-supplying garden. Despite this, Vanderkooy (2010) was able to show that those with food-supplying gardens were likely to also possess preserving skills. Although this study did not examine correlations between variables, it was evident that regardless of garden accessibility, preserving foods was one of the top three most poorly rated food skills among participants. The accessibility of a food-supplying garden may provide an added situational
influence, which may contribute to relatively high level of food skills. This finding would be supported through Pender’s Health Promotion Model as well which states the external environment can influence positive behaviour changes.

**Behavioural outcome.**

**Immediate competing demands and preferences.**

Immediate competing demands and preferences are those factors that are either beyond the participants control to change or are of which they exert relatively high control respectively (Pender et al., 2006). Given that there is still minimal literature examining food skills, anecdotally, time is often listed as a major barrier to practicing food skills. Time could be perceived as both a competing demand and preference; however, given that participants can exert control over the time they have to prepare foods it was assessed as a competing preference. No competing demands emerged through the questions used in the survey.

The results described that most participants spent between 31-60 minutes at a food store either weekly or biweekly. Limited Canadian data related to grocery shopping were found, however an American study identified that participants spent approximately 20 minutes a day on grocery shopping (Zick & Stevens, 2010). Participants of this survey may have been more willing to spend a lengthier amount of time in the grocery store given that almost half of those surveyed were unemployed. Knowledge may also be an influencing factor on the time spent in a grocery store. If participants are truly are influenced by health in meal preparation, they may be taking a longer time to read and review nutrition labels to ensure healthier decisions. This notion was further supported by the item addressing confidence in reading nutrition labels where, on a
scale of one to five where five was most confident, participants’ responses were an average of 4.11.

The majority of participants also felt that they spent the longest amount of time preparing dinner. This may be related to anecdotal perceptions of dinner being a grand meal, or perhaps that participants may have had more time to make dinner over other meals such as breakfast or lunch, which may conflict with work hours. Participants stated they most often spent between 31-60 minutes preparing their most complex meal, which is consistent with an American study that identified the average time being 51 minutes (Zick & Stevens, 2010).

By allotting more control over the competing preferences of time, participants have shown a relatively high level of food skills. This information is vital for food skill building stakeholders as it offers a sense of how much time participants are willing to put towards making a meal. It suggests that since most of the participants of the survey had not consumed convenience foods in the past three days, they were likely preparing their meals from basic ingredients within 31-60 minutes. These findings also suggest that participants are willing to put the most time and effort into preparing dinner which offers guidance for the levels of complexity for various meals.

**Summary of Strengths and Limitations**

**Strengths and Limitations**

This study offered a comprehensive approach to creating a credible survey to assess the level of food skills among the general population. By using a multi-phase approach this study was able to achieve a valid and reliable tool. Achieving validity and reliability reduces the risk for bias (Polit & Beck, 2008). Not only was bias reduced, but also the final tool was easy to use
and confidential. With the inclusion of demographic questions, health units will be able to determine priority populations as well as formulate links to what type of populations are linked with diminished or excelled food skills. Lastly, during the pilot of the survey the large sample size (10 participants per item on the survey) provided credible data for interpreting reliability of the survey and reviewing the descriptive results.

The tool has been proven to be credible for a telephone survey approach, thus to be used through other routes such as the internet or mail out, the survey would need to be reviewed and piloted once more in those respective formats. In addition, given the nature of telephone surveys, there is a risk for recency bias occurring, where participants are unable to recall all of the options available in a multiple choice question and result in answering one of the first few options (Dillman, 2000). This may have been the case for questions about influences on cooking and where participants learned to cook. The survey was also at risk for social desirability bias given that participants were aware of the survey’s connection with the local public health agency. Given this connection, participants may have felt more compelled to respond with “health” being a major influence on their food skills.

Given that the first 12 questions of the survey were nominal in nature, internal consistency could not be determined on those specific items. As a result of this limitation, the entire survey has not been deemed reliable but moreover a section of the survey. Furthermore, the survey was only developed and tested for use in the English language, which limits its use in some areas of Canada. The study also neglected to include a postal code question, which could help health units determine pockets of food skill levels within a community. Lastly, the results of this survey are not generalizable to the rest of Canada given the tool was piloted in one Local Health Integration Network.
Recommendations for Future Research

This survey tool was created for use by public health units aiming to assess food skills in their respective communities. The tool has achieved validity and reliability for use as a telephone survey in the Local Health Integration Network. The tool could also be used by those assessing food skills in a general population. Although the use of this tool has not been tested for use as a pre- and post-evaluation tool, the final tool or an adaptation of it, may offer support for evaluation of food skill building programs.

The survey would prove to be more efficient if participant location identification was included in the demographic questions. This would allow surveyors to identify specific areas of a community that are most in need of a food skills development program while still maintaining the confidentiality of the survey. Surveyors may also consider the additions of a question addressing competing demands as described by Pender’s HPM. Such a question could assist in identifying barriers to learning and increasing food skills that may need to be considered when developing a food skills program.

To ensure reliability of the entire survey, a test-retest may offer more insight to the stability of the survey. This evaluation would be particularly useful given that the survey item responses are unlikely to change over time without intervention. Surveyors should also consider when the survey is being completed, as different days of the week may yield different results. During the pilot of this study, the survey was not conducted on specific days, nor were the days recorded. Results may vary depending on the inclusion or exclusion of weekend days.
Chapter 6: Conclusions

The literature demonstrates a gap in knowledge related to food skills among North American, European and Australian citizens. It has further outlined evidence that supports a relationship between poor food skills and negative health outcomes. These known findings have lead to provincial initiatives to establish a public health standard related to food skills. Despite these findings and initiatives, no credible assessment tool has been created to date. This study sought to develop such a tool and in doing so, ensured its credibility through a series of phases focused on achieving validity and reliability.

This study used Pender’s Health Promotion Model to form linkages between concepts that emerged in the literature review. It further used these linkages to formulate questions for the first draft of the survey, which was then altered multiple times after consultation with different stakeholders throughout the study’s phases. Although the survey did not encompass each of the elements of Pender’s model once it had been reviewed and altered, the model did offer several explanations for the descriptive results achieved.

The rigour used for the validation and reliability testing for this survey is bound to provide a credible way for food skills to be assessed among general populations. This tool will provide an assessment of communities, which will ultimately provide interventions based on identified community needs. These interventions ultimately could lead to positive health changes related to obesity and healthy dietary intake.

