

Short Communication

Faith-based intervention to increase fruit and vegetable intake among Koreans in the USA: a feasibility pilot

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Abstract

Objective: In the USA, adults of Korean descent tend to eat fewer vegetables than adults in South Korea. The present pilot study examined the feasibility of developing and implementing a faith-based intervention to improve knowledge, attitudes and intake of fruit and vegetables (F&V) for Koreans in the USA.

Design: Feasibility pilot using a cluster-randomized intervention trial design. The multicomponent intervention included motivational interviewing sessions by telephone and church-based group activities.

Setting: Eleven of the largest Korean churches in Southern California.

Subjects: Adults (n 71) from the eleven Korean churches.

Results: Feasibility was demonstrated for the study procedures, including recruitment of churches and individual participants. Allocating time throughout the study for church collaboration and having a study church coordinator to coordinate multiple churches were crucial. Participants' attendance at church activities (89%) and participation by pastors and fellow churchgoers exceeded expectations. Participants' use of intervention materials was high (94% or above) and satisfaction with coaching sessions was also high (75% or above). Having a centralized coach trained in motivational interviewing, instead of one at each church, proved practical. Pilot results are promising for F&V knowledge, attitudes and behaviours. The intervention group improved knowledge and intake of the recommended amounts of F&V, above that of the control group.

Conclusions: This pilot suggests that Koreans in the USA can be reached through their church and that a faith-based intervention study can be implemented to increase F&V intake. Preliminary results for the intervention appear promising but further research is needed to properly evaluate its efficacy.

Keywords

Pilot
Fruits and vegetables
Korean
Church
Intervention

Dietary guidelines recommend a diet with sufficient fruits and vegetables (F&V). F&V provide essential fibre, vitamins and minerals. Low F&V consumption is associated with overweight and chronic diseases such as CVD and cancer⁽¹⁾.

The traditional Korean diet features *kimchi* (side dish of fermented and seasoned vegetables such as cabbage) and provides sufficient vegetables and fresh fruit^(2–4). For Koreans in the USA (hereafter referred to as 'Korean Americans'), acculturation has been associated inversely with vegetable intake. Fruit intake among Korean Americans is less clear. One study reported higher fruit intake among acculturated Koreans⁽⁵⁾, while another study of women found higher fruit intake among Korea-born women⁽⁶⁾. The proportion overweight or obese was much higher in US-born women (31%) *v.* Korea-born women (9%)⁽⁶⁾.

There is a need for culturally congruent interventions for Korean Americans to address the unfavourable trends in vegetable intake and overweight, as well as access barriers. Most Korean American adults were born in Korea (90%)⁽⁷⁾, do not speak English very well (51%), and their income and proportion with health insurance rank below the median for Asians⁽⁸⁾. Language barriers, financial barriers, deportation fears and cultural beliefs make them less accessible by mainstream health care⁽⁹⁾. Korean churches are potential forums for reaching large groups of Korean Americans. Over 70% of Korean Americans attend church regularly^(7,10,11) and most prefer the church setting for receiving health information⁽⁸⁾. F&V interventions in collaboration with Korean churches have yet to be tested. Almost a third of Korean Americans reside in California,

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forming a large and growing minority group⁽¹²⁾. The present paper describes a pilot study of a culturally acceptable, faith-based intervention in Southern California to promote F&V intake. The pilot's aims were to test the feasibility of developing and implementing the intervention and to describe pilot results.

Methods

Study design

Feasibility was tested for a cluster randomized design, with churches randomized to the F&V group or control group. Within each church, individual study participants formed a cluster. The study was conducted during 2009–2013.

Recruitment

The bilingual (Korean/English) study church coordinator met with the pastors and other church leaders of the largest Korean churches on several occasions to discuss the study during the first year of the study. The largest eleven churches (forty to 1000+ members) were invited and participated. Seven churches were Presbyterian, two were Baptist, and the others were Nondenominational or Catholic. We grouped the two smallest Presbyterian churches and matched churches on denomination similarity before randomization to treatment group.

