

UCLA

UCLA Previously Published Works

Title

Web-Based Study for Improving Mammography Among Korean American Women

Permalink

<https://escholarship.org/uc/item/5850r59c>

Journal

Journal of Cancer Education, 32(2)

ISSN

0885-8195

Authors

Lee, Eunice E
Brecht, Mary-Lynn
Park, HanJong
et al.

Publication Date

2017-06-01

DOI

10.1007/s13187-015-0920-2

Peer reviewed

Web-Based Study for Improving Mammography Among Korean American Women

Eunice E. Lee¹ · Mary-Lynn Brecht² · HanJong Park³ · Jongwon Lee⁴ · Kyeung Mi Oh⁵

© American Association for Cancer Education 2015

Abstract Web-based culture-specific interventions for Korean American (KA) women to improve mammography utilization are not available. An established intervention developed to improve mammography utilizations for Korean American (KA) women was tested via the Web for its efficacy, feasibility, and acceptability. A randomized controlled trial, with a

pretest-posttest control group design, was conducted with 136 KA women and their spouses. Intention to have a mammogram within the next 12 months increased significantly in the intervention group compare to controls. Among women whose mammograms had not been updated, 22 % of women in the intervention and 13 % of women in the control group obtained a mammogram at 2-month post-baseline, even though the difference was not statistically significant. The Web-based study educating couples was feasible and could improve KA women's breast cancer screening intention and behaviors. Combining off-line contact for recruitment/data collection with online intervention material could decrease the attrition rate in the future study because the attrition rate in this study was higher than the original study.

This study was supported by the National Cancer Institute (1R01CA127650) and UCLA School of Nursing Intramural grant to Dr. Eunice E. Lee.
Work performed at University of California, Los Angeles, California

✉ Kyeung Mi Oh
koh5@gmu.edu

Eunice E. Lee
eclee@sonnet.ucla.edu

Mary-Lynn Brecht
lbrecht@ucla.edu

HanJong Park
hpark61@khu.ac.kr

Jongwon Lee
jwlee@salud.unm.edu

Keywords Breast cancer · Mammography · Health beliefs · Korean American women · Web-based

Introduction

Breast cancer (BC) is the most commonly occurring cancer among Korean American (KA) women with a prevalence of 53.5 per 100,000 [1]. Although the rate is lower than the prevalence in non-Hispanic white women in USA [1], BC incidence rate for KA women almost doubled between 1990 and 2008 [2]. Further, KA women are 60 % more likely than non-Hispanic white women to have BC tumors ≥ 1 cm at diagnosis [3].

Regular mammogram screening has been used to detect BC at early stages and has been shown to be effective in reducing BC deaths [4]. However, KA women's mammography screening rates have been consistently lower than other ethnic groups. Even among Asian subgroups, KA women showed the lowest mammogram screening rate [5]. Low

¹ School of Nursing, University of California, Los Angeles, 700 Tiverton Ave. 4-940 Factor Building, Mail Code: 691821, Los Angeles, CA 90095-6918, USA

² School of Nursing, University of California, Los Angeles, 700 Tiverton Ave. 5-151 Factor Building, Mail Code: 691821, Los Angeles, CA, USA

³ College of Nursing Science, Kyung Hee University, 26 Kyunghee dae-ro, Dongdaemun-gu, Seoul 130-701, Republic of Korea

⁴ College of Nursing, University of New Mexico, MSC07 4380, 1 University of New Mexico, Albuquerque, NM 87131, USA

⁵ School of Nursing, George Mason University, MS3C4, 4400 University Dr, Fairfax, VA 22030, USA

screening rates for KAs inevitably contribute to late stage diagnoses and high death rates for cancer [6]

Several intervention studies for KA women have been performed to increase BC screening uptake. Those intervention studies targeted KA women used multiple strategies, such as culturally sensitive printed materials, audiovisual materials [7, 8], mobile screening services [9], screening incentives [10], media campaigns, and assistance in scheduling and attending screening [10]. Outcomes of the intervention were measured based on completion of mammograms [8, 11], scheduling mammograms [12], intention of obtaining mammograms [11, 13], and changes in knowledge and attitude [10] after the intervention.