This study successfully created a credible tool for assessing food skills in the general population. In doing so, it was also able to identify strengths and limitations in the food skills of the KFL&A community. This survey can also be used in future studies to obtain surveillance
data related to food skills, a major gap in current literature. Further assessment of the data might also support relationships between individual characteristics, behaviour specific cognitions and affects and behavioural outcomes. However, given the purpose of this study, these relationships were not assessed.
References


Deschambault, C. (2009). *The removal of mandatory home economics from quebec's official education curriculum.* (Unpublished Environmental Sc. & International Development). Dalhousie University,


Appendix A
Literature Search

Figure 1. Literature review search
## Appendix B

### Methods Timeline

<table>
<thead>
<tr>
<th>Task</th>
<th>Date of completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literature Review focusing on food skills</td>
<td>May 2011</td>
</tr>
<tr>
<td>Problem Statement</td>
<td>May 2011</td>
</tr>
<tr>
<td>Population and study sample</td>
<td>May 2011</td>
</tr>
<tr>
<td>Theoretical Framework/model established</td>
<td>May 2011</td>
</tr>
<tr>
<td>Objective/Aim and Hypotheses</td>
<td>May 2011</td>
</tr>
<tr>
<td>Tool identified for revision</td>
<td>May 2011</td>
</tr>
<tr>
<td>Ethics approval</td>
<td>July 2011</td>
</tr>
<tr>
<td>Phase 1: Face validity through discussing questions for tool with Public Health</td>
<td>August 2011</td>
</tr>
<tr>
<td>Review tool with community stakeholders (Leeds Grenville Public Health and/or Hastings Prince Edward County Public Health) make revisions and review with KFL&amp;A</td>
<td></td>
</tr>
<tr>
<td>Phase 2: Content validity through expert panel ratings</td>
<td>September 2011</td>
</tr>
<tr>
<td>Re-submit revised survey tool to ethics</td>
<td>September 2011</td>
</tr>
<tr>
<td>Phase 3: Pilot tool and measure Cronbach’s statistic</td>
<td>November 2011</td>
</tr>
</tbody>
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Appendix C

Information Letter – Public Health Units

Dear (respective public health unit),

My name is Lydia Vrhovnik and I am currently attending Queen’s University to complete a Masters of Science in Nursing. I have been given the opportunity to complete my thesis with the Kingston, Frontenac, Lennox & Addington Public Health Unit alongside Suzette Taggart, manager of the Chronic Disease & Injury Prevention (CDIP) and Heather McMillan, registered dietician of the CDIP program. Together, we are working to examine new measures of examining food skills among community members.

In conformance with the Ontario Public Health Standards outlining the need to assess healthy weights, we have begun a pilot study to create a valid and reliable tool for the assessment of food skills. Although previous evaluations have assessed food skills, the use of a valid and reliable tool has not yet been created. Our survey tool will aim to achieve face and content validity as well as internal consistency through the responses of a telephone survey. By creating such a tool, subsequent studies for examining the food skills among your population of interest can offer more credible results. Future endeavours may result in individualized food skills programs based on the identified needs of your population.

To support this research, we are inviting public health nurses, dieticians and health promoters in your CDIP program to offer expertise for the development of the questionnaire. Your knowledge and participation will provide valuable face validity to the survey tool. Please join us in a short 30-45minute discussion on (date) in the (room location of facility), refreshments and a light snack will be provided. We look forward to meeting you.

Please confirm your attendance by contacting me at lvrhovnik@kflapublichealth.ca. I am happy to answer any questions, comments or concerns that you may have as well.

Thank you,

Lydia Vrhovnik, RN

Masters Student, Chronic Disease & Injury Prevention

KFL&A Public Health
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lvrhovnik@kflapublichealth.ca
Appendix D

Information Letter – General Population

I1. Hello, my name is ___________________________ and I am calling from CCI Research on behalf of the Kingston, Frontenac, Lennox and Addington Health Unit and Queen’s University. I would like to speak to the person in the household who is 18 years of age or older and is the primary person for preparing meals in the home. Is that you?

[Interviewer Prompt if asked to clarify - The person in the household who is 18 years of age or older and who prepares most of the meals for the household.]

1. Speaking  Go to I3.
2. Goes to get them  Go to I2
3. Not available  Record Call Back
4. Refused  Thank you for your time. Goodbye (Refused)

I2 Hello, my name is ___________________________ and I am calling from CCI Research on behalf of the Kingston, Frontenac, Lennox and Addington Health Unit and Queen’s University. I am told you are 18 years of age or older and the primary person for preparing meals for the household, is this correct?

[Interviewer prompt: If asked to clarify - The person in the household who is 18 years of age or older and who prepares most of the meals for the household.]

1. Yes  Go to I3
2. No  Go to I2b
3. Not available  Record Call Back
4. Refused  Thank you for your time. Goodbye (Refused)

I2b. I am sorry I was looking to speak with the person in the household who is 18 years of age or older and is the primary person for preparing meals for the household. Is that person available?
If asked to clarify - The person in the household who is 18 years of age or older and who prepares most of the meals for the household.]

1. Yes Go to I2
2. Not available Record Call Back
3. Refused Than you for your time. Goodbye (Refused)

I3. Hi, we are gathering data from KFL&A residents to develop a generic survey that can be used to assess the food skills of various populations. This survey will take about 10 minutes of your time. It is confidential and voluntary; you may refuse to answer any question or stop the interview at any time. Your refusal or participation will not impact the services you receive from KFL&A public health or Queen’s University. However, your participation is IMPORTANT for us to gather accurate information regarding food skills to develop the generic survey, which will ultimately tell your local health unit how they can better serve you.

For questions or concerns regarding the survey contact Lydia Vrhovnik RN @ 613-548-1232 ext. 1214. If you have any questions regarding your rights as a research participant contact Dr. Albert Clark Chair of the Queen’s University Health Science Research Ethics Board @ 613-533-6081 or by e-mail at clarkaf@queensu.ca.

This call may be recorded for monitoring purposes.

May I continue?

1. Yes Go to Q1
2. No later Go to Call back screen
3. No never Code as Refused (RF)
Appendix E

Information Letter for Experts

**Title of Research Project:**
A pilot study for the development of a food skills survey tool.

**Investigators:**
Lydia Vrhovnik, RN
Kim Sears, RN, PhD
Jennifer Medves RN, PhD
Kate O’Connor, RN, PhD
Suzette Taggart, RD, MBA

**Purpose of Research:**
The purpose of this pilot study will be to create a valid and reliable tool to assess food skills. To date, no such reliable and valid tool exists based on an international search of the literature. This tool will contribute to the credibility of subsequent studies for examining the food skills on various populations.

**Description of Research:**
This pilot study will collect data to achieve face validity, content validity and internal consistency reliability. Face validity will be achieved through consultation with Kingston, Frontenac, Lennox & Addington (KFL&A) public health as well as through Leeds, Grenville & Lanark District Health Unit and Hastings and Prince Edward Counties Health Unit. Content validity will be achieved through the response of 10 content and tool experts. Lastly, internal consistency will be achieved through the analysis of data collected from piloting the tool among 80 Kingston residents.

