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Acceptability, Satisfaction and Cost of a Model-Based Newsletter for Elders in a Cancer Prevention Adherence Promotion Strategy

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Abstract

Though widely used by business, industry, academia, and social service agencies as a mass communication vehicle, the effectiveness of newsletters has received limited critical review. The sound research base needed to support the use of newsletters in cancer prevention interventions was not found in the literature. This article details the development, design, use and evaluation of a health behavior model-based monthly newsletter for participants in three community-oriented cancer prevention studies. Depending on the extent of behavior change asked of them, participants reported reading 60–100% of the content. Participants in the three different cancer prevention interventions perceived the newsletters to be informative, accurate, and interesting. Costing as little as \$0.36 per participant per issue, this strategy has implications for other types of field studies with similarly educated participants. The adherence-promotion strategy, of which the newsletters were a part, kept the participants in field studies long enough to test the study hypotheses and potentially improve their health, and reduce morbidity and mortality.

Keywords: Adherence; Newsletter; Community-based studies; Health education method.

Introduction

Colon cancer is the second leading cause of cancer death in the United States today, claiming an estimated 60 500 American lives in 1991 [1]. Another 157 500 Americans will likely be diagnosed with colon cancer in 1991 [1]. Nonadherence with preventive screening guidelines is related to late diagnosis and resultant increased mortality [2]. This is not surprising given that one-third of all patients fail to follow their health recommendations [3]. Newsletters appeared to have promise for facilitating adherence. Thus, they were utilized and evaluated in several cancer prevention clinical trials. The purpose of the newsletter evaluation reported here was [1] to assess the participants' readership, interest, satisfaction, and image of the newsletters, and [2] to assess newsletter cost.

Background

Though widely used by business, industry, academia, civic groups and social service agencies as a vehicle of mass communication, newsletters also have excellent potential as a patient education and adherence enhancer. Newsletters, however, have received limited critical review. The small number of newsletter evaluations that have been published in the areas of family relations [4,5], health and nutrition [6–9] and business [10,11] suggest that readers rate newsletters positively. Reader knowledge acquisition, attitude change and behavior modification have been documented.

Newsletters used for public education and/or adherence enhancement should include prior analysis of the target audience, guidance by established theories or models of human behavior, verification of a causal relationship between the messages and the intended goal of the newsletter, established criteria for content selection, and critical evaluation. However, significant evidence for the use of a sound research base for the development and pretesting of newsletters was not found in the literature. After highlighting the key issues of the research literature base in the use of newsletters, this article details the development, design, use and evaluation of a monthly newsletter for participants in three cancer prevention studies from three to twelve months in duration with different interventions. The newsletter not only provided participants with educational information, but also served as a vehicle for adherence enhancement. Topics for the individual articles were selected and timed (issue placement) based on an established model of health behavior rather than intuitively. Factors affecting the practice of preventive behaviors and study adherence were targeted when they were predicted to have the greatest impact. Target audience analysis, pilot testing and post-study evaluation were conducted.

Health-related newsletters

Two prior published studies assessed health-related newsletter effectiveness, but the characteristics of newsletter design, message construction, or topic selection were not researched. Neither study focussed on cancer specifically. In the most comprehensive evaluation of newsletter impact to date, overwhelming readership and utilization of a monthly, general health information newsletter was reported [6]. Forty-seven percent of the 48.8% sample (887 of 1817 recipients) who returned the evaluation form reported that the newsletter kept them apprised of current health issues. An analysis of reported action taken by the readers revealed the “the most frequent behavioral effects were passing the newsletter information to others (60.8%), recommending programs listed in the newsletter to others (39.2%), attending one of the programs of the health information center which produced the newsletter (35.2%), and recommending the center to others (27.2%)” (p. 273). Though not directly related to a change in health status, these behaviors may reflect an indirect relationship by an increased awareness and acceptance of health information. In a randomized trial of self-management promotion among 589 adult arthritics, a bimonthly newsletter unexpectedly did not provide significantly improved patient outcomes as the sole reinforcement to the original self-management course [12].

Other health education mailings

Although technically not newsletters by definition, mailed health education pamphlets and other written materials (mailed singularly or in a series) have also been used to disseminate health and nutrition information to the public. Some of these comparable media have been scrutinized. One readership study noted that as the Canadian mothers’ educational level, socioeconomic status, and community participation increased, readership of 16 monthly nutrition and health education pamphlets increased [8]. In-home

evaluation interviews revealed that 86% of the women were aware of the pamphlet series which was mailed with their monthly family allowance check. Seventy-five percent of the recipients read the pamphlets.

