Dietitians' Perspectives on Interventions to Enhance Adherence to Dietary Advice for Chronic Diseases in Adults

SOPHIE DESROCHES, RD, PhD^{a,b}, ANNIE LAPOINTE, RD, PhD^b, SARAH-MAUDE DESCHÊNES, RD, MSc^b, VÉRONIQUE BISSONNETTE-MAHEUX, RD, MSc^b, KARINE GRAVEL, RD, PhD^b, JAYNE THIRSK, RD, PhD, FDC^c, and FRANCE LÉGARÉ, MD, PhD, CCFP, FCFP^{a,d}

^aCHUQ Research Center, Centre Hospitalier Universitaire de Québec, Hôpital St-François d'Assise, Laval University, Quebec, QC

^bInstitute of Nutrition and Functional Foods, Laval University, Quebec, QC

^cPractice-based Evidence in Nutrition, Dietitians of Canada, Calgary, AB

^dDepartment of Family Medicine and Emergency Medicine, Laval University, Quebec, QC

Abstract

Purpose—To assess dietitians' perspectives on the importance and applicability of interventions to enhance adherence to dietary advice for preventing and managing chronic diseases in adults in the Canadian context.

Methods—Based on a Cochrane systematic review, we identified 8 promising interventions for enhancing adherence to dietary advice: behavioural contracts, exchange lists, feedback based on self-monitoring, individualized menu suggestions, multiple interventions, portion size awareness, telephone follow-up, and videos. Thirty-two dietitians then completed a 3-round Delphi study by responding to an electronic questionnaire asking them to rate the importance and applicability in their practice of the 8 interventions on a 7-point Likert scale.

Results—Using a 75% level of agreement, 4 interventions showed strong consensus: multiple interventions, feedback based on self-monitoring, portion size awareness, and videos. Among these, the most significant were (means $\pm$ SD for importance and applicability, respectively) feedback based on self-monitoring (6.97 ± 0.18 and 6.72 ± 0.46), portion size awareness (6.69 ± 0.54 and 6.75 ± 0.51), and multiple interventions (6.94 ± 0.25 and 6.81 ± 0.40).

Conclusions—These findings can guide the development of educational training sessions for dietitians to help them provide practice-relevant interventions that will increase the likelihood that patients adhere to their advice regarding prevention and management of chronic diseases.

INTRODUCTION

Chronic diseases, such as cardiovascular diseases, diabetes, and obesity, are usually associated with an unhealthy lifestyle involving modifiable behaviours such as sedentary

lifestyle, poor nutrition, tobacco use, and excessive alcohol consumption [1]. Chronic diseases are the leading cause of mortality and disability in Canada and are projected to account for 89% of all deaths in 2015 [2]. The Department of Chronic Disease and Health promotion of the World Health Organization (WHO) recommends urgent action from governments to prevent and reduce chronic diseases and their associated risk factors [3]. The principle authorities on chronic diseases have also recommended the adoption of a healthy diet as the cornerstone for preventing and/or managing cardiovascular diseases [4], diabetes [5], cancer [6], and hypertension [7].

Although several studies have demonstrated the beneficial impact of dietary interventions in strictly controlled experimental conditions, maximizing patient adherence to recommended diets in real-life settings is essential. Interventions that improve adherence are critical for reducing risk factors and preventing adverse health outcomes [8]. As greater adherence to dietary advice is an essential component for preventing the onset and progression of many diet-related chronic diseases, interventions to improve patient adherence to dietary advice using various techniques have been developed [9, 10]. To identify these interventions, we conducted a Cochrane systematic review to assess the effects of interventions enhancing adherence to dietary advice for preventing and managing chronic diseases in adults [11]. Eight interventions to enhance adherence to dietary advice (behavioural contracts, exchange lists, feedback based on self-monitoring, individualized menu suggestions, multiple interventions, portion size awareness, telephone follow-up, and videos) were identified as promising on the basis of their positive effect on at least 1 diet adherence outcome. However, before recommending that these interventions be applied widely in practice, we wished to identify the interventions that dietitians believed were most important and which they felt were most applicable in their practices. As suggested by Grimshaw et al. [12], evidence-based strategies for translating knowledge into clinical practice need to be balanced by what is found useful and practical by the targeted users. These insights also provide additional directions for research. Consequently, using an electronic Delphi process, we sought to assess dietitians' perspectives on the importance and applicability of our selected interventions for enhancing adherence to dietary advice for preventing and managing chronic diseases in adults in the Canadian context.

