Using Mixed Methods to Identify Factors that Affect Cervical Cancer Screening Uptake Among Lesbian and Bisexual Women

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Medical University of South Carolina

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Using Mixed Methods to Identify Factors that Affect Cervical Cancer Screening Uptake among Lesbian and Bisexual Women

Michael James Johnson

A dissertation submitted to the faculty of the Medical University of South Carolina in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the College of Nursing

2015

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Abstract

Research has highlighted the lower prevalence of cervical cancer screening among lesbian, bisexual, and queer (LBQ) women, as compared to the general female population. Numerous factors that influence screening behaviors among LBQ women have been identified; however, so little is still known about the nature of LBQ women's participation in screening. This dissertation is a compendium of three manuscripts that represent two distinct but related studies that have implications to cervical cancer screening among LBQ women. The first manuscript details a qualitative grounded theory study that aimed to understand how LBQ women experience health care systems. The second and third manuscripts detail a mixed methods study that examined cervical cancer screening behaviors of LBQ women using American Cancer Society guidelines as the standards for comparison, and determined factors that influenced participation in cervical cancer screening. The findings from the first qualitative study show an explanatory conceptual framework that represents three distinct phases of the health care experience. The findings from the mixed method study show the factors that were associated with cervical screening behavior of LBQ women. The findings of the two studies are finally integrated at the conclusion of this dissertation.
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Introduction

Cervical cancer is one of the most common reproductive cancers among women in the U.S. (Schiffman, Castle, Jeronimo, Rodriguez, & Wacholder, 2007). The American Cancer Society (ACS) (2015) estimates that in 2015, nearly 13,000 new cases of cervical cancer will be diagnosed, and over 4,000 women will die from the disease. The development of cervical cancer has been associated with a number of risk factors, including the human papilloma virus (HPV), cigarette smoking, suppressed immune systems, multiple sexual partners, chlamydia, obesity, long-term use of oral contraceptives, intrauterine devices, multiple full-term pregnancies, low socioeconomic status, and family history of cervical cancer (American Cancer Society, 2014; Omerod, 2002). However, the most significant risk factor is the lack of screening or infrequent screening (Spence, Goggin, & Franco, 2007).

The Papanicolaou (Pap) test is the preferred and widely accepted method to screen women for cervical cancer. Females between the age of 21 and 65, who have a cervix, are recommended to receive cervical screening at least once every three years, unless advised otherwise by a health care provider (U.S. Preventive Services Task Force, 2012). The Pap test is used to detect changes in the cells of the cervix resulting from human papilloma virus (HPV) infection, including early stages of cervical neoplasia as evidenced by squamous intraepithelial neoplasia. The Pap test is the most important screening tool used to prevent the development of invasive cervical cancer, and it has been established as a reliable test for the secondary prevention of cancer. Moreover, it has been the most important contributing factor to the significant decline in the incidence and mortality rates of cervical cancer over the last 50 years (Ekwueme et al., 2014).
Several factors have been attributed to the wide acceptance and recommendation of the Pap test, including the high false-negative rate, the difficulty in determining the risk status of an individual woman, recent evidence that cancer lesions can rapidly develop into invasive cancer, and the opportunity to screen for other medical conditions and malignancies (Omerod, 2002). Given the effectiveness of Pap testing and the fact that deficient screening remains the most significant risk factor for cervical cancer, it is essential to understand the factors that influence the receipt of cervical screening.

Evidence shows that racial and ethnic minority and low-income women are less likely than other groups to be screened for cervical cancer (Bazargan, Bazargan, Farooq, & Baker, 2004; Hall, Uhler, Coughlin, & Miller, 2002). Additionally, certain factors have been identified as barriers to timely screening, including lack of a regular health care provider, absence of provider's recommendation, lack of health insurance, and lack of social support (Behbakht, Lynch, Teal, Degeest, & Massad, 2004; Coronado, Thompson, Koepsell, Schwartz, & McLerran, 2004; Hatcher, Studts, Dignan, Turner, & Schoenberg, 2011; Mandelblatt et al., 1999). Although a great deal is known about the determinants of Pap testing, identifying subpopulations in which cervical cancer screening disparities exist can lead to the development of tailored strategies to increase screening rates, thus further reducing incidence and mortality.

Lesbian, bisexual, and queer (LBQ) women are one such subpopulation shown to underutilize Pap tests. Cervical screening rates among LBQ women have been estimated between 43% and 71% (Agenor, Krieger, Austin, Haneuse, & Gottlieb, 2014; Charlton et al., 2011; Fish & Anthony, 2005; Matthews, Brandenburg, Johnson, & Hughes, 2004; Tracy, Lydecker, & Ireland, 2010), compared to 73% of the general female population (Centers for Disease Control and Prevention, 2010). Although the important association between female
sexual behavior with men and risk of cervical cancer might seem to imply LBQ women are not at meaningful risk for cervical cancer, they are certainly still at risk. Moreover, underutilization of Pap tests can delay the time of diagnosis and treatment, elevating the risk of morbidity and mortality.

As with other groups of women, receipt of cervical screening by LBQ women is associated with age, race, education, income, health insurance, provider’s recommendation, sexual activity, and abnormal Pap results. However, extant research suggests that LBQ women also encounter unique barriers to screening, such as disclosing one’s sexual orientation to the provider, fear of discrimination, and mistrust of the medical establishment (Agenor et al., 2014; Charlton et al., 2011; Fish & Anthony, 2005; Kerr, Ding, & Thompson, 2013; Matthews et al., 2004; Tracy, Schluterman, & Greenberg, 2013). Despite a body of research that addresses Pap testing among LBQ women, numerous gaps warranted this dissertation study.

The first gap is the glaring lack of research on the topic of cervical cancer screening among LBQ women. After an extensive literature search, less than a dozen published studies were found on this topic since the year 2000. Of the studies located during the literature search, half were published before 2012, which is when the new cervical cancer screening guidelines were released (U.S. Preventive Services Task Force, 2012). Although the results from those studies published prior to 2012 are still relevant, there is an obvious lack of research that examined Pap testing under the current recommendation guidelines.

Secondly, data on the receipt of Pap testing among LBQ women has been limited to quantitative self-report questionnaires. Many of these studies repeatedly investigated the same factors, while other potentially important factors have been minimally addressed or yet to be
discovered. None of the studies identified during the literature search used qualitative or mixed methods.

The last noticeable gap was the lack of a theoretical or conceptual framework. Although theoretical frameworks are not always used in descriptive or exploratory research, they are an important organizing structure for the research design and methods, and are integral to explaining the study results and placing the findings within the context of science (Mock et al., 2007; Radwin & Fawcett, 2002). None of the published studies identified during the literature search applied a theoretical or conceptual framework.

**Theoretical Foundation**

Receipt of cervical cancer screening is a point in the health system where a woman’s needs meet the professional system—it is a health care utilization issue. One of the most widely acknowledged models of health care utilization is Andersen’s (Andersen, 1995, 2008) Behavioral Model of Health Services Use (BMHSU). Originally developed in 1968 by Andersen, it has undergone many modifications as the knowledge of health care systems and health care utilization has evolved. The latest version, published in 2008, served as the theoretical framework for this dissertation study.

The BMHSU postulates that a variety of determinants influence health care utilization. The model is separated into four main components: contextual characteristics, individual characteristics, health behaviors, and outcomes. In the bounds of contextual and individual characteristics, determinants can be designated as predisposing, enabling, or need. Health behavior determinants are partitioned as personal health practices, process of medical care, and use of personal health services. Outcomes are separated into perceived health, evaluated health,
and consumer satisfaction. Additionally, the BMHSU illustrates the health care utilization process as a feedback loop cycle.

Andersen (2008) encourages users of the BMHSU to adapt the model to their health services research in theoretically sound and meaningful ways. Two studies were used as guides to operationalize the conceptual model for this dissertation study (Babitsch, Gohl, & von Lengerke, 2012; Simpson, Balsam, Cochran, Lehavot, & Gold, 2013). The manuscript chapters will detail how the BMHSU was applied; in brief, the model was used to integrate and contextualize the qualitative and quantitative results.

Manuscripts

This dissertation consists of three manuscripts that represent two distinct but related studies. The first manuscript details a grounded theory qualitative study that explored the health care experiences of LBQ women. The second and third manuscripts detail a mixed methods study that examined cervical cancer screening behaviors of LBQ women. The second manuscript details the qualitative findings and the third manuscript details the quantitative and mixed findings.
References


Abstract

BACKGROUND: Lesbian and bisexual (LB) women encounter numerous barriers to equitable health care services, such as lack of quality care and discriminatory health care settings. These barriers affect the well-being of LB women, presumably leading to disparities in health and health care. Despite these disparities, few published research studies explore health services of LB women. This qualitative grounded theory study addressed that gap.

METHODS: Purposive sampling was used to recruit 18 – 24 year old women who identified as LB and who reported using health services as an adult. Participants (N = 9) were recruited from LGBT student groups at universities in the Southwest U.S, and in-depth audio-recorded interviews were performed. The nine participants represented 29 unique health care experiences. The transcriptions were uploaded into NVivo, and the constant comparison method was used to analyze the data.

FINDINGS: Six themes were identified, including seeking health care, expectations, disclosure of sexual orientation, moment of truth (provider attributes), proximal outcomes, and health outcomes. These themes were sorted into an explanatory conceptual framework that represents three distinct phases of the health care experience: pre-interaction, health care interaction, and outcomes.

CONCLUSIONS: The women in this study identified disclosure of sexual orientation and provider attributes as major points in the health care experience. Creating health care environments that facilitate disclosure of sexual orientation and educating providers about LB-appropriate care are strategies that may affect health and health care disparities of LB women.
Introduction and Background

Lesbian and bisexual (LB) women, referring to women with “an enduring pattern of or disposition to experience sexual or romantic desires for, and relationships with, people of one’s same sex, the other sex, or both sexes,” (Institute of Medicine, 2011, p. 27) encounter numerous barriers to equitable health care services, such as lack of quality care and discriminatory health care settings. LB women often encounter health care providers who are insensitive, discriminatory, biased, do not have LB-specific knowledge, or are not attuned to the needs of LB women (Clift & Kirby, 2012; Hutchinson, Thompson, & Cederbaum, 2006; Matthews, Brandenburg, Johnson, & Hughes, 2004). Health care systems also systematically discriminate against LB women, such as not having policies inclusive to women who identify as something other than heterosexual and using intake forms that only recognize heterosexual women (Eliason, Dibble, DeJoseph, & Chinn, 2009). These barriers potentially affect the overall well-being of LB women, presumably leading to disparities in health and health care.

In comparison to heterosexual women, LB women more often underutilize routine health screenings, including Pap smears and tests for sexually transmitted infections (Agenor et al., 2014; Charlton et al., 2011; Fish, 2009; Tracy, Lydecker, & Ireland, 2010). The U.S. Department of Health and Human Services (2013) corroborated these findings in its latest Women’s Health USA report and also found that LB women are more likely to self-report worse overall health.

LB women also have disproportionately higher levels of negative health outcomes as compared to their heterosexual counterparts. They are at increased risk for cardiovascular disease (Farmer, Jabson, Bucholz, & Bowen, 2013), are more likely to smoke and use alcohol or drugs (Cochran, Ackerman, Mays, & Ross, 2004; Farmer et al., 2013; Hughes, Johnson, & Matthews, 2008; Lee, Griffin, & Melvin, 2009; Marshal et al., 2012; Parsons, Kelly, & Wells, 2006), and be
obese or overweight (Boehmer, Bowen, & Bauer, 2007; Boehmer et al., 2011; Jun et al., 2012). Additionally, they are more likely to report a mood or anxiety disorder (Burgess, Lee, Tran, & Van Ryn, 2008; King et al., 2008).

Despite these disparities, and even with the Institute of Medicine’s (2011) proclamation of health care inequities as a priority research area for lesbian, gay, bisexual, and transgender (LGBT) populations, few published research studies have addressed health services for LB women. We addressed this gap by conducting a qualitative study that aimed to understand how LB women experience health care delivery systems. Understanding health care services from the perspective of LB women is integral to addressing health care inequities and health disparities.

We designed and conducted a qualitative grounded theory (GT) study (Glaser, 1998; Glaser & Strauss, 1967) using in-depth interviews as the data collection method. GT is a systematic, inductive, and comparative approach used to construct theories and to identify process or conceptual categories (Bryant & Charmaz, 2007). The GT approach provided us with a method to analyze in-depth interviews and then develop a conceptual framework. This framework identifies specific concepts of the health care experience, and thus can guide policy, practice, and research aimed at addressing health care inequities and health disparities of LB women. This paper presents our study’s methods, results, and the implications of our findings to addressing health care inequities and health disparities of LB women.

Methods

This paper presents a GT analysis of in-depth interviews conducted with young adult LB women about their health care experiences. The Institutional Review Board at Medical University of South Carolina provided ethical approval for this study.
Data Collection

Purposive sampling was used to identify young adult LB women who had received services from a health care provider. The participants were recruited from LGBT student groups at universities in the southwest United States. The first author (MJJ) identified the LGBT student groups (n = 45) through Internet searches, and then contacted them through e-mail and social media requesting distribution of the recruitment flyer.

The first author screened interested participants and then scheduled interviews with those who were eligible. Per the IRB protocol, participants read a Statement of Research and provided verbal informed consent. MJJ conducted the semi-structured in-depth telephone interviews using a guide (see Table 1). The interviews were audio-recorded and professionally transcribed. The participants provided demographic information at the end of the interviews, and MJJ recorded reflexive and field notes immediately following the interviews. The interviews took place from July to December 2013.

MJJ had education and training in qualitative methods. He established rapport with the participants before engaging them in the interview process. He disclosed his own sexual orientation as a gay male to the participants, and discussed his interest in the topic and his reasons for doing the research. This initial conversation seemed to ease the participants, creating a relaxed and open dialogue.

Participants

Inclusion criteria for the study were self-identifying women between the age of 18 and 24 years who identified with a sexual orientation other than heterosexual (e.g., lesbian, bisexual, queer), and reported using health services during their adulthood. One individual in-depth
interview was conducted with each participant (n = 9), and the interviews lasted between 15 and 45 minutes (mean = 25 minutes). Participants were compensated with a $25 electronic gift card.

All of the participants lived in the southwest United States (Arizona, Texas, Colorado, and Oklahoma). The average age of the participants was 20 years old (range 18 – 23). Five of the participants identified as lesbian and four as bisexual. One participant was transgender male-to-female, and most were White, with the exception of one Hispanic and one Asian. All of them were full-time students at a university.

Data Analysis

The transcribed interviews and field notes were uploaded into NVivo 10.0 (QSR International, Pty. Doncaster, Victoria, Australia) to organize data analysis. MJJ analyzed the data using the GT approach (Glaser, 1998; Glaser & Strauss, 1967). The second author (LSN) was consulted throughout the process. Immersion and crystallization by both authors was used to validate and refine the themes (Borkan, 1999).