In contrast, a Finnish telephone interview study of 256 women from randomly selected households showed higher readership in less educated, 20–49-year-old women with smaller households and fewer children ($P < 0.05$) [7]. Eighty-one percent of the housewives who received the pamphlet read it “partly” or “entirely”. Eighty-nine percent of the mailed leaflets and 71% of the newspaper-inserted leaflets were read to some degree. The one-time-only nutrition leaflet containing dietary recommendations such as decrease fat and increase fruit and vegetable intake was disseminated better through mail ($P < 0.01$) and newspaper inserts ($P < 0.05$) than when carried home by a school child.

Persons who received cholesterol-reducing information via a structured, sequential format had greater knowledge acquisition than those who received the same material via one bulk mailing [9]. However, participants’ knowledge increase was demonstrated only when the mailings were spaced one month or less apart. In the randomized study of 940 general consumers, the typical participant was female, white, under 50 years old, college educated, and living with one or more family members who had a history of cardiovascular disease. Twenty-five percent of the respondents had a personal history of heart disease.

Family relations/parent education newsletters

Two studies substantiated the effectiveness of providing increased knowledge and support through newsletters. In one study [4], ten monthly newsletters about prenatal care, infant development, nutrition, parenting, and baby care were targeted (by baby age) to new parents in nineteen states. Ninety-eight percent of the 880 recipients reported that the newsletters helped them learn more about

their baby’s growth, develop a better relationship with their baby, boost their parental self-confidence, and fulfill personal needs. However, actual effectiveness estimates were not reported.

In a study of effectiveness of a newsletter for single parents in a Northeastern state [5], the materials were rated most useful by the white or Hispanic readers who had the fewest and the older children, had been married, and were currently working outside the home. However, education and income levels did not influence how favorably readers evaluated the newsletters. Respondents to the mailed or telephone evaluation reported that the newsletter was either “somewhat helpful” (54%) or “very helpful” (46%). From 69 to 83% used the information in some way.

Overall, though not research-driven, health-related newsletters and other printed media (e.g., pamphlets) were effective at positively influencing readership, knowledge, and satisfaction in readers. The effect of the health messages on actual behavior was less clear. Newsletter use in cancer prevention trials was not documented. Evidence of evaluation but little a priori research was found in the newsletter literature to guide newsletter use in the cancer prevention field studies reported here. Pilot testing and model-based planning were not typically utilized; however, they are features of the cancer prevention studies. One review reported using audience analysis; two reviews reported using objective criteria for article topic selection, consistent with the model base for content in the cancer studies. Few of the reviews suggested a formal, planned connection between the health messages incorporated into the newsletters and the intended goal of the vehicle. Post hoc evaluations, however, were administered and reported in each review. Most evaluations focused on increased readership as the targeted outcome. One newsletter evaluated effectiveness in terms of behavioral

outcomes; adherence is the behavioral outcome in the cancer prevention studies.

Methods

The clinical trials

Monthly newsletters were the main component of a comprehensive adherence enhancement program within each of three clinical trials in the Colon Cancer Prevention Project [13,14], a large nationally funded chemoprevention project conducted in two southwestern metropolitan areas. The major scientific objective of the first clinical trial was to determine whether daily consumption of wheat bran fiber cereal and calcium tablets for 12 months was protective against colorectal cancer in colon polyp patients. A high and low dose of fiber and calcium were used. The second trial was similar but asked resected colon cancer patients to eat the high doses of supplemental wheat bran fiber only for two months. The endpoint of these two studies was the reduction of colon cell growth rates as measured by tritiated thymidine uptake. The third trial, a dose-response study, asked colon polyp patients to take piroxicam, a nonsteroidal anti-inflammatory drug (doses varied), once daily for four months. The different purposes of the trials warranted different sample sizes and lengths.

The participants

The wheat bran fiber and calcium trial was conducted in a small affluent retirement suburb of a major southwestern metropolitan area. The recruitment goal for this study was 100 participants. Of the 144 people who signed consent, 95 completed the entire twelve-month period on study. The mean age of the 144 participants recruited in this study was 67 of which 64% were male, 36% female. Sixty-one percent of the participants reported that they had at least some college education. All but 25% of the participants were married at the time of their participation, and most (82.8%) reported being unemployed either due to retirement or disability.