METHODS

Study design

The detailed protocol of this study has been published elsewhere [13].

Participants

From April 16 to May 7, 2012, we recruited dietitians through an online invitation sent to 11 chronic diseases related practice networks within Dietitians of Canada (e.g., diabetes, obesity and cardiovascular, gerontology, etc.). Those who were interested registered on the study website and received a personalized email explaining the nature of their participation in more detail. We also invited dietitians to send the online invitation to other colleagues. Interested participants were directed to the study website to register their contact information and confirm their chronic diseases counselling experience. Inclusion criteria were to speak

English or French, be a member of Dietitians of Canada, have access to the Internet, and have self-reported counselling experience or skills related to patients with chronic diseases (cardiovascular diseases, diabetes, cancer, hypertension, etc.). We informed dietitians that their participation was entirely voluntary. Because we invited dietitians (qualified as experts) to give their perspective on the importance and the applicability of the interventions found most effective for enhancing adherence to dietary advice, the Ethics board of the CHUQ-HSFA Research Centre considered that the study did not represent any risk for health, dignity, or reputation of dietitians and therefore complied with ethical research principles. Therefore, this study received ethics exemption from the Ethics Board of the CHUQ-HSFA Research Centre and participants did not have to sign an informed consent form.

Development of the questionnaire

For the purpose of our Cochrane systematic review, an intervention was defined as a method used to facilitate changes in dietary habits through dietary advice [11]. Table 1 presents the definitions of the 8 interventions selected from the review. Our questionnaire to assess the importance and the applicability of these 8 interventions started with a definition of importance and applicability concepts. Importance was defined as “*the degree of priority of the intervention for your counselling with patients/clients regarding healthy eating in Canada*”, whereas applicability was defined as “*the practical aspect of the intervention in the Canadian context, according to your experience*” (adapted from [14]). The first section of the questionnaire consisted of sociodemographic questions. Then, for each intervention, we provided a definition of the intervention (Table 1) followed by a 7-point Likert scale for evaluating its importance (from very unimportant to very important), and its applicability (from very inapplicable to very applicable) (example found in Supplementary Table 1¹). Participants were invited to provide written comments about each intervention in addition to their response on the Likert scale. The questionnaire was available in English and French and was pilot-tested for clarity and readability by 8 dietitians, none of whom received an invitation to participate in the 3-round Delphi study.

Data collection procedures

We conducted the 3-round pan-Canadian electronic Delphi study during 17 consecutive days in May 2012. Studies have used the Delphi methodology to assess the perspectives of dietitians about specific issues such as client-centred nutrition counselling or identification of infant malnutrition and nutrition support [15–18]. The Delphi study is the preferred methodology for reaching an expert consensus on a specific theme. It consists of structured rounds of questionnaires in which experts give their opinions anonymously, successively revising their opinions in consideration of the opinions of their fellow experts as the rounds proceed and converging towards a consensus [19, 20]. The first round began on May 14, the second on May 21, and the third on May 28. We aimed for a minimum of 2 rounds, and a third round was needed as consensus was not reached for over 50% of interventions after the second round. For each round of the Delphi study, dietitians were emailed a link to the online questionnaire and were identified by a code number to preserve their confidentiality

¹Supplementary data are available with the article through the journal Web site at <http://dcjournal.ca/www.nrcresearchpress.com/doi/suppl/10.3148/cjdpr-2015-009>.

and anonymity. For each round, 48 h were granted to dietitians for completing the questionnaire. After 24 h, we sent a reminder email to dietitians who had not yet completed the questionnaire. For the second and third rounds, the answers retrieved for each point of the Likert scale in the previous round were presented to the dietitians in percentage form, and they were invited to consider the other dietitians' answers before reassessing their answers. We did not provide dietitians with reminders of their own responses in the previous rounds. We invited only those dietitians who participated in the previous round to participate in the next round.