The GT approach started with open coding, a process of reading the transcripts and assigning labels to sections while remaining open to the participants’ perspectives. The initial open codes were created using the participants’ words, and then subsequently grouped together using the constant comparative method, a hallmark of GT. They were grouped based on similarities and differences and were more conceptual than the initial codes. The grouped codes lead to focused coding, which allowed for coding of larger data segments. The focused codes were then refined using the constant comparative method, leading to the final themes. Additionally, memos were created throughout to document the data analysis. After analyzing all of the transcripts, the memos and themes were sorted to construct a conceptual framework.
Data were saturated after the seventh interview, after which no new codes or themes were found. We conducted two more interviews, totaling nine, to ensure no more codes emerged. In addition, each participant described more than one health care experience, and thus the nine interviews represent 29 unique experiences.

Results

The data analysis resulted in six categories/themes that we sorted into an explanatory framework that sequences the progression of the participants through their health care experiences. This framework (see Figure 1) is separated into three phases: (1) pre-interaction, (2) health care interaction, and (3) outcomes. This section will describe each of the categories and provide participant quotes as exemplars.

Pre-Interaction Phase

Seeking health care and expectations

The participants sought health care services for various reasons, but most experiences were with a gynecologist. After seeking care, all of the participants had expectations for their health care experience, such as the provider delivering care attuned to the needs of LB women. One participant expected that the provider had learned this information in school.

\[ I \text{ just went there under the assumption that they are going to be understanding because they have to learn about this in school and they're going to know exactly what I'm talking about.} \]

Other participants did not expect the provider to have LB-specific knowledge, stating that most providers deliver heteronormative care.

\[ Sometimes \text{ I just literally assume that they're going ahead on heteronormative what-not because that's what they know and what they're familiar with. I'm going to assume my doctor is going to see people are straight until I have a reason to believe otherwise. If I even so much as see a pamphlet that acknowledges that queer women exist, that makes me feel better about my doctor.} \]
Health care Interaction Phase

Disclosure of sexual orientation

The importance of disclosing sexual orientation or gender identity (SOGI) was apparent in every narrative. Each participant emphasized disclosing her SOGI, but the reasons for disclosing varied. One participant described disclosing her SOGI to inform the provider of her sexual activity.

*I always try to be very honest with my physicians and I always express my sexual orientation just so they’re aware of what kind of sexual activity I’m having.*

Another described disclosing her SOGI as therapeutic.

*I like revealing my sexuality to my health care provider because I grew up in a very conservative household and that was not anything I was ever able to tell my parents, so it is very refreshing to be able to tell an adult in a relevant way about my sexuality because I haven’t been able to do that in the past. I know that I have patient-doctor confidentiality and that’s something they can’t reveal to my family, and there is comfort in that.*

Regardless of the reason, disclosing was an important moment. Moreover, none of the participants were asked to identify their SOGI on intake forms, but all of the participants remarked that they wished these forms had a place to identify their SOGI.

Moment of truth (provider attributes)

This category is a pivotal point in the health care experience and was the primary focus of all of the interviews. The *Moment of Truth* occurs after the patient discloses her sexual orientation to the provider, meaning that the provider’s ability to provide quality care is revealed. This category is composed of three attributes: knowledge, communication and attitudes.

The health care provider’s knowledge about LB-specific topics was important to every participant. The LB women wanted their providers to have knowledge about same-sex relationships, sexuality, sexual health, and other topics specific to LB women. Despite these
expectations, eight of the participants described how some providers were not attuned to all of their needs.

_Usually if I go to the gynecologist, they get as far as, “what birth control do you use?” and I might say, “Oh, I’m dating a women right now.” Then they’re like “okay” and they don’t really know how to respond to that. They never talk about dental dams or anything like that._

To the contrary, two of the participants described how some providers had knowledge specific to their needs.

_There was one time where I was getting tested for something based on my sexual patterns with women at the time. The doctor said, “Well, you should probably get a throat swab instead because that’s more likely to be an issue.” That was very informed, and that was one of the only times where a doctor had a response that was relevant to women having sex with women beyond just, “Oh, okay. So, you’re not going to get pregnant from that.”_

Patient-provider communication was another attribute important to all of the participants. Although there were varying descriptions, they either described the communication as comfortable or uncomfortable.

_We talked about everything. At times we would talk about how to improve our relationship and she would always ask, “Oh my gosh, are you guys looking forward to moving in together?” She was just so comfortable._

Another participant described a scenario where the conversation was antagonistic.

_The OB/GYN asked me at one point, which I thought was really rude, “Well, are you sure you’re not just going to go back to girls?” I was like, “Oh, my God! That’s none of your business. I just need birth control right now.” She definitely said a few comments that that were definitely snippy. That’s definitely the worst and just the most uncomfortable experience I’ve ever had._

Although attitudes can be conveyed through communication, it was noticeably a separate attribute. Participants either described the provider as respectful, understanding, and accepting of
their SOGI, or as disrespectful and not accepting of their SOGI. For example, one participant described a health care interaction with the presence of her same-sex partner.

*I brought my partner, who was supporting me, but it was almost like ‘why are they even here’ kind of attitude.*

Another participant described a provider who was accepting and comfortable with the presence of her same-sex partner.

*What I really liked about my experience is that they let my partner come and sit with me. It was just really a welcoming environment for me. I definitely felt like there was no awkwardness. I was definitely able to be open about my sexuality, and having my partner there with me was really awesome.*

**Outcomes**

**Proximal outcomes**

The category that follows the health care interaction is proximal outcomes, which is the participants’ behavior or reaction that occurred after the patient-provider interaction. The behavior patterns that emerged in the interviews included health knowledge seeking, health care seeking, disguising sexual orientation in subsequent health care interactions, and changing health care provider.

Four participants described seeking out health related knowledge using the Internet because their provider did not have LB-specific knowledge, or because they felt uncomfortable asking questions.

*With my gynecologist experience, actually the first couple of questions I felt, ‘Oh crap. Maybe I should have gone somewhere else or researched this doctor first because I shouldn’t be asking anymore questions,’ because I felt stupid and I felt she probably didn’t know the answer anyway, and I was probably going to go home and Google it to find the answer.*
Three participants described changing their health care seeking behaviors following a poor quality health care interaction. One participant described how she would forego health care in the future because of a negative experience.

*It definitely made me more aware of where I was, whom I was interacting with, and what choices I was going to make in the future in order to make those experiences more comfortable. Even if that means that I’m in a lot of pain and I’m going to sit down and research for ten minutes of where would be a better place than another place to go, then that’s what I’ll end up doing.*

Following negative encounters, participants described searching for providers known to care for LB women. Others described disguising their SOGI during subsequent health care interactions.

*I had a conversation with my partner like, “Wow, that was really uncomfortable. Maybe next time when we go, let’s have a game plan of you’re going to wait in the waiting room or if we have someone who is really uncomfortable and we’re not getting good vibes, maybe you’re just my friend and maybe you’re just my roommate.”*

**Discussion**

Using the interview data of the LB women, we developed a conceptual model (see Figure 1) that identifies five major points in the health care experience: seeking health care, expectations, disclosure of sexual orientation, provider attributes, and proximal outcomes. The points at which LB women interacted with their provider were found to be important to the participants. Participants primarily discussed the importance of this interaction in relationship with disclosing their sexual orientation to the provider. Their main concern was the provider’s ability to care for them after revealing their sexual orientation. Thus, our findings signal *provider attributes* and *disclosure of sexual orientation* as two key points in the health care experience that can be targeted to address health and health care disparities among LB women.
Within the category of *provider attributes*, we identified three key attributes that are important for providers to have when caring for LB women. They need to be knowledgeable about LB-specific care. They should communicate with LB women using culturally sensitive terms. Last, they should convey a caring and accepting attitude toward LB women. These findings support previous results that found LB women’s satisfaction with care was associated with the provider’s LB-specific knowledge, competency of care, and sensitivity to areas of concern for LB women (Saulnier, 2002; Seaver et al., 2008). Providers’ attributes are important beyond satisfaction with care though; they may also influence outcomes among LB women.

The findings suggest that LB women’s satisfaction with care is associated with their subsequent health care practices, referred to as *proximal outcomes* in the model. In our study, negative provider-patient interactions resulted in the LB women seeking out health information on the Internet, delaying health care visits, changing providers, and disguising their sexual orientation during subsequent health care interactions. We postulate that the provider-patient interaction and proximal outcomes influence a woman’s health outcomes, which is why we include *health outcomes* in the conceptual model.

Although few studies have tested the association between health care experiences and health outcomes, Fish and Anthony (2005) found that good health care experiences were associated with increased likelihood of cancer screening among LB women. In addition, although not specific to LB women, a recent systematic review found positive associations between patient experiences and self-rated and objectively measured health outcomes (Doyle, Lennox, & Bell, 2013). Given the probable link between satisfaction with care among LB women and health outcomes, providers need more education to improve their skills in providing LB-appropriate care.
Previous findings indicate that educational interventions to improve practitioners’ skills in providing health care to LB women was effective (Scout, Bradford, & Fields, 2001), yet many medical and nursing education programs lack LB-specific content in their curriculums (Obedin-Maliver et al., 2011). Our findings strengthen the argument to mandate the inclusion of LGBT content in all curricula for health care professionals and to require current health care providers and professionals to take LGBT specific continuing education courses. Until the time arrives when all providers are educated about and accepting of LB women, providers who are knowledgeable and affirming of LB clientele should advertise their services in LB-specific directories. Insurance companies should also consider identifying these providers in their directories.

Being satisfied with LB-appropriate care is dependent on the woman disclosing her sexual orientation to the provider. Numerous studies have explored disclosure of sexual orientation in the context of a patient-provider relationship, finding that disclosure is dependent on the patient-provider relationship, the perceived risk of disclosing, and the patient’s internal attributes (Durso & Meyer, 2013; McNair, Hegarty, & Taft, 2012; St. Pierre, 2012). In our study, the women primarily disclosed their sexual orientation to their providers because they wanted appropriate care. However, for LB women to disclose their sexual orientation, they need providers who are skilled at asking patients about their sexual orientation and/or creating safe health care environments.

Creating a safe health care environment and educating the provider about facilitating disclosure are the most modifiable areas. Including LGBT inclusive language and adopting sexual orientation questions on patient intake forms are modifiable areas that can better facilitate disclosure (Cahill & Makadon, 2013; Eliason et al., 2009; Institute of Medicine, 2013). All of the
women in our study expressed interest in responding to sexual orientation questions on patient intake forms to decrease anxiety and fear around disclosing. Many of the women commented that such questions would signal to them that the provider is accepting of LB women.

**Implications to Policy and/or Practice**

Although the provider-patient interaction is the heart of the health care experience, other points in the conceptual model are relevant to practice and/or policy. The first concept in the model is *seeking health care*. Despite the recent positive changes to the legal and policy landscape for LB women and their families, they often encounter challenges and barriers to accessing health services. LB women still face unique coverage and access barriers related to federal and state laws and employer policies. For example, even with the recent law that bans the federal government and federal contractors from discriminating against LGBT persons (The White House, 2014), discrimination can still continue due to lack of protections at the state and federal level. Thus, policymakers need to continue to promote equal treatment of LB women, same-sex couples, and their families.

Another concept important to practice and policy is *health outcomes*. There is a lack of health outcome data available on LB women and consequently it is challenging to gather support for change. Health services and research industries emphasize programs, services, and interventions that respond to negative health outcomes. Thus, it is important that policymakers and providers lead the way of collecting sexual orientation and gender identity data in health care practices and organizations and federal surveys. Quantifying health disparities of LB women will signal grant funders, researchers, policymakers, and providers to identify and address the causes.
Limitations

Although the model developed from this study is conceptual and should be applicable to diverse populations, the participants were mostly White young college students with health insurance. Additionally, although the transgender bisexual woman in our study described similar experiences to the other women, we recognize that the conceptual model does not represent the unique health care experiences of transgender people. Last, the conceptual model does not represent LB women who did not disclose their sexual orientation to their health care provider. Additional research is needed for those experiences.

This conceptual framework explains how LB women experience health care, which is intended by the GT approach. Although extant research already suggests a causal relationship between some of the concepts in the framework, we must avoid making causal inferences with our data and framework. Further testing is needed to determine cause-and-effect.

Although GT can be used to generate theory, we used this approach to discover major concepts in the health care experience from the perspective of the participants. Further research is needed to expand the conceptual model and to discover attributes specific to each concept. We do not claim the findings of this study as a theory. Despite these limitations, our study contributes to the extant literature related to LB women health care experiences.

Conclusions

Numerous publications already bring attention to the inequitable health care services that LB women encounter, such as lack of quality care and discriminatory health care settings. Our study, which sought to understand health care experiences from the perspective of LB women, not only confirmed previous research but also discovered that negative encounters can lead to negative outcomes. Although more research needs to be conducted, our findings suggest that the
two important points in the health care experience that are significant targets to improving outcomes for LB women are disclosure of sexual orientation and provider attributes. LB women want to be able to disclose their sexual orientation and receive appropriate and competent care from their providers. To ensure providers can deliver these services to LB women, more pressure is needed to mandate providers and other health care professionals complete continuing education courses in LGBT care and for schools to include LGBT topics in their curricula.
References


### Table 1

*Interview Guide Used During Participant Interviews*

<table>
<thead>
<tr>
<th>Interview Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tell me about your experiences using health care services as a [lesbian, bisexual, etc] female. Health care can include seeing a doctor, nurse, counselor, psychologist, or any other health care professional.</td>
</tr>
<tr>
<td>2. Based on the experiences you just described, tell me if thought these encounters to be quality health care services and why you think that.</td>
</tr>
<tr>
<td>3. Tell me how you felt during the health care experiences you described earlier.</td>
</tr>
<tr>
<td>4. Tell me what happened after the experiences you described earlier.</td>
</tr>
<tr>
<td>5. Could you describe what you think is needed for health care services to be of quality for lesbian and bisexual females?</td>
</tr>
<tr>
<td>6. Can you talk about if your health care needs were met in the encounters you described earlier?</td>
</tr>
<tr>
<td>7. What did you find to be most helpful to you during the health care encounters described earlier?</td>
</tr>
<tr>
<td>8. After having these health care experiences, what advice would you give to health care providers and their staff caring for lesbian and bisexual females?</td>
</tr>
</tbody>
</table>
Figure 1. Conceptual framework explaining the health care experience of lesbian and bisexual women
Manuscript 2

Qualitative Study of Cervical Cancer Screening Among Lesbian and Bisexual Women and Transgender Men

Abstract

BACKGROUND: Lesbian, bisexual, and queer women, as well as transgender men, (LBQT) are less likely than their heterosexual and female-identifying counterparts to access cervical cancer screening services. Although numerous factors that influence receipt of cervical screening have been identified, several gaps in research and knowledge merit additional research. A mixed-methods study was carried out to address these gaps. This study details the qualitative findings.

METHODS: A convenience sampling of 21-65 year old LBQT people was recruited from the Internet and community events. The qualitative data was collected through in-depth telephone interviews (N = 20) and open-ended questions on an online questionnaire (N = 226). The in-depth interviews averaged 20 minutes in length, and there were 1,231 responses between all of the open-ended questions on the Internet questionnaire. The transcribed interviews and questionnaire responses were uploaded into NVivo, and then a deductive-inductive content analysis approach was used to analyze the data.

FINDINGS: The sample was mostly non-Hispanic White females who identified as lesbian or gay. Most were routine cervical cancer screenings. Eighteen factors/themes were identified in the data and were contextualized within a health services theoretical framework.