The piroxicam trial was conducted in a smaller community in the same southwestern state. Because this was a smaller study lasting only four months, the recruitment goal was 40 participants. Of the 57 people who signed consent, 40 completed as planned. The mean age of this sample was 65 of which 67% were male and 33% female. Sixty-three percent of the participants reported having at least some college education. Seventy-nine percent were married at the time of their participation, and 80% were unemployed due to retirement or disability.

The wheat bran fiber only trial was conducted in both of the above mentioned locations. Seventeen of twenty recruited participants completed the two-month trial. The sample characteristics of this smaller study were similar to those of the wheat bran fiber and calcium trial, with no significant differences.

The adherence protocol

The overall objective of the project's adherence enhancement program and newsletter strategy was to keep participants on study long enough (i.e., to completion) to test the clinical hypotheses. Adherence, an essential element in clinical studies, is considered to be a negotiated agreement for a behavioral change between the caregiver and study participant in which the participant has an active role in doing what needs to be done to enhance health or the accomplishment of treatment goals [15,16].

The adherence intervention for all three studies included monthly newsletters, appointment reminder postcards, calendars, and knowledge and self-efficacy enhancement. A more comprehensive adherence program was designed for two of the more complex studies. This intervention also incorporated follow-up letters, discussion of individual adherence detractors (assessed by a model-based questionnaire), negotiation of solutions to adherence problems, and goal-setting contracts which served to promote participant interest, adherence and retention. All received newslet-

ters, but not all participants received all enhancers. The adherence enhancement program was based on need. Marginal adherers received more than good adherers; poor adherers received more than marginal adherers. The philosophy driving the adherence intervention was one of enhancing self-care behaviors. Marginal adherers were encouraged to generate the solutions to their adherence problems with the guidance of the clinical coordinator. Poor adherers were provided with solutions and skills to overcome their adherence obstacles. Both adherence with specific study-related tasks and self-care measures for cancer prevention were featured in the adherence intervention. Pilot-testing with a similar sample of older citizens confirmed the acceptability of the strategy [17].

The adherence model

By advancing understanding of the many variables that influence adherence to a particular regimen, whether it be for acute illness, chronic illness or prevention, several prominent behavioral and social scientists have developed models for predicting and enhancing adherence [18–20]. To address deficiencies in these models, the Health Behavior in Cancer Prevention Model (HBCP) was developed [21]. The HBCP model, which guided newsletter development and the adherence assessment enhancement program for the Colon Cancer Prevention Project, was based on the combination of several health behavior/health belief models with the addition of essential non-behavioral adherence predictors such as objective health status. The HBCP model incorporates a causal modeling strategy which features precise and accurate definitions in five stages with the direction of relationships specified [22,23]. For example, knowledge (about colon cancer) is predicted to impact adherence indirectly by increasing perceived health threat, which in turn impacts adherence directly in a positive direction (i.e., as perceived health threat increases, adherence increases).

The HBCP model was used by the Colon Cancer Prevention Project to provide a sound scientific basis for newsletter topics and the ideal timing of the articles throughout the issues. The model identifies topics (variables) found to be important in influencing individuals' self-care and adherence including: (a) their state of emotional and physical health, (b) the social support they receive, (c) current knowledge about their illness (colon cancer in this case), (d) their satisfaction with the research staff, (e) how susceptible they perceive they are to getting colon cancer, (f) how severe they think the impact would be if they developed colon cancer, (g) what benefits they would receive by participating in the study (to them and others), (h) what the barriers would be to participating (e.g., inconvenience, discomfort, loss of favorite foods), (i) their ability (self-efficacy) to perform the study activities, (j) the effectiveness of the experimental treatment, (k) the degree to which they feel responsible for their own health (locus of control in terms of chance, self-control, and provider control), and (l) how much they value their health [24–32].

Newsletter design

Published evaluations of health-related newsletters have focused on post hoc measurements of newsletter readership, reader satisfaction and subjective assessments of impact only. Very little has been mentioned about how the newsletters were designed, on what basis article topics were chosen, or what directed article placement, repetition or frequency. Whether the messages communicated by newsletters were designed based on (1) preliminary research of the target audience, (2) established theories or models of knowledge, attitude and behavior change, or (3) the verified causal relationship between the messages and the intended outcome/purpose of the communicate (e.g., modify dietary patterns, pursue preventative health screening) is not apparent.