The benefits of using the Internet to deliver behavior programs that are accessible, effective, and economical are well recognized [14]. Web-based interventions were used for improving specific behaviors such as smoking [15], alcohol consumption [16], sexual behavior [17], physical activity [18], and dietary behavior [19]. There have been relatively few studies using a Web-based intervention to promote cancer screenings. Most of these are clinic-based interventions that have focused on colorectal cancer screening [20–22] and prostate cancer screenings [23, 24]. Despite its value in health education, Web-based educational interventions to improve women's BC screening uptakes have not been conducted with KA women.

A recent study of KA women indicated that women who received support from family members were almost four times more likely to receive a mammogram than were those who did not [25]. It could be speculated that for KA women, decision making about BC screening was not based solely on personal concern but was influenced by the familial context because KA women have traditionally been raised to sacrifice their own needs for their family's sake [26].

A recent randomized clinical trial ($N=428$ KA couples) established the efficacy of the “Korean Immigrants & Mammography—Culture-Specific Health Intervention (KIM-CHI)” program in increasing KA women's adherence to recommended BC screening protocols by educating KA women and their husbands [8]. The KIM-CHI intervention was based on the Health Belief Model [27] supplemented with a cultural explanatory model [28]. The results indicated that the intervention group had twice the odds of getting a mammogram compared to the control group [8]. However, recruiting KA couples and delivering the intervention through KA religious organizations were very time and labor intensive.

Therefore, the primary aims of this study were to test the preliminary efficacy of the Web-based KIM-CHI program between baseline and 2-month post-baseline on the outcomes of (1) intention to get a mammogram from all of the KA women in the study and (2) actual mammogram attainment among KA women whose mammograms had not been updated (who had not gotten a mammogram in the previous year).

We also evaluated the feasibility (number of days spent for recruitment, attrition, and successful completion of data collection) and acceptability of the Web site (usability and user-friendliness) and the educational DVD (credibility, comprehensibility, and readability).

Methods

We used a pre- and post-test, randomized, two group experimental study design. Women and their spouses in the control group received the intervention after the 2-month baseline data collection (delayed intervention). The study was approved by the primary author's institutional review board.

Sampling

Participants included women (1) who were older than 40 years of age because of current BC screening guidelines by USPSTF [29] and ACS [30] that women begin BC screenings at age 40 to 50; (2) who were born in Korea but currently lived in the greater Los Angeles (LA) area; and (3) who were able to speak and read Korean, and (4) whose husbands meet inclusion criteria (2) and (3). We decided to be conservative in terms of including women in their 40s because a relatively higher percentages of KA women never had a mammogram and low screening rates [8] so it would be better to be inclusive considering their risk for finding breast cancer in later stage. Participants were also required to have an email address and access to the Internet to participate in the study.

Intervention Description

The original KIM-CHI program consisted of (a) showing a project-team designed 30-min Korean-language film (in DVD format) to participants, (b) holding a brief group discussion session immediately after the film showing, and (c) requiring each couple to complete a discussion activity together at home to enhance spousal support for the women within 24 h or watching the DVD [8]. For the Web-based study, the DVD was divided into two parts and uploaded to the study Web site. The second component of the original intervention (b) was replaced by posting the PowerPoint summary of the study for participants to view online after watching the DVD. For the last component of the intervention (c), each couple was asked to complete a homework activity and then call the study phone number to leave a message about what they discussed as proof of completing the homework activity.

Measures

All measures in this study were validated in our prior study [8]. The primary outcomes measured by self-report consisted of the KA women's intention to have a mammogram in the next 12 months, measured on a Likert scale of 1 (very unlikely) to 5 (very likely) and whether a mammogram was obtained during the 2-month study period. Having had a mammogram prior to study entry and recency was also self-reported at baseline. Data about sociodemographic were collected from both wives and husbands. The level of acculturation, health insurance coverage, and spousal support for BC screening was also obtained from women (Table 1).

