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Tailored telephone counseling to improve adherence to follow-up regimens after an abnormal pap smear among minority, underserved women

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Abstract

Objective—The present study explored the impact of a tailored telephone counseling intervention on increasing follow-up adherence after an abnormal Pap smear result among low-income, minority women, which may reduce cervical cancer disparity.

Methods—Participants ($N = 211$) were randomly assigned to receive: (1) a telephone reminder that included an assessment of barriers to adherence, as well as counseling tailored to the barriers elicited; (2) telephone reminder and barriers assessment, followed by a mailed home tailored barriers print brochure; or (3) enhanced standard care comprising telephone reminder and barriers assessment. Assessments were obtained at initial contact and 1-week later, as well as at 6- and 12-months after the initial colposcopy.

Results—The telephone counseling group showed greater adherence to follow-up recommendations than did the combined other two groups ($p < 0.05$). For the initial colposcopy, tailored telephone barriers counseling was more effective among women with a high school education or less.

Conclusion—Tailored telephone barriers counseling improves adherence to initial colposcopy, as well as to longer-term medical follow-up, among low-income, inner-city women.

Practice Implications—Dissemination of barriers counseling into ongoing telephone reminder calls and contacts may decrease disparities in cancer outcomes, especially among women with less than postsecondary education.

Keywords

Cervical cancer screening; Follow up adherence; Tailored counseling

1. Introduction

In 2009, 12,357 women were diagnosed with cervical cancer, and 3909 of them died from this disease in the United States [1]. Women of racial and ethnic minorities suffer the highest incidence rates in the US, and therefore bear a disproportionate burden of the disease [2]. Persistent infection with the human papillomavirus (HPV) is a prerequisite for the development of cervical cancer and its precursor, cervical intraepithelial neoplasia 3 (CIN 3). The prevalence of HPV infection is high, with minority race/ethnicity, low education, and low income being associated with substantially higher prevalence [3–6].

Invasive cervical cancer in the US has virtually been eradicated by the successes attributable to the well-established early screening test, the Pap smear [7]. There are about 55 million Pap tests performed each year in the US; approximately 3.5 million (~6.4%) are abnormal and require medical follow-up [8–12]. Although cervical cancer is a preventable cancer, adherence to colposcopy and follow-up recommendations is less than optimal, with the lowest adherence rates occurring among low-income minority groups [13–17], generally in the 30–40% range [17], as well as among women who are younger and less educated [18,19]. The significantly lower adherence rates among underserved women probably contribute to the fact that mortality from cervical cancer among African-American women is almost twice that among Caucasian women [20].

The Cognitive-Social Health Information Processing (C-SHIP) model provides an overarching conceptual framework for delineating cognitive, affective, and self-regulatory barriers to adherence [17,21–23]. In particular, prior research suggests that adherence is undermined by a lack of understanding of the meaning of a Pap smear test result, inaccurate risk perceptions and expectations, and/or lack of coping competences for managing anxiety and enacting planning strategies [17,21–23]. In addition to cognitive-affective barriers, socio-demographic barriers (e.g. education) have also been found [24–27].

A growing body of literature suggests that health communication interventions, tailored to these barriers, are effective in increasing adherence among low-income populations, providing a promising avenue to reduce health disparities in cervical cancer [9,28–31]. Delivering tailored messages via telephone has the advantage of building a personal connection that can assess and address barriers in a direct, dynamic, and interactive format, thereby facilitating patient support and navigation [4,17,19,21,32,33]. Our prior work shows that tailored telephone counseling significantly improves adherence to the initial colposcopy appointment [17], as well as to a rescheduled colposcopy appointment among those who missed their first appointment [22]. There is also some evidence that print materials, which provide psycho-education and cues to action, are easy to compile and distribute to hard-to-reach populations, can be an effective channel of delivery [16,34–37].

In the present study, we build on these findings by directly comparing telephone counseling to print materials, as well as to an enhanced standard care comparison group that received written notification of the abnormal Pap test result, a telephone appointment reminder, and a telephone barriers assessment. We hypothesized that low-income, inner-city women who received initial telephone counseling call tailored to their cognitive-affective profile of barriers would display the highest adherence rates, the tailored print counseling group would display moderate adherence rates, and the enhanced standard care group would display the lowest rates. We also explored whether tailored telephone counseling would be most effective for women with less than post-secondary education, since lower levels of education are associated with common cognitive barriers such as lack of understanding of the meaning of an abnormal Pap test result [17,22–24,32,38,39].