The colon cancer prevention newsletters

were model-directed. Each variable in the HBCP model determined the time(s) in the study when each topic was predicted to have the greatest impact on promoting adherence and self-care. All predictions were literature-based and well-founded [33]. For example, susceptibility to colon cancer was targeted early to increase participants' awareness of their vulnerability, thus reinforcing the necessity of compliant participation. Barriers to self-care and adherence needed to be identified before the clinical trial began [34]. In this project, the barriers were identified and addressed in the newsletter just ahead of the time when the participants were expected to encounter them (e.g., helpful ideas for traveling on vacation with the fiber supplement). The need for social support and encouragement from others increases as the novelty of the field trial fades and participation seems routine and endless. This often occurs after about six months on a given regimen [35]. Thus, for example, the social support variable was targeted between study months four and nine in the Fiber and Calcium trial. Table 1 outlines variable placement for each issue of this projects' newsletters. Self-efficacy (the

perceived ability to perform the intervention) was targeted continually throughout the studies to teach participants skills for performing the study requirements (e.g., fiber supplement recipes) and thus boost their confidence.

In terms of content, the newsletters were designed for adults at increased, medically documented risk of developing colorectal cancer. Stylistically, the newsletters were designed specifically for the documented audience profile [36]. The language, type size, fonts, paper weight, paper colors and art used in each issue of the newsletter were pilot tested before inclusion via in-depth interviews with a recovered colon cancer patient representative of the target audience and feedback sessions with the project team. Because of the high educational level of the study population, the language used in the newsletter could be more sophisticated than an educational brochure for the general public, for example. Medical terms were not avoided. The typeface sizes chosen were larger than average and frequently bolded to aid older individuals who may have a visual weakness. Bright paper colors, and an overall professional, newspaper-style format were utilized to positively attract the eye of the older reader and promote readership.

Table 1. Frequency and timing (by issue) of Health Behavior in Cancer Prevention Model (HBCP) variable coverage in fiber and calcium project newsletters.

	Issue number (<i>N</i> = 11)
Barriers	2, 6, 7, 10
Benefits	1, 2, 3, 4, 5, 8, 11
Efficacy	2-11
Knowledge	1-11 (all)
Health locus of control	3, 5, 6, 10
Health status	3, 5, 6, 10, 11
Health value orientation	5, 11
Satisfaction with client/ provider relationship	1, 4, 5, 6, 11
Severity	2, 10, 11
Social support	1, 2, 4, 5, 8, 9
Susceptibility	1, 2, 4, 9, 10

Results

Newsletter evaluation

Participants from each of the three trials evaluated the newsletters by completing a self-administered questionnaire. Readers responded to questions about their patterns of readership, their perceived image of the newsletter overall, and their interest in and satisfaction with the featured articles. Seventy-three percent or 22 of the 30 piroxicam trial participants responded to the evaluation questionnaire; 76% or 13 of the 17 wheat bran fiber trial participants who were polled responded; 98.9% or 94 of the 95 fiber and calcium trial participants who completed the

trial responded. Due to the medical eligibility criteria for study participation, the participant sample in the studies was extremely homogeneous. Thus, demographic correlations are not reported separately from the population in this analysis.

Readership. In terms of readership, 60% (wheat bran fiber), 86% (fiber and calcium) and 91% (piroxicam) of the respondents read at least half of the issues, and 40% (wheat bran fiber), 64% (fiber and calcium) and 76% (piroxicam) read over three-quarters of the content of the newsletters offered to them (Table 2). The more rigorous, concentrated, and complex the medical regimen, the higher the readership of the newsletter. It should be noted that the lengths and behavior change requirements of the trials varied. The wheat bran fiber trial was 3 months long, the piroxicam trial was 4 months long, and the fiber and calcium trial was 12 months long. Wheat bran fiber trial participants were required to undergo two sigmoidoscopy (bowel visualization) examinations with multiple rectal biopsies, and blood and urine collections. Fiber and calcium trial participants had three sigmoidoscopies with multiple rectal biopsies, four blood and urine collections, three fecal collections, and three bone density scans. Piroxicam trial participants had four sigmoidoscopies with multiple rectal biopsies, eight blood sample collections, seven urine sample collections, eight fecal occult blood tests, and two bone density scans.