A total of 17 questions were administered to couples in the intervention group immediately after they completed the Web-based KIM-CHI program to assess the acceptability of the Web site (usability and user-friendliness) and the educational DVD (credibility, comprehensibility, and readability) (Table 3). All of the items used Likert-type rating, ranging from 1 (strongly disagree) to 5 (strongly agree).

Procedures

KA women were recruited through banners that were posted on three Korean language Web sites in USA. We were able to recruit a total of 99 couples during the 4-month recruitment period. Those interested in participating in the study were instructed to click on the email sign on the banner to email the study project director. Then the project director sent an email requesting answers to inclusion and exclusion criteria

of our study in order to make sure the couple was eligible. We also asked the woman for her husband's email address after discussing her participation in the study with her husband. A Web page was created in which prospective participants could access to the pre- and post-intervention surveys and watch the intervention DVD that were developed for our previous KIM-CHI study.

A total of 198 women responded to the banner announcement. After learning more about the study, 15 women refused to participate, and one woman responded twice. After obtaining informed consent, the remaining 182 women were randomly assigned to either the intervention ($n=88$) or control ($n=94$) group. A total of 136 women (75 %) completed the baseline phase of the study and form the primary sample for the current analysis: 57 women in the intervention group and 79 women in the control group. Of the 57 women in the intervention group completing the baseline phase, 43 (74 %) participated with their spouses; of the 79 women in the control group, 51 (65 %) participated with their spouses. Overall, 94 women participated with their husbands and 42 women participated without their husbands.

Each of the pre- and post-baseline surveys took about 30–45 min to complete for women and 5–10 min for husbands. For the couple in the intervention group, we emailed them a code to purchase \$60 of merchandise from Amazon.com. Couples in the control group also received an email from us with a code to purchase \$20 of merchandise from Amazon.com.

At 2-month post-baseline, 75 women ($75/136=55\%$; attrition rate of 45 %) completed the survey: 31 women from the intervention group and 44 from the control group. Women in

Table 1 Baseline sample characteristics

	Intervention group Mean (SD) or % $n=57$	Control group Mean (SD) or % $n=79$	t, χ^2	p value
Wives				
Age (years)	48.80 (6.89)	48.16 (5.89)	.584	.560
Duration of US stay (years)	16.42 (9.11)	19.65 (9.90)	-1.937	.055
Education (years)	15.77 (2.56)	15.94 (3.06)	-.331	.741
Acculturation	41.23 (6.02)	42.30 (7.00)	-.937	.351
Insurance (yes)	28.1 %	41.8 %	2.697	.101
Duration of marriage (years)	20.32 (8.44)	18.11 (8.06)	1.535	.124
Ever had a mammogram (Yes)	71.9 %	82.3 %	2.062	.151
History of having a mammogram			4.165	.055
Less than 1 year	28.1 %	25.3 %		
1–2 years ago	12.3 %	26.6 %		
More than 2 years ago	31.6 %	29.2 %		
Don't remember	1.8 %	2.5 %		
Never taken	26.3 %	16.5 %		
Perceived spousal support from husband	Intervention group Mean (SD)	Control group Mean (SD)		
	20.79 (4.35)	22.68 (3.57)	20.99 (4.67)	21.61 (4.98)

the control group received the KIM-CHI education after completing the time 2 survey. Couples in the delayed control group were not followed up after they received the education at time 2.

Data Analysis

The primary outcomes measured by self-report were (1) the change from baseline to follow-up for KA women's intention to have a mammogram in the next 12 months and (2) whether a mammogram was obtained during the 2-month study period among those women who had not had a mammogram in the previous 1 year.