2. Methods

2.1. Setting and design

This study was approved by the Institutional Review Boards of Fox Chase Cancer Center (FCCC) and Temple University Hospital (TUH), where participants were recruited. The study utilized a prospective randomized controlled design (clinicaltrials.gov registration number NCT01561326). There were three arms (tailored telephone, tailored print, and enhanced standard care), stratified by race/ethnicity (Black, Caucasian, Hispanic, with balanced randomization [1:1:1]).

2.2. Participants

Participants were recruited from May, 2006 through June, 2010 from the Temple University School of Medicine Women's Care Center Colposcopy Clinic in North Philadelphia, Pennsylvania, which serves predominately low-income African-American and Latino women. Potential participants were patients scheduled for a colposcopy due to an initial abnormal Pap smear identified by chart review conducted by an on-site research nurse. Patients were excluded from the study if they were younger than 18 years old, unable to communicate readily in English, had a history of malignancy, had current evidence of invasive carcinoma of the cervix or another life-threatening medical condition, or displayed symptoms of severe cognitive confusion.

2.3. Measures

2.3.1. Background variables—Demographic variables assessed included level of education, age, race, ethnicity, marital and employment status, and household income. The socio-demographic characteristics of the final study participants in each of the study groups are presented in Table 1.

2.3.2. Barriers to adherence—Barriers to adherence were assessed by a 23-item author-constructed questionnaire based on our previous work and formative evaluation [17,21–23,40]. The development of the cognitive-affective barriers instrument was guided by the constructs delineated by the Cognitive-Social Health Information Processing (C-SHIP) model, including: (1) self-perceptions of cervical risk; (2) beliefs and expectations about the utility of cancer prevention and treatment; (3) cancer-relevant affective and emotional states; (4) cancer-relevant values and goals; and (5) self-regulatory competencies and skills for generating and maintaining goal-oriented health-protective behaviors and for managing cancer risk-related distress [17,21–23,40]. The items were rated by participants on a Likert scale from 1 (not at all) to 5 (extremely) that indicated the importance of each barrier to the participant. Responses to this questionnaire were used to generate the tailored counseling messages for participants in the telephone counseling and print mail-home brochure groups. The specific profiles of barriers identified are being reported in a separate manuscript for ease of communication and nature of study focus [41].

2.3.3. Adherence outcomes—According to the consensus guidelines at the time of the study, women who received an abnormal Pap smear were recommended for initial colposcopy, with repeat Pap tests at 6- and 12-months over the course of the next year. Adherence to the initial diagnostic colposcopy was measured by clinical chart reviews at 1-week postcolposcopy. Patients were considered adherent if they attended their initial appointment or rescheduled the appointment to another date that was within three months of their original appointment date. Patients who did not attend the initial colposcopy appointment or did not reschedule an appointment within three months were still included in the longitudinal follow-up assessments but were considered non-adherent. At the time of colposcopy, if a cervical lesion was identified, it was biopsied. Patients without lesions, or

with CIN 1 on biopsy, were asked to return for follow-up in six months interval until two consecutive normal Pap test results were obtained [42,43]. Patients with CIN 2 or 3 on biopsy were scheduled for treatment within 6–8 weeks. Treatment included cryosurgery, laser vaporization or excision of the cervical transformation zone. After treatment, patients were asked to return for follow-up at 6 months intervals until they received two consecutive normal evaluations consisting of Pap smear and colposcopy. Adherence to the 6- and 12-months medical follow-up recommendations were assessed by both medical chart reviews and self-report at 9- and 15-months post-initial colposcopy to allow for data collection for the 6- and 12-month follow ups. We primarily used chart review data for the adherence measure, but when unavailable, self-reported adherence was used. The 6-month adherence data consisted of 61.3% chart review and 38.7% self-report data; at 12-month, 54.9% were chart review and 45.1% self-report.