When respondents were asked to indicate the degree to which they read the various articles and features in the newsletter, on a scale of 1–5 (never to always), on average people read each feature “some” or “most” of the time (mean = 3.1–4.5). This readership is consistent with percentages reported in published investigations. The Bush and Sabry study indicated that 75% of recipients read the health pamphlets “sometimes” or “always” [8]. Seibold found that 97% of their readers described themselves as “usual” readers [6]. Most of the 48.8% sample of 29–89-year-old

readers were white women who were high school graduates, married with children and employed, relatively similar to the women in the sample reported here. In a third investigation, 81% of recipients read the health leaflet “partly” or “entirely” [7].

Using a model-based approach contributed to providing meaningful material interesting to the participants. Presenting the topics for each newsletter issue by time period based on the model was associated with an overall high adherence level of 95% to the wheat bran fiber intervention, for example.

Interest. Participants indicated their level of interest in the various features and articles in the newsletter using a scale of 1–5 (extremely uninterested through extremely interested; mean = 3.0–4.6). Table 2 summarizes their interest levels across the trials. All of the ratings were in the “interested” range of the scale. Cancer prevention articles were considered to be the most interesting feature across all three study populations. Other published investigations did not report readers’ interest levels.

Satisfaction. Participants rated their satisfaction with the newsletter on a scale from 1–5 (extremely dissatisfied to extremely satisfied; mean = 3.3–4.5). As indicated in Table 2, satisfaction levels were quite high. Articles on cancer prevention, cancer risk, general health care information, support and encouragement, and study personnel were most satisfying to readers overall. Other investigations did not evaluate readers’ satisfaction with the newsletter.

Image. As illustrated in Table 3, participants’ overall impressions of the newsletter’s image were that it was informative (100%), useful (95–100%), accurate (98–100%), complete (93–95%), current (98–100%), attractive (80–100%), well formatted (80–97%), clear (98–100%) and interesting (97–100%). Other investigations did not report readers’ perceptions of newsletter image.

Table 2. Patients' evaluations of newsletter readership, interest and satisfaction.

Feature topic	Readership ^a			Interest ^a			Satisfaction ^a		
	Fiber/cal (n = 84-94) Avg. (SD) ^b	Piroxicam (n = 20-22) Avg. (SD)	WB fiber (n = 10-11) Avg. (SD)	Fiber/cal (n = 87-91) Avg. (SD)	Piroxicam (n = 21-22) Avg. (SD)	WB Fiber (n = 8-9) Avg. (SD)	Fib/cal (n = 78-81) Avg. (SD)	Piroxicam (n = 20-22) Avg. (SD)	WB Fiber (n = 7) Avg. (SD)
Cancer prevention	4.3 (1.2)	4.5 (1.1)	4.0 (1.7)	4.5 (0.72)	4.6 (0.88)	4.4 (0.88)	4.4 (0.71)	4.5 (0.64)	4.1 (0.69)
Fiber recipes	3.4 (1.5)	NA	3.1 (1.9)	3.3 (1.3)	NA	3.0 (1.5)	3.5 (1.1)	NA	3.3 (1.4)
Study procedures	3.6 (1.6)	4.4 (1.1)	3.2 (1.9)	3.9 (1.1)	4.4 (0.72)	3.8 (0.88)	3.8 (0.86)	4.3 (0.79)	3.7 (0.82)
Healthy wizard	3.1 (1.9)	4.3 (1.2)	3.4 (2.0)	3.6 (1.2)	4.1 (0.68)	4.0 (0.76)	3.8 (1.0)	4.2 (0.72)	4.0 (0.82)
Cancer risk news	4.0 (1.4)	4.4 (1.1)	4.0 (1.7)	4.2 (0.92)	4.4 (0.72)	4.2 (0.83)	4.2 (0.77)	4.4 (0.63)	4.1 (0.69)
Vacation tips	3.2 (1.8)	NA	NA	3.4 (1.2)	NA	NA	3.6 (0.87)	NA	NA
Screening info	3.8 (1.5)	4.3 (1.2)	NA	4.1 (0.96)	4.4 (0.63)	NA	4.1 (0.78)	4.5 (0.64)	NA
General health	4.1 (1.2)	4.3 (1.2)	3.3 (1.6)	4.3 (0.84)	4.2 (0.54)	3.9 (0.93)	4.3 (0.71)	4.3 (0.70)	4.0 (0.81)
Study personnel	3.3 (1.7)	4.0 (1.5)	3.5 (2.1)	3.7 (1.1)	4.1 (0.77)	4.1 (0.78)	3.9 (0.93)	4.3 (0.76)	4.4 (0.78)
Social support	3.6 (1.6)	3.8 (1.4)	3.1 (2.0)	4.0 (1.0)	4.0 (1.0)	4.0 (0.87)	4.1 (0.76)	4.1 (0.72)	4.0 (0.82)

^aBased on scale of 1 (low) to 5 (high).^bSD, sample standard deviation.