CONCLUSIONS: This study illustrated that the receipt of cervical screening among LBQT people is influenced by a constellation of factors. The factors need to be investigated and addressed using a multilevel framework, and research should focus on studying how factors interface with each other. Additionally, the unique characteristics of LBQT people are mediated or moderated by other social identities. Thus, future research must examine cervical screening through multiple lenses.
Introduction and Background

In the United States in 2015, nearly 13,000 new cases of cervical cancer are expected to be diagnosed, and over 4,000 women are estimated to die of the disease (American Cancer Society, 2015). The majority of these cases will occur among women who do not receive regular cervical screening. The Papanicolaou (Pap) test is the preferred and most effective method of cervical screening, which is recommended at least once every three years between the age of 21 and 65, unless advised otherwise by a health care provider (American Cancer Society, 2012; U.S. Preventive Services Task Force, 2012). It detects potentially pre-cancerous and cancerous cells, and it is responsible for the sharp decline in the incidence and mortality of cervical cancer throughout the world (Benedet, Anderson, & Matisic, 1992; Christopherson, Lundin, Mendez, & Parker, 1976; Läärä, Day, & Hakama, 1987; Sigurdsson, 1993). Because of the effectiveness of Pap tests, lack of screening or infrequent screening remains the most significant risk factor in the development of cervical cancer. Thus, it is important to identify those subpopulations that underutilize Pap testing and investigate the factors that influence use.

Sexual and gender minority individuals are less likely than their heterosexual and female-identifying counterparts to be screened. This includes females who identify as a sexual orientation other than heterosexual, such as lesbian, bisexual, or queer. It also includes female-to-male transgender people (hereon collectively referred to LBTQ people). The screening rates for LBTQ people are estimated between 43% and 71% (Agenor, Krieger, Austin, Haneuse, & Gottlieb, 2014; Charlton et al., 2011; Fish & Anthony, 2005; Matthews, Brandenburg, Johnson, & Hughes, 2004; Tracy, Lydecker, & Ireland, 2010), compared to 73% of the general female population (Centers for Disease Control and Prevention, 2010).
Researchers have uncovered a constellation of factors that can partly explain utilization of screening among LBTQ people. In the context of Andersen’s Behavioral Model of Health Services Use (BMHSU), the framework used for this study, most of the known factors are specific to the individual. Some of the individual factors favor Pap testing, such as being married or partnered, having a higher income and health insurance, being educated, and perceiving the need for Pap testing (Tracy, Schluterman, & Greenberg, 2013). A number of other factors pertain to the process of medical care, including perceived discrimination, not disclosing one’s sexual orientation to the provider, and positive Pap testing experiences (Fish & Anthony, 2005; Tracy et al., 2013). Additionally, two outcome factors positively associated with Pap testing includes abnormal Pap results and perceived satisfaction with care (Mosack, Brouwer, & Petroll, 2013; Tracy et al., 2010). Although several factors have been identified, a number of noted gaps in the research merit additional research.

Data on the receipt of cervical cancer screening among LBTQ people has been limited to quantitative self-report questionnaires. Many of these quantitative studies have repeatedly investigated the same factors, while other potentially important factors have been minimally addressed or yet to be discovered. In addition, none of the research studies identified during the literature search used a theoretical framework to contextualize their findings. The mixed methods study addressed these limitations by examining known and potentially new factors using an Internet questionnaire and in-depth interviews. We also used a recognized theoretical framework to contextualize the findings.

The purposes of this mixed methods study were to examine cervical cancer screening behaviors of LBTQ people using American Cancer Society guidelines as the standards for
comparison, and to determine factors that influence participation in cervical cancer screening.

This paper will concentrate on the qualitative portion of the study.

**Theoretical Framework**

The BMHSU (Andersen, 1995, 2008) is one of the most widely acknowledged models of health care utilization (Babitsch, Gohl, & von Lengerke, 2012). Numerous modifications have been made since Andersen introduced it in 1968. The latest version was used within our study: a multilevel model that incorporates both individual and contextual determinants of health services use (Andersen, 2008). The BMHSU postulates that a variety of environmental and individual characteristics influence health care utilization, including (1) predisposing factors that affect one’s likelihood of accessing and utilizing care, (2) the presence or absence of enabling resources that make it easier to utilize care, and (3) the need for care (Andersen, 2008). Other components of this model include health behaviors (personal health practices and process of medical care), and outcomes (perceived health, evaluated health, and consumer satisfaction). Additionally, the BMHSU illustrates the health care utilization process as a feedback loop cycle.

Cervical cancer screening among LBTQ people is a health care utilization issue, thus the BMHSU is an appropriate framework. The BMHSU guided the development of some of the qualitative questions and it served to contextualize the findings.

**Methods**

**Design**

A convergent-parallel mixed methods research design (Edmonds & Kennedy, 2013) was used, involving the simultaneous collection of quantitative and qualitative data, followed by the combination and comparison of the two resulting data sets. This paper presents the qualitative analysis and findings of the in-depth interviews and open-ended Internet questionnaire responses.
We used the consolidated criteria for reporting qualitative studies (COREQ) (Tong, Sainsbury, & Craig, 2007) to guide our paper. The institutional review board (IRB) at Medical University of South Carolina (MUSC) approved this study.

Participants and Recruitment

Inclusion criteria for the study were females between the age of 21 and 65 who identified with a sexual orientation other than heterosexual, including transgender people with a cervix. A website was created that provided details about the study, contact information of the principal investigator (PI) for people interested in participating in an interview, and a link to the Internet questionnaire.

LBTQ people have been historically hard to reach, and thus a convenience sample was recruited using three different approaches: Internet, community settings, and word-of-mouth (snowball). Internet recruitment was extensive and entailed the PI distributing an electronic recruitment flyer to LBTQ groups found on professional websites, university websites, and social media websites. The study was also advertised on a few blogs and in LBTQ electronic newsletters. In total, the PI contacted nearly 300 groups and centers. Community recruitment involved the PI handing out flyers at two LBTQ events in the southwest United States. Those who took part in the study were encouraged to refer their friends to the study’s website.

Data Collection

Two data collection methods were used: in-depth telephone interviews and an Internet questionnaire. The PI used email correspondence to screen the people interested in participating in a telephone interview. Per the IRB protocol, participants who were eligible read a Statement of Research before the phone interview. Then, they provided verbal informed consent at the beginning of the phone interview. The participants provided demographic information at the
beginning of the telephone call. Additionally, the participants reported the last time they had a Pap test. Per the American Cancer Society (2012) guidelines, and consistent with previous research on this topic (Matthews et al., 2004; Tracy et al., 2013), people reporting a Pap test within the last three years were identified as “routine screeners” and people reporting a Pap test greater than three years previous were identified as “non-routine screeners.”

The PI then conducted the semi-structured in-depth interview using a guide. The PI had education and training in qualitative methods and interviewing techniques. He established rapport with the participants before engaging them in the interview process. He disclosed his own sexual orientation as a gay male to the participants, and discussed his interest in the topic and his reasons for doing the research.

The interview questions centered on the participants’ perceptions of Pap testing, the reasons behind their decision to be (or not be) screened, their thoughts about why some people are screened while others are not, and what can be done to encourage screening. A few of the questions varied depending on whether the participant was a routine or non-routine screener. The PI wrote field notes during the interviews to record his initial thoughts. The interviews were audio-recorded and professionally transcribed and then verified by the PI. The transcribed interviews were not returned to the participants for comments or correction. The interviews took place from August to October 2014. Participants were given a $20 electronic gift card for their time.

The Internet questionnaire data were collected and managed using the REDCap electronic data capture tool hosted at MUSC. REDCap (Research Electronic Data Capture) is a secure, web-based application designed to support data capture for research studies (Harris et al., 2009). People who responded to the Internet questionnaire read an informed consent before
answering the questions. Most of the questions were quantitative measures, including a measure that identified the respondent as either a routine or non-routine screener; however, there were 10 open-ended response questions. The open-ended questions were nearly identical to those asked during the telephone interviews. The Internet questionnaire was open from August to December 2014. After respondents completed the questionnaire, they could choose to be directed to another REDCap survey site to enter their name and email address into a drawing for a $100 electronic gift card. The separate survey site ensured that no identifying information could be linked to the questionnaire responses.

Data Analysis

The transcribed interviews and responses from the open-ended Internet questions were uploaded into NVivo 10.0 (QSR International, Pty. Doncaster, Victoria, Australia) to organize the data analysis. The data were analyzed using a deductive-inductive content analysis approach (Elo & Kyngas, 2008). Figure 1 illustrates this approach. The PI independently coded all of the data and identified the initial themes. Due to the nature of the deductive-inductive approach, some of the code and theme names were identified in advance whereas others were derived from the data. The primary goal of coding was to identify the factors or reasons for LBTQ people’s utilization (or not) of Pap testing.

Data collection and data analysis were conducted concurrently, and data saturation was determined at the point in which new information produced little or no change to the emerging themes. The second author, who is a qualitative research expert, was consulted after data saturation and after the PI identified themes. Both researchers then discussed and refined the themes. The manuscript and themes were then presented to the remaining research team who provided their input.
Results

Twenty people participated in the in-depth telephone interviews and 226 respondents completed the Internet questionnaire. Due to the nature of the convenience sample, we cannot calculate response rate. The in-depth interviews lasted between 10 and 45 minutes; the average length was just under 20 minutes. In total, there were 1,231 qualitative responses between all of the open-ended questions on the Internet questionnaire. The participants were mostly non-Hispanic White females who identified as lesbian or gay. Additionally, 85% of the interview participants and 73% of the questionnaire respondents were routine cervical cancer screeners. Tables 1 and 2 describe all of the participant characteristics.

The data analysis resulted in 18 factors (themes) that were sorted and contextualized within the BMHSU theoretical framework. The final model is illustrated in Figure 2. Exemplar participant quotes are found in Tables 3 and 4. This section is organized according to the different sections of the BMHSU. We also provide a brief introduction for each BMI-ISU section.

Contextual Characteristics

Andersen (2008) described contextual characteristics/factors as being measured at some aggregate rather than individual level and include health organization and provider-related factors and community characteristics. Contextual characteristics are divided into predisposing and enabling factors. In the context of this study, predisposing factors are those that make someone more or less susceptible to access or use cervical screening services, and enabling factors are those that make it easier to access or use cervical screening services. Two contextual factors emerged in our study, stigma and health care environments safe for LBTQ people.

Stigma, a predisposing factor, refers to the societal prejudice toward LBTQ people. Participants remarked that the social stigma of being LBTQ can influence a person’s choice to
access cervical screening services. Even among those participants who did not use the word 
*stigma*, many described how LBTQ people avoid Pap tests because they fear being judged or
discriminated against.

The other factor in this section, health care environments safe for LBTQ people, enables
people to access cervical screening services. This factor was threaded throughout many
interviews and questionnaire comments. Safe health care broadly refers to environments where
LBTQ people can go and feel welcomed and accepted, and where they will encounter health care
professionals who are comfortable and respectable toward them. If a LBTQ person knows that an
environment is safe, it eases their decision to get a Pap test.

**Individual Characteristics**

These factors are specific to the individual and are divided into predisposing, enabling,
and need factors (Andersen, 2008). The definitions for predisposing and enabling are identical to
those we introduced earlier. Need factors are differentiated as being either perceived (how LBTQ
people view or experience their own health) or evaluated (professional assessments and objective
measurements of the LBTQ person’s health status) (Babitsch et al., 2012).

Many predisposing factors emerged in our study, including knowledge, peer support, role
models, distrust in health care, and gender dissonance. Knowledge of Pap testing guidelines as a
factor was evident in nearly every participant’s interview and questionnaire. The participants
frequently stated that many LBTQ people are either unaware or misinformed about Pap testing
guidelines. The participants discussed many of the widespread fallacies around Pap testing, but
the most identified misconception was the belief that a woman must be in a sexual relationship
with a man to necessitate a Pap test. This misinformation presumably decreases the likelihood of
seeking out cervical screening services.
Having peer support is a factor that likely increases the uptake of cervical screening services. Participants described that those LBTQ people who are hesitant about Pap testing are especially in need of encouraging peer support. In addition, witnessing role models throughout one’s life use engage in health maintenance screenings may also be an important predisposing factor.

The last two predisposing factors are distrust in health care and gender dissonance. Participants discussed that LBTQ people who distrust health care are probably less inclined to seek out cervical screening. Gender dissonance is the only factor specific to the transgender participants. Many of them spoke of the distress they experience as a result of the mismatch between their biological sex (female) and gender identity (male). Receiving a Pap test reminds them of this mismatch, and thus they try to avoid any gynecological exam.

The three enabling factors (health insurance, socioeconomic status, and regular provider) are not unique to LBTQ people, but they were identified by most of the participants. Possessing health insurance and financial stability enables a person to seek out cervical screening services. Additionally, those participants who were routine screeners commented that having a regular provider enabled them to stay on schedule with their Pap tests.

Having a family history of cancer and getting an abnormal result back after a Pap test were the two need factors. Some participants explained that their family had a history of cancer and that this knowledge reinforced their need to get screened. Many other participants revealed that they have had abnormal cervical results in the past, resulting in them being more mindful of needing to continue their screening.
Health Behaviors

Health behavior factors include personal health practices and the process of medical care. This includes the behavior of providers while interacting with patients (Andersen, 2008). The participants in our study communicated two factors: providers are sensitive and competent at providing care to LBTQ patients and providers are competent at assessment, treatment, and performance of diagnostic tests. These factors occur during the delivery of health care, and thus are categorized under the process of care category.

Similar to the safe health care environments discussed earlier, the subject of provider competency and sensitivity arose in most interviews and was found in many questionnaire comments. Participants primarily defined competency as providers being knowledgeable and skilled at delivering care to LBTQ people. They defined sensitivity as being aware, responsive, and caring toward LBTQ people. The degree of competency and sensitivity a LBTQ patient perceives during a health care encounter are factors that arguably affect future cervical screening behaviors.

The other factor in this category refers to the ability of the provider to assess, treat, and perform diagnostic tests, especially Pap tests. Participants discussed the importance of the provider’s ability to competently care for them during a cervical screening visit, including a comprehensive assessment, recommending proper treatments, and performing tests. Performing a quick and painless Pap test was especially important to participants. If a participant perceived their provider to be inadequate at assessment, treatment, or performing tests, they usually changed providers; however, some participants stopped going to any health care provider for periods of time after experiencing a provider they perceived to be unskilled or incompetent.
Outcomes

Outcome factors are those that come after utilizing health care (Andersen, 2008). Outcome factors were less noticeable among the data as compared to the others already mentioned. The four factors identified were completion and results of a Pap test, effects of health maintenance, a cancer diagnosis, and perceived satisfaction with care. Participants discussed how Pap test results and regular health maintenance affect future cervical screening utilization. For example, an abnormal Pap result often led to the participant ensuring that they continued to get follow-up screenings. Likewise, a cancer diagnosis of any kind was motivation for participants to maintain a regular screening schedule. Additionally, participants who were satisfied with their overall care stated that they tended to stay on a routine cervical screening schedule.