2.4. Procedure

2.4.1. Recruitment and randomization—Patients with abnormal Pap smears were sent a notification letter informing them of their Pap smear results and the need to follow-up with a diagnostic colposcopy, a scheduled appointment date, and clinic contact numbers. The TUH research nurse reviewed the Colposcopy Clinic schedules and identified eligible patients. Approximately 2–4 weeks prior to the initial colposcopy appointment, eligible patients were contacted by the TUH research nurse by telephone. A maximum of 20 attempts were made during both day and evening hours. Upon contact, the patient's upcoming colposcopy appointment was confirmed. Then, the research nurse informed the patient about this study opportunity and invited her to be transferred to a FCCC study staff to learn more. Patients who provided verbal HIPAA authorization and informed consent were then telephonically transferred to an FCCC study staff member. This immediate and interactive telephonic transfer process helped facilitate communication between clinic and research staff. For patients who were transferred, study staff then provided further information about the study and confirmed verbal consent. These patients were then sent a written informed consent document in the mail for them to sign and return in a pre-stamped envelope. During the same telephone call, verbally consenting participants were administered the baseline assessment, as well as the barriers assessment. They were then randomized to one of the three study conditions (enhanced standard care and two intervention conditions) via a computerized randomization algorithm.

2.4.2. Intervention delivery: computer-assisted telephone interview (CATI) system—The CATI system was utilized to standardize and facilitate the baseline assessment, barriers assessment, as well as the administration of the group protocols. During the first telephone contact, the interviewers followed scripted questions/prompts that were displayed on the computer screen and participants' responses were immediately entered into the database. The CATI system stored all counseling messages of the message library and, based on participants' responses to the barriers questionnaire, automatically identified the tailored counseling messages to be delivered. All staff underwent extensive training and ongoing supervision for quality assurance.

2.4.3. Study conditions

Enhanced standard care: Participants who were randomized to this study arm received a notification letter from TUH and a telephone reminder of the appointment about 2–4 weeks before the appointment. Participants were also administered the baseline and C-SHIP-based barriers assessment during this telephone contact.

Cognitive-affective tailored interventions: Participants randomized to either of the two intervention conditions received Enhanced Standard Care as described above *and a*

cognitive-affective barriers intervention. Participants who were randomized to the Tailored Telephone Intervention were administered the initial telephone-delivered barriers counseling protocol, immediately after the baseline and barriers assessments. Participants randomized to the Tailored Print Intervention were mailed the corresponding barriers counseling protocol in a print brochure, immediately after the baseline assessment.

Drawing on our previous work [17,22], we conducted a formative evaluation of the cognitive-affective message library. The intervention messages were designed to counsel participants regarding their personal profiles of barriers to adherence, e.g., reduce (or increase) perceived vulnerability, provide accurate expectancies and beliefs, address relevant values and goals, address affect that was too high or too low (e.g., overly worried or not concerned at all), and offer plans and strategies to enhance self-regulation to enable the participant to keep her colposcopy appointment. The acceptability, appeal and appropriateness of the C-SHIP-based barriers messages were refined through expert review (the panel of experts consisted of two behavioral scientists, an oncologist specializing in cervical cancer, and one health communication specialist), as well as focus groups testing among members of the target population ($n = 40$). After these review processes, a revised final message library was generated (see Table 2).

Tailored telephone intervention: The CATI system automatically identified the two barriers with the highest ratings in each of the five C-SHIP-based barrier categories, ranked them in order of importance based on the participant's ratings, retrieved the counseling messages that addressed the target barriers, and displayed them in the relevant order of importance on the staff member's computer screen during the call. To ensure the accuracy of the telephone counseling messages, a sub-set (15%) of the CATI System recordings of the telephone-administered counseling sessions was transcribed and found to indicate intervention integrity.

Tailored print intervention: Participants were prompted to look for information in the mail within the next 5 days that was relevant to their appointment and were asked to confirm the best address for receiving the mail-home print brochure. The CATI system produced an automated printing of the tailored messages in the same format as in the tailored telephone group. The print messages were presented in a high quality, pocket sized, color brochure that included culturally sensitive graphic elements. The brochure was produced and mailed the day of the baseline telephone contact. A systematic review of the brochures sent to the first 20 participants was conducted to check for accurate content (i.e., that it corresponded to the participants' barrier profiles) and appropriate formatting. After this initial quality control review, systematic review at the end of the study conducted on a randomly selected sub-set (15%) of the tailored print brochures that were sent also showed compliance with the tailoring algorithm.