Data analysis

There is a lack of clarity in the definition criteria for the determination of a consensus in a Delphi study. However, a systematic review by Boukdedid et al. [21] provided us with some guidance for improving our Delphi methodology and reporting data. In studies with a similar design [22–24], consensus on the importance and applicability of an intervention were defined as strong when at least 75% of dietitians reached agreement on both the importance and applicability of an intervention, moderate when 60%–74% of dietitians agreed on both the importance and applicability of an intervention, and partial when at least 60% of the dietitians reached consensus on only one aspect (importance or applicability) of an intervention. Absence of consensus was determined when less than 60% of dietitians agreed on either the importance or the applicability. To define agreement on importance, we collapsed the 7-point Likert scale into 3 categories: (i) unimportant, which includes (1) very unimportant and (2) unimportant; (ii) neutral, which includes (3) slightly unimportant, (4) neither unimportant nor important, and (5) slightly important; and (iii) important, which includes (6) important and (7) very important. To define agreement on applicability, we collapsed the scale into 3 categories: (i) inapplicable, which includes (1) very inapplicable and (2) inapplicable; (ii) neutral, which includes (3) slightly inapplicable, (4) neither inapplicable nor applicable, and (5) slightly applicable; and (iii) applicable, which includes (6) applicable and (7) very applicable (example in Supplementary Table 1¹). Only the third round was used for the purpose of these analyses. Results of rounds 1 and 2 are available upon request. We analysed descriptive data (means and distribution) with Statistical Analysis System (Version 9.2, 2012, SAS Institute Inc.). We classified dietitians' qualitative comments into broader themes (e.g., barriers and facilitators to applicability) and 2 independent assessors computed the frequency of each theme (number of quotes) with NVivo© software (version 10, 2013, QSR International). The 2 assessors resolved any discrepancies in classification through discussion and consensus. A third assessor was involved if discrepancies remained.

RESULTS

Characteristics of participants

Among the 64 dietitians who registered to participate on the study website, 51 (80%) participants completed round 1, 39 (61%) completed round 2, and 32 (50%) completed all 3 rounds. Participating dietitians were from 7 of the 10 Canadian provinces, with a majority from Ontario. Most dietitians practised in a clinical context (59%), whereas a smaller proportion worked in community practice (11%) or practised in both contexts (18%). They

had a mean of 15 years of experience as a dietitian (SD: 9; min–max: 0.5–36 years) and the majority of their counselling experience and skills were related to at least 1 of the following chronic diseases: diabetes, cardiovascular disease, hypertension, nephropathy, obesity, dyslipidemias, and inflammatory bowel disease. Thirty dietitians completed the English questionnaire, and 2 dietitians completed the French questionnaire.

Consensus among participants

Table 2 presents the consensus among participants after 3 survey rounds. Four interventions reached a strong consensus (feedback based on self-monitoring, multiple interventions, portion size awareness, and video), 3 interventions reached a moderate consensus (behavioural contract, individualized menu suggestions, and telephone follow-up), and 1 intervention reached a partial consensus (exchange lists). Among interventions with a strong consensus, feedback based on self-monitoring, multiple interventions, and portion size awareness were found most important and applicable, whereas videos were found to be of neutral importance and applicability. There was a moderate consensus for other interventions such as behavioural contracts, individualized menu suggestions, and telephone follow-up, whereas there was a lack of consensus on the exchange lists strategy.

Barriers and facilitators to applicability of interventions

Barriers and facilitators to applicability are only presented for interventions for which there was a strong consensus that they were both important and applicable. For feedback related to self-monitoring, some dietitians identified patient characteristics, (e.g., stage of change readiness) as a barrier, and the availability of existing tools (e.g., EATracker [25]) as a facilitator. Patient characteristics and time constraints were identified as barriers for several interventions. Dietitians also mentioned that the use of multiple interventions would require dietitians to master many counselling skills and competencies. For portion size awareness, dietitians identified certain patient characteristics as barriers and the fact that portion size tools may be expensive, but they mentioned the availability of existing tools (e.g., photographs, food models, and healthy plate models) and ease of utilization as facilitators.

DISCUSSION

To the best of our knowledge, our study is the first conducted among dietitians to assess the importance and the applicability of interventions enhancing adherence to dietary advice for preventing and managing chronic diseases in adults. From the list of effective interventions identified in a Cochrane systematic review [11], Canadian dietitians ranked 3 interventions as the most important and applicable for enhancing dietary adherence: feedback based on self-monitoring, use of multiple interventions, and portion size awareness.

