



Barriers to Follow-Up of an Abnormal Pap Smear in Latina Women Referred for Colposcopy

Sanja Percac-Lima, MD, PhD^{1,2,3}, Leslie S. Aldrich, MPH², Gloria B. Gamba, MA^{1,2},
Adriana M. Bearse, BA², and Steven J. Atlas, MD, MPH³

¹Chelsea HealthCare Center, Massachusetts General Hospital, Chelsea, MA, USA; ²Center for Community Health Improvement, Massachusetts General Hospital, Boston, MA, USA; ³General Medicine Division, Department of Medicine, Massachusetts General Hospital, and Harvard Medical School, Boston, MA, USA.

BACKGROUND: Lower rates of follow-up after an abnormal Pap smear in racial and ethnic minorities may contribute to the higher incidence and mortality rates of cervical cancer seen in these groups.

OBJECTIVE: To identify patient-perceived barriers to follow-up after an abnormal Pap smear result among Latina women.

DESIGN, PARTICIPANTS AND APPROACH: Qualitative, semi-structured, one-on-one interviews were conducted with patients from an academic hospital-affiliated urban community health center. Three groups of women were interviewed: new colposcopy clinic patients, patients who had previous colposcopies and patients enrolled in the health center's patient navigator program. Open-ended questions explored their knowledge, beliefs and experiences with colposcopy. Content analysis of transcripts was performed using established qualitative techniques.

RESULTS: Of 40 Latina women recruited, 75% spoke only Spanish. The average age was 31.5 (range 18–55). Personal and system barriers identified were categorized into four themes: (1) anxiety/fear of procedure and diagnosis; (2) scheduling/availability of appointments interfering with work and/or child care; (3) inadequate communication about appointments, including lack of explanation regarding diagnosis, procedure and results; and (4) pain. New patients more commonly reported problems with scheduling and communication. Follow-up patients were more concerned about pain, and navigated women most often reported fear of results but had fewer concerns about inadequate communication.

CONCLUSION: Anxiety/fear was the most common personal barrier, while difficulty scheduling appointments and inadequate communication were the major systems barriers identified in these Latina women. Interventions to lower these barriers to colposcopy among Latina women may increase adherence to follow-up of abnormal Pap smears.

KEY WORDS: colposcopy; Latino; health disparities; patient navigation.
J Gen Intern Med 25(11):1198–204
DOI: 10.1007/s11606-010-1450-6
© Society of General Internal Medicine 2010

Received November 25, 2009

Revised May 11, 2010

Accepted June 18, 2010

Published online July 21, 2010

BACKGROUND

The likelihood that a woman will develop or die from cervical cancer in the US has steadily declined, but the National Cancer Institute SEER predicted that 11,270 women would still be diagnosed with and 4,070 would die from cervical cancer in 2009¹. According to SEER data, there is a marked disparity in incidence and mortality rates across racial and ethnic groups². The incidence of cervical cancer in Latina women per 100,000 is 12.7 compared to 7.1 for non-Latina white women. More Latinas are dying from cervical cancer compared to non-Latina whites (3.1 vs. 2.1 per 100,000)². Since effective screening is available to prevent cervical cancer, higher incidence and mortality may be attributed to lapses in screening, failure of the Pap test to detect an abnormality, or inadequate follow-up after an abnormal Pap test result^{3,4}. Pap smear rates and adherence to follow-up after an abnormal test are also lower in Latina women^{5,6}. Differences in screening and abnormal follow-up could be due to language barriers, foreign birth/acculturation, limited education, poverty and lack of insurance^{7–11}. All these factors are more common in Latinas and could influence their compliance with recommended care.

There have been studies exploring patient barriers to cervical cancer screening^{11–15}, attitudes and beliefs about human papilloma virus (HPV) and the HPV vaccine^{16–18}; however, few have focused on barriers to follow-up of an abnormal Pap smear^{3,6,7,16}. Del Carmen and colleagues explored sociodemographic and knowledge differences between Latina and non-Latina women referred to colposcopy⁷. Little is known about patients' perspectives regarding experiences with or possible barriers to colposcopy¹⁹.

The objective of this study was to examine barriers to colposcopy reported by Latina patients receiving care in an urban community health center. We sought the perspective of new patients, patients who had already had a colposcopy and patients who were part of a cervical outreach (patient navigator) program. By better matching barriers to colposcopy with potential interventions, our goal is to increase adherence rates in low-income Latina women.

METHODS

Design

We conducted a qualitative, descriptive study of Latina patients with abnormal Pap smears referred for colposcopy to obtain in-depth information about potential barriers to receiving recommended follow-up care. The study was approved by our institutional review board.