2.5. Statistical analyses

Demographics and adherence rates were compared for the three groups at each assessment time point. These comparisons were made by Chi-square test, or analysis of variance (ANOVA), depending on whether the variable under consideration was nominal, ordinal or continuous, respectively. The Enhanced Standard Care and Tailored Print Intervention groups were combined because their adherence rates were not statistically different (initial colposcopy: 65.75% vs. 61.84%, $p > 0.05$; 6-month follow-up: 60.98% vs. 50.00%, $p > 0.05$; 12-month follow-up: 53.85% vs. 58.62%, $p > 0.05$; see more details in Table 3), which was consistent with theoretical reasons (i.e., the hypothesized superior efficacy of the Tailored Telephone Intervention). The Tailored Telephone Intervention group was then compared to the combined group. Adherence to initial colposcopy and subsequent medical

follow-up recommendations at 6- and 12-months were summarized by group and compared at each time point using logistic regression. Additionally, due to the smaller sample size of the groups at each time point than originally planned, generalized estimation equation (GEE) model in the context of logistic regression was used to explore study condition effect across all assessment time points [44]. The discrete time points and intervention conditions were included as fixed effects. A correlation matrix of observations from the same participant at three follow-up time points was used to account for the dependency of these data. This correlation matrix was assumed to be unstructured to allow different correlations between observations at any two different points and more flexibility in model fitting. The group effect across the three time points was tested using the Wald test.

3. Results

3.1. Participant flow

Fig. 1 summarizes study accrual and randomization. During the 57 months of the study, 425 patients were screened, 343 were eligible, 324 provided verbal consent, and written consent was obtained from 210 who participated in the study (participation rate: 61.22%). In all, 47.1% were lost to follow up at 6 months, and 13.8% participants were lost at 12 months. The number of patients with CIN-2 or 3 on biopsy was 30 (13.4%), and they were all included in the post-colposcopy follow-ups. Participants who completed the study did not differ significantly from those who did not in terms of baseline demographics, including age, race/ethnicity, education, marital status, and employment status (p 's > 0.05).

3.2. Participant characteristics

The sample was representative of the low socio-economic, underserved population in which the highest incidence rates and the lowest adherence rates to follow-up after abnormal Pap smear have been observed [13–17]. Regarding barriers to adherence, the most frequently endorsed barriers were found to be in the risk perception (encoding) category (67.72%), followed by the affective category (64.01%), self-regulatory competencies (36.00%), goals and values (28.49%), and beliefs and expectancies category (25.10%). Additional details specific to the barriers findings are being reported in another manuscript [41].

3.3. Adherence

Table 3 presents the adherence rates to the initial colposcopy and the two subsequent medical follow-up visits. Overall, adherence rates ranged from 50% (Tailored print group at 6 months follow-up) to 75% (Tailored telephone group at initial colposcopy). Participants in the three study conditions did not display significantly different adherence rates at each of the three assessment time points (initial colposcopy, $p > 0.05$; 6-month follow-up, $p > 0.05$; 12-month follow-up, $p > 0.05$).

Exploratory analyses were conducted by comparing the tailored telephone group with the combined enhanced standard care and tailored print groups, since the print group received a delayed intervention, in a less salient format, and did not undergo counseling in the context of a health educator. As noted in the introduction, we hypothesized a priori that tailored telephone counseling would be superior to both comparison conditions, because the telephone channel is the only one to provide immediate, direct and dynamic communication, as well as human support. In addition, we explored differences for the adherence data combined across all three assessment time-points, as effective adherence entails attendance at all three medical visits. However, due to recruitment difficulties and attrition, the smaller final sample size in each study arm led to a significant reduction in statistical power to detect an intervention effect between any two groups at any one time-point.

The revised two-group comparison on adherence across all three assessment time-points, using generalized estimation equation (GEE) analyses, resulted in a significant finding: the tailored telephone group exhibited higher adherence to follow-up after abnormal Pap smear, defined as attending initial colposcopy and two subsequent medical follow-up visits ($p < 0.05$). Table 4 presents the adherence rates at each of three time points as well as the overall adherence by the two-arm comparison. The adherence rates of the combined group vs. telephone group were: 63.76% vs. 75.41% for initial colposcopy ($p > 0.05$), 55.56% vs. 70.00% for 6-month follow-up ($p > 0.05$), and 56.36% vs. 62.96% for 12-month follow-up ($p > 0.05$). Both self-report and chart-review data on adherence were used. At 6 months, the telephone group had slightly more self-report data than the combined group (53.3% vs. 33.3%, $p = 0.05$). Agreement between these types of data was examined among those that had both available. Correlations measured by Kappa coefficients were ~ 0.03 at 6-month and 0.35 at 12-month.