The first of these, feedback based on self-monitoring, provides patients with data about their own recorded behaviour and teaches them to self-evaluate the behaviour. For example, Beasley et al. [26] reported a higher adherence to recommended energy, fat, saturated fat, and cholesterol intake in overweight–obese clients in the intervention group using feedback based on self-monitoring with an electronic food diary compared with the control group. However for the other interventions, dietitians identified patient characteristics such as the

stage of change readiness as barriers. This underlines the fact that interventions have to be tailored to each patient and that extensive counselling may be needed.

Second, we found that the use of multiple interventions was important and applicable in dietetic practice. Multiple interventions or the use of 2 or more types of interventions appear to have better potential to improve adherence to dietary advice than 1 intervention alone. For example, Zhao and Wong [27] evaluated the effects of telephone follow-up as well as individual sessions with a dietitian combined with goal setting in patients with coronary heart disease, and they reported a higher proportion of clients with high adherence to the diet in the intervention group compared with the usual care group at 4 and 12 weeks. In our Cochrane systematic review [11], other studies of multiple interventions also showed the most positive effect on diet adherence outcomes compared with control groups [28–31]. However, dietitians in our study mentioned time constraints as a barrier to use of multiple interventions and underlined the fact that it requires them to learn many new skills. Further studies are needed to investigate what would be the most effective combinations of interventions to enhance adherence to dietary advice, but our results emphasize that dietitians may first need more training opportunities to acquire the necessary knowledge and skills.

Third, tools that enhance portion size awareness such as photographs or food models illustrating the recommended portion sizes were also found to be important for improving adherence. For example, Chen et al. [32] reported a higher proportion of clients with renal failure reaching the target for protein intake at 1 month in the intervention group using menu suggestions, exchange lists, and portion sizes as nutritional tools compared with the control group. In our study, dietitians mentioned that portion size tools enabled patients to develop a more accurate awareness of how much they eat.

It must be emphasized that in our Cochrane systematic review, interventions for enhancing diet adherence were designated as promising if they improved at least 1 diet adherence outcome, such as adherence to a potassium-restricted diet, to a sodium-restricted diet, or to energy intake targets [11]. However, for other diet adherence outcomes, these interventions showed no difference compared with the control or usual care group, making the results inconclusive about the most effective intervention for enhancing adherence to dietary advice. For instance, we found that some interventions showed a positive impact on an adherence outcome measured by fat intake, but no impact on other outcomes such as fibre intake. Moreover, studies were generally of short duration and low quality, and adherence measures varied widely. Consequently, there is a need for further long-term, good-quality studies using standardized and validated measures of adherence to identify the interventions that should be used to enhance adherence to dietary advice in the context of a variety of chronic diseases.

The limitations of our study need to be taken into consideration. As there are no systematic methodologies for conducting Delphi studies regarding the definition of a consensus, the adequate number of rounds, or the sample size, we based our paper on a practical guide developed by Boulkedid et al. [21] for reporting on our Delphi procedures. However, some limits have been raised concerning our Delphi methodology. First, the representativeness of

the sample is not assured, because random selection was not performed. Whether the results of our study are transferable to other contexts such as the United States, Australia, and United Kingdom remains to be investigated. Second, the response rate (50% after 3 rounds) was relatively low, but similar to that in other studies [17, 23]. Thirty-two dietitians completed the 3 rounds and, according to Okoli et al. [20], 10–18 experts is an adequate sample size for a Delphi study. The rapid turnaround (48 h to return the survey) may have contributed to the low response rate. However, this 1-week time between each round was chosen so that the participant would better remember their responses from the previous round, thus ensuring that if their response changed it was most likely due to the influence of their peers. Finally, as nutritional counselling may require the use of several strategies, it may have been difficult for dietitians to assess the 8 strategies separately as they may overlap in a real counselling session.

RELEVANCE TO PRACTICE

This study found a strong consensus that 3 interventions were important and applicable in the Canadian context: feedback based on self-monitoring, multiple interventions, and portion size awareness. These findings could guide the development of educational training sessions or tools (such as those using new information technologies) for dietitians that they could apply in their practice that will help them provide chronic disease prevention and management advice that is likely to be adhered to by their patients.