**Potential Harm and Benefit:**
There are no known risks identified for participation in this study. Your responses will, however, help develop a tool that can assess the needs of a population. This assessment can help future studies identify gaps in knowledge related to food skills. By doing this, individualized programs can be created and offered to communities. These programs would not only help increase food skills but it may also assist in decreasing the rates of overweight and obesity in the population.

**Confidentiality:**
Ethics approval will be obtained from the Queen’s University Research Ethics Board. Survey responses will not be used without your consent. Your name will not appear on the final study.

**Right for Refusal:**
If you choose not to participate your services from KFL&A public health and Queen’s University will not be affected.
Conflict of Interest:
There is no personal, commercial or financial interest in this study by any research team members.

Please contact the following person for any questions or comments you have about the study:
Lydia Vrhovnik, RN
Masters Student, Chronic Disease & Injury Prevention
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lvrhovnik@kflapublichealth.ca
Appendix F

Phase 1 Survey for Expert Review

**Survey begins:**

Surveyor will request to speak to the primary person responsible for preparing meals at home, if he/she is not home, the surveyor will ask for a more convenient time to call.

Please choose the option that best reflects your response in the following questions.

1) Do you value eating a meal cooked at home from basic ingredients, such as pasta, rice, fresh, frozen or canned vegetables and fruits and meats?
   - Yes
   - Sometimes
   - No

2) Basic ingredients are foods such as pasta, rice, fresh, frozen or canned fruits and vegetables, meats and seasoning. Do you have these basic ingredients in your home?
   - Yes
   - Some of them
   - No

3) Do you have a food supplying garden at home?
   - Yes, when the season permits
   - No

4) Convenience foods are pre-packed foods that are bought and eaten (example: Kraft Dinner, frozen chicken fingers, SideKicks). In the past 3 days, how often have you eaten convenience foods for breakfast, lunch and dinner?
   - 1-3 times
   - 4-5 times
   - More than 5 times

5) Excluding transit time, how long does it take you to grocery shop for the week?
   - Less than 15 minutes
   - 15-30 minutes
   - 31-60 minutes
More than an hour
☐ I don’t grocery shop

6) Excluding transit time, how long are you willing to put towards grocery shopping per week?
☐ Less than 15 minutes
☐ 15-30 minutes
☐ 31-60 minutes
☐ More than an hour
☐ I don’t grocery shop

7) What transportation do you use to get to where you buy food?
☐ Walk
☐ Bike
☐ Public Transit
☐ Drive

8) Does a lack of money keep you from buying healthy foods:
☐ Yes
☐ No
☐ Sometimes

9) Which meal do you spend the most time cooking?
☐ Breakfast
☐ Lunch
☐ Dinner
☐ I don’t cook meals

10) On average, how much time are you willing to put towards actively making your meal from start to finish with basic ingredients?
☐ Less than 15 minutes
☐ 15-30 minutes
☐ 30-60 minutes
☐ More than 1 hour

11) In the past 3 days, how often have you cooked that meal at home from pasta, rice, fresh, frozen or canned fruits and vegetables and meats?
☐ Never
☐ Once
☐ Twice
☐ Three times
12) How many people, including yourself, are you responsible for providing meals to in your home?

☐ 1
☐ 2
☐ 3
☐ 4
☐ 5
☐ More than 5

13) Do you use a food bank?

☐ Yes
☐ No
☐ Sometimes

14) How can we help you develop more/new cooking skills?

☐ Through the Internet
☐ Through a free class
☐ Through a video
☐ Through a book
☐ Other (please specify) ______________
☐ I am not interested

15) Would you be interested in a tour of your grocery store?

☐ Yes
☐ No

16) How did you learn to cook?

☐ Family
☐ Friends
☐ Media (example: television, magazine, books, etc.)
☐ School
☐ Other (please specify)_____________

17) What do you believe is the best way to thaw frozen meat, you may choose more than one?

☐ On the counter
☐ In hot water
☐ In running cold water
☐ In the fridge
☐ Other (please specify)__________________
18) What influences how you prepare foods (you may choose more than one option):
- Taste
- Presentation
- Smell
- Money
- Culture
- Health
- Availability
- Texture
- My family
- Other (please specify) ___________________

19) What is the one thing that you need the most to be able to cook a well-balanced, nutritious meal?
- Knowledge
- Planning abilities
- Conceptualizing Food
- Mechanical Techniques
- Food perception

For the next set of questions, I’m going to ask you how confident you feel about specific skills on a scale of 1-5, where 1 is not confident and 5 is very confident:

How confident are you in your ability to:

20) Boil (example: potatoes, hot water, egg):
1   2   3   4   5   I do not own a stove/pots

21) Stir/mix/blend:
1   2   3   4   5

22) Safely use a knife to prepare food:
1   2   3   4   5
23) Ability to Stir-fry:
1 2 3 4 5

24) Steam (steaming is using the steam from boiling water to cook food):
1 2 3 4 5 I do not own a stove/proper pots

25) Grill:
1 2 3 4 5 I do not own a grill/barbeque

26) Microwave for cooking (other than for reheating meals):
1 2 3 4 5 I do not own a microwave

27) Use an oven:
1 2 3 4 5 I do not own a working stove/oven

28) Preserve food (example: freezing):
1 2 3 4 5 I do not own a freezer

29) Cooking grains:
1 2 3 4 5

30) Cook vegetables and fruits:
1 2 3 4 5

31) Cook meat:
1 2 3 4 5 Not applicable

32) Use a meat thermometer to know when your food is safely cooked:
1 2 3 4 5 I do not own a meat thermometer for this purpose
33) Prepare a well balanced plate. A well balanced plate provides half a plate of vegetables, ¼ a plate of meat or alternative and ¼ a plate of starch/bread products like pasta or rice.

1 2 3 4 5

34) Purchase enough groceries within your budget:

1 2 3 4 5

35) Use grocery store flyers to save money:

1 2 3 4 5 I don’t use store flyers

36) Read nutrition labels to make healthy choices (e.g. low fat, low salt, nutrition dense foods):

1 2 3 4 5

37) Plan meals for the week:

1 2 3 4 5

38) Prepare more than one food item for a meal (e.g. cooking meat, potatoes and corn at the same time):

1 2 3 4 5

39) Read recipes:

1 2 3 4 5 I don’t read

40) Use substitutions in recipes if I don’t have a specific ingredient:

1 2 3 4 5 Not applicable

41) Change recipes to make them healthier (e.g. lower sugar, lower fat, lower sodium, high fibre, nutrition dense foods):

1 2 3 4 5

42) Use leftovers to prepare new meals:
43) Teach your children/grandchildren how to cook:
1 2 3 4 5 Not applicable

The next set of questions is about you personally. These answers will help us to develop our program to specifically help you and meet your needs:

44) Are you:
☐ Male
☐ Female

45) What year were you born, you may choose not to answer?__________

46) What is the highest level of education that you have completed?
☐ Some high school
☐ Completed high school
☐ Some post-high school
☐ Completed College or University
☐ Other
☐ Choose not to answer