Descriptive statistics were used to describe the characteristics of each group, and independent *t* test or chi-square tests were performed to examine the differences between the intervention and control groups at baseline and 2-month post-baseline. Generalized estimating equations (GEE) were used to examine the effect of the intervention on intention to get a mammogram among the KA women. The GEE is an efficient method to analyze longitudinal data because it accounts for correlations within subjects (across repeated measures) and allows inclusion of subjects even if the outcome measure is missing at a time point. A simple model (model 1 in Table 2) was estimated to examine the group by time interaction (for assessing whether groups differed in their change from baseline to the 2-month follow-up in intention to get a mammogram). A second model

(model 2 in Table 2) was estimated, including selected wife baseline characteristics as covariates. This more comprehensive model allowed examination of the stability of the intervention effect, controlling for participant characteristics, and also provided estimates of predictors of intention level. The alpha level was set at .05 for each analysis.

Results

Sample Characteristics

Baseline data for this study were collected from 136 KA women and 94 spouses of the women (Table 1). No significant differences in baseline characteristics were found between intervention ($n=57$) and control ($n=79$) group women. There were no significant differences on background characteristics or baseline outcome variables between women whose husbands participated in the study ($n=94$) and those whose husbands did not ($n=42$).

At baseline, only about one fourth of the women had obtained a mammogram in the previous year, 28.1 % in the intervention group ($n=16$) and 25.3 % for control group ($n=20$). Participating husbands in the intervention and control groups had similar characteristics, their mean age was 50 years old and they had about 16 years of education, except husbands in the control group reported significantly longer duration of US stay (18.4 years) than those did in the intervention group (22.7 years).

Table 2 Effect of intervention on intention to have mammogram

Parameter	Model 1 no covariates			Model 2 with baseline covariates		
	B	SE	<i>p</i> value	B	SE	<i>p</i> value
(Intercept)	3.38	.19	<.001	2.58	1.36	.059
Group (intervention) ^a	.37	.30	.220	.45	.30	.135
Time 1 ^b	.24	.22	.290	.17	.21	.420
Group (intervention)*time 1 ^{a, b}	-1.04	.37	.005	-1.02	.37	.005
Covariates (wife characteristics at baseline)						
Age				.01	.02	.521
US stay (years)				.01	.01	.320
Acculturation				-.01	.02	.677
Spousal support				.03	.02	.185
Husband participated in study (yes) ^c				-.47	.21	.028

$n=132$ for model 1 baseline because of missing data on intention variable at both time points for four subjects
 $n=129$ for model 2 baseline because three additional subjects had missing data on one or more baseline predictors

^a Reference category for group = control

^b Reference category for time = time 2

^c Reference category for husband participation = no

Change in Intention to Have Mammogram (from All Women Participants)

Results from the simple model with no covariates (model 1 in Table 2) showed that the groups differed significantly in terms of their change from baseline to follow-up in intention to have mammogram, that is, a significant group-by-time interaction effect ($p=.005$). To examine this group-by-time interaction in more detail, we used specific contrasts to test change from baseline to follow-up within each group. Intention to have a mammography within the following 12 months increased significantly in the intervention group (from 2.95 to 3.75; $B=.80$, $z=2.73$, $p=.006$). However the control group displayed a different pattern of slight (but not significant) drop in intention from baseline to follow-up (3.63 to 3.37; $B=-.22$, $z=1.01$, $p=.314$). Adjusting for covariates did not alter the primary result of a significant group by time interaction ($p=.005$, model 2 in Table 2).

Mammography Uptake During the Study Period (from Women Who Had Not Obtained a Mammogram in the Previous Year)

In examining whether the groups differed in mammogram uptake during the study period, we focused only on women who had not had a mammogram during the year preceding the study (and thus, for whom a mammogram would be recommended) and who had completed follow-up data collection. At follow-up, among those who had not had a mammogram during the year preceding the study, 21.7 % ($n=5$) of 23 women in the intervention group and 12.5 % ($n=4$) of 32 women in the control group obtained a mammogram during the study period. While the difference was not statistically significant in this small sample (chi square=.83, $p=.36$), this difference translates to an effect size of $d=.25$.