Discussion

The results of this study reveal the complexity of cervical cancer screening. Contextualizing the factors in the dynamic BMHSU theoretical framework illuminates how screening is influenced at different levels. The factors represent all levels, including policy, system, organizational and health care practices, providers, family and social support, and the individual. Adding to the complexity of the levels, we know that cervical screening is not a discrete event, but rather a continuum that involves communication between specialists and primary care providers, patient communication, and potential referrals to other health care providers and/or settings (Zapka & Cranos, 2009). The uptake of cervical cancer screening is convoluted and is influenced by a web of factors that leads us to ask, what factors should we address and what approaches should we use?

The results from our study provide some answers to those questions. We can make sense of the factors in our study when visualizing them in the context of the BMHSU framework. The
majority of factors are nested within the individual level. We already know that health insurance and socioeconomic status (ability to pay for care) are important enabling factors to cancer screening (Sabatino et al., 2008), but the prominence of predisposing individual factors may be a signal to examine that area closer. Additionally, the number of factors that relate to health care environments and/or health care encounters is striking. It stands to reason that targeting and addressing these areas may be important to improving access to and utilization of cervical screening services among LBTQ people. We focus the remainder of our discussion on these areas and conclude with a brief discussion on multilevel approaches.

Out of all the individual predisposing factors, knowledge was most prevalent in interviews and questionnaire comments. Either the participants themselves misunderstood Pap testing guidelines or they knew of another LBTQ person who was mistaken. The two common myths were that a female does not need a Pap test if they have never had sex and that a female does not need a Pap test if they were not in a sexual relationship with a male. These continued misunderstandings and myths are concerning because previous research has established that Pap testing knowledge among LBTQ people is correlated with screening behaviors (Tracy et al., 2010; Tracy et al., 2013).

Hopefully LBTQ people who misunderstand Pap testing guidelines are captured during one of their routine health care visits. We know that provider recommendation is one of the strongest predictors of patient receipt of screening (Klabunde, Schenck, & Davis, 2006). However, for those people who lack knowledge about Pap testing guidelines and do not see providers on a routine basis, other systems should be in place to capture them. For example, many participants complained that cervical cancer public health campaigns, a common method to disseminate health information, do not target LBTQ people. Previous research confirms that
LBTQ people often feel excluded from health messages (McIntyre, Szewchuk, & Munro, 2010; Power, McNair, & Carr, 2009). This is problematic because public health campaigns are considered effective interventions to improve personal health and screening behaviors (Noar, Palmgreen, Chabot, Dobransky, & Zimmerman, 2009; Snyder et al., 2004). Public education and targeted outreach facilitate the critical link between public service programs and the communities they serve (Levano et al., 2014), thus, researchers should consider investigating LBTQ-specific cervical screening health messages.

Peer support and role models were two of the other predisposing individual factors that might be important to investigate further. Peer support among cancer patients has been studied extensively and has been shown to have psychosocial benefit (Hoey, Leropoli, White, & Jefford, 2008) and is effective in cancer care navigation (Robinson-White, Conroy, Slavish, & Rosenzweig, 2010). A number of participants in our study recommended that community centers should create programs for LBTQ people who distrust health care systems to meet and provide support to each other. There is a noticeable gap in the literature as it relates to peer support programs for LBTQ people, leaving an opportunity for further investigation.

Gender dissonance was the other predisposing individual factor and was the only factor specific to female-to-male (FTM) transgender people. Gender dissonance refers to the marked difference between an individual’s expressed/experienced gender and the gender others would assign him or her (American Psychiatric Association, 2013). FTM people in our study described how Pap tests can be challenging because of disconnect between their biological sex and gender identity. They tried to ignore the existence of their female sex organs and the thought of getting a Pap test caused them immense distress. It is important for FTM people to get cervical screenings though.
There is still a lot to be discovered about the physiological changes FTM people experience when taking testosterone. A recent study showed that FTM people who were taking testosterone had a higher prevalence of unsatisfactory cytologic samples as compared to non-transgender people, meaning that the results were inconclusive and another sample had to be collected from the patient (Peitzmeier, Reisner, Harigopal, & Potter, 2014). Although that study concluded that the unsatisfactory samples were partly because of provider collection error, testosterone was also thought to contribute. It is important that FTM continue to get Pap tests until the cervix is surgically removed. Intervention developing and testing is needed to help FTM people overcome the obstacle of gender dissonance.

Much of the other factors identified in this study pertain to primary health care environments and patient-provider encounters. Based on the results of our study and based on the high number of participants who broached the topic of health care systems, we speculate that unwelcoming health care environments and/or incompetent and insensitive health care providers and professionals are some of the most significant barriers to LBTQ people utilizing cervical screening services. These findings are consistent with numerous other studies (Clift & Kirby, 2012; Hutchinson, Thompson, & Cederbaum, 2006; Matthews et al., 2004), including one of our recent studies that suggests LBTQ people alter their health care seeking behaviors after experiencing discriminatory providers (Johnson & Nemeth, 2014).

Factors relating to LBTQ-accepting environments and providers are found at every level in the BMHSU framework, which is probably due to the fact that social stigma around sexual orientation and gender identity still exists. However, LBTQ patients should not have to confront discrimination at the hands of health care organizations and providers, especially when seeking out cervical cancer screening services. Health care organizations have access to ample resources
that will guide them to create welcoming and affirmative environments for all sexual orientations and gender identities. However, there are obviously significant barriers that impede organizations from adopting these changes, and implementation research that examines the facilitators and barriers to organizations and providers adopting inclusive policies and practices are indicated.

**Limitations**

Some limitations need to be considered. First, the sample was mostly non-Hispanic White females and was recruited through convenience approaches. Second, because we only included LBTQ people in this study, we cannot compare and contrast the findings with the perceptions of heterosexual and non-transgender females. Third, transgender people have characteristics and issues that are unique, and because our study did not have a larger transgender sample size, we recognize that many more factors exist that are unique to them. Fourth, because the PI of this study is male, some participants may have restricted or censored their responses during the in-depth interviews, or chose not to participate. Fifth, these factors are derived from the perceptions of the participants. Additional research is needed to confirm the factors. In addition, we do not claim the factors in this study to be an exhaustive list. Sixth, most of the participants were routine screeners. Even though many of the participants knew of and spoke about non-routine screeners, further research with non-routine screeners may expose new factors. Lastly, due to the anonymity, respondents could have participated in both the in-depth interviews and Internet questionnaire.

**Conclusions**

This study illustrated that cervical screening utilization among LBTQ people is influenced by several multidimensional factors that exist at different levels. Although focusing
on single factors is understandable to some extent, a reductionist approach to this issue will probably not be very effective. Factors need to be investigated and addressed using a multilevel framework. Research should also focus on studying how factors interface with each other. For example, a growing consensus among LBTQ scholars is that studies need to address the influence of intersecting forms of oppression related to sex/gender, sexuality, race/ethnicity, immigration status, disability, age, and many more. Participants in this study clearly feel that LBTQ people have unique characteristics and concerns that need to be considered, but those unique characteristics are mediated or moderated by other social identities. Thus, future research must examine the issue of cervical cancer screening through a lens of sexual orientation and gender identity as well as broader understanding of the multifactorial nature of issues such as accessing health screenings.
References


Sabatino, S. A., Coates, R. J., Uhler, R. J., Breen, N., Tangka, F., & Shaw, K. M. (2008). Disparities in mammography use among US women aged 40-64 years, by race, ethnicity,


Figure 1. Deductive-inductive content analysis approach used to analyze the qualitative data
Table 1

Sample Description for In-depth Interviews

<table>
<thead>
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<td>Bisexual</td>
<td>3</td>
<td>(15)</td>
</tr>
<tr>
<td>Queer</td>
<td>6</td>
<td>(30)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic</td>
<td>16</td>
<td>(80)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>4</td>
<td>(20)</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>17</td>
<td>(85)</td>
</tr>
<tr>
<td>Asian</td>
<td>1</td>
<td>(5)</td>
</tr>
<tr>
<td>Black or African American</td>
<td>1</td>
<td>(5)</td>
</tr>
<tr>
<td>Multi-racial</td>
<td>1</td>
<td>(5)</td>
</tr>
<tr>
<td><strong>Gender Identity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>16</td>
<td>(80)</td>
</tr>
<tr>
<td>Female-to-Male Transgender</td>
<td>4</td>
<td>(20)</td>
</tr>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>35.3</td>
<td>(11.5)</td>
</tr>
</tbody>
</table>
### Table 2

**Sample Description for Internet Questionnaire**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>In-depth questionnaire responses</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Screener Type</strong> ($n = 226)^a$</td>
<td></td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Routine Screener</td>
<td>165</td>
<td>(73)</td>
<td></td>
</tr>
<tr>
<td>Non-routine Screener</td>
<td>61</td>
<td>(27)</td>
<td></td>
</tr>
<tr>
<td><strong>Sexual Orientation</strong> ($n = 205)^a$</td>
<td></td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Lesbian / Gay</td>
<td>145</td>
<td>(70.8)</td>
<td></td>
</tr>
<tr>
<td>Bisexual</td>
<td>30</td>
<td>(14.6)</td>
<td></td>
</tr>
<tr>
<td>Queer</td>
<td>30</td>
<td>(14.6)</td>
<td></td>
</tr>
<tr>
<td><strong>Ethnicity</strong> ($n = 195)^a$</td>
<td></td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic</td>
<td>181</td>
<td>(92.8)</td>
<td></td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>14</td>
<td>(7.2)</td>
<td></td>
</tr>
<tr>
<td><strong>Race</strong> ($n = 202)^a$</td>
<td></td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>American Indian / Alaska Native</td>
<td>3</td>
<td>(1.5)</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>9</td>
<td>(4.5)</td>
<td></td>
</tr>
<tr>
<td>Black or African American</td>
<td>2</td>
<td>(1.0)</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>177</td>
<td>(87.6)</td>
<td></td>
</tr>
<tr>
<td>Multiracial</td>
<td>11</td>
<td>(5.4)</td>
<td></td>
</tr>
<tr>
<td><strong>Gender Identity</strong> ($n = 205)^a$</td>
<td></td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>180</td>
<td>(87.8)</td>
<td></td>
</tr>
<tr>
<td>Female-to-Male Transgender</td>
<td>4</td>
<td>(2.0)</td>
<td></td>
</tr>
<tr>
<td>Genderqueer (neither female nor male)</td>
<td>21</td>
<td>(10.2)</td>
<td></td>
</tr>
<tr>
<td><strong>Age (years)</strong> ($n = 199)^a$</td>
<td></td>
<td>39.7</td>
<td>(13.3)</td>
</tr>
</tbody>
</table>

*aDue to missing data, the $n$ differs for each characteristic/variable.
Figure 2. Factors that influence cervical cancer screening among LBTQ people contextualized within Andersen’s Behavioral Model of Health Services Use
Table 3

*Exemplar Participant Quotes for Each Factor/Theme*

<table>
<thead>
<tr>
<th>Factor Type</th>
<th>Factor/Theme</th>
<th>Exemplar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contextual</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predisposing</td>
<td>Stigma</td>
<td>&quot;Lesbian women are stigmatized...people are always judging them...&quot;</td>
</tr>
<tr>
<td>Individually</td>
<td>Health care environments safe for LBTQ people</td>
<td>&quot;It can be scary because you don’t know who is safe and who is not safe...&quot;</td>
</tr>
<tr>
<td>Individually</td>
<td>Knowledge</td>
<td>&quot;Education...people think if you are not having sex with a male and if you are safe, that you don’t need a Pap test.&quot;</td>
</tr>
<tr>
<td></td>
<td>Peer support</td>
<td>&quot;Encourage them to go with a trusted friend. That has been the number one thing that has worked for me.&quot;</td>
</tr>
<tr>
<td></td>
<td>Role models</td>
<td>&quot;I grew up in a household where we got our checkups. My friend didn’t grow up with role-models who talked about Paps&quot;</td>
</tr>
<tr>
<td></td>
<td>Distrust in health care</td>
<td>&quot;Queer women don’t trust providers.&quot;</td>
</tr>
<tr>
<td></td>
<td>Gender dissonance</td>
<td>&quot;For transmen, needing to focus on an essential female part of themselves is incredibly upsetting.&quot;</td>
</tr>
<tr>
<td>Enabling</td>
<td>Health insurance</td>
<td>&quot;I didn’t have health insurance last year and now that I do, I can go.&quot;</td>
</tr>
<tr>
<td></td>
<td>Socioeconomic status</td>
<td>&quot;Money is always an issue.&quot;</td>
</tr>
<tr>
<td></td>
<td>Regular provider</td>
<td>&quot;I go because I visit my doctor regularly.&quot;</td>
</tr>
<tr>
<td>Need</td>
<td>Family history of cancer</td>
<td>&quot;I have a family history of cancer.&quot;</td>
</tr>
<tr>
<td></td>
<td>Abnormal Pap test result</td>
<td>&quot;I do it because I’ve had previous abnormal Pap tests and so I worry.&quot;</td>
</tr>
</tbody>
</table>
### Table 4

**Exemplar Participant Quotes for Each Factor/Theme (Continued from Table 3)**

<table>
<thead>
<tr>
<th>Factor Type</th>
<th>Factor/Theme</th>
<th>Exemplar</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health Behaviors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process of care</td>
<td>Providers are sensitive and competent at providing care to LBTQ patients</td>
<td>“Doctors need to be sensitive to queer women’s needs, and they need to tailor services and discussions to queer women.”</td>
</tr>
<tr>
<td></td>
<td>Providers are competent at assessment, treatment and performance of diagnostic tests</td>
<td>“The procedure needs to be comfortable. The right size speculum needs to be used.”</td>
</tr>
<tr>
<td><strong>Outcomes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluated health</td>
<td>Completion and results of Pap test</td>
<td>“I know queer women who go only because of a history of dysplasia.”</td>
</tr>
<tr>
<td></td>
<td>Effects of health maintenance</td>
<td>“You need to take yourself in for regular maintenance.”</td>
</tr>
<tr>
<td></td>
<td>Cancer diagnosis</td>
<td>“I get a Pap test every year since being diagnosed with cervical cancer.”</td>
</tr>
<tr>
<td>Consumer satisfaction</td>
<td>Perceived satisfaction with care</td>
<td>“If you have a good relationship with your doctor, you are more likely to come back and get it done.”</td>
</tr>
</tbody>
</table>
Abstract

BACKGROUND: The specific aims of this mixed methods study were to: 1) measure the prevalence of, and identify factors associated with, cervical screening among a sample of lesbian, bisexual, and queer (LBQ) women, 2) describe the factors that influence LBQ women participating in cervical cancer screening, and 3) compare and contrast the findings from aims 1 and 2 to verify findings, interpret inconsistencies, and discover new meanings.

METHODS: Convenience sampling was used to recruit 21-65 year old LBQ women from the Internet and community events. The quantitative data was collected via a 48-item Internet questionnaire (N = 226), and the qualitative data was collected through in-depth telephone interviews (N = 20) and open-ended questions on the Internet questionnaire. This paper details the quantitative and mixed analyses.

FINDINGS: Seventy-three percent of the sample were routine screeners. Factors found to explain the difference between routine and non-routine cervical screeners were contextualized within a health care utilization framework. Factors triangulated if they were found to be statistically significant (p-value less than 0.05) and identified in the qualitative data. Triangulating factors at the individual level include health insurance, income and employment, gender identity, and Pap recommended by a provider. Triangulating factors at the contextual level pertain to welcoming health care environments. Those at the health behavior level are specific to perceived discrimination and good Pap testing experiences. Finally, triangulating factors at the outcome level include abnormal Pap results and satisfaction with care. A number of other factors were found that contrasted between the quantitative and qualitative data, necessitating additional research.