47) About how much is your total monthly family income, before taxes?
☐ Less than $1250
☐ $1251-$1670
☐ $1671-$2500
☐ Over $2500
☐ Do not know
☐ Choose not to answer

48) What is your current marital status?
☐ Married/Living with a partner
☐ Separated
☐ Divorced
☐ Widowed
☐ Single, never been married
☐ Choose not to answer
49) What, if any, are your religious beliefs, you may choose not to answer?
   - Jewish
   - Muslim
   - Christian
   - Other please specify _________________________
   - No religion (agnostic, atheist)
   - Choose not to answer

50) What is your cultural background?
   - Aboriginal
   - African-Canadian
   - Asian
   - Caucasian
   - Hispanic
   - Middle-Eastern
   - Other please specify____________________________
   - Choose not to answer

51) Are you currently employed?
   - Yes
   - No
   - Choose not to answer
Appendix G

Phase 2 Results and Actions Taken

<table>
<thead>
<tr>
<th>Question</th>
<th>CVI – Overall</th>
<th>CVI – Content</th>
<th>CVI – Comprehension</th>
<th>CVI – Clarity</th>
<th>Comments</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.76</td>
<td>0.90</td>
<td>0.89</td>
<td>0.50</td>
<td>1) Include other meats and dairy</td>
<td>Wording changed to reflect comments provided by experts</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>2) The word “value” might be better replaced by “is important to you”. I wonder why you didn’t include milk products? Would you consider putting them in the same order as on Canada’s food guide?</td>
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<td>3) Not clear how “valuing” fits into the 5 domains outlined by the Ministry definition</td>
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<td>4) Define basic ingredients more (does this include local vs. Imported, generic vs. Non-generic)</td>
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<td></td>
<td>5) What does the term “value” mean – better to say, “Is eating a meal cooked at home.... important to you?</td>
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<td>6) I think this is a difficult question to answer but especially if it is the first question on the survey. It might work better later after they have already answered questions about food. I suggest putting pasta and rice at the end of the list as they may not be common to some respondents. I think you</td>
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</table>
should give examples of what you mean by pasta in case people don’t understand (e.g. macaroni, spaghetti, noodles). Do I value meals with all of these foods or any one of these foods? Not clear. My comment about pasta and rice applies to many questions.

7) Change to “how much do you value”

8) Clear question but needs to be reworded, I think, because the answers to this question will mostly be yes. Who would not value a meal cooked at home from scratch? A more useful question might be how much one values home cooked meals.

1) Add meat and dairy

2) My concern is that participants might not have one of those in the list (e.g. pasta) but everything else and they would then have to say “some” where in fact they might not have a well stocked kitchen but they just don’t prefer pasta

3) How will they/you know what “some” means? Does “yes” meant that they have all of these in their home, and no means they have none of them?

4) See pasta note above. Do I have all of these ingredients? Or just one? If just one, how useful is that information? What about juices/fruit flavoured drinks? Will

Questions answers reworded to reflect comments of experts
<table>
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<tr>
<th>3</th>
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</thead>
<tbody>
<tr>
<td>1)</td>
<td>Reword to: Do you have access to a garden that supplies food?</td>
<td>Question reworded to reflect comments provided by experts</td>
<td></td>
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<tr>
<td>2)</td>
<td>“Food supplying garden” is a very awkward term. “Do you grow your own food” might be clearer. Also “at home” excludes people who grown food elsewhere (e.g. in a community garden)</td>
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<tr>
<td>3)</td>
<td>Give examples of food supplying gardens</td>
<td></td>
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<tr>
<td>4)</td>
<td>I have never heard the term “food supplying garden” – sounds like jargon and may put people off. Consider clear communication – what do people call this usually? I call it a garden or a vegetable garden.</td>
<td></td>
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<tr>
<td>5)</td>
<td>“food supplying garden” is awkward wording</td>
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<tr>
<td>6)</td>
<td>Some people grow food on their balconies or in little greenhouses, and some grow herbs only. You might want to ask “do you grow any foods or herbs at home</td>
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<tr>
<th>4</th>
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<tbody>
<tr>
<td>1)</td>
<td>Use “and” instead of “or” in last sentence</td>
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<tr>
<td>2)</td>
<td>Should they have the option of 0 or none?</td>
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<tr>
<td>3)</td>
<td>Better define convenience foods – highly processed foods</td>
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<tr>
<td>4)</td>
<td>Does everyone understand what “Side</td>
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</table>
Kicks” are? (I don’t) – depends on how local you want to use your survey – within outside Canada

5) Is the you referring to the individual answering the question or the household? Other questions seem to be referring to the household.

6) Convenience foods are not well defined here. Foods that “pre-packed and eaten” vary from healthy to unhealthy, minimally to maximally process – e.g. yogurt in small containers, instant oatmeal, etc.

7) Where is 0?

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<th>0.90</th>
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</table>

1) You have excluded transit time- it seems to me that transit time is an important factor that should warrant a question. Another question might be what types of stores they shop at. There is quite a bit of literature these days on food deserts (pockets within cities where there is no easy access to a regular grocery store forcing people in that neighbourhood to use higher prices options

2) include alternatives to grocery stores

3) Would you consider online shopping?

4) Clear communication – transit is not a common word. What about travel time? Or the time it takes you to get to the store? 30 minutes appears in two check boxes. How much time does it take?

5) Question was removed based on KFL&A public health feedback. Staff felt this question was repetitive with question 6 and that question 6 was more useful.
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<tbody>
<tr>
<td>5)</td>
<td>What if they do not shop each week?</td>
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<tr>
<td>6)</td>
<td>Unclear of the difference between this question and the next</td>
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<tr>
<td>7)</td>
<td>Change “transit” to “travel time to the store”</td>
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</tbody>
</table>

1) Note typo in last possible answer “show” should be “shop”; you have excluded transit time- it seems to me that transit time is an important factor that should warrant a question. Another question might be what types of stores they shop at. There is quite a bit of literature these days on food deserts (pockets within cities where there is no easy access to a regular grocery store forcing people in that neighbourhood to use higher prices options.

2) How much time are you? (see comments re: 30 minutes)

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<tbody>
<tr>
<td>1)</td>
<td>Include “other please specify” as an option</td>
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<td>2)</td>
<td>Would it matter if they drove themselves versus being driven by someone else?</td>
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<td>3)</td>
<td>Include “not applicable” – online</td>
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<tr>
<td>4)</td>
<td>Question should be phrased to acknowledge that most people use more than one form of transportation for food shopping</td>
<td></td>
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<tr>
<td>5)</td>
<td>“What mode of transportation” and include “taxi”</td>
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Question and answers were reworded based on feedback from both experts and KFL&A staff.