Feasibility and Acceptability

It took 4 months to recruit 99 KA couples, as we originally planned. However, we were able to recruit only 40 couples from the first two Web sites during the first 2 months, so we needed to add one more Web site to recruit the rest of participants. It took time to figure out which Web sites would be best to recruit KA participants, yet, the recruitment method was feasible to recruit KA couples.

Of recruited women who were assigned to either the intervention or control group ($N=136$), the completion of data collection rate among women participants at baseline was 75 % (136/182). The completion rate of the baseline data for women in the intervention group was lower 57/78 (73 %) than for women in the control group 79/94 (84 %). The attrition rate of 34 % (32 of 94 couples) among women who completed the study with their husbands was a little higher than in the

original KIM-CHI study at 15-month post-baseline, as 7.7 % [8]. When we included all the women in the study, the attrition rate was 45 % after 2-month post-baseline (61 of 136 women dropped at follow-up, which was much higher than in the original intervention).

Both wives and husbands in the intervention group showed high acceptance of the Web-based program for its usability and user-friendliness (means of 3.81 and 3.83, for wives and husbands, respectively) and of the educational DVD program (3.81 and 3.70 for wives and husbands, respectively) (Table 3). No significant differences in evaluation of the Web site and the DVD were found between the groups and couples.

Discussion

Technology has had a profound effect on the healthcare system. Web-based interventions are a recent strategy explored by researchers who are analyzing their usefulness and impact on patient health and/or behavioral outcomes. Although Web-based interventions show promise in changing health behaviors, it is clear that more research is needed to provide evidence of its benefits.

This study provided preliminary evidence for the effectiveness of educating KAs via the Web to improve their intention to get a mammogram. In addition, among the subgroup of participants (who had not had a mammogram in the previous year), the intervention group had a somewhat greater uptake of mammography between baseline and follow-up than did the control group, while the difference was not statistically significant. It was encouraging to see even a small difference within the very short study time frame of 2-month follow-up. Considering the relatively small sample size, our findings are promising for testing the Web-based study with a larger sample of KAs in the future.

This proposed study is innovative in that it utilizes an already developed and tested KIM-CHI program via a Web-based delivery that is time private for KA couples who may not feel comfortable discussing this subject with others. The Web-based study also has the advantage of flexibility to choose when to participate in the study, compared with the original KIM-CHI, in which couples were required to complete the survey and participate on Sundays after attending a religious service. Further, the Web-based education is cost-effective and can reach many more participants.

The results showed that this complicated Web-based couple-based intervention was successfully tested. Participants did not just respond to the questionnaire and watch the DVD, but they also completed the homework and left a message on our research phone. We could have allowed the participants to email their homework, but we wanted to make sure that the couples really talked about the education and left a message together. The findings of our study could be useful in developing educational programs targeting more than one individual and suggest that it is

Table 3 Percentage of intervention group wives and husbands with agree or strongly agree responses on acceptability items for Web site and DVD

	Agree or strongly agree (%)	
	Wives (<i>n</i> =31)	Husbands (<i>n</i> =34)
Web site acceptability		
I think the Web site is user-friendly	80.7	83.3
I think the Web site gives clear direction	90.3	86.7
I think the Web-based program is a good choice for this type of education	90.3	90.0
I think the Web site is well-designed	58.1	56.6
I am familiar with using a computer	90.3	73.3
I would rather do a written test	16.2	23.3
I have problems with the colors	16.1	13.3
I have problems with the presentation	16.1	20.0
I have problems with the styling	12.9	16.7
Educational DVD acceptability		
I think the messages are interesting	77.4	66.7
I think the messages are credible	86.8	83.4
I think the messages are logical	83.9	80.0
I think the messages are comprehensive	77.4	86.7
I think the messages are personally relevant	93.6	80.0
I think the messages are confusing	19.4	23.3
I think the messages are complete	80.7	73.4
I think the messages are too long	29.0	40.0

possible to develop Web-based health behavior interventions for dyads, including significant others.