Setting and Participants

Participants included women referred from the Massachusetts General Hospital Chelsea Health Care Center (MGH Chelsea). This urban, multi-specialty community health center in Chelsea, MA, serves a multiethnic, low-income, heavily immigrant and refugee community. Over 23% of Chelsea's 35,080 residents live below the poverty level, and it has the second largest percentage of Latinos (48%) of any city in the state²⁰. The cervical cancer incidence is two and a half times the state

average (16.3 vs. 6.5 per 100,000)²¹, and mortality is 1.8 vs. 1.5 per 100,000²².

Interviews were conducted at the MGH colposcopy clinic located on the main hospital campus. The clinic sees around 1,800 patients per year (21% from MGH Chelsea). Women were eligible for the study if they received their primary care at MGH Chelsea, were referred to colposcopy because of an abnormal Pap smear and identified themselves as Latinas. A convenience sample of patients meeting these criteria was identified using the colposcopy clinic's scheduling system. Patients were called by a bilingual research assistant to schedule an interview during their colpo-

Text Box 1. Interview Guide

As we talked about on the phone, I would like to talk to you about your experience with colposcopy. Knowing what you think might help us improve the care our patients receive.

1. Demographic information:
 - How old are you?
 - Where are you from originally (country of origin)?
 - If not from the U.S.: How long have you been in the U.S. for (number of years)?
 - What is your primary language?
 - Are you married?
 - Do you have children?
 - Do you work currently?

2. How did you find out that you needed a colposcopy?

Tell me about the experience:

 - Who told you? What did they tell you about colposcopy?
 - Why is it done?

3. Is this your first colposcopy?
 - a. If yes (*New Patients*)

Tell me more:

 - What has your experience been so far?
 - Have you had problems with:
 - scheduling/rescheduling? transportation? lost time from work? childcare?
 - language barriers (if not English speaking)?
 - Was there anyone to help you? Who? How did they help?
 - Do you have any concerns:
 - about the procedure?
 - about the medical staff?
 - b. If no (*Follow-Up and Navigated Patients*)

Tell me more:

 - What was your experience:
 - the first time you had one? the second/third/etc.? today?
 - Did you have problems with:
 - scheduling/rescheduling? transportation? lost time from work? childcare?
 - language barriers (if not English speaking)?
 - Did anyone speak your language? Was there an interpreter present?
 - Do you think you understood everything said to you?
 - Was there anyone that helped you (if patient had above problems, or was navigated)? Who? How?
 - Do you have or have you had any concerns:
 - about the procedure? Was it different than you expected? How?
 - about the medical staff?

4. Have you ever missed your appointment? If yes, why?
5. Is there anything you can think of that we could change to make your experience better?
6. If you knew someone that needed a colposcopy, would you recommend that they go? Why / why not?
7. Would you like to share anything else?

scopy visit, and were excluded if they did not speak English or Spanish, or had major physical or mental co-morbidities.

Interviews

An interview guide (Text Box 1) was developed based on previous studies of barriers to colposcopy in racial and ethnic minorities^{6,7,19}, as well as informal interviews with MGH Chelsea navigators and health care providers. A research assistant was trained to conduct semi-structured one-on-one patient interviews of approximately 10-15 min using this guide. The interview collected demographic information, followed by questions on how participants were informed about needing a colposcopy and their knowledge of and beliefs about colposcopy. If this was the participant's first visit to the colposcopy clinic, she was classified as a "new patient," and further open-ended questions were asked to explore her experiences, problems and concerns to date. If this was a follow-up visit, the participant was classified as a "follow-up patient" and further questions explored both previous and current experiences, problems and concerns. Participants enrolled in the MGH Chelsea Cervical Outreach Program because of missed colposcopy appointments or identified by a clinician as 'at-risk' were classified as "navigated patients" and asked the same questions as follow-up patients. The study sought to recruit equal numbers of women from each of these three groups to ensure a broad range of experiences and insights, and for comparison purposes. The research assistant described the study to participants, provided a fact sheet about the study, answered questions and obtained verbal consent. Interviews were performed from September to December of 2008.

Analysis

All interviews were tape recorded, transcribed verbatim, and translated by a certified medical interpreter if needed. Transcripts were analyzed after 5, 12, 18, 30 and 40 interviews were completed. After analyzing 40 interviews, it was determined that saturation was achieved since no new themes emerged from the last ten transcripts.