Question was removed by KFL&A staff because it was deemed a question related to barriers to food access as oppose to food skills.
<table>
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<tr>
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<tbody>
<tr>
<td>1) Define “healthy” and review food security questions on Community Health Survey (Statistics Canada)</td>
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<tr>
<td>2) Review Community Health Survey to validate style of questions</td>
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<tr>
<td>Question was reworded to reflect changes recommended by experts</td>
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<tbody>
<tr>
<td>1) Define cooking – change to preparing</td>
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<tr>
<td>2) Include “and preparing”</td>
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<tr>
<td>3) Assumes it’s cooked. What about most time preparing?</td>
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<tr>
<td>Question was reworded to reflect changes recommended by experts</td>
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<th>0.90</th>
<th>0.89</th>
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</thead>
<tbody>
<tr>
<td>1) Add “I don’t cook”</td>
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<tr>
<td>2) Sentence structure is awkward – I think that people would understand a term like “from scratch using basic ingredients” more clearly</td>
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<tr>
<td>3) Wording needs to be corrected “make your that meal”</td>
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<tr>
<td>4) This question needs some work. Does it refer back to question 9? If so, that needs to be clear. Make a meal is odd – prepare a meal perhaps. Your meal or household meal? Is the word “actively” needed? Or does “start to finish” cover it? 30 minutes again.</td>
<td></td>
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<tr>
<td>5) “are you willing to spend to make your meal”</td>
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<tr>
<td>6) Change 2nd 30 option to 31</td>
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<tr>
<td>Question was reworded to reflect changes recommended by experts</td>
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<tr>
<td>Question</td>
<td>ICVI</td>
<td>CVI</td>
<td>ASQ</td>
<td>I-CVI</td>
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</table>
| 11       | 0.72 | 0.90| 0.67| 0.60  | 1) Include “meat and alternatives” and “dairy”  
2) What if they missed thing on the list? Better to say “from scratch using basic ingredients such as...”  
3) Does it need to be clarified again what “that meal” refers to?  
4) How often do they even cook from home, if they do?  
5) After the last option include “or more times”  
6) What meal? I assume it refers back to question 9? If the answer is breakfast, the foods may not make sense.  
7) This question does not acknowledge multicultural differences nor the possibility of vegetarianism. Do not list foods (respondents might think they have to include all foods in one meal) but focus on cooking from unprocessed ingredients in general  
8) Give option of “More than three times” | Question was removed due to feedback from experts and KFL&A staff – the question was not able to be reworded and the I-CVI was less than 0.80 |
| 12       | 0.90 | 1.00| 0.89| 0.80  | 1) Include “I don’t cook”  
2) Wording a bit awkward  
3) Remove “in your home”  
4) Preparing? – providing has a different meaning  
5) “do you prepare meals for in your home” | Question was reworded to reflect comments from both experts and KFL&A staff |
| 13       | 0.93 | 1.00| 0.89| 0.90  | 1) Statistics Canada – there are other alternatives – such as soup kitchens, meals | Question removed as it
<p>| | | | | |</p>
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<tr>
<td><strong>14</strong></td>
<td>0.96</td>
<td>1.00</td>
<td>0.89</td>
<td>1.00</td>
</tr>
<tr>
<td>1)</td>
<td>You might consider clarifying “book”, i.e. recipe book</td>
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<tr>
<td>2)</td>
<td>Who are we? Do you first need to ask something about their present cooking skills and whether they are interested in developing them? What about including “DVD”</td>
<td></td>
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</tr>
<tr>
<td>3)</td>
<td>You are assuming that the respondent wants to learn more cooking skills. Perhaps a question needs to be asked to what degree people are interested in learning more skills.</td>
<td></td>
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<tr>
<td>4)</td>
<td>Two questions here, separate, is it more or is it new?</td>
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<tr>
<td><strong>15</strong></td>
<td>0.69</td>
<td>0.89</td>
<td>0.63</td>
<td>0.56</td>
</tr>
<tr>
<td>1)</td>
<td>Include the purpose of the tour (i.e. that it isn’t a sightseeing experience, what will they learn? How to read labels?)</td>
<td></td>
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<tr>
<td>2)</td>
<td>For what purpose?</td>
<td></td>
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<tr>
<td>3)</td>
<td>Include purpose of tour and indicate that the tour is free of charge</td>
<td></td>
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<tr>
<td>4)</td>
<td>Include “to find out more about the food available or health food”</td>
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<tr>
<td>5)</td>
<td>I wonder if people will know what you mean by this? Grocery store tours are not</td>
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</table>

was deemed a question related to food barriers as oppose to actual food skills.

Question and answers reworded based on feedback from experts, KFL&A staff and survey company.

Question was removed and instead offered as an answer in question 14. This was done based on recommendations from experts and
that common. I think you need to describe what a grocery store tour is first.

6) Confusing – interest of service, move to end with content.

7) Do respondents know what a tour of their grocery store would entail? This might be a foreign concept to many.

---

16  0.90  0.89  0.80  0.86

1) Give option “I do not know how to cook” give examples

2) Perhaps a question about how their cooking skills – how would you rate your cooking skills? Your interest in cooking? Then how did you learn? Then how would you like to learn?

3) How did you “primarily” learn to cook

1) Include “meat and dairy”

2) When you ask “best” you are implying that one is best so it is confusing when you say “you may choose more than one” you might be better off saying “what way do (or would) you defrost meat?”

3) Include “to avoid food borne illness” and specify a more complex food such as frozen turkey

4) Include “in the microwave oven”

5) The sequence of questions is a bit odd. Why not group the items that ask about cooking skills? Take out “do you believe”

6) Bracket “you may choose more than one option”

7) Change to “check all that apply”

---

17  0.80  0.90  0.89  0.60

Reworded question to reflect recommendations by experts and KFL&A staff

This question was removed and replaced with another food safety question. KFL&A staff felt this was too specific towards meats to be included in the survey
18 | 0.83 | 0.90 | 0.78 | 0.80

1) Include “I don’t cook”
2) It is unclear what you mean by “prepare foods” – opening a can of soup is preparing food so it is making a recipe from scratch – what kind of information do you want here – i.e. it looks like you want to know what motivates people to cook food at home – if that’s the case then make it clear
3) After texture include “mouth feel”
4) What does presentation mean? What does culture mean?
7) Change to “check all that apply”

19 | 0.38 | 0.70 | 0.33 | 0.10

1) Include “other”, “access to equipment” and examples
2) The options are weak – knowledge is OK – but what do you mean by “conceptualizing” and “food perception”? – technical skills would be more clear or even just cooking skills – but what about other options like no time, no money, don’t have the proper equipment, etc.
3) Unless I had the definition. I may not know what is meant by conceptualizing food and mechanical techniques
4) Give examples of each

The question and answers in this item were reworded to reflect the recommendations of the experts and KFL&A staff. This question was removed because of the extremely low CVI for all categories.
5) Add “ideas about what to cook”, “hands-on skills to prepare and cook a meal together”. Use examples above to clarify exactly what you mean by this – I don’t know what you mean.