Further exploratory sub-group analyses by education levels were then conducted. The sub-group analyses revealed that among participants who had completed high school or less ($n = 120$), the tailored telephone group ($n = 37$) had higher adherence to initial colposcopy than the combined enhanced standard care and tailored print groups ($n = 83$; 78.38% vs. 56.63%, $p < 0.05$). Among those who had post-secondary educational achievement, tailored print group did not have higher adherence to initial colposcopy than either the enhanced care or tailored telephone group.

4. Discussion and conclusion

4.1. Discussion

Although cervical cancer is preventable, disparities in the uptake of follow up regimens after receipt of an abnormal Pap smear result continue to occur [13–17]. Hence it is important to assess and address barriers to diagnostic recommendations following a positive test result among minority populations [9]. Yet, there are few studies that investigate interventions to improve diagnostic adherence, particularly over the long term. To help fill this void, we studied the efficacy of an initial tailored barriers counseling program, delivered by telephone, among a highly vulnerable inner city population. The results showed that underserved women who were in the telephone barriers counseling group exhibited greater adherence over time to follow up recommendations than the enhanced standard care group – consisting of a notification letter of abnormal pap test result, a notice of the scheduled date and time of the initial colposcopy appointment, a telephone confirmation of the appointment, and a cognitive-affective barriers assessment – and than the enhanced care group with mail home tailored print materials.

In a variety of contexts, telephone-based counseling has been shown to have several advantages compared to written health communications [9]. First, it can be used to deliver messages in an “in the moment” fashion and at a time of heightened motivation, as at the point of initial notification of an abnormal screening result and the need for diagnostic follow up [45]. Second, the dynamic interactive counseling format between the counselor and participant can serve as a stand in for social support processes that model and normalize adaptive surveillance behaviors [45]. Third, since the telephone channel uses spoken language for exchanging information, it is less dependent on the participant’s reading skills to comprehend and act on motivational, affective, and behavioral messages. Fourth, messages delivered through the telephone channel can serve as an important navigational tool for patients, helping to guide them through the practical barriers to care [9].

It is of note that the adherence rates achieved by participants in this study were 50–75%, which are higher than those generally reported (about 30%) in the existing literature for this

underserved population. This finding is possibly due to two reasons. One is the likely self-selection of more motivated and conscientious women into the study, since only those who signed and returned a written consent were included in the analyses. These women were able to remember they had agreed to participate, reviewed the informed consent document, signed it, and returned it in a pre-stamped envelope. Women who took these extra behavioral steps to follow through with their verbal consent probably were more conscientious than the general low-income, minority female population who were approached about the study. Conscientiousness as a personality trait has been demonstrated to predict adherence to healthy behaviors [46,47].

Second, the two messaging groups were compared to enhanced standard care, which provided a barriers assessment that is not normally a part of routine management on notification of an abnormal Pap test result. The additional barriers assessment may have raised awareness of the psycho-social and practical issues they needed to overcome to keep their appointment. The barriers assessment might also have prompted these women to take actions to overcome these barriers, such as read more closely the information on colposcopy enclosed in the letter or plan for transportation, etc.

The study is unique in demonstrating that the use of a telephone contact at the initial point of entry as a delivery channel for tailored counseling messages, in conjunction with appointment reminders, results in higher adherence to follow-up recommendations after an abnormal Pap test result over a one-year period. Further, among women with high school education or below, those who were in the tailored telephone group displayed higher adherence to the initial colposcopy than those who were in the combined comparison group. Individuals who have completed high school or below typically are characterized by lower health literacy skills to obtain, process, and understand basic health information [48]. Use of the telephone as a medium for the adherence messages may circumvent some of the barriers posed by lower literacy skills, given its immediacy, interactivity, fluency, and relevance to the target population.

There are four main lessons learned from this study that will be important for future research efforts. First, it was difficult to recruit and retain participants from this low-income, minority population, which is a common challenge that has been reported in the research literature [49–52]. These usual challenges were compounded by the loss of the research nurse at the collaborating Temple clinic for a majority of the study period, and the many competing tasks of the nurse when one was available. This is not an uncommon source of missing chart review data, which can negatively impact the validity of adherence measures. Further, because of these missing data, we had to rely in some cases on self-report data, which can be subject to retrospective recall biases. This limitation can be improved by having more than one research staff member conduct chart reviews in future studies. Additionally, a significant number of participants needed to be excluded because the mechanism for collecting the written consent form was not well-established, despite patients' verbal willingness to participate in telephone and print forms of intervention and assessment. It may have improved recruitment if a research staff member followed up by telephone after mailing the written consent form to prompt the review, signing, and return of the form.