CONCLUSIONS: The findings have implications for research, education, and cancer control among LBQ women. Many of the triangulated factors represent areas of the LBQ women’s health care experience that can be modified, especially those that relate to welcoming environments. Many of the factors that contrasted between the quantitative and qualitative data necessitate additional research.
Introduction and Background

In the United States, the significant decline in cervical cancer incidence and mortality has been mostly attributed to early detection and treatment, as well as the affordability and acceptability of the Papanicolaou (Pap) test (Ekwueme et al., 2014), a technique that screens for precancerous processes in the endocervical canal of the female reproductive system. Routine Pap tests, operationalized as screening at least once every three years for females between the age of 21 and 65 (U.S. Preventive Services Task Force, 2012), increase the likelihood of detecting pre-invasive lesions or early-stage cervical cancer. Early diagnosis of cervical cancer has a five-year survival rate of over 90% (American Cancer Society, 2015b). Despite these gains, 12,900 cervical cancer diagnoses are expected in the U.S. in 2015 resulting in 4,100 deaths (American Cancer Society, 2015a).

Given the effectiveness of Pap testing, deficient screening remains the most significant risk factor for cervical cancer (Spence, Goggin, & Franco, 2007). Thus, it is essential to understand the differences between routine and non-routine screeners. Evidence shows that racial and ethnic minority and low-income women are less likely than other groups to be screened for cervical cancer (Bazargan, Bazargan, Farooq, & Baker, 2004; Hall, Uhler, Coughlin, & Miller, 2002). Additionally, certain factors have been identified as barriers to timely screening, including lack of a regular health care provider, absence of provider’s recommendation, lack of health insurance, and lack of social support (Behbakht, Lynch, Teal, Degeest, & Massad, 2004; Coronado, Thompson, Koepsell, Schwartz, & McLerran, 2004; Hatcher, Studts, Dignan, Turner, & Schoenberg, 2011; Mandelblatt et al., 1999).

Although a lot is known about the determinants of cervical cancer screening, identifying subpopulations in which cervical cancer screening disparities exist can lead to the development
of tailored strategies to increase screening rates, thus further reducing the incidence and mortality associated with cervical cancer. Several studies have suggested that women who identify as a sexual orientation other than heterosexual, such as lesbian, bisexual, or queer (LBQ), are one such subpopulation to underutilize Pap tests.

Cervical screening rates among LBQ women are estimated between 43% and 71% (Agenor, Krieger, Austin, Haneuse, & Gottlieb, 2014; Charlton et al., 2011; Fish & Anthony, 2005; Matthews, Brandenburg, Johnson, & Hughes, 2004; Tracy, Lydecker, & Ireland, 2010), compared to 73% of the general female population (Centers for Disease Control and Prevention, 2010). Although there is a lack of evidence indicating that LBQ women are at increased risk for cervical cancer, underutilization of routine Pap tests can delay the time of diagnosis and treatment, elevating the risk of morbidity and mortality. The purposes of the current study were to examine the cervical cancer screening behaviors of LBQ women using American Cancer Society (ACS) guidelines as the standards for comparison, and to determine factors that influence participation in cervical cancer screening.

As with other groups of women, screening by LBQ women is associated with age, race, education, income, health insurance, provider’s recommendation, sexual activity, and abnormal Pap results. However, extant research suggests that LBQ women also encounter unique barriers to screening, such as disclosing one’s sexual orientation to the provider, fear of discrimination, and mistrusting the medical establishment (Agenor et al., 2014; Charlton et al., 2011; Fish & Anthony, 2005; Kerr, Ding, & Thompson, 2013; Matthews et al., 2004; Tracy et al., 2010; Tracy, Schluterman, & Greenberg, 2013). Thus, cervical screening programs and services that do not consider the unique needs of LBQ women may not be as effective and may act as barrier.
Despite a body of research that addresses Pap testing among LBQ women, more research is needed. Many of the factors identified to influence Pap testing among LBQ women have been investigated repeatedly, while other potentially important factors have been minimally addressed. This study extended the findings from other studies by reexamining certain factors and investigating potentially new factors. In addition to the quantitative investigation, qualitative data were collected to uncover factors from the perspective of the participants. The quantitative and qualitative results were then compared and contrasted. This paper details the methods and results for the quantitative and mixed analyses. Detailed discussion for the qualitative methods and results can be found in a separate publication (to be referenced).

**Theoretical Framework**

Researchers have used a variety of theoretical frameworks to identify and classify the determinants of cancer screening. For this study, Andersen’s Behavioral Model of Health Services Use (BMHSU) provided a conceptual framework (see Figure 1). The BMHSU (Andersen, 2008) has been applied and altered over the past 45 years and is one of the most widely acknowledged models of health care utilization (Babbitch, Gohl, & von Lengerke, 2012). The BMHSU illustrates a feedback loop between contextual characteristics, individual characteristics, health behaviors, and outcomes (Andersen, 2008). Each broad area has sub-characteristics that account for different determinants of health services use, such as environmental, population health indices, health policies, processes of medical care, provider behaviors, and consumer satisfaction. Andersen (2008) encourages users of the BMHSU to adapt the model to their health services research in theoretically sound and meaningful ways. In the current study, the BMHSU mainly served as a system to mix and contextualize the quantitative and qualitative results.
Methods

This study used a convergent-parallel mixed methods design (Edmonds & Kennedy, 2013), which involves the simultaneous collection of quantitative and qualitative data, followed by the combination and comparison of the two data sets (see Figure 2). The STROBE statement (strengthening the reporting of observational studies in epidemiology) (von Elm et al., 2008) was used to guide this paper. The institutional review board (IRB) at Medical University of South Carolina (MUSC) approved this study.

The specific aims of this study were to: 1) measure the prevalence of, and identify factors associated with, cervical screening among a sample of LBQ women, 2) describe the factors that influence LBQ women participating in cervical cancer screening, and 3) compare and contrast the findings from aims 1 and 2 to verify findings, interpret inconsistencies, and discover new meanings.

Data Collection

Data were collected from August 2014 to December 2014 (N = 226). The inclusion criteria were 21 to 65 year old females who self-reported a sexual orientation other than heterosexual and could speak and read the English language. Transgender men who reported to still have a cervix were also included. Recruitment procedures included three approaches: Internet-based, community-based, and snowball. The Internet-based approach was extensive and entailed the principal investigator (PI) marketing the study to LBQ groups across the country, including community centers, professional groups, online social groups, and university groups. Advertisements were also placed on social media websites and in LBQ internet publications. In total, the PI contacted nearly 300 groups and centers. The community-based approach involved...
the PI handing out flyers at two LBQ events in the southwest U.S. Last, all participants were encouraged to refer their friends to the study's website.

A convenience sample was used for both the quantitative and qualitative data collection. Quantitative data were collected using an Internet questionnaire, which was managed using the REDCap electronic data capture tool hosted at MUSC. REDCap (Research Electronic Data Capture) is a secure, web-based application designed to support data capture for research studies (Harris et al., 2009). Respondents first read an informed consent and then answered the questions. After finishing the questionnaire, respondents could choose to enter their name and email address into a separate website to win a $100 electronic gift card. The separate website ensured anonymity of the questionnaire responses. Additionally, determining the response rate was impossible due to the sample being convenience.

Measures

The majority of measures used in this study were adapted from previous research studies, with the addition of a few measures created by the research team. The outcome variable for this study was frequency of Pap testing. At the time of this study, the ACS (2012) recommended females between the age of 21 and 65 years receive a Pap test at least once every three years, unless directed otherwise by a health care provider. Thus, respondents who self-reported a Pap test within the last three years were coded as a “routine” screener, and those who reported a Pap test before the past three years (including those who never had a Pap test) were coded as a “non-routine” screener. This coding procedure is consistent with other research studies (Matthews et al., 2004; Tracy et al., 2010; Tracy et al., 2013). Additionally, although this study relied on self-report for receipt of Pap test, past studies demonstrate 70% positive and 95% negative predictive value of recall for Pap tests (McGovern, Lurie, Margolis, & Slater, 1998; McPhee et al., 2002).
The predictor variables examined in this study assessed contextual, individual, and health behaviors, as well as outcome factors. Contextual characteristics included eight questions about their perception of inclusiveness and welcoming LBQ people in the health care environment. Individual characteristics were separated into predisposing, enabling, and need factors. Eighteen questions assessed individual predisposing factors, including knowledge, previous sexual activity, sexual orientation, gender expression and identity, age, race and ethnicity, education, partner or marital status, geographic location, and health insurance status. Two questions assessed individual enabling characteristics, including employment and income. Three questions assessed individual need factors, including family and personal history of cancer and whether their provider recommended a Pap test. Health behavior characteristics were separated as process of medical care factors and use of personal health services factors. Twelve questions assessed process of medical care factors, including experiences with Pap tests, disclosure of sexual orientation to provider, and perceived discrimination. Two questions assessed use of personal health services, including previous services for contraceptives or sexually transmitted infections (STI). Lastly, outcome characteristics were separated into evaluated health and consumer satisfaction factors. Evaluated health was assessed with one question about previous abnormal Pap results and consumer satisfaction was assessed with one question about satisfaction with provider. All of the variables, with the exception of age and number of sexual partners, were categorical.

The total set of 48 items was subjected to pre-testing by a variety of content experts, academicians, and lay people. The PI emailed the survey to those (N = 10) who agreed to pre-test it and instructed them to read and assess each question and corresponding response options for clarity. The survey was edited based on the responses of the pre-testers. Moreover, the
Cronbach’s alpha of the finalized survey was 0.7, indicating adequate internal consistency/reliability (DeVon et al., 2007).

**Statistical Analyses**

Data analyses were conducted with Statistical Program for the Social Sciences (SPSS version 22.0) software (Chicago, IL) and proceeded in four steps. The first step involved screening and coding of the data and reporting descriptive statistics of the observed cases. Cases were coded as either routine (most recent Pap ≤ 3 years) or non-routine screeners (most recent Pap > 3 years or never had a Pap). Then, descriptive statistics of the observed cases were calculated to describe the sample characteristics.

The second step involved examining and addressing missing data. Apart from the outcome variable, almost all variables had some missing data. In most cases, less than 10% of cases were missing. To minimize any bias due to data that are not missing completely at random, multiple imputation was conducted (Little & Rubin, 2002). Due to the number of variables requiring imputation, two separate imputation models were used. First, demographic data, knowledge and past sexual experiences were imputed using chained equations. Second, variables relating to experiences of health care environments and discrimination were imputed. Twenty imputations were carried out and restrictions were placed on the continuous variables to ensure imputations did not result in impossible values (e.g., negative numbers). The twenty imputations were pooled for the subsequent analyses.

For the third step, bivariate analyses were conducted to identify significant associations between each predictor variable and the outcome variable. Categorical variables were compared using chi-square tests or Fisher’s exact test (when the expected number of participants with a characteristic within either group was < 5). Continuous variables were all skewed, which was
confirmed through inspection of box-plots and Shapiro-Wilks test, therefore distributions were compared across groups using the Mann-Whitney U test. All of the tests used to compare groups (chi-square, Fisher’s exact, and Mann-Whitney) were conducted for each imputed dataset, and the overall significance reported as the mean p-value (Rubin, 1987).

Finally, multivariate logistic regression (LR) was used to identify significant independent predictors of routine screening. A backwards stepwise procedure was used to identify the factors. All variables were considered for inclusion in the model apart from those that related to past experiences of Pap tests (abnormal Pap results and Pap test experiences).

Because SPSS does not allow to carry out backwards stepwise selection simultaneously across all 20 imputed datasets, a model was first identified using complete case analysis (not including cases with missing data). Then, backwards selection was carried out separately for each of the imputed datasets. All variables identified as significant in any of these models were then used in a manual backwards selection process, with the purpose of determining whether or not any important variables were excluded from the complete case model. Results from imputed and complete case data were compared.

**Mixed Method Analyses**

Although there are numerous strategies for integrating mixed forms of data, there are no set guidelines. The matrix approach used for this study was developed using a variety of sources (Bazeley & Jackson, 2013; Edmonds & Kennedy, 2013; Jang, McDougall, Pollon, Herbert, & Russell, 2008). Matrix tables were created to compare and contrast the quantitative and qualitative factors. A detailed discussion of the qualitative analyses can be found in a separate manuscript (to be referenced); in brief, the qualitative data (in-depth interviews and open-ended questions on the Internet questionnaire) were analyzed using a deductive-inductive content
analysis approach. This approach resulted in the identification of factors that could be clearly compared and contrasted with the quantitative factors. Figure 2 illustrates the flow of data collection and analysis for both the quantitative and qualitative data. The purpose of the mixed analyses was to identify new meanings for the quantitative factors using the qualitative data and to interpret inconsistencies between the two data sets.

**Results**

**Participant Characteristics**

See Table 1 for the participant characteristics. The majority of participants were routine cervical screeners (73%). The median age of the study participants was 39 years (IQR 28-50 years). Participants were primarily non-Hispanic white (87.6%), had more than a high school education (87.3%), lived in a city or urban area (58.2%), were employed (72.1%), and had health insurance (87.2%). Over half were either married or partnered (59.5%) and almost half had a household income of at least $50,000 (48.5%).

**Contextual and Individual Factors**

Table 2 details the contextual and individual factors. The contextual factors, which are those that relate to the health care environment, show that the majority of participants were not asked about their sexual orientation or gender identity during health care visits. However, routine screeners were more likely than non-routine screeners to feel welcomed (70.7% vs 42.5%, \( p < 0.001 \)) and to have their partners welcomed (54% vs 29%, \( p = 0.001 \)) during health care visits. Additionally, as expected, participants with higher income, health insurance, employment, and education were statistically significantly more likely to be routine screeners. Age was also statistically significantly different between routine and non-routine screeners. Routine screeners tended to be older than non-routine screeners.
Among the individual factors, participants were mostly woman-identified (84.5%) who identified as lesbian (68%). Although the differences in screening status between sexual orientations were not statistically significant, there was a small statistically significant difference between gender identities ($p = 0.041$). Nearly half classified their gender expression as femme/feminine, and were more likely to be routine screeners compared to participants who identified as androgynous, transgender, or gender queer. Although there was no statistically significant difference between screener status and number of male or female sex partners, routine screeners were more likely to report ever engaging in previous sexual activity (93.6% vs 81.1%, $p = 0.012$). Routine screeners reported more family and personal history of cancer as well as use of contraceptive and STI services compared to non-routine screeners, but differences were not statistically significant. There was a statistically significant higher proportion of routine screeners who reported that their provider recommended a Pap test as compared to non-routine screeners (81.2% vs 50.8%, $p < 0.001$).