7) Define each of these to make them more clear.

8) Simplify last 4 options.

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<td>0.90</td>
<td>0.78</td>
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<tr>
<td>1)</td>
<td>Is boiling in a kettle or microwave similar?</td>
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<tr>
<td>2)</td>
<td>Offer “I do it in the microwave” as an option</td>
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<tr>
<td>3)</td>
<td>Include “water” and include “I do not own saucepans”</td>
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<tr>
<td>4)</td>
<td>Take out “water” – would this insult people? The ultimate put-down about someone’s cooking skills is to say they can’t boil water</td>
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<td>5)</td>
<td>Knowing how to bring something to the boil is different from boiling foods to the right degree of doneness</td>
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<td>0.70</td>
</tr>
<tr>
<td>1)</td>
<td>Also add a last category – e.g. no mixing bowls, mixing spooks, beaters, etc. no sharp knives or cutting boards; no wok or</td>
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This question was combined with question 21 due to the similarity in topics.
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<th>23</th>
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<tr>
<td></td>
<td>1.00</td>
<td>0.89</td>
<td>0.93</td>
</tr>
<tr>
<td>1)</td>
<td>Also add a last category – e.g. no mixing bowls, mixing spoons, beaters, etc. no sharp knives or cutting boards; no wok or suitable frying pan</td>
<td>Also add a last category – e.g. no mixing bowls, mixing spoons, beaters, etc. no sharp knives or cutting boards; no wok or suitable frying pan</td>
<td>Include “microwave”</td>
</tr>
<tr>
<td>2)</td>
<td>Remove “blend”</td>
<td>Include “cook food in a wok”</td>
<td>Offer option of no “saucepans”</td>
</tr>
<tr>
<td>3)</td>
<td>Without specific examples, these words are meaningless. People may know what the words mean but have no idea how to apply them while cooking.</td>
<td>Define/describe</td>
<td>“(that is using the steam from boiling water to cook food)”</td>
</tr>
<tr>
<td>4)</td>
<td>How clear is this question really?</td>
<td></td>
<td>This question was combined with questions 22 and 23 due to the similarity in topics</td>
</tr>
</tbody>
</table>

This question was combined with questions 20 due to the similarity in topics.
| 25 | 0.86 | 1.00 | 0.78 | 0.80 | 1) Would broiling in an oven be equivalent?  
2) Define/Describe – does grill mean fry? BBQ? Both? | This question was combined with questions 26-27 due to the similarity in topics |
| 26 | 0.86 | 0.90 | 0.89 | 0.80 | 1) Change “meals” to food | This question was combined with questions 25 and 27 due to the similarity in topics |
| 27 | 0.86 | 0.90 | 0.78 | 0.90 | 1) Remove “stove”  
2) Include “hob/cook/stove top”  
3) Redundant – the entire series is about confidence  
4) Remove “confidently”  
5) Give specific scenarios or specific examples of foods | This question was combined with questions 25-26 due to the similarity in topics |
| 28 | 0.73 | 0.80 | 0.78 | 0.60 | 1) You give only one example of preserving – need to include canning, dehydrating, jam/jelly making, smoking  
2) What about including canning? Reframe question to focus on freezing if that is what you are assessing  
3) Give specific scenarios or specific examples of foods | This question was reworded to reflect the comments of the experts |
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<tbody>
<tr>
<td>29</td>
<td>0.69</td>
<td>0.80</td>
<td>0.67</td>
<td>0.60</td>
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</table>
|   | 1) Include “no equipment”  
2) You need to include what you mean by grains – rice, couscous, oats, barley, groats, quinoa?  
3) Give examples, “rice, pasta, cous cous”  
4) Describe what you mean by grains  
5) There are too many ways of cooking grains – this is a question you may want to remove. If you use it, consider giving examples of grains.  
6) Give specific scenarios or specific examples of foods |
|   | This question was reworded to reflect the comments of the experts |
| 30 | 0.83 | 0.80 | 0.89 | 0.80 |
|   | 1) Include “no equipment”  
2) I suggest separating fruits and vegetables  
3) Most people would not cook fruit – keep question to veg only. |
|   | This question was reworded to reflect the comments of the experts |
| 31 | 1.00 | 1.00 | 1.00 | 1.00 |
|   | 1) Add meat alternatives  
2) Should you include “fish or poultry” here? |
|   | This question was reworded to reflect the comments of the experts |
| 32 | 0.93 | 1.00 | 0.89 | 0.90 |
|   | 1) Include “or use visual measures to determine when meat is cooked – when mean juices run clear when flesh is pierced”  
2) Remove “your food is safely cooked” and change to: Use a meat thermometer to |
|   | This question was removed after consultation with KFL&A |
know when meat is cooked adding. Adding safely makes it a value-loaded and double-barrelled question.

1) “Well balanced plate” isn’t a common term – you might consider well balanced meal and then in the description a well balanced meal would be a plate where ½ is vegetables, etc.

2) Give examples of meat alternatives (including beans)

3) Include “potatoes”

4) “Prepare a well balanced plate. A well balanced plate provides half a plate of vegetables, ¼ a plate of meat or alternative (need to define alternative) and ¼ a plate of grain products like pasta or rice” I question this last part. A starch product could include vegetables (e.g. potatoes) – needs more explanation. Also consider the question – how confident are you that you could prepare it? Is this really what you want to know? Seems to have more to do with meal planning than food preparation skills.

5) This question assumes that every meal must be balanced according to CFGE. Actually, a balanced diet is encouraged over the day. Still, the skill might be if the respondent knows the proportions of foods.

This question was reworded to reflect the recommendations of the experts.
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<td>34</td>
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<td>0.90</td>
<td>0.89</td>
<td>0.90</td>
<td>1) What is considered enough?</td>
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<td>This question was removed after consultation with KFL&amp;A. This question was deemed to similar to question 8.</td>
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<tr>
<td>35</td>
<td>0.79</td>
<td>0.70</td>
<td>0.78</td>
<td>0.90</td>
<td>1) Include “to compare food prices to save money”</td>
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<td>2) You are asking two things – how confident are you in using flyers and how confident are you that using them will save money. What is your interest – using flyers or saving money? Perhaps two questions.</td>
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<tr>
<td>36</td>
<td>0.83</td>
<td>0.90</td>
<td>0.78</td>
<td>0.80</td>
<td>1) Include “unable to read English”</td>
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<td></td>
<td>2) Should there be an option like “don’t read labels”, “don’t plan” or “don’t use recipes”?</td>
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<td>3) May want to think about if they do read nutrition labels</td>
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<td>4) This term will need to be explained. What do you mean by nutrition labels? The Nutrition Facts panel? The entire product label? Nutrition information is presented in different places</td>
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<td>5) Include “low calorie” and explain</td>
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This question was reworded according to the recommendations provided by the experts.
“nutrition dense foods”.