A two-page screening questionnaire was offered in Korean and English to adult members after church services during 2010. Of 1093 respondents, 217 met inclusion criteria (over 18 years old; Korean descent; combined daily F&V intake that is at least 1.5 cups below existing dietary guidelines^(1,13); not moving; and non-smoker reporting second-hand smoke exposure). The last criterion was applied because controls received an alternative (reducing second-hand smoke exposure) intervention. Eligible screening respondents (n 75) from each church were invited to participate from mid-2010 to 2011. Two participants refused (one in each group), leaving seventy-three (97%) participants enrolled (thirty-six in the F&V intervention; thirty-seven controls).

Intervention

Development

Using a community-based participatory research framework, study and church teams (well-known and respected congregants) collaborated throughout the study. The intervention comprised multiple components to address individual and sociocultural factors in the behavioural ecological model⁽¹⁴⁾ and social ecological framework⁽¹⁾, and was modelled after church-based studies⁽¹⁵⁾. The intervention consisted of the following main components: educational materials; five coaching sessions; and church

activities. The components were provided in English or Korean (94% of participants in Korean, per participants' preference) and tailored to Korean norms, such as group-mindedness and elder respect. The intervention's goal was to improve knowledge, attitudes, behaviours and social support for F&V intake.

Intervention materials

Intervention participants' binder provided study information, exercises to identify important values related to healthy eating, benefits of F&V, etc. Korean dishes (e.g. *kimchi*) and religious messages with health themes were featured. Participants received weekly diaries (to track goals, strategies and progress) and study logo items (refrigerator magnet, pen and reusable grocery bag) to provide environmental cues.

Coaching sessions

A bilingual coach of Korean descent conducted five individual motivational interviewing sessions by telephone every week. Coaches were trained in motivational interviewing, including open-ended questions, affirmation and reflective listening^(15,16). Sessions focused on improving F&V intake. The coach guided goal setting and strategies, which were discussed at subsequent sessions.

Church activities

Study participants were encouraged by their coach to attend two F&V cooking demonstrations and taste testing at churches following church services or functions. These activities were organized and led by members of their church teams and were open to all church members, which provided social support.

Controls

Control participants received a similar intervention (e.g. materials, coaching and church activities) but on reducing second-hand smoke exposure. An alternative intervention was provided to boost controls' participation and comparability between treatment conditions⁽⁸⁾.

Interview data

Two trained non-coaching staff conducted baseline and follow-up interviews by telephone in English/Korean. Participants reported their demographic and other characteristics shown in Table 1. Questions about knowledge, attitudes and diet were asked at both interviews. Participants were called within a week after completing their coaching sessions to conduct their follow-up interview.

Knowledge

Participants indicated: (i) whether Koreans eat less vegetables the longer they live in the USA; (ii) whether animal products such as chicken contain fibre; (iii) whether most fresh F&V contain almost no sodium; (iv) whether adults

Table 1 Participants' baseline characteristics, by experimental group, in the feasibility pilot of a faith-based intervention to increase fruit and vegetable intake among Korean Americans, Southern California, 2009–2013

Characteristic	Control group (n 36)		Intervention group (n 35)		Total (N 71)		P*
	n	%	n	%	n	%	
Age (years), mean		35		37		36	0.51
Female gender	24	67	18	51	42	59	0.19
Married	22	61	19	54	41	58	0.56
Employed	21	58	23	66	44	62	0.52
Interviews completed in Korean	33	92	34	97	67	94	0.61
Spoke Korean only or mostly Korean	21	58	18	51	39	55	0.56
Identified as Korean	27	75	30	86	57	80	0.26
Born in Korea	31	86	32	91	63	89	0.71
Age moved to the USA (years), mean		28		30		29	0.66
High/trade-school graduate or higher education	35	97	34	97	69	97	1.00
Current health good or very good	36	100	31	89	67	94	0.05
Overweight or obese†	10	28	9	26	19	27	0.84
Prefer Korean or mostly Korean food at home	31	86	28	80	59	83	0.49
Prefer Korean or mostly Korean restaurants	12	33	6	17	18	25	0.12
Eat at restaurant/bar (times/week), mean		2		3		3	0.08
Eat at fast-food restaurant (times/week), mean		1		1		1	0.16
Attend religious services (times/month), mean		6		5		6	0.43

*P value from independent *t* tests for continuous variables; Pearson or Fisher's exact χ^2 tests for categorical variables.