Content analysis of the transcripts was performed to synthesize findings and identify key themes. The data were analyzed using the "framework method" described by Ritchie and Spencer²³. To become familiar with the data, the interview transcripts were independently reviewed by the two research assistants, with senior researcher oversight. Preliminary themes began to emerge during the familiarization phase, leading to the development of an initial thematic framework. Theme counts were performed through indexing of transcripts, and data were subsequently charted and organized by overarching theme. In the mapping and interpretation phases, patterns and differences among the three categories of interviewed women were explored. The analysis team met bi-monthly to review data, discuss new insights, confirm existing and generate new themes. Interrater reliability about the themes and supporting data were always greater than 90%. Disagreements were resolved through discussion until the group achieved consensus.

RESULTS

Study Participants

Sociodemographic characteristics of the 40 participants are shown in Table 1. Three women approached declined to be

Table 1. Patient Demographic Characteristics

Demographic characteristic, n (%) ^a	Patient group			All
	New (N=12)	Follow-up (N=15)	Navigated (N=13)	Total (N=40)
Mean age (range)	34.1 (20–54)	32.7 (21–52)	27.8 (18–55)	31.5 (18–55)
Interview language				
English	3 (25%)	0 (0%)	6 (46%)	9 (23%)
Spanish	9 (75%)	15 (100%)	7 (54%)	31 (78%)
Married	3 (25%)	6 (40%)	2 (15%)	11 (28%)
Children ^b	8 (67%)	8 (53%)	9 (69%)	25 (63%)
Working	7 (58%)	10 (67%)	8 (62%)	25 (63%)
Origin ^c				
US-born	2 (17%)	0 (0%)	1 (8%)	3 (8%)
Foreign born	10 (83%)	15 (100%)	12 (92%)	37 (93%)
Colombian	0 (0%)	0 (0%)	2 (15%)	2 (5%)
Cuban	2 (17%)	0 (0%)	0 (0%)	2 (5%)
Salvadorian	1 (8%)	3 (20%)	3 (23%)	7 (18%)
Guatemalan	3 (25%)	2 (13%)	0 (0%)	5 (13%)
Honduran	2 (17%)	9 (60%)	2 (15%)	13 (33%)
Mexican	0 (0%)	0 (0%)	2 (15%)	2 (5%)
Puerto Rican	2 (17%)	1 (7%)	3 (23%)	6 (15%)
Years in the US				
Less than 5 years	4 (33%)	2 (13%)	2 (15%)	8 (20%)
5 years or more	8 (67%)	13 (87%)	11 (85%)	32 (80%)

^aColumn percentages may not total 100% due to rounding

^bRefers only to participants with children currently in their care

^cUS-born refers to those born in the continental US. Foreign-born refers those not born in the continental US, including those born in Puerto Rico

interviewed (93% response rate). All self-identified as Latinas, with most speaking only Spanish. The average age was 31.5 (range 18–55). Less than a third (28%) reported being married, and close to two-thirds (63%) had children in their care. Twenty-five participants (63%) were employed at the time of the interview. For 12 participants (30%), it was their first colposcopy clinic visit (classified as "new patients"). Fifteen (38%) were there for a follow-up visit ("follow-up patients"), and 13 (33%) were enrolled in Chelsea's Cervical Outreach Program ("navigated patients"). Most women (60%) had lived in the US for 5 or more years, eight were recent immigrants, and eight had lived in the US their whole lives.

Findings Overview

A range of barriers were identified, and four main themes emerged: (1) *anxiety/fear* of the procedure and/or of diagnosis; (2) *scheduling difficulties* including appointments interfering with work and/or childcare, and transportation-related issues; (3) *inadequate communication* about appointments and lack of explanation about the diagnosis, procedure and/or results; and (4) *pain* associated with the procedure. These themes were categorized as *personal barriers* (anxiety/fear, and concerns about pain) or *systems barriers* (inadequate communication and scheduling difficulties) (Table 2). Follow-up and navigated patients more commonly reported concerns about pain, and new and navigated patients more commonly reported anxiety/fear, particularly of results (navigated patients). Systems issues were more common in new patients.