Table 3. Patients' newsletter image ratings.

Image item	Percent agreeing		
	Piroxicam (n = 16-21)	Fiber/ Calcium (n = 63-81)	Wheat bran fiber (n = 4-7)
Informative	100	100	100
Useful	95	99	100
Accurate	100	98	100
Complete	93	95	100
Current	100	98	100
Attactive	100	95	80
Formatted well	94	97	80
Clear	100	98	100
Interesting	100	97	100

Costs

An attractive, quality newsletter can be produced and disseminated relatively inexpensively with the appropriate computer equipment and software. The Colon Cancer Prevention Project's newsletters were designed and produced in-house by two research staff members using an IBM-XT personal computer with an installed graphics card, a letter-quality printer, and a standard desk-top publishing program. Other than general equipment, supplies (e.g., paper for original copies, printer ribbons) and staff time, the only additional expenses were for photocopying and postage. By trial, the newsletters cost \$0.60 (piroxicam trial), \$0.86 (wheat bran fiber trial) and \$1.65 (fiber and calcium trial) per participant to photocopy including quality colored paper. This translates into costs of \$0.15 (piroxicam trial), \$0.29 (wheat bran fiber trial), and \$0.14 (fiber and calcium trial) per issue. All but the first issue of the newsletter were mailed to study participants' homes to supplement and reinforce contact with the project between monthly office visits. Had the newsletters not been mailed to study participants, they could have been produced for

as little as \$1.33 per person. Taking the expense of postage into account, the newsletters actually cost \$3.29 per person to produce and disseminate overall. Costs per trial ranged from \$1.35 (piroxicam) to \$1.93 (wheat bran fiber) to \$4.15 (fiber and calcium) per person.

Discussion

Available literature was found to document mode and pattern of dissemination, but was silent about issues such as timing of specific content for best effect. The practical implications found in this study are outlined in Table 4. These studies used a model base for targeting a parsimonious set of specific variables and for identifying the timing of each newsletter topic. The newsletters were designed to increase knowledge and perceived benefits of being on the study. Both of these features have been associated with increased adherence in previous work [3]. High adherence levels were associated with the adherence intervention featuring newsletters as a main element.

Table 4. Practice implications.

1	The newsletter was based on a conceptual model which: (a) provided direction for timing of each topic (b) targeted a parsimonious set of high-priority topics
2.	Newsletter dissemination coincided with scheduled contacts
3.	Participants, all of whom received newsletters, adhered well to cancer prevention treatments
4.	Newsletters were: (a) feasible (b) cost-effective (c) well received by elders
5.	The newsletter concept is adaptable to other community studies
6.	Age levels need to be taken into account in design of newsletters

Respondents reported good to excellent readership depending on the medical demands of the clinical trial, in excess of those reported by the Siebold et al. [6] study. Very favorable image accompanied high interest and satisfaction levels across three different cancer prevention interventions ranging from three to twelve months in duration. A cost as low as \$0.36 per participant per issue (all trials combined) was well worth the newsletter's contribution to the adherence outcome. These findings were consistent with those of a recent investigation which found that women who perceived the breast cancer education materials they received via mail as useful, interesting, attractive, and calming were more likely to comply with a breast cancer screening program [37]. This study clearly supports the feasible, effective, and cost-efficient strategy with community-based older people for use of newsletters in field trials: thorough target population research, HBCP model-based newsletter topics and timing, and approximately one-month dissemination intervals throughout the 3–12-month cancer prevention field trials reported here. Consistent with earlier work [7], this investigation clearly supports the inclusion of newsletters as part of a larger informational or adherence-enhancing program targeted toward patient audiences who are concurrently receiving message reinforcement through interpersonal channels, such as clinical staff in clinical or research settings.

Current findings need to be replicated and causal links between the newsletter intervention and specific adherence levels need to be identified. For these purposes a trial needs to be conducted with more representative groups in terms of age, education, and income in which participants are randomized to receiving the newsletters or not. However, this cost-effective strategy has implications for other types of field trials with similarly educated participants. The adherence-promotion strategy, of which the newsletters were a part, was associated with keeping participants in field

trials long enough to test the study hypotheses and to enhance their ability to potentially improve their health, and reduce morbidity and mortality [39].

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