Despite the many potential advantages, there were a couple of recruitment and attrition issues impacting the feasibility of a Web-based couple-based intervention. We were not able to recruit enough participants through the two Web sites (KA newspapers) that were well known to KAs. We learned later that although the Web sites are visited by many KAs, these individuals are not necessarily our target population of women aged 40 years and older. Therefore, we added another Web site in the third month of recruitment, solely for married KA women. We found that posting the recruitment banner in a certain place on the Web site, such as a chat room, was more effective than posting it on the main Web page.

The relatively high attrition rate at the 2-month follow-up could have related to the fact that about one quarter of women at baseline did not have their spouses (intervention group, 26%; control group, 35%). However, at follow-up, more than 90% of women responded with their spouses. Therefore, those women who participated without their spouses at baseline were more likely to not participate at follow-up. If we included women who participated with their spouses only, the attrition rate could have been 26% (94 couples at baseline and 70 couples at follow-up). However, the rate is still much higher than that of 7% at the 15-month follow-up in the original KIM-CHI study. Therefore, in the subsequent study, face-

to-face or telephone contact for recruitment or data collection, along with the online intervention, could decrease the attrition rate. We attempted to measure the time and frequency for completing the questionnaire and watching the DVD, but we found that some participants took several hours or days to complete the questionnaire and/or watch the DVD, indicating that just tracking time is not sufficient to measure the time to complete the questionnaire and watch the DVD.

The intervention was well accepted for women and their spouses in the intervention group. However, the least agreed item was "I think the Web site is well-designed." We hope to have a better response on the item when we could have more resources to design the Web site in the future study because the study Web site was built with very limited resources. Another main comment was the DVD was too long. The 30-min DVD could have been too long to watch for the study participants. Dividing up the DVD into smaller sections or decreasing the DVD length itself could be considered in the future study.

Conclusions

Our study successfully demonstrated the possibility of using the Internet to educate KA women and their spouses in the Korean language to improve KA women's mammography screening behaviors. Lessons learned from many aspects of

the study are also valuable in designing future studies with larger sample sizes. Providing more culture-specific and language-specific Web-based education is expected to improve the health disparities for ethnic populations as well as their health-care providers.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no competing interests.