Table 2. Barriers to Follow-Up of Abnormal Pap Smear Results

Themes/barriers, n (%)	Patient group			All
	New (N=12)	Follow-up (N=15)	Navigated (N=13)	Total (N=40)
Personal barriers				
Anxiety/fear, any reported	10 (83%)	10 (67%)	11 (85%)	31 (78%)
Procedure	2 (17%)	0 (0%)	3 (23%)	5 (13%)
Diagnosis/results	7 (58%)	7 (47%)	8 (62%)	22 (55%)
Cancer	6 (50%)	6 (40%)	7 (54%)	19 (48%)
HPV infection/virus	3 (25%)	2 (13%)	2 (15%)	7 (18%)
Embarrassment	2 (17%)	0 (0%)	1 (8%)	3 (8%)
Childbearing	1 (8%)	1 (7%)	1 (8%)	3 (8%)
Pain/discomfort concerns	1 (8%)	8 (53%)	5 (38%)	14 (35%)
Systems barriers				
Scheduling difficulties, any reported	11 (92%)	7 (47%)	7 (54%)	25 (63%)
Work	5 (42%)	4 (27%)	4 (31%)	13 (33%)
Transportation	6 (50%)	3 (20%)	1 (8%)	10 (26%)
Childcare	4 (33%)	2 (13%)	3 (23%)	9 (23%)
Appointment availability	4 (33%)	2 (13%)	1 (8%)	7 (18%)
Inadequate communication, any reported	7 (58%)	5 (33%)	2 (15%)	14 (35%)
Explanation, procedure or diagnosis	5 (42%)	4 (27%)	1 (8%)	10 (25%)
Notification, appointment or results	4 (33%)	3 (20%)	2 (15%)	9 (23%)
Language barrier	1 (8%)	1 (7%)	0 (0%)	2 (5%)

Personal Barriers

Anxiety/Fear. For all women, anxiety/fear regarding the colposcopy and/or its results was a common theme.

Diagnosis/Results. Anxiety/fear around diagnosis/results was the most frequently expressed type of anxiety/fear: about half of participants shared a fear that the procedure would result in a cancer diagnosis. As one woman stated, “there’s always a little bit of fear when they tell you they are going to do a colposcopy...I think maybe I could have cancer.” Many participants fear the unknown since they have no experience with and little knowledge of colposcopy or cervical cancer: “at the beginning I was scared, I was nervous, I did not know what was going on...I thought I had cancer.” Some participants also feared an HPV diagnosis. As stated by one, “Before all of this I was crying...I don’t know, maybe I just overreacted on what the nurse told me who called to explain the possible HPV. That’s what you hear a lot about now. Before, you never really heard too much about that. That made me nervous. It scared me, you know?”

Fear of Procedure. Several participants expressed fear of the procedure, although less commonly than fear of diagnosis: “I’m more afraid of the results than the procedure.” Fear of the procedure was often connected to fear of physical pain (see

below). One participant’s comment demonstrated this link: “I was worried. I was afraid. I thought it would hurt and I was afraid of what they might find”.

Embarrassment. Anxiety/fear was often coupled with feelings of surprise or embarrassment regarding possible diagnoses, and/or confusion due to lack of knowledge or understanding about why the procedure is done and what the results might mean. This connection is exemplified in the following quote: “I was embarrassed because of what I have. The girl who called said I have an abnormal Pap. I think maybe I have an infection or bacteria, and I don’t know why. She also mentioned cancer, and I was worried...I am very confused and worried. I thought I might have something serious.” Embarrassment was most commonly reported among new patients.

Childbearing Concerns. Another source of anxiety and fear for participants was uncertainty about whether the test results would influence their health in the future, particularly pregnancy. “I worry that they keep coming back abnormal. I am also trying to get pregnant, so I don’t know...well, I worry about these results and how they will affect my pregnancy.”

Pain. Although the least commonly reported barrier was concern about, fear of and prior experiences with pain/discomfort, for one participant it was a main reason for missing a prior appointment: “I didn’t want to come, because it’s uncomfortable and I just put it off.” A few participants felt misinformed about how painful the procedure would be: “They said it would be like a pinch, but it’s a bit more than that.” Pain during previous colposcopies was a more often reported barrier in follow-up compared to navigated patients.

System Barriers

Scheduling Difficulties. Many participants identified scheduling and transportation difficulties as barriers to care, including lack of timely colposcopy appointments and clinic hours that conflicted with work schedules or childcare responsibilities. These barriers were most common in new patients.

Work Conflicts. Work-related issues were cited by a third of participants. In order to attend appointments scheduled during work hours, participants often had to request uncompensated time off work: “I am a single mom, and if I lose two hours of work then I can’t make it up...I need to feed my children.” Work-related issues were most common among new patients. Three participants who had missed past appointments cited work-related reasons.

Childcare Conflicts. Scheduling difficulties associated with childcare were cited by almost a quarter of participants. As stated by one participant, “I leave them with my husband, so he needs to take time [from work] to stay with them while I come to the appointment.” Some participants bring their children to appointments: “I kept her [daughter] from school...I had to bring her with me. I had no one to pick her up from school. She was in the room when I had the appointment.”