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<td>1)</td>
<td>Should there be an option like “don’t read labels”, “don’t plan” or “don’t use recipes”?</td>
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<tr>
<td></td>
<td>This question was not changed</td>
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| 38 | 0.76 | 0.80 | 0.78 | 0.70 |
| 1) | Add “no equipment” |
| 2) | Too many meat examples – consider alternatives like fish |
| 3) | “Prepare more than one food item so that they are all cooked at the same time (this is quite a complex skill that would test out advanced food skills)” |
| 4) | Remove “potatoes and corn” and replace with “vegetables” |
|   | This question was reworded based on recommendations from the experts and KFL&A staff |

| 39 | 0.87 | 0.88 | 0.86 | 0.88 |
| 1) | Include “unable to read English” |
| 2) | Should there be an option like “don’t read labels”, “don’t plan” or “don’t use recipes”? |
| 3) | Include “and follow” recipes |
| 4) | Is this what you want to know? Can people read? Or can they follow a recipe? |
| 5) | Are you asking if read or use? Validity not rated |
|   | One of the optional answers were reworded for this question based on expert feedback |

<p>| 40 | 1.00 | 1.00 | 1.00 | 1.00 |
| 1) | Consider having reader skip questions if participant does not cook |
|   | This question was not changed |</p>
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<tr>
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|   |   |   |   |   | 1) Change “high” to “higher” and “nutrition” to “nutrient”  
|   |   |   |   |   | 2) “Change recipes to make them healthier (e.g. lower sugar, lower fat, lower salt, higher fibre, more nutrition dense ingredients)” – nutrient dense will need to be explained  
|   |   |   |   |   | This question was reworded based on recommendations by experts and KFL&A staff |

| 42 | 0.90 | 0.90 | 0.89 | 0.90 |   |
|   |   |   |   |   | 1) Include “I don’t cook”  
|   |   |   |   |   | 2) Consider “batch cooking”  
|   |   |   |   |   | 3) Some cultures like East Indians don’t use leftovers and consider them unhealthy  
|   |   |   |   |   | One answer was added to this question to reflect the recommendations of the experts |

| 43 | 0.90 | 0.90 | 0.89 | 0.90 |   |
|   |   |   |   |   | 1) Include teaching yourself  
|   |   |   |   |   | This question was not changed |

| 44 | 1.00 | 1.00 | 1.00 | 1.00 |   |
|   |   |   |   |   | 1) Does this question have to be asked? Could the interviewer not tell?  
|   |   |   |   |   | This question was made an optional question if the interviewer could not tell if the participant as male or female |

| 45 | 0.97 | 1.00 | 1.00 | 0.90 |   |
|   |   |   |   |   | 1) Some may be more inclined to answer if you give ranges for them to choose from, e.g. 20-30  
|   |   |   |   |   | 2) Simply say – “what is your age (in years)”  
<p>|   |   |   |   |   | This question was reworded to reflect the |</p>
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<tr>
<th>ID</th>
<th>Rating</th>
<th>Likelihood</th>
<th>Type</th>
<th>Comments</th>
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<tr>
<td>47</td>
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<td>49</td>
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1) Change to “white”, “black”, “latino” accordingly
2) Are these cultures? Ethnic background? What is a Caucasian culture? If this is in relation to food, the list is not very long.

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<td>1.00</td>
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1) Should you follow this up with “full” or “part-time”

people can cook? – links between cultural differences

3) I’m not sure about this question although I don’t have any suggestions. I just know that I would have trouble answering it for myself. Beliefs vs. My traditions that might affect my food. Perhaps you need to ask the question in that context – are your food choices influenced by religious beliefs or traditions

4) What do religious beliefs have to do with cooking skills?

religion being addressed in question 18

This question was removed due to the topic of culture being discussed in question 18

This question was moved to a different part of the survey
Appendix H

Final Food Skills Survey Tool

1) Is eating a meal cooked at home important to you?

1. Yes
2. Sometimes
3. No
4. Don’t know
5. Refused

2) Basic ingredients are foods such as pasta, rice, fresh, frozen or canned fruits and vegetables, meats and seasoning. Do you have some or all of these basic ingredients in your home?

1. Yes
2. No
3. Don’t know
4. Refused

3) Do you have access to a garden that grows foods and/or herbs?

1. Yes
2. No
3. Don’t know
4. Refused

4) Convenience foods are pre-packed foods that are bought and prepared easily. For example: Kraft Dinner, frozen chicken fingers. In the past 3 days, how often have you eaten convenience foods for breakfast, lunch or dinner?

1. 0 times
2. 1-3 times
3. 4-5 times
4. More than 5 times
5. Don’t know
6. Refused
5) Once you are in the grocery store, how much time are you willing to put towards purchasing food for the week /biweekly. This could be at a farmer’s market, convenience store, superstore, grocery store, etc.?
   1. Less than 15 minutes
   2. 15 – 30 minutes
   3. 31 – 60 minutes
   4. More than an hour
   5. I don’t grocery shop
   6. Don’t know’
   7. Refused

6) Do you ever worry that you do not have enough money to buy the quality of foods you wish to buy?
   1. Yes
   2. No
   3. Don’t know
   4. Refused

7) Which meal do you spend the most time preparing?
   1. Breakfast
   2. Lunch
   3. Dinner
   4. I don’t cook meals
   5. Don’t know
   6. Refused

8) On average, how much time do you spend on making that meal?
   1. Less than 15 minutes
   2. 15-30 minutes
   3. 31-60 minutes
   4. More than 1 hour
   5. I don’t cook
   6. Don’t know
   7. Refused
9) How many people, including yourself, are you responsible for preparing meals for in your home?
   1. 1.
   2. 2
   3. 3
   4. 4
   5. 5
   6. More than 5
   7. I do not prepare meals
   8. Don’t know
   9. Refused

10) How would you like to learn to develop more cooking skills?
    1. Through the Internet
    2. Through a free class
    3. Through a free video or DVD
    5. A tour of a grocery store to learn more about what healthy foods are
    6. Other (please specify) ______________
    7. Not interested
    8. Don’t know
    9. Refused

11) How did you first learn to cook?
    1. Family
    2. Friends
    3. Media (example: television, magazine, books, etc.)
    4. School
    5. Other (please specify) ______________
    6. I do not know how to cook
    7. Don’t know
    8. Refused
12) What is the biggest influence on how you prepare foods (please select all that apply):

1. Senses for example. Taste, smell, presentation, texture
2. Money
3. Culture
4. Health
5. Availability of food items
6. Family
7. Media (example: television, magazine, books, etc.)
8. Other (please specify)________________
9. I don’t cook
10. Don’t know
11. Refused

For the next set of questions, I’m going to ask you how confident you feel about specific skills. Please use a scale of 1-5, where 1 is not confident and 5 is very confident:

How confident are you in your ability to:

13) Prepare foods for cooking by chopping, mixing and stirring?