References

1. Miller BA, Chu KC, Hankey BF, Ries LAG (2008) Cancer incidence and mortality patterns among specific Asian and Pacific Islander populations in the U.S. *Cancer Causes Control* 19:227–256
2. Gomez SL, Noone A-M, Lichtensztajn DY et al (2013) Cancer incidence trends among Asian American populations in the United States, 1990–2008. *J Natl Cancer Inst* 105:1096–1110
3. Miller BA, Hankey BF, Thomas TL (2002) Impact of sociodemographic factors, hormone receptor status, and tumor grade on ethnic differences in tumor stage and size for breast cancer in US women. *Am J Epidemiol* 155:534–545
4. Kerlikowske K, Grady D, Rubin SM et al (1995) Efficacy of screening mammography: a meta-analysis. *JAMA J Am Med Assoc* 273:149–154
5. Lee HY, Ju E, Der Vang P, Lundquist M (2010) Breast and cervical cancer screening among Asian American women and Latinas: does race/ethnicity matter? *J Women's Health* 19:1877–1884
6. McCracken M, Olsen M, Chen J, Moon S et al (2007) Cancer incidence, mortality, and associated risk factors among Asian Americans of Chinese, Filipino, Vietnamese, Korean, and Japanese ethnicities. *CA Cancer J Clin* 57:190–205
7. Juon HS, Choi S, Klassen A, Roter D (2006) Impact of breast cancer screening intervention on Korean-American women in Maryland. *Cancer Detect Prev* 30:297–305
8. Lee E, Menon U, Nandy K et al (2014) The effect of a couples intervention to increase breast cancer screening among Korean Americans. *Oncol Nurs Forum* 41(3): E185–E193
9. Kim YH, Sama L (2004) An intervention to increase mammography use by Korean American women. *Oncol Nurs Forum* 31:105–110
10. Moskowitz JM, Kazinets G, Wong JM, Tager IB (2007) “Health is strength”: a community health education program to improve breast and cervical cancer screening among Korean American women in Alameda County, California. *Cancer Detect Prev* 31:173–183
11. Han H-R, Lee H, Kim MT, Kim KB (2009) Tailored lay health worker intervention improves breast cancer screening outcomes in nonadherent Korean-American women. *Health Educ Res* 24:318–329
12. Sadler GR, Beerman PR, Lee K et al (2012) Promoting breast cancer screening among Asian American women: the Asian grocery store-based cancer education program. *J Cancer Educ Off J Am Assoc Cancer Educ* 27:612–617
13. Kim J, Menon U, Wang E, Szalacha L (2010) Assess the effects of culturally relevant intervention on breast cancer knowledge, beliefs, and mammography use among Korean American women. *J Immigr Minor Health* 12:586–597
14. Murray E (2012) Web-based interventions for behavior change and self-management: potential, pitfalls, and progress. *Med* 2.0 1(2): e3. doi:10.2196/med20.1741
15. Shahab L, McEwen A (2009) Online support for smoking cessation: a systematic review of the literature. *Addiction* 104:1792–1804
16. Khadjesari Z, Murray E, Hewitt C et al (2011) Can stand-alone computer-based interventions reduce alcohol consumption? A systematic review. *Addiction* 106:267–282
17. Bailey JV, Murray E, Rait G, et al (2010) Interactive computer-based interventions for sexual health promotion. *Cochrane Database Syst Rev* CD006483. doi: 10.1002/14651858.CD006483.pub2
18. Jennings CA, Vandelanotte C, Caperchione CM, Mummery WK (2014) Effectiveness of a web-based physical activity intervention for adults with Type 2 diabetes—A randomised controlled trial. *Prev Med* 60:33–40
19. Harris J, Felix L, Miners A et al (2011) Adaptive e-learning to improve dietary behaviour: a systematic review and cost-effectiveness analysis. *Health Technol Assess Winch Engl* 15:1–160
20. Spruce LR, Sanford JT (2012) An intervention to change the approach to colorectal cancer screening in primary care. *J Am Acad Nurse Pract* 24(4):167–174
21. Fleisher L, Kandadai V, Keenan E et al (2012) Build it, and will they come? Unexpected findings from a study on a Web-based intervention to improve colorectal cancer screening. *J Health Commun* 17:41–53
22. Weinberg DS, Keenan E, Ruth K et al (2013) A randomized comparison of print and web communication on colorectal cancer screening. *JAMA Intern Med* 173:122–129
23. Wilkes MS, Day FC, Srinivasan M et al (2013) Pairing physician education with patient activation to improve shared decisions in prostate cancer screening: a cluster randomized controlled trial. *Ann Fam Med* 11:324–334
24. Feng B, Srinivasan M, Hoffman JR et al (2013) Physician communication regarding prostate cancer screening: analysis of unannounced standardized patient visits. *Ann Fam Med* 11:315–323
25. Han Y, Williams RD, Harrison RA (2000) Breast cancer screening knowledge, attitudes, and practices among Korean American women. *Oncol Nurs Forum* 27:1585–1591
26. Im EO, Lee EO, Park YS (2002) Korean women's breast cancer experience. *West J Nurs Res* 24:751–765
27. Champion VL, Skinner CS (2008) The health belief model. *Health Behav Health Educ Theory Res Pract* 4:45–65
28. Kleinman A (1980) Patients and healers in the context of culture: an exploration of the borderland between anthropology, medicine, and psychiatry. University of California Press, Berkeley
29. U.S. Preventive Services Task Force (2014) U.S. Preventive Services Task Force (USPSTF): recommendations for Adults. <http://www.uspreventiveservicestaskforce.org/adultrec.htm>. Accessed 19 Mar 2014
30. American Cancer Society (2014) American Cancer Society guidelines for the early detection of cancer. <http://www.cancer.org/healthy/findcancerearly/cancerscreeningguidelines/american-cancer-society-guidelines-for-the-early-detection-of-cancer>