Lack of Appointment Availability. Several participants, particularly new patients, identified lack of availability of

timely appointments as a barrier: "I just tried to get an earlier appointment. I didn't want to wait...they had none." Waiting to get an appointment after being told of an abnormal test result was a source of stress: "I was crying...I was a bit nervous...I wanted to be seen tomorrow. I wanted to hurry up and get seen you know? I thought I had cancer."

Transportation Issues. Transportation represented a barrier for a quarter of all participants. Although Chelsea is only 5 miles from the colposcopy clinic, for some: "The commute is too long...It's about an hour to get here. I wish there were something easier." The clinic is also outside of the participants' community: "I was late because I'm not familiar with the area." Even patients familiar with the hospital still felt overwhelmed: "They said if I knew how to get to the hospital then I would know where to go. Well, I know the hospital...but I did not know where to go." New patients were particularly prone to experiencing transportation issues, with half getting lost or arriving late for an appointment. Navigated patients rarely experienced these issues: "Last time the navigator took me, so no problems."

Inadequate Communication. The other system-related theme was inadequate communication. Communication breakdowns were related to three main areas: (1) lack of explanation about the procedure, diagnosis or results, (2) inadequate appointment or results notification and (3) language barriers.

Lack of Adequate Explanation. Lack of adequate explanation about the procedure, diagnosis or results was the main form of inadequate communication reported. Close to half of new

patients felt the colposcopy was inadequately explained. Conversely, only one navigated patient did not receive adequate explanation of the procedure/diagnosis. One patient's experience highlights this issue: "They did not tell me anything. They just said I had an appointment and that I had to come here." When asked if anyone explained why she needed a colposcopy, another said: "They didn't say. I just got the appointment by letter. They didn't tell me anything...I did receive a pamphlet explaining the appointment and it said that I probably had an abnormal Pap." Some participants received an explanation but did not clearly understand it.

Inadequate Appointment/Results Notification. Some participants, especially new patients, reported inadequate notification from the clinic regarding their appointments or colposcopy results, which often contributed to anxiety: "well, if there were something wrong, I'm sure they would have told me by now...but I worry." One participant expressed frustration about both her appointment and results notification: "I was very upset at how I found out I needed to come here. I got the appointment for the colpo before the doctor even told me something was up. I got the letter in the mail, no call, no results...no nothing...When you get bad results, you just don't get it in the mail, and that's how I got it. I wanted a call...Three days later I got a letter from the nurse telling me what the results were."

Language Barriers. Language barriers, such as receiving materials in English when needed in Spanish, were mentioned by only two participants. Most women had Spanish-speaking staff and interpreters available at the colposcopy clinic when needed.

Text Box 2. Barriers to colposcopy and proposed improvements for a cervical navigator program

BARRIERS TO COLPOSCOPY	PROPOSED IMPROVEMENTS
<p>PERSONAL BARRIERS</p> <ul style="list-style-type: none"> ■ Anxiety/Fear ■ Pain 	<ul style="list-style-type: none"> ■ Standard navigator education program for cervical cancer screening and colposcopy ■ Develop survey guide for navigator to explore barriers in women during the colposcopy appointment confirmation phone call ■ Navigator will educate/review cervical health issues with all new patients during confirmation calls ■ Review the treatment of pain post-procedure with Colposcopy Clinic providers
<p>SYSTEM BARRIERS</p> <ul style="list-style-type: none"> ■ Inadequate communication ■ Scheduling difficulties 	<ul style="list-style-type: none"> ■ At the time of referral to Colposcopy Clinic all new patients will receive a package that includes: <ul style="list-style-type: none"> ■ Brochure in Spanish (6th grade reading level) about cervical health and colposcopy ■ Letter about the Cervical Health Outreach Program including instructions on how to contact the navigator for questions/concerns ■ Shuttle schedule from MGH Chelsea to main campus ■ Map with path drawn from shuttle stop to Colposcopy Clinic ■ Navigator will coordinate with Colposcopy Clinic to improve the process of scheduling/rescheduling appointments

DISCUSSION

Lowering the incidence of cervical cancer requires understanding why women do not get screened for cervical cancer and why women with abnormal screening tests do not complete follow-up evaluations, including colposcopy. This is the first qualitative study exploring patient-perceived barriers to colposcopy in low-income Latina women, some of whom received navigation services to help reduce barriers to care. We focus specifically on Latina women because this group is known to have the highest cervical cancer incidence and mortality rates^{2,24}.