Acknowledgments

We would like to thank the participants of this study for their time and Louisa Blair for editing the manuscript. We also want to express our gratitude to the Canadian Institutes of Health Research (CIHR) for the financial support. SD is a CIHR New Investigator. FL is Canada Research Chair in Shared decision making in primary care.

Financial Support: Canadian Institutes of Health Research (CIHR).

References

- Centers for Disease Control and Prevention. Four common causes of chronic disease. 2013. [cited 2015 Jan 29]. Available from: <http://www.cdc.gov/chronicdisease/overview/index.htm#2>
- World Health Organization. Facing the fact: the impact of chronic diseases in Canada. 2005. [cited 2015 Jan 29]. Available from: http://www.who.int/chp/chronic_disease_report/media/CANADA.pdf
- World Health Organization. Preventing chronic disease: a vital investment: WHO global report. 2005. [cited 2015 Jan 29]. Available from: http://www.who.int/chp/chronic_disease_report/full_report.pdf
- Lichtenstein AH, Appel LJ, Brands M, Carnethon M, Daniels S, Franch HA, et al. Diet and lifestyle recommendations revision: a scientific statement from the American Heart Association Nutrition Committee. *Circulation*. 2006; 114(1):82–96. DOI: 10.1161/CIRCULATIONAHA.106.176158 [PubMed: 16785338]
- Bantle JP, Wylie-Rosett J, Albright AL, Apovian CM, Clark NG, Franz MJ, et al. Nutrition recommendations and interventions for diabetes: a position statement of the American Diabetes Association. *Diabet Care*. 2008; 31(Suppl 1):S61–78. DOI: 10.2337/dc08-S061
- Kushi LH, Doyle C, McCullough M, Rock CL, Demark-Wahnefried W, Bandera EV, et al. American cancer society guidelines on nutrition and physical activity for cancer prevention: reducing the risk of cancer with healthy food choices and physical activity. *CA: Cancer J Clin*. 2012; 62(1):30–67. DOI: 10.3322/caac.20140 [PubMed: 22237782]