**Health Behavior and Outcome Factors**

Table 3 summarizes the health behavior and outcome factors. The health behavior factors in this study all fall under the process of care (experiences during health care encounters). Routine screeners were more likely to report good experiences with their Pap tests ($p < 0.001$). There was also a statistically significant difference between routine and non-routine screeners in their report of “outness” to the provider (67.9% vs 45.4%, $p = 0.003$). Additionally, non-routine screeners reported more perceived discrimination across all areas, and those found to be statistically significant included discrimination based on gender expression ($p = 0.002$), sexual orientation ($p = 0.008$), socioeconomic status ($p = 0.001$), physical size ($p = 0.039$), and education ($p = 0.034$). Moreover, because respondents must have accessed health care services to
report either of the outcome variables, it is not unexpected that routine screeners were statistically significantly more likely to have abnormal Pap results and be satisfied with their provider.

**Multivariate Analyses**

LR was conducted to find the best fitting, simplest, model possible that describes the relationship between the predictor variables and screening status. Table 4 shows the results from the three LR models. The first model shows the results from the backward LR of the cases with complete data. The second model shows the results from the backward LR analysis following multiple imputation. Finally, the third model shows the results of the manual LR when predictor variables identified in the first model are combined with those obtained from model 2.

The third LR model revealed that five predictors (health insurance, knowledge question, provider recommended Pap test, discrimination based on gender expression, and satisfaction with health care provider) were statistically significant in distinguishing between routine and non-routine screeners. All of the variables, with the exception of discrimination based on gender expression, had odds ratios greater than 2.5. The highest odds ratio was 4.2 (provider recommended a Pap test), indicating that women who were recommended for a Pap test were over four times more likely to be a routine screener compared to those who did not get that recommendation. Women who reported discrimination based on gender expression were 3.3 times ($1/0.30$) more likely to be a non-routine screener than women who did not report discrimination.

The differences between the three models can be largely explained by the different sample sizes as well as correlations between the variables. The first model had a sample size of 176, whereas the second and third model had a sample size of 226. Additionally, because logistic
regression is sensitive to correlations among predictor variables (Tabachnick & Fidell, 2007), the statistically significant bivariate correlations that were found between some of the predictor variables in the first model that were not present in the third model may also explain the differences. For example, the Spearman correlation coefficients (see Table 5) were lower in the imputed data as compared to the completer data for discrimination of gender expression and physical size (0.33 vs 0.29), satisfaction with provider and “outness” to provider (0.39 vs 0.23), and health insurance and use of STI services (0.15 vs 0.02). These correlation differences coupled with the different sample sizes may explain the differences between the models. The reader should focus their attention on the second and third models.

Mixed Analyses

Figure 3 compares the statistically significant quantitative factors to the qualitative factors (identified and detailed in a separate paper), that are contextualized within the BMHSU factor types. The two data sets were collected and analyzed separately but yet the factors mirror each other, indicating triangulation or validation of the findings. There are also a number of contrasting factors. Seven qualitative factors were identified that did not appear in the quantitative results, including peer support, role models, knowledge, distrust in health care, having a regular provider, family history of cancer, and cancer diagnosis. Intriguingly, knowledge and history of cancer were assessed in the quantitative survey but neither was statistically significant. A number of quantitative factors found to be statistically significant did not appear in the qualitative results, including age, educational level, previous sexual activity, “outness” to provider, and discrimination based on physical size, socioeconomic status, and education.
Discussion

The purposes of this study were to examine the cervical cancer screening behaviors of LBQ women and to determine factors that influence participation in cervical cancer screening. A sizeable group of routine screeners (73%) was represented in the current study. Although this rate is higher than reported in some previous studies, it mirrors the national average for the general female population (Centers for Disease Control and Prevention, 2010). Moreover, if the definition of ‘routine screener’ used in the current study is applied to previous studies, the observed rate is similar to other samples of LBQ women (Matthews et al., 2004; Tracy et al., 2010). This study’s sample consisted of mostly educated people who were employed and had health insurance. These characteristics may explain the high rate of screening. Alternatively, the findings could be encouraging and reflect greater awareness of the need for screening. Either way, the bivariate, multivariate, and mixed results have important implications.

Individual Characteristics

Many of the individual factors found to be statistically significant were expected and are consistent with extant research, including education, employment, income, and health insurance. Most of these factors were also triangulated during the mixed analyses. Like Tracy and colleagues’ (2010) research, routine screeners in the current study were also statistically significantly more likely to be of older age. The opposite is true for the general female population; lower age is associated with increased cervical screening (Centers for Disease Control and Prevention, 2014). Although the reasons for this difference are unclear, one hypothesis is that females who are engaged in sexual relations with men receive the cue for Pap testing when they obtain a prescription for oral contraceptives at a young age. Thus, if women
are engaged in sexual relations with other women or are abstinent, the cue to action may not be received until an older age, such as during mammography screening (Tracy et al., 2010).

These findings also echo the importance of provider recommendation, which was identified as a statistically significant predictor in a different study (Tracy et al., 2013). Provider recommendation is a cue to action and requires interaction between the patient and the provider and is one of the strongest predictors of patient receipt of screening (Klabunde, Schenck, & Davis, 2006). That said, there is likely an association between provider recommendation and having a usual source of care (regular provider), a factor that was identified in the qualitative data, but not assessed in the quantitative questionnaire.

Gender identity and gender expression were important factors in the quantitative and qualitative studies. In this study, non-routine screeners were statistically significantly more likely to report discrimination based on gender expression. This factor was also identified as an independent predictor in the LR model. Additionally, a difference was found between females and transgender/genderqueer (does not identify with one gender) people. This finding was also triangulated during the mixed analyses.

The differences found between gender identities and gender expression are important and have vast implications. Research studies historically have had a difficult time capturing transgender participants (Institute of Medicine, 2011), and even fewer studies have collected gender expression data. Those studies that have examined measures of health care use among varying gender expressions found butch-identifying women statistically significantly less likely to receive routine gynecological examinations, perceive poorer treatment in health care settings, and experience more discrimination (Hiestand, Horne, & Levitt, 2007; Levitt, Puckett, Ippolito, & Horne, 2012). Although not enough evidence exists to suggest an inverse relationship between
gender identity or expression and Pap testing, the findings from this study coupled with the results from previous research point toward that direction.

A number of individual factors were identified in the qualitative data that were not measured in the quantitative questionnaire, including peer support and role models. Interpersonal support among cancer patients has been studied extensively and has been shown to have psychosocial benefit and is effective in cancer care navigation (Hoey, Leropi, White, & Jefford, 2008; Robinson-White, Conroy, Slavish, & Rosenzweig, 2010). Future research should explore whether interpersonal support can help overcome some of the barriers non-routine screeners encounter to cervical screening.

Knowledge was found to be an important qualitative individual factor but was not statistically significant in the quantitative study. The quantitative questions assessed general knowledge of Pap testing guidelines, whereas the qualitative data showed knowledge deficits specific to LBQ women. Another recent qualitative study also found that LBQ women misunderstood guidelines and underestimated their own risk (Curmi, Peters, & Salamonson, 2014). Future mixed methods research should develop knowledge assessment questions that are tailored to LBQ women. Findings from such a study would have important implications to health communication and public health messages.

Contextual Characteristics and Health Behaviors

The quality of care for LBQ women has been extensively written about (Clift & Kirby, 2012; Eliason, Dibble, DeJoseph, & Chinn, 2009; Institute of Medicine, 2011; Mosack, Brouwer, & Petroll, 2013; Tracy et al., 2010), yet LBQ women continue to report perceived discrimination and unwelcoming environments. The quantitative and mixed findings from this study confirmed that welcoming environments facilitate screening, whereas discriminatory providers act as a
barrier to screening. These findings support the hypothesis that LBQ women modify their health care seeking behaviors following a negative encounter, a postulation that was made in a recent qualitative study (Johnson & Nemeth, 2014). Although achieving high quality care can be a challenging course for providers and organizations, health care organizations have shown that satisfaction with transgender-specific health care services is achievable and sustainable (Bockting, Robinson, Benner, & Scheltema, 2004).

Disclosure of sexual orientation to health care providers was another important predictor in this study. Although extant research on this topic is limited, many posit that disclosure of sexual orientation and gender identity is important to improving care and eliminating health disparities (Cahill & Makadon, 2013; Institute of Medicine, 2013; Quinn, Schabath, Sanchez, Sutton, & Green, 2014). The current study found that routine screeners were statistically significantly more likely to be “out” to their provider compared to non-routine screeners. Another recent study (Tracy et al., 2013) also found that disclosure of sexual orientation to a health care provider was predictive of screening behavior. Intriguingly though, few respondents in the current study reported having forms or staff ask them about their sexual orientation or gender identity, indicating that the majority of people reported this information without provider’s prompt. If health care providers and organizations were to add this information to forms, it would presumably increase the number of women who disclose. Moreover, future research should explore disclosure among non-routine screeners, especially past disclosure reactions, which has been shown to have important implications in other sexual minority populations (Rosario, Schrimshaw, & Hunter, 2009).
Outcomes

The outcome factors that were predictive of routine screening, including abnormal Pap results and satisfaction with health care providers, are consistent with extant literature (Fish & Anthony, 2005; Grindel, Mcgehee, Patsdaughter, & Roberts, 2007; Tracy et al., 2013). These factors were also identified in the qualitative data and hence were triangulated during the mixed analyses. These factors represent those LBQ women who entered the health care system and thus are understandably predictive. Although the current study did not examine time intervals between Pap tests or assess screening following an abnormal result, the abnormal Pap test predictor may signify routine follow-up care.

Limitations

The findings have important implications for cancer prevention and control among LBQ women; however, several limitations need to be noted. The first relates to the sample characteristics. The LBQ women were mostly urban dwellers, non-Hispanic white, educated, employed, and insured. Efforts by researchers to access and sample LBQ women who are of minority racial/ethnic backgrounds, have less education, and/or are unemployed might reveal additional important findings. Moreover, it is possible that non-routine screeners were more likely to not volunteer.

Another limitation relates to the sampling. The cross-sectional data were from a nonprobability convenience sample that was generated primarily from online sources. Thus, this study did not capture LBQ women without Internet access, and likely suffers self-selection bias (Wright, 2005). Moreover, the study was less likely to reach LBQ women who were not as “out” and who did not subscribe to LBQ Internet professional or social groups or who did not belong
to a LBQ organization. As a result, the generalizability of the findings to other LBQ populations is unknown.

The questionnaire used for this study was constructed primarily of measures from previous research studies, most of which did not provide information about reliability or validity. Although the questionnaire for the current study had face validity and was pre-tested, external validity is uncertain. Though the questionnaire had acceptable internal consistency/reliability as indicated by the Cronbach’s alpha of 0.7 (DeVon et al., 2007), the stability of the measures is unknown until retest reliability is performed (Carmines & Zeller, 1979).

Although missing data are common in survey research, they always pose a limitation to the study. In this study, most variables had less than 10% of missing cases. To minimize any bias due to data that are not missing completely at random, multiple imputation was conducted (Little & Rubin, 2002). Additionally, statistical analyses were carried out for both the completer cases and multiple imputed data, and very few differences were noted upon comparison. Even so, imputing missing data can cause biased results.

Conclusions

The current study is an important contribution to the literature on cervical cancer screening among LBQ women. Many of the findings from the quantitative and mixed analyses were consistent with previous research. Researchers and practitioners should especially take note of those factors that appeared in the quantitative and qualitative data. Many of the triangulated factors represent areas of the LBQ women’s health care experience that can be modified, especially those that relate to welcoming environments. Many of the factors that contrasted between the quantitative and qualitative data deserve further attention by researchers, including LBQ-specific knowledge of cervical screening, the impact of interpersonal support on screening
behavior, and the barriers and facilitators to non-routine screeners disclosing their sexual orientation to health care providers. Lastly, the perspective of health care providers on this topic is noticeably absent in the literature, and thus future research should address this gap.
References


Table 1

**Participant Characteristics by Type of Screener**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All (N = 226)</th>
<th>Routine Screener (n = 165)</th>
<th>Non-routine Screener (n = 61)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnicity (White)</td>
<td>177 (87.6%)</td>
<td>134 (89.9%)</td>
<td>43 (81.1%)</td>
<td>0.095</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to high school diploma</td>
<td>16 (12.8%)</td>
<td>18 (11.9%)</td>
<td>8 (15.4%)</td>
<td>0.034</td>
</tr>
<tr>
<td>Technical or community college</td>
<td>31 (15.3%)</td>
<td>17 (11.3%)</td>
<td>14 (26.9%)</td>
<td></td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>73 (36.0%)</td>
<td>59 (39.1%)</td>
<td>14 (26.9%)</td>
<td></td>
</tr>
<tr>
<td>Graduate degree</td>
<td>73 (36.0%)</td>
<td>57 (37.7%)</td>
<td>16 (30.8%)</td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>147 (72.1%)</td>
<td>116 (76.8%)</td>
<td>31 (58.5%)</td>
<td>0.027</td>
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<tr>
<td>Student</td>
<td>25 (12.3%)</td>
<td>14 (9.3%)</td>
<td>11 (20.8%)</td>
<td></td>
</tr>
<tr>
<td>Retired/unemployed/disabled</td>
<td>32 (15.7%)</td>
<td>21 (13.9%)</td>
<td>11 (20.8%)</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; $25,000</td>
<td>51 (25.2%)</td>
<td>29 (19.2%)</td>
<td>22 (43.1%)</td>
<td>0.002</td>
</tr>
<tr>
<td>$25,000 - $49,999</td>
<td>53 (26.2%)</td>
<td>39 (25.8%)</td>
<td>14 (27.5%)</td>
<td></td>
</tr>
<tr>
<td>$50,000 - $99,999</td>
<td>61 (30.2%)</td>
<td>50 (33.1%)</td>
<td>11 (21.6%)</td>
<td></td>
</tr>
<tr>
<td>≥ $100,000</td>
<td>37 (18.3%)</td>
<td>33 (21.9%)</td>
<td>4 (7.8%)</td>
<td></td>
</tr>
<tr>
<td>Relationship status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>56 (28.0%)</td>
<td>39 (26.2%)</td>
<td>17 (33.3%)</td>
<td>0.387</td>
</tr>
<tr>
<td>Legally married</td>
<td>57 (28.5%)</td>
<td>47 (31.5%)</td>
<td>10 (19.6%)</td>
<td></td>
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<tr>
<td>Casual relationship</td>
<td>25 (12.5%)</td>
<td>19 (12.8%)</td>
<td>6 (11.8%)</td>
<td></td>
</tr>
<tr>
<td>Partnered</td>
<td>62 (31.0%)</td>
<td>44 (29.5%)</td>
<td>18 (35.3%)</td>
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</tr>
<tr>
<td>Geographic location</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City or urban area</td>
<td>117 (58.2%)</td>
<td>91 (60.7%)</td>
<td>26 (51.0%)</td>
<td>0.230</td>
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<tr>
<td>Suburban area</td>
<td>61 (30.3%)</td>
<td>45 (30.0%)</td>
<td>16 (31.4%)</td>
<td></td>
</tr>
<tr>
<td>Rural area</td>
<td>23 (11.4%)</td>
<td>14 (9.3%)</td>
<td>9 (17.6%)</td>
<td></td>
</tr>
<tr>
<td>Health insurance (insured)</td>
<td>177 (87.2%)</td>
<td>138 (91.4%)</td>
<td>39 (75.0%)</td>
<td>0.002</td>
</tr>
<tr>
<td>Type of health insurance</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>160 (78.8%)</td>
<td>125 (82.8%)</td>
<td>35 (67.3%)</td>
<td>0.009</td>
</tr>
<tr>
<td>Government</td>
<td>17 (8.4%)</td>
<td>13 (8.6%)</td>
<td>4 (7.7%)</td>
<td></td>
</tr>
<tr>
<td>No insurance</td>
<td>26 (12.8%)</td>
<td>13 (8.6%)</td>
<td>13 (25.0%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Median</th>
<th>IQR</th>
<th>Median</th>
<th>IQR</th>
<th>Median</th>
<th>IQR</th>
<th>Median</th>
<th>IQR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>39</td>
<td>28-50</td>
<td>40.5</td>
<td>29-51</td>
<td>32</td>
<td>23-46</td>
<td>0.011</td>
<td></td>
</tr>
</tbody>
</table>