Second, the role of system barriers for recruitment should be noted. In this study, patients were drawn from the TUH clinic, therefore, the TUH research nurse needed to make the first contact with eligible patients to comply with HIPAA regulations. When the TUH research nurse was ready to telephonically transfer an interested patient, the FCCC research assistants might not have been available to administer the consent process and continue with the study. The process may also have been confusing for both staff and study participants. While these recruitment and coordination difficulties may have undermined recruitment efforts, the

recent merger between TUH and FCCC should alleviate these system barriers in our future studies.

Third, we included a tailored print intervention condition because written health communication materials appear to be a viable alternative given the regular cancelation of phone service and rapid turn-around of telephone numbers in the target population. However, it would have been helpful to include a follow-up with participants in the print condition to ascertain whether they had actually received and read the materials, and to help guide them through it.

Fourth, the use of telephone and print counseling interventions may be augmented by the design and implementation of short text messages to patients' mobile phones, since this mode of communication is common, attended to, and salient among the target population.

The study findings suggest a number of considerations for designing future interventions. First, initial telephone counseling can prompt increased uptake of diagnostic recommendations, particularly among less educated women, over the course of the next year [17,22]. Second, the telephone appears to be useful in terms of accessing and connecting with young low-income, innercity women, consolidating reminder messages in a timely fashion, eliciting and responding to barriers, and providing a sense of support and guidance [9]. Third, telephone counseling may not only represent a useful initial outreach channel for connecting with participants, it may also serve to help them navigate through the diagnostic and treatment process over the long-term, particularly if repeated as patients progress through follow-up.

Finally, the results suggest the need to explore the utility of clinical-community partnerships to engage underserved communities, through such mechanisms as community-based patient navigation. A patient navigator can interface with the clinical system and help to identify and engage patients who are at high risk of non-adherence, implement barriers assessment and tailored telephone counseling, facilitate utilization of community resources to address practical barriers, and follow the patient through the long-term. Indeed, there is some evidence that the patient navigation approach can increase abnormal screening follow-up adherence [53–55] and thereby help to reduce cancer disparities in this context. In future research, it will be important to systematically test an integrated community navigator/barriers' counseling approach.

4.2. Conclusion

Study findings suggest that telephone delivery of tailored psycho-educational interventions has the potential to improve adherence in the cervical cancer risk context, demonstrating higher efficacy than tailored print and enhanced standard care over one year. Further, women with lower than post-secondary education are particularly underserved and may benefit most from tailored telephone counseling in improving their adherence to the initial colposcopy.

4.3. Practice implications

An important practice implication from this study is that integration of telephone barriers counseling into appointment reminder calls may improve adherence and thereby reduce unnecessary morbidity and mortality due to cervical cancer among women with low socio-economic status. This intervention may make more effective use of resources available to high risk women. At the policy level, establishing and maintaining strong social support and navigational ties, possibly through community-based patient navigators and integration of telephone counseling into the navigation services, may be useful to more effectively reduce disparities in cervical cancer risk and disease [9].