7. United States Department of Health and Human Services: National Institutes of Health, National Health Lung and Blood Institute. Your guide to lowering your blood pressure with dash. 2006.
8. World Health Organization. Adherence to long-term therapies: evidence for action. 2003. [cited 2015 Jan 29]. Available from: http://www.who.int/chp/knowledge/publications/adherence_report/en/
9. Addolorato G, De Lorenzi G, Abenavoli L, Leggio L, Capristo E, Gasbarrini G. Psychological support counselling improves gluten-free diet compliance in coeliac patients with affective disorders. *Aliment Pharmacol Ther*. 2004; 20(7):777–82. DOI: 10.1111/j.1365-2036.2004.02193.x [PubMed: 15379838]
10. Campbell LV, Barth R, Gosper JK, Jupp JJ, Simons LA, Chisholm DJ. Impact of intensive educational approach to dietary change in NIDDM. *Diabetes Care*. 1990; 13(8):841–7. [PubMed: 2209318]
11. Desroches S, Lapointe A, Ratté S, Gravel K, Légaré F, Turcotte S. Interventions to enhance adherence to dietary advice for preventing and managing chronic diseases in adults. *Cochrane Database Syst Rev*. 2013; 2:CD008722.doi: 10.1002/14651858.CD008722.pub2
12. Grimshaw JM, Thomas RE, MacLennan G, Fraser C, Ramsay CR, Vale L, et al. Effectiveness and efficiency of guideline dissemination and implementation strategies. *Health Technol Assess*. 2004; 8(6):iii–iv. 1–72.
13. Desroches S, Lapointe A, Ratté S, Gravel K, Legare F, Thirsk J. Interventions to enhance adherence to dietary advice for preventing and managing chronic diseases in adults: a study protocol. *BMC Public Health*. 2011; 11:111.doi: 10.1186/1471-2458-11-111 [PubMed: 21329508]
14. Turoff M. The design of a Policy Delphi. *Technological Forecasting and Social Change*. 1970; 2:2.
15. Brauer PM, Hanning RM, Arocha JF, Royall D, Grant A, Dietrich L, et al. Development of a nutrition counselling care map for dyslipidemia. *Can J Diet Pract Res*. 2007; 68(4):183–92. [PubMed: 18073000]
16. Olree K, Skipper A. The role of nutrition support dietitians as viewed by chief clinical and nutrition support dietitians: implications for training. *J Am Diet Assoc*. 1997; 97(11):1255–60. DOI: 10.1016/S0002-8223(97)00300-3 [PubMed: 9366863]
17. Maclellan DL, Berenbaum S. Dietitians' opinions and experiences of client-centred nutrition counselling. *Can J Diet Pract Res*. 2006; 67(3):119–24. [PubMed: 16968559]
18. St Pierre A, Khattra P, Johnson M, Cender L, Manzano S, Holsti L. Content validation of the infant malnutrition and feeding checklist for congenital heart disease: a tool to identify risk of malnutrition and feeding difficulties in infants with congenital heart disease. *J Pediatr Nurs*. 2010; 25(5):367–74. DOI: 10.1016/j.pedn.2009.04.009 [PubMed: 20816559]
19. Keeney S, Hasson F, McKenna HP. A critical review of the Delphi technique as a research methodology for nursing. *Int J Nurs Stud*. 2001; 38(2):195–200. [PubMed: 11223060]
20. Okoli C, Pawlowski SD. The Delphi method as a research tool: an example, design considerations and applications. *Inf Manag*. 2004; 42(1):15–29.
21. Boukdid R, Abdoul H, Loustau M, Sibony O, Alberti C. Using and reporting the Delphi method for selecting healthcare quality indicators: a systematic review. *PloS One*. 2011; 6(6):e20476.doi: 10.1371/journal.pone.0020476 [PubMed: 21694759]
22. Duplantie J, Gagnon MP, Fortin JP, Landry R. Telehealth and the recruitment and retention of physicians in rural and remote regions: a Delphi study. *Can J Rural Med*. 2007; 12(1):30–6. [PubMed: 17229362]
23. McGinn CA, Gagnon MP, Shaw N, Sicotte C, Mathieu L, Leduc Y, et al. Users' perspectives of key factors to implementing electronic health records in Canada: a Delphi study. *BMC Med Inform Decis Mak*. 2012; 12:105.doi: 10.1186/1472-6947-12-105 [PubMed: 22967231]
24. Fleuren M, Wiefferink K, Paulussen T. Determinants of innovation within health care organizations: literature review and Delphi study. *Int J Qual Health Care*. 2004; 16(2):107–23. DOI: 10.1093/intqhc/mzh030
25. Dietitians of Canada. eaTracker; [cited 2015 Jan 29]. Available from: <https://www.eatracker.ca/>
26. Beasley JM, Riley WT, Davis A, Singh J. Evaluation of a PDA-based dietary assessment and intervention program: a randomized controlled trial. *J Am Coll Nutr*. 2008; 27(2):280–6. [PubMed: 18689560]

27. Zhao Y, Wong FK. Effects of a postdischarge transitional care programme for patients with coronary heart disease in China: a randomised controlled trial. *J Clin Nurs*. 2009; 18(17):2444–55. DOI: 10.1111/j.1365-2702.2009.02835.x [PubMed: 19619203]
28. Wood D, Kotseva K, Connolly S, Jennings C, Mead A, Jones J, et al. Nurse-coordinated multidisciplinary, family-based cardiovascular disease prevention programme (EUROACTION) for patients with coronary heart disease and asymptomatic individuals at high risk of cardiovascular disease: a paired, cluster-randomised controlled trial. *The Lancet*. 2008; 371(9629): 1999–2012.
29. Gucciardi E, Demelo M, Lee RN, Grace SL. Assessment of two culturally competent diabetes education methods: individual versus individual plus group education in Canadian Portuguese adults with type 2 diabetes. *Ethnic Health*. 2007; 12(2):163–87. DOI: 10.1080/13557850601002148
30. Morey B, Walker R, Davenport A. More dietetic time, better outcome? A randomized prospective study investigating the effect of more dietetic time on phosphate control in end-stage kidney failure haemodialysis patients. *Nephron Clinical Practice*. 2008; 109(3):c173–80. DOI: 10.1159/000145462 [PubMed: 18663331]
31. Jiang X, Sit JW, Wong TK. A nurse-led cardiac rehabilitation programme improves health behaviours and cardiac physiological risk parameters: evidence from Chengdu, China. *J Clin Nurs*. 2007; 16(10):1886–97. DOI: 10.1111/j.1365-2702.2007.01838.x [PubMed: 17880478]
32. Chen W, Lu XH, Wang T. Menu suggestion: an effective way to improve dietary compliance in peritoneal dialysis patients. *J Renal Nutr*. 2006; 16(2):132–6. DOI: 10.1053/j.jrn.2006.01.009
33. Government of Canada. Eat well and be active educational toolkit. 2014. [cited 2015 Apr 19]. Available from: <http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/educ-comm/toolkit-trousse/index-eng.php>
34. USDA. My pyramid - Getting started. 2014. [cited 2015 Apr 19]. Available from: http://www.choosemyplate.gov/food-groups/downloads/MyPyramid_Getting_Started.pdf