Note: Discrepancies in n’s due to missing values

* Summarized as median and interquartile ranges due to skewed data
### Table 2

**Multiple Imputed Contextual and Individual Factors by Type of Screener**

<table>
<thead>
<tr>
<th>Factor Type</th>
<th>Factor / Variable</th>
<th>All (N = 226)</th>
<th>Routine Screener (n = 165)</th>
<th>Non-routine Screener (n = 61)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contextual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enabling</td>
<td>Health care environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Feels welcoming</td>
<td>63.1</td>
<td>70.7</td>
<td>42.5</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Forms ask about SO</td>
<td>15.4</td>
<td>15.9</td>
<td>14.1</td>
<td>0.601</td>
</tr>
<tr>
<td></td>
<td>Forms ask about GI</td>
<td>11.7</td>
<td>11.5</td>
<td>12.3</td>
<td>0.558</td>
</tr>
<tr>
<td></td>
<td>Staff ask about SO/GI</td>
<td>22.6</td>
<td>21.3</td>
<td>26.1</td>
<td>0.479</td>
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<tr>
<td></td>
<td>Partner welcomed</td>
<td>47.3</td>
<td>54.0</td>
<td>29.0</td>
<td>0.001</td>
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<tr>
<td>Individual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Predisposing</td>
<td>Sexual orientation</td>
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<td></td>
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<tr>
<td></td>
<td>Lesbian</td>
<td>68.0</td>
<td>69.6</td>
<td>63.6</td>
<td>0.506</td>
</tr>
<tr>
<td></td>
<td>Bisexual</td>
<td>14.6</td>
<td>13.8</td>
<td>16.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Queer</td>
<td>17.5</td>
<td>16.7</td>
<td>19.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gender expression</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Butch</td>
<td>12.7</td>
<td>13.5</td>
<td>10.7</td>
<td>0.303</td>
</tr>
<tr>
<td></td>
<td>Femme</td>
<td>46.0</td>
<td>47.4</td>
<td>42.1</td>
<td></td>
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<tr>
<td></td>
<td>Androgynous</td>
<td>18.4</td>
<td>15.6</td>
<td>25.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Queer</td>
<td>23.0</td>
<td>23.6</td>
<td>21.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gender identity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>84.5</td>
<td>87.7</td>
<td>75.9</td>
<td>0.041</td>
</tr>
<tr>
<td></td>
<td>FTM or Genderqueer</td>
<td>15.5</td>
<td>12.3</td>
<td>24.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Knowledge Question 1^a</td>
<td>70.8</td>
<td>67.9</td>
<td>78.7</td>
<td>0.113</td>
</tr>
<tr>
<td></td>
<td>Knowledge Question 2^a</td>
<td>88.1</td>
<td>89.1</td>
<td>85.2</td>
<td>0.433</td>
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<tr>
<td></td>
<td>Knowledge Question 3^a</td>
<td>43.9</td>
<td>45.1</td>
<td>41.0</td>
<td>0.587</td>
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<tr>
<td></td>
<td>Previous sexual activity</td>
<td>90.2</td>
<td>93.6</td>
<td>81.1</td>
<td>0.012</td>
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<tr>
<td></td>
<td>Number of male partners ^b</td>
<td>2.2-13.9</td>
<td>2.8-14.6</td>
<td>1.8-12.6</td>
<td>0.330</td>
</tr>
<tr>
<td></td>
<td>Number of female partners ^b</td>
<td>2.3-10.8</td>
<td>2.2-10.3</td>
<td>2.5-12.1</td>
<td>0.521</td>
</tr>
<tr>
<td>Need</td>
<td>Abnormal Pap results</td>
<td>30.9</td>
<td>37.5</td>
<td>13.1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Pap recommended by HCP</td>
<td>73.0</td>
<td>81.2</td>
<td>50.8</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Family history of cancer</td>
<td>78.3</td>
<td>80.5</td>
<td>72.1</td>
<td>0.174</td>
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<tr>
<td></td>
<td>Personal history of cancer</td>
<td>11.9</td>
<td>12.7</td>
<td>9.8</td>
<td>0.552</td>
</tr>
<tr>
<td></td>
<td>Contraception services</td>
<td>11.7</td>
<td>12.8</td>
<td>8.5</td>
<td>0.376</td>
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<tr>
<td></td>
<td>STI services</td>
<td>18.7</td>
<td>20.2</td>
<td>14.8</td>
<td>0.392</td>
</tr>
</tbody>
</table>

^a% of participants who selected the correct answer; questions evaluated knowledge about frequency of screening (Q1), if sexual activity necessitates screening (Q2), and commencement of screening based on sexual activity (Q3)

^b Summarized as median (interquartile range) due to skewed data
### Table 3

**Multiple Imputed Health Behavior and Outcome Factors by Type of Screener**

<table>
<thead>
<tr>
<th>Factor Type</th>
<th>Factor / Variable</th>
<th>All (N = 226) (%)</th>
<th>Routine Screener (n = 165) (%)</th>
<th>Non-routine Screener (n = 61) (%)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health Behavior</strong></td>
<td><strong>Pap test experience</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Good experiences</td>
<td>43.5</td>
<td>53.3</td>
<td>16.7</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Bad experiences</td>
<td>28.8</td>
<td>32.1</td>
<td>20.0</td>
<td>0.073</td>
</tr>
<tr>
<td></td>
<td><strong>Discrimination based on</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>16.1</td>
<td>13.6</td>
<td>22.8</td>
<td>0.105</td>
</tr>
<tr>
<td></td>
<td>Gender expression</td>
<td>12.7</td>
<td>8.3</td>
<td>24.8</td>
<td>0.002</td>
</tr>
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<td></td>
<td>Sexual orientation</td>
<td>26.6</td>
<td>21.7</td>
<td>40.2</td>
<td>0.008</td>
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<td>Physical size</td>
<td>24.8</td>
<td>20.9</td>
<td>35.2</td>
<td>0.039</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>16.9</td>
<td>16.9</td>
<td>17.0</td>
<td>0.775</td>
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<tr>
<td></td>
<td>Socioeconomic status</td>
<td>17.6</td>
<td>12.2</td>
<td>32.3</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Race or ethnicity</td>
<td>7.5</td>
<td>6.8</td>
<td>9.3</td>
<td>0.576</td>
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<tr>
<td></td>
<td>Education</td>
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<td>5.6</td>
<td>15.2</td>
<td>0.034</td>
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<td>Occupation</td>
<td>7.5</td>
<td>5.7</td>
<td>12.3</td>
<td>0.158</td>
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<tr>
<td></td>
<td>“Outness” to provider</td>
<td>61.9</td>
<td>67.9</td>
<td>45.4</td>
<td>0.003</td>
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<td><strong>Outcomes</strong></td>
<td><strong>Evaluated Health</strong></td>
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<td>Abnormal Pap results</td>
<td>30.9</td>
<td>37.5</td>
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<tr>
<td></td>
<td>Satisfaction</td>
<td>82.5</td>
<td>89.5</td>
<td>63.6</td>
<td>&lt;0.001</td>
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</table>
### Table 4

*Multivariate Logistic Regression Analyses*

<table>
<thead>
<tr>
<th></th>
<th>Model 1&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Model 2&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Model 3&lt;sup&gt;c&lt;/sup&gt;</th>
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<tr>
<td></td>
<td>OR</td>
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<td>p</td>
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<tr>
<td>Health insurance</td>
<td>5.0</td>
<td>1.5–17.4</td>
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<tr>
<td>Knowledge question 1</td>
<td>0.29</td>
<td>0.09–0.90</td>
<td>0.032</td>
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<tr>
<td>Use of STI services</td>
<td>13.9</td>
<td>2.2–78.8</td>
<td>0.003</td>
</tr>
<tr>
<td>Provider recommended Pap test</td>
<td>4.9</td>
<td>1.9–12.6</td>
<td>0.001</td>
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<tr>
<td>Discrimination: Gender expression</td>
<td>0.14</td>
<td>0.04–0.52</td>
<td>0.003</td>
</tr>
<tr>
<td>Discrimination: Physical size</td>
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<td>0.13–0.92</td>
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<td>“Outness” to provider</td>
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<td>Satisfaction with provider</td>
<td>3.9</td>
<td>1.4–11.2</td>
<td>0.011</td>
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</table>

<sup>a</sup> Backward stepwise LR of cases with complete data (N = 176)

<sup>b</sup> Backward stepwise LR of all cases following multiple imputation (N = 226)

<sup>c</sup> Manual LR when predictor variables identified in the first model are combined with those obtained from model 2 imputation (N = 226)
### Table 5

Comparing Spearman Bivariate Correlation Coefficients between Completed Data and Imputed Data for Predictor Variables Identified in Logistic Regression Models

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<tr>
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<td>2. Knowledge question 1</td>
<td>0.20**</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>-0.52**</td>
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<td></td>
<td></td>
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<tr>
<td>3. Use of STI services</td>
<td>0.15*</td>
<td>-0.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>4. Provider recommended Pap test</td>
<td>0.20**</td>
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<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td></td>
<td>0.18**</td>
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<td>0.02</td>
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</tr>
<tr>
<td>5. Discrimination: Gender expression</td>
<td>0.00</td>
<td>0.03</td>
<td>0.01</td>
<td>-0.02</td>
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<tr>
<td>6. Discrimination: Physical size</td>
<td>0.03</td>
<td>-0.06</td>
<td>-0.07</td>
<td>0.04</td>
<td>0.33**</td>
<td></td>
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<tr>
<td></td>
<td>0.00</td>
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<td>-0.07</td>
<td>0.03</td>
<td>0.29**</td>
<td></td>
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<tr>
<td>7. “Outness” to provider</td>
<td>0.12</td>
<td>0.00</td>
<td>0.02</td>
<td>0.21**</td>
<td>0.08</td>
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<tr>
<td></td>
<td>0.10</td>
<td>0.05</td>
<td>0.05</td>
<td>0.16**</td>
<td>-0.03</td>
<td>-0.04</td>
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<td>8. Satisfaction with provider</td>
<td>0.11</td>
<td>0.09</td>
<td>-0.06</td>
<td>0.21**</td>
<td>-0.03</td>
<td>-0.09</td>
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<td>0.11</td>
<td>0.06</td>
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<td>-0.18**</td>
<td>-0.06</td>
<td>0.23**</td>
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</tr>
</tbody>
</table>

Note: The top correlation coefficient in each cell represents the completed data and the bottom coefficient represents the imputed data

* $p < 0.05$, ** $p < 0.001$
Figure 1. The theoretical framework used to guide this study, Andersen’s Behavioral Model of Health Services Use. Adapted from “National health surveys and behavioral model of health services use,” by R. M. Andersen, 2008, Medical Care, 46(7), 647-653. Copyright 2008 by Lippincott Williams & Wilkins.
Figure 2. Flow chart illustrating the quantitative and qualitative data collection, sample, and analysis.
<table>
<thead>
<tr>
<th>Individual Characteristics</th>
<th>Contextual Characteristics</th>
<th>Health Behaviors</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Triangulating Quantitative and Qualitative Factors</strong></td>
<td>• Health insurance • Income and employment • Gender identity • Pap recommended by provider</td>
<td>• Welcoming healthcare environment • Partner welcomed</td>
<td>• Good Pap testing experiences • Discrimination based on sexual orientation and/or gender expression</td>
</tr>
<tr>
<td><strong>Contrasting Quantitative Factors</strong></td>
<td>• Age • Education level • Previous sexual activity</td>
<td>• “Outness” to provider • Discrimination based on: physical size, socioeconomic status, and education</td>
<td></td>
</tr>
<tr>
<td><strong>Contrasting Qualitative Factors</strong></td>
<td>• Knowledge • Peer support • Role models • Distrust in healthcare • Regular provider • Family history of cancer</td>
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</tbody>
</table>

*Figure 3. The qualitative and quantitative factors compared (triangulated) and contrasted and then contextualized within the theoretical framework*
Summary and Conclusions

This dissertation consists of three manuscripts that report the findings of two distinct but related studies. The first study, detailed in the first manuscript, was a qualitative exploration of health care experiences of LBQ women. The second study, detailed in the second and third manuscripts, used a mixed methods design to identify factors associated with cervical cancer screening among LBQ women. The information presented within the three manuscripts has important implications.

The mixed methods study (manuscripts 2 and 3), which represents the bulk of this dissertation, showed that a constellation of factors were associated with the receipt of cervical cancer screening. Ten broad factors were found in both the quantitative and qualitative data, indicating triangulation. These factors represent each level of the health care utilization process. At the individual level, factors found to influence screening included health insurance, income and employment, gender identity, and Pap test recommended by a provider. At the contextual level, factors were specific to welcoming health care environments. At the health behavior level, factors included good Pap testing experiences and perceived discrimination based on sexual orientation and/or gender identity. Finally, at the outcome level, abnormal Pap tests and satisfaction with care were factors that influenced screening.

Many of the factors identified in the mixed methods study support the findings from the first qualitative study (manuscript 1). The mixed methods study showed that welcoming environments and satisfaction with care facilitates routine screening behaviors, whereas perceived discrimination based on sexual orientation and/or gender identity was a barrier to screening. Similarly, the first qualitative study showed two major points in the health care experience from the perspective of LBQ women, including disclosure of sexual orientation and
**provider attributes.** LBQ women wanted to be able to disclose their sexual orientation and then receive appropriate and competent care from their providers. The findings also suggested that negative health care encounters can lead to negative proximal outcomes, such as changing health care seeking behaviors. The findings from the two different studies clearly validate each other.

Numerous other factors were found in the mixed methods study that did not triangulate, meaning that they were identified in either the quantitative or qualitative data, but not both. Most of the contrasting factors were found in the qualitative data but were not assessed in the quantitative questionnaire, including interpersonal support and LBQ-specific knowledge of screening guidelines. Additionally, disclosure of sexual orientation was a factor identified in the quantitative data but not the qualitative data. However, disclosure of sexual orientation was found to be an important theme in the first qualitative study, thus validating the importance of this factor.

Attention also needs to be given to the implications of the theoretical framework used in the mixed methods study. None of the published studies on cervical cancer screening among LBQ women identified during the literature search for this study applied a theoretical or conceptual framework. This dissertation study contextualized the findings within a multilevel theoretical framework, which showed that a constellation of factors interface with each other. Future research on cervical cancer screening among LBQ women, especially the development of interventions, should use a multilevel framework. Future research must examine the issue of cervical cancer screening through a lens of sexual orientation and gender identity as well as broader understanding of the multifactorial nature of issues.