†Overweight or obese = BMI of 23.0 kg/m² or above, per WHO definition.

should eat the same amount of F&V regardless of their physical activity levels; and (v) how many cups of F&V they should eat daily according to existing guidelines (MyPyramid) about recommended daily intake (RDI)⁽¹³⁾. Responses were scored as accurate or inaccurate.

Attitudes

Participants reported which factor (price, taste, nutrition or convenience) was most important in selecting food.

Dietary intake

Past month consumption frequency and quantity of green salad, other vegetables, fruit juice and fruit were adapted from the National Institutes of Health all-day screener⁽¹⁷⁾. Frequency was converted to daily units following the National Cancer Institute's scoring⁽¹⁸⁾. Daily frequency was multiplied by daily quantity to estimate daily intake. In addition, participants reported *kimchi* consumption and meals (breakfast, lunch, dinner and snack) at which they consumed F&V during the past week.

Participants' feedback

Feedback from participants was obtained at the follow-up interview.

Church activities. Participants reported whether: their pastor mentioned F&V in sermons; church members discussed F&V; they attended church activities; and activities were helpful.

Coaching sessions. Participants rated: how easy it was to find time (very, somewhat or not very); the number of sessions (too many, too few or just right); session length (too short, too long or just right); whether the coach

listened (definitely, probably or not); and whether goal setting was helpful (very, somewhat or not very).

Educational materials. Participants reported if they read their binder and used their pen, magnet or bag.

Perceived effectiveness. Participants indicated: what made it easy or hard to achieve their goals; their confidence level (very, somewhat or not very) to maintain any results achieved; and whether they would recommend the study to someone else.

Analysis

Feasibility

To assess feasibility, process measures included: receptivity by churches; feasibility of screening at churches; church activities to promote the intervention; participant recruitment and retention rates; average time to complete interviews; treatment fidelity (number of coaching calls completed); and study participants' appraisal of the intervention.

The present study was a feasibility pilot which was not powered for significance testing for impact outcomes⁽¹⁹⁾. Descriptive statistics such as frequencies, percentages and pre–post change (Δ ; with 95% CI) were computed for attitudes, knowledge and F&V intake using the statistical software package IBM SPSS Statistics Version 22.0.

Results

Feasibility

Feasibility of collaboration with churches was demonstrated. Allowing time for building relationships with church

teams throughout the study fostered their involvement. Process measures indicated the feasibility of delivering a faith-based intervention. Participant recruitment at churches was practical, with 1000+ screeners completed, over one-fifth eligible and 97% enrolment. The intervention fidelity was 97%; one participant in each group completed some but not all of the coaching sessions. These two participants did not complete the follow-up interview, hence retention was 97% and this left thirty-five participants in the F&V intervention and thirty-six controls for analyses.

Participants' baseline characteristics

There were no statistically significant differences at the $P < 0.05$ level in baseline characteristics between the control and intervention groups (Table 1). Participants' mean age was 36 years; over half were female (59%), married (58%), employed (62%), and spoke Korean only or mostly (55%). Most identified as Korean (80%) and

were born in Korea (89%). Most participants were high-school graduates (97%) and in good to very good health (94%). Twenty-seven per cent of participants were overweight or obese. Participants attended church six times monthly, on average.

Changes in attitudes and knowledge

Table 2 shows that at baseline, 71% of intervention participants rated taste as most important in choosing food, followed by nutrition (9%); at follow-up, nutrition became most important (80%), followed by taste (9%). Controls rated taste as most important in choosing food (47% at baseline and follow-up), followed by nutrition (22% at baseline, 36% at follow-up).