Table 1

Definitions of the eight promising interventions enhancing adherence to dietary advice.

Interventions	Definitions
Behavioural contract	A behavioural contract consists of identifying a behaviour or set of behaviours to be targeted for change (which may have similarities with a SMART goal [33]). A formal agreement is subsequently signed by both the dietitian and the patient. The behavioural contract could include a negotiation between the dietitian and the patient about a timetable for the accomplishment of the specified behaviour(s); how should the degree of accomplishment be evaluated, what rewards would be received for appropriate behaviour(s); when the patient would be rewarded.
Exchange lists	Patients learn how to make food substitutions using an exchange list. For example, nutritionally balanced food lists, with calorically equivalent alternatives, in 100 kcal portions or equivalent portions of foods within the same MyPyramide food group [34].
Feedback based on self-monitoring	This involves providing the patient with data about his/her own recorded behaviour(s) and teaching them to self-evaluate their behaviour(s): e.g., in a diary.
Individualized menu suggestion	Patients are provided with individualized menu suggestions based on food preferences, food skills, budget, and food availability.
Multiples interventions	According to our systematic review, a counselling approach including 2 or more types of interventions of any types mentioned in previous questions has a better potential to improve adherence to dietary advice. For example, including both behavioural contract plus individualized menu suggestions would be considered as “multiple interventions”.
Portion size awareness	Patients receive tools like photographs or food models illustrating the recommended portion sizes of foods or cups, spoons, etc.
Telephone follow-up	Providing verbal support over the phone to patients after the face-to-face encounter.
Video	Patients view a video created by health professionals in a clinical setting or at home. The video presents a narrator’s health issue to which they can relate. The narrator(s) (a patient or simulated patient) explain(s) the importance of following dietary advice to prevent or manage their health issue.

Table 2

Consensus of the 32 dietitians after the 3 rounds Delphi study.

Interventions	Means±SD	Distribution on the 7-point Likert scale (%)		
		1–2 Unimportant or Inapplicable	3–5 Neutral	6–7 Important or Applicable
Strong consensus ^a				
Feedback based on self-monitoring				
Importance	7.0±0.2	0	0	100
Applicability	6.7±0.5	0	0	100
Multiple interventions				
Importance	6.9±0.2	0	0	100
Applicability	6.8±0.4	0	0	100
Portion size awareness				
Importance	6.7±0.5	0	3	97
Applicability	6.7±0.5	0	3	97
Video				
Importance	4.7±0.7	0	94	6
Applicability	4.8±0.7	0	91	9
Moderate consensus ^b				
Individualized menu suggestions				
Importance	5.8±0.6	0	28	72
Applicability	5.7±0.9	0	28	72
Telephone follow-up				
Importance	5.7±0.5	0	28	72
Applicability	5.7±0.6	0	28	72
Behavioural contract				
Importance	5.5±1.1	3	35	62
Applicability	5.6±0.9	0	28	72
Partial consensus ^c				
Exchange lists				
Importance	5.3±0.7	0	61	39
Applicability	5.4±0.8	0	44	56

^a 75% agreement on both the importance and the applicability.^b 60%–74% agreement on both the importance and the applicability.^c >60% agreement on the importance or the applicability.