Researchers, health care professionals, educators, and policymakers should carefully review the findings from this dissertation and consider the implications to their work.
Researchers should especially focus on those factors that contrasted between the quantitative and qualitative data, such as interpersonal support, LBQ-specific knowledge of cervical cancer risk and screening, and disclosure of sexual orientation to providers. In addition, researchers should examine the relationship between gender identity/expression and receipt of cancer screening, a factor that triangulated in the mixed methods study but has been minimally studied in extant research.

Health care professionals and organizations should scrutinize their policies and practices around sexual orientation and gender identity. There are obviously significant barriers that impede organizations from adopting changes specific to these topics. More organizations need to conduct implementation research that examines the facilitators and barriers to adopting inclusive policies and practices.

Including LBQ-specific content in curricula for health care professionals has been written about extensively. The findings from this study strengthen the argument to lobby for nursing and medical education accrediting bodies to mandate the inclusion of LBQ content in all curricula and to require current health care professionals to take LBQ specific continuing education course.

Policymakers should continue to promote equal treatment of LBQ women, same-sex couples, and their families. Recognition of same-sex marriage at the federal level has important implications to health insurance coverage and health care access. Additionally, policymakers should continue lobbying for the collection of sexual orientation and gender identity data in health care practices and organizations and federal surveys. Quantifying health disparities of LBQ women will signal grant funders, researchers, policymakers, and providers to identify and address the causes.
Finally, the limitations of this dissertation study need to be noted. First, the sample for both studies were primarily non-Hispanic white, educated, employed, and insured. Second, both studies used a nonprobability convenience sample generated primarily from online sources, limiting generalizability to the LBQ population. Third, because the investigator is male, some respondents may have restricted or censored their responses, or chose not to participate. Moreover, neither study had an adequate sample of women who were not "out" with their sexual orientation. Fourth, neither study included heterosexual women, which limits the understanding of differences between LBQ and heterosexual women. Fifth, both studies had very small numbers of transgender participants. Additional research is needed to identify factors specific to transgender men. Lastly, numerous limitations specific to the methods can be found in the manuscripts. Despite these limitations, this dissertation study contributes to the extant literature related to cervical cancer screening among LBQ women.
Appendices

Appendix A

The IRB approval letter for the study reported in manuscript 1

Institutional Review Board for Human Research (IRB)
Office of Research Integrity (ORI)
Medical University of South Carolina

Harborview Office Tower
19 Hagood Ave., Suite 601, MSC857
Charleston, SC 29425-8570
Federal Wide Assurance # 1888

APPROVAL:
This is to certify that the research proposal Pro00025876 entitled
Exploring the experiences of healthcare encounters and characterizing the perceptions of quality healthcare services in lesbian and bisexual female college age students attending 4-year universities in the Southwest United States

Submitted by: Michael Johnson
Department: Medical University of South Carolina

For consideration has been reviewed by IRB-I - Medical University of South Carolina and approved with respect to the study of human subjects as adequately protecting the rights and welfare of the individuals involved, employing adequately methods of securing informed consent from these individuals and not involving undue risk in the light of potential benefits to be derived therefrom. Additionally, the Institutional Review Board for Human Research (IRB) recommends approval of the investigator's request for Waiver of Signed Consent in accordance with 45 CFR 46 117(c)(1),(2) because the only record linking the subject and the research would be the consent document and the principal risk would be potential harm resulting from a breach of confidentiality and/or because the research presents no more than minimal risk and involves no procedures for which written consent is normally required outside of the research context. The Institutional Review Board for Human Research (IRB) also recommends approval of the investigator's request for a HIPAA Waiver of Authorization, as it appears that the criteria of the Privacy Rule have been satisfied. The HIPAA Waiver of Authorization was reviewed under expedited review procedures. No IRB member who has a conflicting interest was involved in the review or approval of this study, except to provide information as requested by the IRB.

Original Approval Date 7/19/2013
Approval Expiration 7/18/2014

Type: Expedited

Chairman, IRB-I - Medical University of South Carolina
Mark Hamner

Statement of Principal Investigator:

As previously signed and certified, I understand that approval of this research involving human subjects is contingent upon my agreement:

1. To report to the Institutional Review Board for Human Research (IRB) any adverse events or research related injuries which might occur in relation to the human research I have read and will comply with IRB reporting requirements for adverse events.
2. To submit in writing for prior IRB approval any alterations to the plan of human research.
3. To submit timely continuing review reports of this research as requested by the IRB.
4. To maintain copies of all pertinent information related to the research activities in this project, including copies of informed consent agreements obtained from all participants.
5. To notify the IRB immediately upon the termination of this project, and/or the departure of the principal investigator from this institution and the project.

* Electronic Signature: This document has been electronically signed by the IRB Chairman through the HSSC eIRB Submission System authorizing IRB approval for this study as described in this letter.

Initial Review Approval of Full Board or Expedited Research
2/28/2015
Appendix B

The IRB approval letter for the study reported in manuscripts 2 and 3

Institutional Review Board for Human Research (IRB)
Office of Research Integrity (ORI)
Medical University of South Carolina

Harborview Office Tower
19 Hagood Ave., Suite 601, MSC857
Charleston, SC 29425-8570
Federal Wide Assurance # 1888

APPROVAL:
This is to certify that the research proposal Pro0038905 entitled
Cervical Cancer Screening Among Lesbian and Bisexual Women
Submitted by: Michael Johnson
Department: Medical University of South Carolina

For consideration has been reviewed by IRB-I - Medical University of South Carolina and approved with respect to the study of human subjects as adequately protecting the rights and welfare of the individuals involved, employing adequately methods of securing informed consent from these individuals and not involving undue risk in the light of potential benefits to be derived therefrom. Additionally, the Institutional Review Board for Human Research (IRB) recommends approval of the investigator's request for Waiver of Signed Consent in accordance with 45 CFR 46 117(c)(1),(2) because the only record linking the subject and the research would be the consent document and the principal risk would be potential harm resulting from a breach of confidentiality and/or because the research presents no more than minimal risk and involves no procedures for which written consent is normally required outside of the research context. No IRB member who has a conflicting interest was involved in the review or approval of this study, except to provide information as requested by the IRB

Original Approval Date: 8/15/2014
Approval Expiration: 8/14/2015
Type: Expedited

Chairman, IRB-I - Medical University of South Carolina
Susan Newman

Statement of Principal Investigator:

As previously signed and certified, I understand that approval of this research involving human subjects is contingent upon my agreement:

1. To report to the Institutional Review Board for Human Research (IRB) any adverse events or research related injuries which might occur in relation to the human research. I have read and will comply with IRB reporting requirements for adverse events
2. To submit in writing for prior IRB approval any alterations to the plan of human research
3. To submit timely continuing review reports of this research as requested by the IRB
4. To maintain copies of all pertinent information related to the research activities in this project, including copies of informed consent agreements obtained from all participants
5. To notify the IRB immediately upon the termination of this project, and/or the departure of the principal investigator from this institution and the project

* Electronic Signature: This document has been electronically signed by the IRB Chairman through the HSSC eIRB Submission System authorizing IRB approval for this study as described in this letter.
Appendix C
Recruitment postcard for the study reported in manuscripts 2 and 3

Do you identify as a LGBTQ woman and are between the age of 21 and 65?
If so, you are eligible to participate in a research study.

We are looking for LGBTQ women to take a brief survey and/or participate in a telephone interview about cervical cancer screening.

We will reimburse you for your time.
Visit our website for more information.

www.CrushCervicalCancer.com
Appendix D
Recruitment website for the study reported in manuscripts 2 and 3
Appendix E
Internet questionnaire for the study reported in manuscripts 2 and 3

SECTION 1
CERVICAL CANCER SCREENING

Q1.1. When was the last time you had a cervical Pap smear test?
   a) Within the last 12 months
   b) Within the last 1 – 3 years
   c) More than 3 years ago
   d) I have never had a Pap test

Q1.2. If you received a cervical Pap smear test in the last 3 years, what were the reasons you decided to get the test?

Q1.3. If you received a cervical Pap smear test more than 3 years ago, what are the reasons you have not gone back to get the test?

Q1.4. If you have never had a cervical Pap smear test, what are the reasons you have never gotten the test?

Q1.5. Has your doctor ever advised you to not have a cervical Pap smear test for medical reasons?
   a) Yes
   b) No
   c) I don’t know

Questions 1.6 – 1.8 assess your knowledge of cervical cancer screening. Answer true or false for each question.

Q1.6. Women should receive cervical Pap smear tests every 3 years.
   a) True
   b) False
Q1.7. It is not necessary to receive a cervical Pap smear test if a woman is not sexually active.
   a) True
   b) False

Q1.8. Women should first start receiving cervical Pap smear tests when they become sexually active.
   a) True
   b) False

Q1.9. Have you ever been told by a doctor or nurse that you had an abnormal cervical Pap smear result?
   a) Yes
   b) No
   c) I don’t know

Q1.10. Has a doctor or nurse ever recommended you receive a cervical Pap smear test?
   a) Yes
   b) No
   c) I don’t know

Q1.11. Do you have a history of ANY type of cancer in your family?
   a) Yes
   b) No
   c) I don’t know

Q1.12. Have you ever been diagnosed with ANY type of cancer?
   a) Yes
   b) No

Q1.13. Have you personally had any BAD experiences of cervical Pap smear tests?
   a) Yes
   b) No

If you answered YES, please describe below what happened:
Q1.14. Have you personally had any GOOD experiences of cervical Pap smear tests?
   a) Yes
   b) No

If you answered YES, please describe below what happened:

Q1.15. Why do you think some lesbian and bisexual women get a cervical Pap smear test and others do not?

Q1.16. What do you think should be done to encourage lesbian and bisexual women to get a cervical Pap smear test?

Q1.17. Do you have any other comments you would like to make about cervical Pap smear tests?

SECTION 2
INTERACTIONS WITH HEALTH CARE PROVIDERS

Q2.1. Do you believe your doctor knows what your sexual orientation is?
   a) Yes, I came out directly
   b) Yes, I am pretty sure my doctor knows even though I did not come out
   c) Not sure
   d) No

Q2.2. How satisfied are you with your doctor?
   a) Very satisfied
   b) Somewhat satisfied
   c) Somewhat unsatisfied
   d) Very unsatisfied
Q2.3. Does your doctor’s office feel welcoming and inclusive to lesbian and bisexual women?
   a) Yes
   b) No
   c) I don’t have a doctor

Q2.4. Does your doctor’s office have patient intake forms that are inclusive to lesbian and bisexual women?
   a) Yes
   b) No
   c) I don’t have a doctor

Q2.5. Have you ever felt that who you are in any way negatively affected the quality of the health care you received? (Check Yes or No)
   a) Gender: Yes No
   b) Sexual Orientation: Yes No
   c) Physical Size: Yes No
   d) Age: Yes No
   e) Socioeconomic Status: Yes No
   f) Race or Ethnicity: Yes No
   g) Education: Yes No
   h) Occupation: Yes No

Q2.6. Do you have any other comments you would like to make about the interactions with your health care providers?

SECTION 3
SEXUAL ACTIVITY

Q3.1. Have you ever engaged in sexual activity? By sexual activity, we mean vaginal sex, anal sex, oral sex, or touching each other intimately.
   a) Yes
   b) No
   c) I don’t know

Q3.2. During your life, with whom have you engaged in sexual activity with?
   a) I have not had sexual contact with anyone
   b) Females
   c) Males
   d) Female(s) and Male(s)

Q3.3. During your life, with how many MEN have you engaged in sexual activity with?
Q3.4. During your life, with how many WOMEN have you engaged in sexual activity with?

Q3.5. In the past year, have you seen a doctor for contraceptive purposes, such as birth control prescription, intrauterine device/IUD, or morning-after pill?
   a) Yes
   b) No

Q3.6. In the past year, have you received counseling or testing for a sexually transmitted infection?
   a) Yes
   b) No

Q3.7. Do you have any other comments you would like to make about sexual activity?

SECTION 4
SEXUAL ORIENTATION AND GENDER IDENTITY

Q4.1. What sexual identity term do you prefer?
   a) Lesbian, gay or homosexual
   b) Heterosexual or straight
   c) Bisexual
   d) Don’t know
   e) Something else – Please Specify: _____

Q4.2. How would you describe yourself now?
   a) Butch
   b) Feminine
   c) Androgynous
   d) None of the above

Q4.3. What is your current gender identity?
   a) Male
   b) Female
   c) Female-to-Male (FTM) / Transgender Male / Trans Man
   d) Male-to-Female (MTF) / Transgender Female / Trans Woman
   e) Genderqueer, neither exclusively male nor female
   f) Something else – Please Specify: _____
Q4.4. What sex were you assigned at birth on your original birth certificate?
   a) Female
   b) Male

Q4.5. Do you have any other comments you would like to make about your sexual and/or gender identity?

SECTION 5
BACKGROUND INFORMATION

Q5.1. How old are you? _____

Q5.2. What description best fits your ethnic identity?
   a) Hispanic or Latino
   b) Not Hispanic or Latino

Q5.3. What description best fits your racial identity?
   a) American Indian / Alaska Native
   b) Asian
   c) Native Hawaiian or Other Pacific Islander
   d) Black or African American
   e) White

Q5.4. What is the highest level of education that you have completed?
   a) Less than high school diploma
   b) High school diploma or GED
   c) Technical school or community college
   d) Bachelor’s degree
   e) Master’s degree
   f) Doctorate or professional degree (PhD, medicine, law, etc.)

Q5.5. What best describes your employment status? You may choose more than one option.
   a) Employed full time
   b) Employed part time
   c) Unemployed or looking for work
   d) Retired
   e) Full or part time college student
   f) On disability
   g) Other – Please Specify: _____
Q5.6. What statement best describes your current relationship status?
   a) Legally married or domestic partnership
   b) Partnered
   c) In a casual relationship or dating
   d) Single
   e) Other – Please Specify: _____

Q5.7. Do you currently live in:
   a) A city or urban area
   b) A suburban area
   c) A rural area
   d) Other – Please Specify: _____

Q5.8. What is your approximate household yearly income before taxes?
   a) Less than $25,000
   b) Between $25,000 and $49,999
   c) Between $50,000 and $99,999
   d) $100,000 or more

Q5.9. Do you have health insurance?
   a) Yes
   b) No

SECTION 6
FINAL QUESTION

Q6.1. Are there any other comments you would like to make about cervical Pap smear tests as it applies to lesbian and bisexual women?
Appendix F
Qualitative interview questions for the study reported in manuscripts 2 and 3

<table>
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<tr>
<th>Routine Screeners</th>
<th>What were the reasons you decided to get your Pap test?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Routine Screeners</td>
<td>What are the reasons you have not had your Pap test in the last three years?</td>
</tr>
<tr>
<td>Never Screeners</td>
<td>What are the reasons you have never had a Pap test?</td>
</tr>
</tbody>
</table>

Why do you think some lesbian and bisexual women get a Pap test and others do not?

What do you think should be done to encourage lesbian and bisexual women get their recommended Pap tests?
- Is there anything specific that organizations should do, such as health insurance companies, employers, or the government?
- Is there anything specific that hospitals or doctors should do?
- Is there anything specific that lesbian and bisexual women should do?