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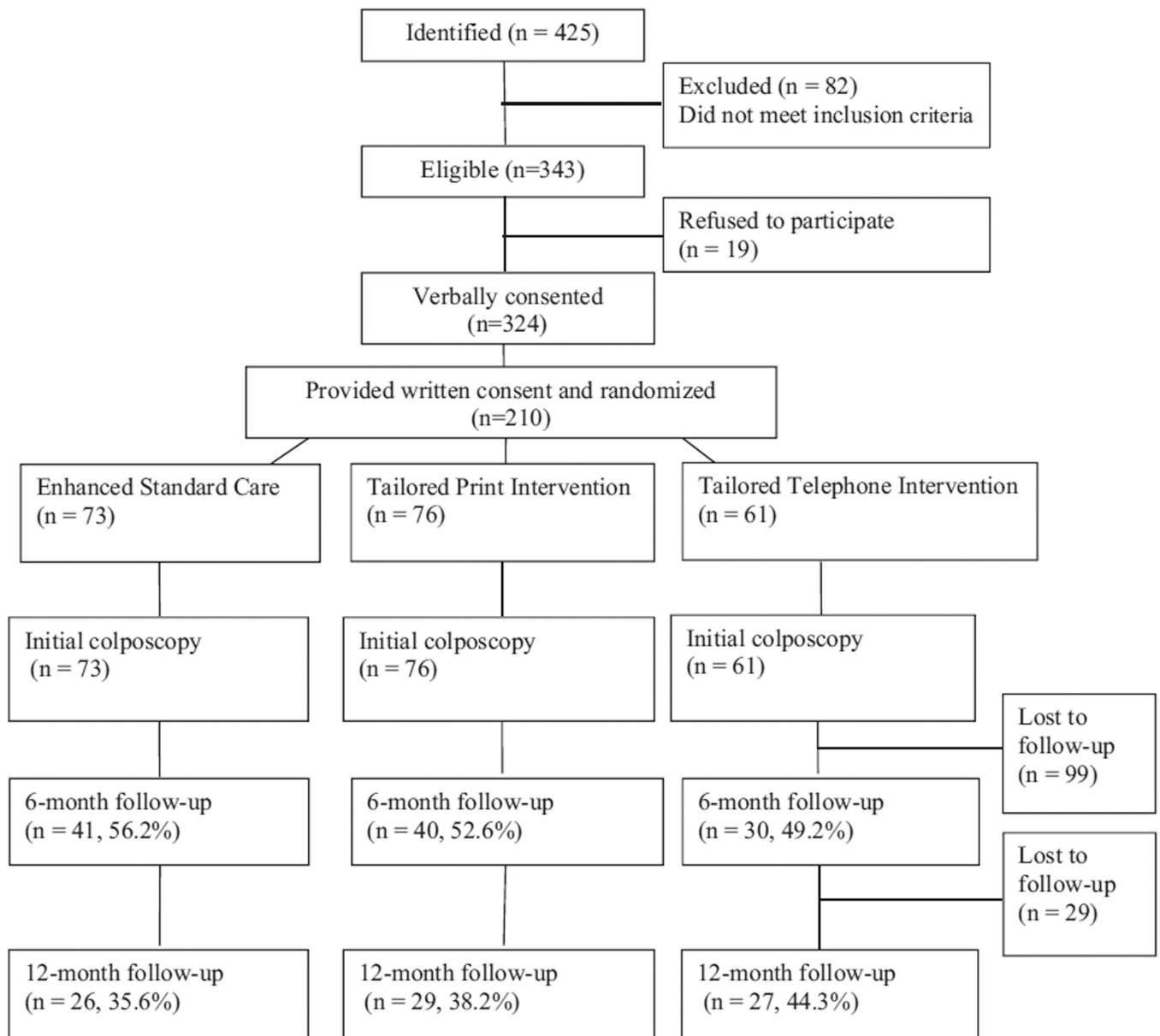


Fig. 1. Participant flow of randomized controlled trial.

Table 1

Baseline demographic characteristics of the total sample and by three intervention conditions.

	Total sample	Enhanced standard care	Tailored print	Tailored telephone	p
Mean age (SD)	30.00 (10.67)	30.64 (10.96)	30.70 (12.00)	28.45 (8.50)	0.3934
Race; N (%)					
White	9 (4.46)	5 (6.94)	1 (1.39)	3 (5.17)	
Black	166 (82.18)	55 (76.39)	61 (84.72)	50 (86.21)	
Hispanic	25 (12.38)	11 (15.28)	9 (12.50)	5 (8.62)	
Other	2 (0.99)	1 (1.39)	1 (1.39)	0 (0.00)	
Education; highest level completed; N (%)					0.9570
Below high school	11 (5.29)	4 (5.41)	5 (6.94)	2 (3.23)	
Some high school	27 (12.98)	10 (13.51)	7 (9.72)	10 (16.13)	
High school, trade school, or GED	84 (40.38)	28 (37.84)	30 (41.67)	26 (41.94)	
Vocational school	22 (10.58)	8 (10.81)	7 (9.72)	7 (11.29)	
Some college	55 (26.44)	20 (27.03)	20 (27.78)	15 (24.19)	
Undergraduate degree	8 (3.85)	4 (5.41)	2 (2.78)	2 (3.23)	
Graduate courses	1 (0.48)	0 (0.00)	1 (1.39)	0 (0.00)	
Marital status; N (%)					0.5817
Widowed	7 (3.47)	1 (1.41)	3 (4.23)	3 (5.00)	
Single, never married	136 (67.33)	43 (60.56)	52 (73.24)	41 (68.33)	
Single, living with significant others	37 (18.32)	16 (22.54)	10 (14.08)	11 (18.33)	
Married	13 (6.44)	7 (9.86)	4 (5.63)	2 (3.33)	
Divorced	9 (4.46)	4 (5.63)	2 (2.82)	3 (5.00)	
Employment status; N (%)					0.3944
Employed full-time	50 (23.92)	23 (30.67)	10 (13.70)	17 (27.87)	
Employed part-time	37 (17.70)	12 (16.00)	14 (19.18)	11 (18.03)	
Disabled	21 (10.05)	6 (8.00)	7 (9.59)	8 (13.11)	
Retiree	1 (0.48)	1 (1.33)	0 (0.00)	0 (0.00)	
Unemployed	76 (36.36)	24 (32.00)	33 (45.21)	19 (31.15)	
Student	24 (11.48)	9 (12.00)	9 (12.33)	6 (9.84)	