Many of the barriers perceived by the Latina women in our sample have been previously described in the literature as possible reasons for non-adherence to colposcopy in other women. Anxiety/fear is often due to insufficient knowledge and understanding about the purpose of colposcopy^{25,26}. Studies show that anxiety in women referred to colposcopy can be significantly decreased by sending a one-page handout or culturally tailored educational brochure prior to the appointment²⁷⁻²⁹. Anxiety/fear about the diagnosis as well as potential for cancer in particular is one of the most commonly cited possible barriers to colposcopy, especially in low-income minority women^{25,30,31}. As described by Reynolds, Latina women may be torn between wanting to know and being afraid to find out if they have cancer⁹. In our study, anxiety/fear about cancer was more common in older participants, while younger women were more concerned about HPV. Misinformation or misunderstanding of available information about HPV and cervical cancer is common and variable in multiethnic low income populations¹⁶⁻¹⁸. Childbearing issues post-colposcopy are also described in the literature^{31,32}.

The most common systems barrier identified by our participants, particularly new patients, was scheduling difficulties and lack of timely appointments. Work and child-care responsibilities also contribute to missed appointments^{32,33}. Inadequate communication, our second most prominent systems barrier, was recognized and targeted in Project SAFE, which was designed to improve abnormal cervical screen follow-up among low-income Latinas³³.

Low English proficiency in Latinas is described in the literature as a barrier to receiving physician recommendations to have a Pap smear³¹, but further studies among immigrant populations are needed to determine its influence on adherence to colposcopy. The majority of our participants did not speak English but did not mention language as a barrier.

Comparing barriers perceived by new, follow-up and navigated patients enabled us to recognize the needs of each group and design appropriate interventions. Navigated women enrolled in MGH Chelsea's Cervical Outreach Program reported similar levels of anxiety/fear and concerns about pain compared to new and follow-up patients, but reported fewer systems barriers. By including navigated women who were targeted because of their increased risk of missing follow-up appointments, barriers reported might be overrepresented due to their higher risk status or underrepresented as a result of receiving navigation services that strive to change attitudes and reduce barriers. It is also possible that women's attitudes/barriers to colposcopy may be influenced by the education they receive from the navigator. Women may experience either more or less anxiety/fear because of the increased knowledge received through the program about cervical health and about the importance of appointment adherence to detect abnormalities.

Only by understanding the common barriers to follow-up can strategies be implemented to increase successful colposcopy evaluations. Matching participants' personal and system barriers with interventions to improve abnormal Pap smear follow-up is a goal of outreach programs³⁴⁻³⁹. Based upon our findings, we propose changes that could improve our cervical outreach (navigator) program and adherence to colposcopy (Text Box 2).

Our study has several limitations. We focused on Latina women because they represent 75% of all patients referred from our health center to the colposcopy clinic. Though Latina women have the highest cervical cancer incidence and mortality rates, other low-income minority groups are also at risk, and our results may not apply to them. Latina women in this small study represented a range of countries of origin, years in the US and ages, but these results may not generalize to all Latina populations. The study setting, an urban community health center that already has a program to assist Latina patients, may result in underestimating the challenges faced by women in settings without such efforts. We also did not interview patients who failed to follow-up on an abnormal Pap test, and their issues may have differed from those of the patients who were interviewed. However, a third of the women (navigated patients) had missed at least one colposcopy appointment in the past, and their concerns were similar to the other groups. Nevertheless, future studies that focus on the women who have not yet completed a follow-up visit might provide additional insights into barriers associated with not evaluating an abnormal Pap result. To compare the groups interviewed, we heavily relied on counts of themes. For personal barriers that emerged spontaneously, it is difficult to know whether some themes were not mentioned by women because they were not important, they just did not come to mind or were so obvious to the participant that she did not think she should mention them. Thus, these barriers might be underreported in our study. On the other hand, systems barrier items were explicitly suggested in questions 3a and 3b (Text Box 1). Because of differences in ascertaining personal and systems barriers, it may not be appropriate to compare frequencies between them. Finally, though we developed an interview guide and used a highly trained interviewer, the use of two or more interviewers may have decreased bias associated with individual style or emphasis.

Understanding why some Latina women are not receiving colposcopy after an abnormal Pap smear is important to reduce racial and ethnic disparities in cervical cancer mortality and morbidity. Our findings add to those previously reported and support directed interventions to address these barriers in low-income Latina patients in urban settings to improve adherence to follow-up after abnormal Pap smear results.