The intervention group's knowledge was lower than controls' at baseline, but surpassed controls' at follow-up. The RDI for vegetables was least known at baseline (3% in intervention group, 11% in controls); at follow up,

Table 2 Participants' attitudes, knowledge and behaviours, by experimental group and period, in the feasibility pilot of a faith-based intervention to increase fruit and vegetable intake among Korean Americans, Southern California, 2009–2013

	Control group						Intervention group					
	Baseline		Follow-up		Δ^*	95% CI	Baseline		Follow-up		Δ^*	95% CI
	<i>n</i>	%	<i>n</i>	%			<i>n</i>	%	<i>n</i>	%		
Five knowledge questions, correct answer												
Less vegetables eaten the longer Koreans in USA	23	64	28	78	14	-2, 30	18	51	33	94	43	26, 59
Most fresh F&V have almost no sodium	26	72	27	75	3	-12, 17	23	66	35	100	34	19, 50
RDI for F&V varies by physical activity level	13	36	5	14	-22	-41, -3	6	17	31	89	71	56, 86
RDI for fruits	6	17	8	22	6	-8, 19	6	17	20	57	40	22, 58
RDI for vegetables	4	11	1	3	-8	-17, 1	1	3	18	51	49	30, 67
One attitudes question†												
Most important in choosing food												
Taste	17	47	17	47	0		25	71	3	9	-62	
Price	8	22	5	14	-8		4	11	2	6	-5	
Nutrition	8	22	13	36	14		3	9	28	80	71	
Convenience/don't know	3	9	1	3	-6		3	9	2	6	-3	
Dietary intake												
F&V RDI – actual intake (cups/d), mean	-3.1		-2.9		0.2	-0.1, 0.6	-3.8		0.5		4.3	3.7, 4.9
Vegetable RDI – actual intake (cups/d), mean	-2.1		-2.1		0.0	-0.2, 0.2	-2.4		-0.1		2.3	1.9, 2.7
Ate green salad daily	6	17	6	17	0	-15, 15	1	3	18	52	49	32, 65
Green salad consumption (cups/d), mean	0.2		0.2		0.0	-0.1, 0.1	0.1		0.7		0.6	0.5, 0.8
Ate vegetables daily‡	10	28	15	42	14	-5, 33	4	11	25	71	60	44, 76
Vegetable intake‡ (cups/d), mean	0.5		0.5		0.0	-0.1, 0.2	0.3		2.0		1.7	1.3, 2.0
Ate vegetables, past week at												
Breakfast	14	39	9	25	-14	-30, 2	4	11	15	43	31	14, 49
Lunch	26	72	17	47	-25	-46, -4	17	49	25	71	23	3, 42
Dinner	31	86	36	100	14	3, 25	29	83	33	94	11	1, 22
Snack	0	0	1	3	3	-3, 8	0	0	2	6	6	-2, 13
Kimchi consumption \geq once/d	28	78	30	83	6	-10, 21	15	43	27	77	34	19, 50
Fruit RDI – actual intake (cups/d), mean	-1.0		-0.8		0.2	0.0, 0.5	-1.4		0.6		2.0	1.6, 2.4
Drank fruit juice daily	3	8	9	25	17	2, 31	0	0	15	43	43	26, 59
Ate fruit daily (excluding juice)	12	33	20	56	22	5, 40	7	20	30	86	66	48, 83
Fruit juice intake (cups/d), mean	0.2		0.4		0.1	0.0, 0.3	0.2		0.7		0.6	0.3, 0.8
Fruit intake (cups/d), mean	0.6		0.6		0.1	-0.1, 0.3	0.3		1.8		1.4	1.2, 1.7
Consumed fruits/fruit juice, past week at												
Breakfast	17	47	19	53	6	-12, 23	6	17	21	60	43	23, 63
Lunch	12	33	10	28	-6	-24, 13	11	31	7	20	-11	-32, 9
Dinner	22	61	17	47	-14	-36, 8	21	60	26	74	14	-4, 32
Snack	6	17	5	14	-3	-21, 15	5	14	5	14	0	-16, 16

F&V, fruit and vegetables; RDI, recommended daily intake.

* Δ indicates change in percentage or mean from baseline to follow-up within group; Δ values are rounded.

†For the one attitudes question, *n*, % and Δ are provided for each of the four possible answer categories shown.

‡Green salad excluded.

knowledge of the vegetable RDI increased in the intervention group (to 51%) but not the controls.