1. 1
2. 2
3. 3
4. 4
5. 5
6. I do not own the equipment to do these
7. Don’t know
8. Refused

14) Use different methods to cook foods such as boiling, stir-frying, steaming and grilling:

1. 1
2. 2
3. 3
4. 4
5. 5
6. I do not own the equipment to do these
7. Don’t know
8. Refused
15) Use different equipment for cooking; for example, stove, microwave, barbeque:

1. 1
2. 2
3. 3
4. 4
5. 5
6. I do not own the equipment to do these
7. Don’t know
8. Refused

16) Preserve food, for example, freezing, canning, dehydrating, smoking:

1. 1
2. 2
3. 3
4. 4
5. 5
6. I do not own the equipment to do these
7. Don’t know
8. Refused

17) Know when your food is cooked:

1. 1
2. 2
3. 3
4. 4
5. 5
6. Don’t know
7. Refused
8.

18) Handle, store and prepare foods safely:

1. 1
2. 2
3. 3
4. 4
5. 5
6. Don’t know
7. Refused
19) Cook grains, for example, rice, pasta, couscous:

1. 1
2. 2
3. 3
4. 4
5. 5
6. I do not own the equipment to do these
7. Don’t know
8. Refused

20) Cook vegetables:

1. 1
2. 2
3. 3
4. 4
5. 5
6. I do not own the equipment to do these
7. Don’t know
8. Refused

21) Cook meat including fish and/or poultry:

1. 1
2. 2
3. 3
4. 4
5. 5
6. Not Applicable
7. Don’t know
8. Refused

22) Prepare a well balanced meal. A well balanced meal would provide half a plate of
vegetables, a quarter plate of meat or alternative, and a quarter plate of grain
products like pasta or rice.

1. 1
2. 2
3. 3
4. 4
5. 5
6. Don’t know
7. Refused
23) Prepare more than one food item so they are ready at the same time. For example, cooking meat or meat alternatives and vegetables at the same time):

1. 1
2. 2
3. 3
4. 4
5. 5
6. I do not own the equipment to do these
7. Don’t know
8. Refused

24) Compare food prices to save money:

1. 1
2. 2
3. 3
4. 4
5. 5
6. I don’t compare food prices
7. Don’t know
8. Refused

25) Read nutrition labels to make healthy choices. For example, low fat, low salt, low calorie, high fiber.

1. 1
2. 2
3. 3
4. 4
5. 5
6. Unable to read English
7. Don’t know
8. Refused

26) Plan meals for the week:

1. 1
2. 2
3. 3
4. 4
5. 5
6. Don’t know
7. Refused
27) Read recipes:
   1. 1
   2. 2
   3. 3
   4. 4
   5. 5
   6. Unable to read English
   7. Don’t know
   8. Refused

28) Use substitutions in recipes if you don’t have a specific ingredient:
   1. 1
   2. 2
   3. 3
   4. 4
   5. 5
   6. Not Applicable
   7. Don’t know
   8. Refused

29) Change recipes to make them healthier. For example, lower sugar, lower fat, lower sodium, higher fibre:
   1. 1
   2. 2
   3. 3
   4. 4
   5. 5
   6. Don’t know
   7. Refused

30) Use leftovers to prepare new meals:
   1. 1
   2. 2
   3. 3
   4. 4
   5. 5
   6. I don’t cook
   7. Don’t know
   8. Refused
31) Teach your children/grandchildren how to cook:
   1. 1
   2. 2
   3. 3
   4. 4
   5. 5
   6. Not Applicable
   7. Don’t know
   8. Refused

These next set of questions are about you personally. The information you provide will help us to develop our program to meet the needs of various populations which will ultimately tell your local health unit how they can better serve you.

32) Which age range do you fit into?
   1. 18 - 20
   2. 21 - 30
   3. 31 – 40
   4. 41 – 50
   5. 51 – 60
   6. 61 – 70
   7. 71 or older
   8. Don’t know
   9. Refused

33) What is the highest level of education that you have completed?
   1. Some high school
   2. Completed high school
   3. Some college or university
   4. Completed College or University
   5. Other Please specify: ____________
   6. Don’t know
   7. Refused

34) Are you currently employed?
   1. Yes
   2. No
   3. Don’t know
   4. Refused
35) What is your total MONTHLY family income, before taxes? Is it…………

1. Less than $1250
2. $1251 - $2000
3. $2001 - $3000
4. $3001 - $4000
5. $4001 - $5000
6. Over $5000 -
7. Don’t know
8. Refused

36) What is your current marital status?

1. Married/Living with a partner
2. Separated
3. Divorced
4. Widowed
5. Single, never been married
6. Don’t know
7. Refused

37) Are you:

(Do not ask)

1. Male
2. Female
Appendix I

Ethics Approval

Queen’s University

Dear Ms. Vrhovnik

Study Title: NURS-276-11 A pilot study for the development of a food skills survey tool
File #: 6006150

Co-Investigators: Dr. Kim Sears

I am writing to acknowledge receipt of your recent ethics submission. We have examined the protocol, Public Health Promotion Model, Information Letter – Public Health Units, Information Letter for Experts, Information Letter – General Population, Methods Timeline, Contract with KFL&A Public Health, and consent form for participants and consent form for participant feedback for your project (as stated above) and consider it to be ethically acceptable. This approval is valid for one year from the date of the Chair’s signature below. This approval will be reported to the Research Ethics Board. Please attend carefully to the following listing of ethics requirements you must fulfill over the course of your study.

Reporting of Amendments: If there are any changes to your study (e.g., consent, protocol, study procedures, etc.), you must submit an amendment to the Research Ethics Board for approval. Please use event form: HSREB Multi-Use Amendment Full Board Renewal Form associated with your post-review file #6006150 in your Researcher Portal (https://servicess.queens.ca/researcherרקסמרא)

Reporting of Serious Adverse Events: Any unexpected serious adverse event occurring locally must be reported within 2 working days or earlier if required by the study sponsor. All other serious adverse events must be reported within 15 days after becoming aware of the information. Serious Adverse Event forms are located with your post-review file 6006150 in your Researcher Portal (https://servicess.queens.ca/researcherרסקמרא)

Reporting of Complaints: Any complaints made by participants or persons acting on behalf of participants must be reported to the Research Ethics Board within 7 days of becoming aware of the complaint. Note: All documents supplied to participants must have the contact information for the Research Ethics Board.

Annual Renewal: Prior to the expiration of your approval (which is one year from the date of the Chair’s signature below), you will be reminded to submit your renewal form along with any new changes or amendments you wish to make to your study. If there have been no major changes to your protocol, your approval may be renewed for another year.

Yours sincerely,

[Signature]

Chair, Research Ethics Board