Acknowledgements: The authors would like to thank Sarah Abernathy-Oo, Joan Quinlan and Diana Maldonado for assisting in the early conceptualization of the study and for their ongoing support. The authors are very thankful to Elyse Park, Ph.D, MPH, for review of the manuscript and help with the qualitative methodology. This paper was presented at the 32nd Annual Meeting of the Society of General Medicine in Miami, May 2009.

The study was funded by a grant from Gillette Corporation to the MGH Chelsea Cervical Outreach Program and the MGH Center for Community Health Improvement. Drs. Percac-Lima and Atlas were

supported in part by a grant from the Agency for Healthcare Research and Quality (1R18 HS019161-01).

Conflict of interest: None disclosed.

Corresponding Author: Sanja Percac-Lima, MD, PhD; Chelsea HealthCare Center, Massachusetts General Hospital, 151 Everett Avenue, Chelsea, MA 02150, USA (e-mail: spercaclima@partners.org).

REFERENCES

- National Cancer Institute. Surveillance Epidemiology and End Results (SEER) Cancer Statistics Review 1975-2006-Table 1.1, Estimated New Cancer Cases and Deaths for 2009. Website Accessed June 2010 [cited June 25, 2010]; Available from: http://seer.cancer.gov/csr/1975_2006/results_single/sect_01_table.01.pdf.
- National Cancer Institute. Surveillance Epidemiology and End Results (SEER) Cancer Statistics Review 1975-2006-Cancer of the Cervix Uteri (invasive), Table 5.10 (p. 11). Website accessed June 2010 [cited June 25, 2010]; Available from: http://seer.cancer.gov/csr/1975_2006/results_merged/sect_05_cervix_uteri.pdf Note: Incidence and mortality rates are age-adjusted per 100,000 women per year, based on cases diagnosed (incidence) or patients who died (mortality) in 2002-2006.
- Eggleston KS, Coker AL, Das IP, Cordray ST, Luchok KJ. Understanding barriers for adherence to follow-up care for abnormal Pap tests. *J Women's Health (Larchmt)*. 2007;16(3):311-30.
- Janerich DT, Hadjimichael O, Schwartz PE, et al. The screening histories of women with invasive cervical cancer, Connecticut. *Am J Public Health*. 1995;85(6):791-4.
- Downs LS, Smith JS, Scarinci I, Flowers L, Parham G. The disparity of cervical cancer in diverse populations. *Gynecol Oncol*. 2008;109(2 Suppl):S22-30.
- Eggleston KS, Coker AL, Luchok KJ, Meyer TE. Adherence to recommendations for follow-up to abnormal Pap tests. *Obstet Gynecol*. 2007;109(6):1332-41.
- Del Carmen MG, Findley M, Muzikansky A, et al. Demographic, risk factor, and knowledge differences between Latinas and non-Latinas referred to colposcopy. *Gynecol Oncol*. 2007;104(1):70-6.
- McKee MD, Lurio J, Marantz P, Burton W, Mulvihill M. Barriers to follow-up of abnormal Papanicolaou smears in an urban community health center. *Arch Fam Med*. 1999;8(2):129-34.
- Reynolds D. Cervical cancer in Hispanic/Latino women. *Clin J Oncol Nurs*. 2004;8(2):146-50.
- Tsui J, Saraiya M, Thompson T, Dey A, Richardson L. Cervical cancer screening among foreign-born women by birthplace and duration in the United States. *J Womens Health (Larchmt)*. 2007;16(10):1447-57.
- Watts L, Joseph N, Velazquez A, et al. Understanding barriers to cervical cancer screening among Hispanic women. *Am J Obstet Gynecol*. 2009;201(2):199e.1-8.
- Ackerson K, Gretebeck K. Factors influencing cancer screening practices of underserved women. *J Am Acad Nurse Pract*. 2007;19(11):591-601.
- Byrd TL, Chavez R, Wilson KM. Barriers and facilitators of cervical cancer screening among Hispanic women. *Ethn Dis*. 2007;17(1):129-34.
- Johnson CE, Mues KE, Mayne SL, Kiblawi AN. Cervical cancer screening among immigrants and ethnic minorities: a systematic review using the Health Belief Model. *J Low Genit Tract Dis*. 2008;12(3):232-41.
- Vanslyke JG, Baum J, Plaza V, Otero M, Wheeler C, Helitzer DL. HPV and cervical cancer testing and prevention: knowledge, beliefs, and attitudes among Hispanic women. *Qual Health Res*. 2008;18(5):584-96.
- Bertram CC, Magnussen L. Informational needs and the experiences of women with abnormal Papanicolaou smears. *J Am Acad Nurse Pract*. 2008;20(9):455-62.