Changes in fruit and vegetable intake

Fruits and vegetables

The intervention group's daily F&V intake increased from 3.8 cups below to 0.5 cups above the RDI. The controls' intake increased slightly, from 3.1 cups below to 2.9 cups below the RDI.

Vegetables

Intervention participants reduced the gap between their recommended and actual vegetable intake from -2.4 cups/d at baseline to -0.1 cups/d at follow-up. They increased green salad intake (from 0.1 to 0.7 cups/d) and other vegetable intake (from 0.3 to 2 cups/d). Vegetable consumption increased throughout the day, especially at breakfast. Controls' vegetable intake did not increase. Both groups increased daily *kimchi* intake from baseline to follow-up as follows: from 43 to 77% among intervention participants; from 78 to 83% among controls.

Fruits

The intervention group increased daily fruit intake from 1.4 cups below the RDI at baseline to 0.6 cups above at follow-up. They increased fruit juice and fruits, from 0.2 to 0.7 cups/d and from 0.3 to 1.8 cups/d, respectively. Consumption increased most at breakfast.

The controls' daily fruit intake increased slightly from 1.0 cups below the RDI to 0.8 cups below at follow-up. Fruit juice increased from 0.2 to 0.4 cups/d, but fruit intake remained at 0.6 cups/d.

Fruit and vegetable intervention assessment

Church activities

Most intervention participants (91%) reported that their pastor mentioned F&V in sermons, that fellow church congregants (83%) discussed diet with them and that they attended F&V activities at church (89%); 65% rated the activities as very helpful.

Coaching sessions

Finding time for coaching sessions was very or somewhat easy (75%), the number of sessions was just right (86%), the duration of sessions was just right (94%), setting goals was very/somewhat helpful (97%), talking with their coach was helpful (100%) and their coach listened (100%).

Educational materials

Most participants read their binder (100%) and used the shopping bag (94%), pen (100%) or magnet (100%).

Perceived effectiveness

All F&V intervention participants were somewhat/very confident about maintaining improvements. Barriers to meeting goals included: lack of F&V availability, forgetting because of busy schedules and disliking the taste. Most found the binder helpful in achieving goals (74%) and would recommend the programme to someone else (97%).

Discussion

The present study is the first faith-based feasibility pilot addressing F&V intake among Korean Americans. Feasibility was demonstrated for the study procedures, including recruitment of churches and individual participants. Several factors favoured the conduct of the pilot. The church coordinator was pivotal for coordinating multiple church teams and church activities. Allocating time throughout the study for church collaboration helped maintain ties and handle unforeseen changes including church leadership changes. Another critical factor was engaging the sociocultural and spiritual influences. Participants' attendance at church activities and participation by pastors and fellow churchgoers exceeded expectations. Having a centralized coach trained in motivational interviewing, instead of one at each church, was more practical. Use of and satisfaction with the study materials and coaching sessions were high.

Pilot results were favourable for knowledge, attitudes and behaviours. Our results should be interpreted with caution as the pilot sample size was limited. The intervention group's knowledge of the F&V RDI increased, but left room for improvement. Inadequate knowledge has been associated with deficient intake^(20,21). In our study, although nearly half of participants could not state the vegetable RDI after the intervention, their intake approximated the RDI.

Study limitations include self-reported F&V intake, which may have been over-reported^(18,22). There is need for reliable F&V assessment tools that are validated with biomarkers, including our modified National Cancer Institute screener. Our F&V RDI were based on contemporary guidelines that are comparable to 2010 guidelines⁽¹⁾, with slightly different age grouping. Updating to current guidelines is needed.

The current pilot suggests that Korean Americans can be reached through their church and that a faith-based community intervention study can be implemented to increase F&V intake. Although pilot results appear promising, further research is needed to evaluate the efficacy of the intervention.