Table 2

Examples of counseling messages corresponding to C-SHIP constructs and focus group feedback.

C-SHIP construct-based focus group question	Sample focus group responses	Final counseling message
Encoding: What does it mean for you to have an abnormal Pap smear?	First thought = STD; "What's going on?"; Is my partner sleeping around on me?	An abnormal Pap smear means that some cells on your cervix look different from regular cells. This does not mean you have cancer of the cervix. But it does mean that you have some cells that could grow and change. Most changes in the cervix happen very slowly. These changes can almost always be treated so that you don't get cancer of the cervix.
Beliefs/Expectancies: What do you think is going to happen during your follow-up visit?	Don't know; Ask questions, don't know yet; Have no idea	In a colposcopy visit, the doctor looks directly at your cervix to see if there are any abnormal cells. To be sure, your doctor might take a small sample of cells to view under a microscope. This is called a biopsy. Both tests will help your doctor decide what treatment is best for you.
Affective/emotional: What kinds of feelings came up for you when you learned that you needed to come back for follow-up of an abnormal pap smear?	Scared, worried; Apprehensive, unknown is scary, but knows can't leave it unattended; Scared and nervous because has a family member with cervical cancer	Most women who have an abnormal Pap smear do not have cancer. If you do what your doctor tells you to do, you can stay healthy by treating the cells that are changing. Many women feel better when they learn their condition may be easily managed.
Goals/values: What specific reasons would make you want to come in for follow-up testing as a result of your abnormal pap smear?	Find out what's going on in your body; life or death; private parts are extremely important and need to take care of them	Women can feel like their body has let them down, as if something has gone wrong. In fact, your body is telling your doctor that there are some changes that need treatment. Coming in for treatment will help you feel good about taking care of your body.
Self-regulatory competencies: What would stop you from coming in for your follow-up colposcopy if the exam is recommended?	Health insurance issues; transportation	If money is tight, medical assistance will pay for the exam. Other insurance plans have low-cost co-pays. If you have no insurance, please ask the clinic manager about payment plans. If you need a referral letter, please bring it with you. The exam cannot be done without it.

Table 3

Adherence rates to the initial colposcopy and medical follow-up recommendations by three intervention conditions.

	Initial colposcopy, %	Medical follow-up at 6 months, %	Medical follow-up at 12 months, %
Enhanced standard care	65.75 (48/73)	60.98 (25/51)	53.85 (14/26)
Tailored print	61.84 (47/76)	50.00 (20/40)	58.62 (17/29)
Tailored telephone	75.41 (46/61)	70.00 (21/30)	62.96 (17/27)
<i>p</i>	0.2321	0.2338	0.7970

Table 4

Adherence rates to the initial colonoscopy and medical follow-up recommendations by two intervention conditions.

	Initial colonoscopy, %	Medical follow-up at 6 months, %	Medical follow-up at 12 months, %
Enhanced standard care combined with tailored print	63.76 (95/149)	55.56 (45/81)	56.36 (31/55)
Tailored telephone	75.41 (46/61)	70.00 (21/30)	62.96 (17/27)
<i>p</i>	0.1027	0.1687	0.5686
Overall <i>p</i> from GEE model		0.0475	