- Sanderson M, Coker AL, Eggleston KS, Fernandez ME, Arrastia CD, Fadden MK. HPV vaccine acceptance among Latina mothers by HPV status. *J Womens Health (Larchmt)*. 2009;18(11):1793-9.
- Watts LA, Joseph N, Wallace M, et al. HPV vaccine: a comparison of attitudes and behavioral perspectives between Latino and non-Latino women. *Gynecol Oncol*. 2009;112(3):577-82.
- Swancutt DR, Greenfield SM, Wilson S. Women's colposcopy experience and preferences: a mixed methods study. *BMC Womens Health*. 2008;8:2.
- Census. US Census Bureau. Chelsea (city) QuickFacts from the US Census Bureau. 2000 [cited June 2010]; Available from: <http://quickfacts.census.gov/qfd/states/25/2513205.html>.
- MassCHIP, Bureau of Health Statistics, Research and Evaluation, Massachusetts Cancer Registry. 2000-2004 Incidence, Massachusetts Department of Public Health, Boston, MA.
- MassCHIP, Bureau of Health Statistics, Research and Evaluation, Registry of Vital Records and Statistics. 2004-2006 Mortality, Massachusetts Department of Public Health, Boston, MA.
- Ritchie J, Spencer L. Qualitative data analysis for applied policy research. In: Bryman A, Burgess R, eds. *Analysing qualitative data*. London: Routledge; 1993:173-94.
- Flores K, Bencomo C. Preventing cervical cancer in the Latina population. *J Womens Health (Larchmt)*. 2009;18(12):1935-43.
- Lerman C, Hanjani P, Caputo C, et al. Telephone counseling improves adherence to colposcopy among lower-income minority women. *J Clin Oncol*. 1992;10(2):330-3.
- Tomaino-Brunner C, Freda MC, Runowicz CD. "I hope I don't have cancer": colposcopy and minority women. *Oncol Nurs Forum*. 1996;23(1):39-44.
- Stewart DE, Buchegger PM, Lickrish GM, Sierra S. The effect of educational brochures on follow-up compliance in women with abnormal Papanicolaou smears. *Obstet Gynecol*. 1994;83(4):583-5.
- Stewart DE, Lickrish GM, Sierra S, Parkin H. The effect of educational brochures on knowledge and emotional distress in women with abnormal Papanicolaou smears. *Obstet Gynecol*. 1993;81(2):280-2.
- Tomaino-Brunner C, Freda MC, Damus K, Runowicz CD. Can precolposcopy education increase knowledge and decrease anxiety? *J Obstet Gynecol Neonatal Nurs*. 1998;27(6):636-45.
- Khanna N, Phillips MD. Adherence to care plan in women with abnormal Papanicolaou smears: a review of barriers and interventions. *J Am Board Fam Pract*. 2001;14(2):123-30.
- Miller SM, Siejak KK, Schroeder CM, Lerman C, Hernandez E, Helm CW. Enhancing adherence following abnormal Pap smears among low-income minority women: a preventive telephone counseling strategy. *J Natl Cancer Inst*. 1997;89(10):703-8.
- Sanders G, Craddock C, Wagstaff I. Factors influencing default at a hospital colposcopy clinic. *Qual Health Care*. 1992;1(4):236-40.
- Eli K, Vourlekis B, Muderspach L, et al. Abnormal cervical screen follow-up among low-income Latinas: project SAFE. *J Womens Health Gend Based Med*. 2002;11(7):639-51.
- Wells KJ, Battaglia TA, Dudley DJ, et al. Patient navigation: state of the art or is it science? *Cancer*. 2008;113(8):1999-2010.
- Block B, Branham RA. Efforts to improve the follow-up of patients with abnormal Papanicolaou test results. *J Am Board Fam Pract*. 1998;11(1):1-11.
- Engelstad LP, Stewart SL, Nguyen BH, et al. Abnormal Pap smear follow-up in a high-risk population. *Cancer Epidemiol Biomark Prev*. 2001;10(10):1015-20.
- Engelstad LP, Stewart S, Otero-Sabogal R, Leung MS, Davis PI, Pasick RJ. The effectiveness of a community outreach intervention to improve follow-up among underserved women at highest risk for cervical cancer. *Prev Med*. 2005;41(3-4):741-8.
- Marcus AC, Crane LA, Kaplan CP, et al. Improving adherence to screening follow-up among women with abnormal Pap smears: results from a large clinic-based trial of three intervention strategies. *Med Care*. 1992;30(3):216-30.
- Dohan D, Schrag D. Using navigators to improve care of underserved patients: current practices and approaches. *Cancer*. 2005;104(4):848-55.