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References

1. US Department of Agriculture & US Department of Health and Human Services (2010) *Dietary Guidelines for Americans, 2010*, 7th ed. Washington, DC: US Government Printing Office; available at <http://www.health.gov/dietaryguidelines/dga2010/DietaryGuidelines2010.pdf>
2. Lee MJ, Popkin BM & Kim S (2002) The unique aspects of the nutrition transition in South Korea: the retention of healthful elements in their traditional diet. *Public Health Nutr* **5**, 197–203.
3. Son SM (2003) Food consumption trends and nutrition transition in Korea. *Mal J Nutr* **9**, 7–17.
4. Kim E-K, Ha A-W, Choi E-O *et al.* (2016) Analysis of kimchi, vegetable and fruit consumption trends among Korean adults: data from the Korea National Health and Nutrition Examination Survey (1998–2012). *Nutr Res Pract* **10**, 188–197.
5. Lee S, Sobal J & Frongillo E (1999) Acculturation and dietary practices among Korean Americans. *J Am Diet Assoc* **99**, 1084–1089.
6. Park SY, Murphy SP, Sharma S *et al.* (2005) Dietary intakes and health-related behaviors of Korean American women born in the USA and Korea: the Multiethnic Cohort Study. *Public Health Nutr* **8**, 904–911.
7. Hofstetter CR, Ayers JW, Irvin VL *et al.* (2010) Does church participation facilitate tobacco control? A report on Korean immigrants. *J Immigr Minor Health* **12**, 187–197.
8. US Department of Commerce, Bureau of Census (2003) We the people: Asians in the United States. <https://www.census.gov/prod/2004pubs/censr-17.pdf> (accessed April 2016).
9. Jo AM, Maxwell AE, Yang B *et al.* (2010) Conducting health research in Korean American churches: perspectives from church leaders. *J Community Health* **35**, 156–164.
10. Hurh WM & Kim KC (1990) Religious participation of Korean immigrants in the United States. *J Sci Study Relig* **29**, 19–34.
11. Massey DS & Higgins ME (2011) The effect of immigration on religious belief and practice: a theologizing or alienating experience? *Soc Sci Res* **40**, 1371–1389.
12. Yau J (2004) The Foreign Born from Korea in the United States. <http://www.migrationpolicy.org/article/foreign-born-korea-united-states> (accessed April 2016).
13. US Department of Agriculture (2005) MyPyramid 2005. <http://www.foodpyramid.com/mypyramid/> (accessed April 2016).
14. Hovell MF, Wahlgren DR & Adams M (2009) The logical and empirical basis for the behavioral ecological model. In *Emerging Theories and Models in Health Promotion Research and Practice: Strategies for Enhancing Public Health*, pp. 347–385 [RJ DiClemente, R Crosby and M Kegler, editors]. San Francisco, CA: Jossey-Bass, Inc.
15. Resnicow K, Campbell M, Carr C *et al.* (2004) Body and Soul. A dietary intervention conducted through African-American churches. *Am J Prev Med* **27**, 97–105.
16. Rollnick S & Miller WR (1995) What is motivational interviewing? *Behav Cogn Psychother* **23**, 325–334.
17. National Institutes of Health (n.d.) Eating at America's Table Study: Quick Food Scan. <http://appliedresearch.cancer.gov/diet/screeners/fruitveg/allday.pdf> (accessed April 2016).
18. National Cancer Institute, Division of Cancer Control and Population Sciences (n.d.) Data collection instruments. Short dietary assessment instruments. All-day screener. Scoring the all-day screener. <http://appliedresearch.cancer.gov/diet/screeners/fruitveg/scoring/allday.html> (accessed April 2016).
19. Lancaster GA, Dodd S & Williamson PR (2004) Design and analysis of pilot studies: recommendations for good practice. *J Eval Clin Pract* **10**, 307–312.
20. Krebs-Smith SM, Graubard BI, Kahle LL *et al.* (2000) Low energy reporters vs others: a comparison of reported food intakes. *Eur J Clin Nutr* **54**, 281–287.
21. Watters JL, Satia JA & Galanko JA (2007) Associations of psychosocial factors with fruit and vegetable intake among African-Americans. *Public Health Nutr* **10**, 710–711.
22. Bogers RP, Dagnelie PC, Westerterp KR *et al.* (2003) Using a correction factor to correct for overreporting in a food frequency questionnaire does not improve biomarker-assessed validity of estimates for fruit and vegetable consumption. *J Nutr* **133**, 1213–1219.