



“My husband says this: If you are alive, you can be someone...”: Facilitators and barriers to cervical cancer screening among women living with HIV in India

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Abstract

Purpose Women living with human immunodeficiency virus (WLWH) have a higher risk of cervical cancer than women without HIV. In addition, women in India experience a high burden of death from cervical cancer. This qualitative study evaluated individual and interpersonal factors influencing cervical cancer screening among WLWH in Surat, India.

Methods In-depth interviews were conducted with 25 WLWH and 15 stakeholders in Surat, India. Data were analyzed using directed content analysis to identify individual and intrapersonal barriers and facilitators.

Results WLWH lacked knowledge and reported being afraid of cervical cancer and cervical cancer screening but were interested in learning more about it. Interpersonal factors influencing cervical cancer screening included receipt or lack of instrumental and emotional family support, interactions with healthcare providers, and receipt or lack of information about cervical cancer and the Pap test from healthcare providers.

Conclusion Widespread public education is necessary to increase awareness of cervical cancer and cervical cancer screening and to encourage family members to support women who wish to obtain screening. Patient- and provider-focused interventions may facilitate the process of providing cervical cancer care to WLWH who are obtaining care in busy public healthcare systems in India.

Keywords Qualitative research · Uterine cervical neoplasms · HIV · Papillomavirus infections · Papanicolaou test · Early detection of cancer

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Introduction

More than 122,000 women in India are diagnosed with cervical cancer each year [1]. Over 80% of cervical cancer cases in India are diagnosed at an advanced stage, contributing to approximately 67,500 deaths from the disease annually [2, 3]. Epidemiologic data on the incidence and prevalence of cervical cancer in India are scarce. A systematic review identified one study that reported an age-adjusted incidence of cervical cancer in Mumbai, India, between 1976 and 2005 of 5.32 per 100,000 women [4]. In comparison, the age-adjusted incidence rate of cervical cancer ranged from 0.11 to 17.93 per 100,000 women in other low- and middle-income countries [4]. In the same review, India had the highest age standardized mortality rate compared to all other low- and middle-income countries included [4].

Indian women living with human immunodeficiency virus (HIV) are two to five times more likely to develop cervical

cancer than women without HIV [5] as a result of increased prevalence of multiple and oncogenic human papillomavirus (HPV) infections, increased rate of HPV progression, and greater incidence of cervical squamous intraepithelial lesions that can develop into invasive cervical cancer [6–9]. Although India's HIV epidemic is declining and its HIV prevalence of 0.2% is smaller than prevalence rates in other middle-income countries, India nonetheless has the third largest HIV epidemic in the world due to the large size of its population [10]. The National AIDS Control Organization (NACO) of the Ministry of Health and Family Welfare of the Government of India recommends that women living with HIV receive a Papanicolaou (Pap) test twice within the first year after HIV diagnosis and yearly Pap tests if both initial tests are normal [11]. It is not clear how many women living with HIV in India receive recommended screening. According to the best available estimates, only 3.1% of *all women* in India age 25–64 years received recommended cervical cancer screening in 2003 [12]. To our knowledge, no published research has examined receipt of cervical cancer screening among women living with HIV in India.

Few studies have examined factors associated with receipt of cervical cancer screening among Indian women. The Social Ecological Model (SEM; Fig. 1) proposes that an outcome, such as cervical cancer, occurs through interaction between a person and her environment [13, 14]. The SEM further specifies several factors that influence behavior, including individual and interpersonal factors [15]. Previous studies in the general population of women in India have found that limited education and knowledge about cervical

cancer and cancer screening are independently associated with lower rates of screening [16, 17]. In addition, studies conducted outside of India have found that family and community support [18–21], communication of screening information by healthcare providers [21], and being part of a social network that includes other women who have received screening [21–24] are associated with increased cervical cancer screening among diverse populations including Vietnamese-American, Korean-American, Peruvian, Latina, Indonesian, and Singaporean women without HIV. However, there are no published studies examining the impact of individual and interpersonal factors on receipt of cervical cancer screening among women living with HIV in India, specifically.

The goal of this cross-sectional, qualitative study is to describe individual and interpersonal barriers and facilitators related to obtaining cervical cancer screening services among women living with HIV in Surat, India. Because India has one of the highest global burdens of both HIV and of cervical cancer, [2–4, 10] it is essential to develop interventions to improve cervical cancer care among women living with HIV in India.

Methods

Setting

India has both a public healthcare system, where healthcare is provided to eligible citizens free of charge, and a private healthcare system. In the public system, HIV care is provided in a network of 528 Antiretroviral Centres (ART Centres) that are managed by NACO. The study setting was the New Civil Hospital (NCH) ART Centre in Surat, India, an outpatient clinic that provided HIV care to approximately 50–60 women per day. Surat is a metropolitan area with a population of approximately 4.84 million people, located in the Gujarat state of western India. NCH was established in 1964 and has inpatient and outpatient facilities with a capacity of 1,150 beds. Many outpatient services are provided at NCH to patients for free or for a nominal charge, including obstetric and gynecologic care. The obstetric and gynecologic outpatient department is located in the same building as the ART Centre.

Participants

Twenty-five patients and 15 stakeholders were initially interviewed, after which the interview transcripts were reviewed to evaluate thematic saturation [5, 25]. At the time of the review, it was determined that saturation had been achieved. Study participants were women living with HIV receiving care at the NCH ART Centre (patients) as well as healthcare



Fig. 1 Social Ecological Model

workers providing care to women living with HIV at NCH (stakeholders). To be eligible for the study, patients must also have been (1) female; (2) 18 years or older; (3) living in Surat, India; (4) able to speak Gujarati or Hindi; and (5) able to provide informed consent. Stakeholders were eligible to participate if they were (1) 18 years or older; (2) able to speak Gujarati, Hindi, or English; (3) able to provide informed consent; and (4) identified by the local investigator as being knowledgeable about the experiences of women living with HIV in Surat. Stakeholders were primarily health-care providers employed by NCH, ranging from resident physicians to department heads.

Procedures

All procedures were approved by a local institutional research committee and the institutional review board at San Diego State University prior to the initiation of any study procedures. Using a purposeful sampling strategy, study staff approached patients at the ART Centre and invited them to take part in individual in-depth interviews. Stakeholders were identified by study staff. Interviews occurred between 25 April 2015 and 1 July 2015, and were conducted within private consultation rooms or offices. Interviews were conducted in the language that each patient or stakeholder preferred. Thus, interviews were conducted in either Hindi, Gujarati, or English. Prior to conducting the interview, the

trained interviewer explained the study, answered all questions, and obtained written informed consent.

Interviews were conducted using semi-structured interview guides created separately for patients and stakeholders based on the SEM [14]. Interviews evaluated barriers and facilitators to healthcare and gynecological care, and experiences with cervical cancer screening and diagnostic care. Stakeholders and patients completed either a demographic survey via self-report or an oral demographic survey conducted by an interviewer. Interviews lasted approximately 45 min. All stakeholders and patients who participated in the study were compensated 500 Indian rupees (approximately \$8 US).

Qualitative analyses

Interviews were audio-recorded, transcribed verbatim, de-identified, and, if necessary, translated into English by multilingual study staff. At least two research team members reviewed all translations for quality. Directed content analysis was implemented to analyze data. Three authors (KW, JRG, and AB) read all interviews and developed an initial codebook based both on a priori themes of the SEM (Fig. 2) and emergent themes (e.g., HIV stigma). Using the preliminary codebook, the authors independently coded randomly selected interviews and met to resolve discrepancies and refine the codes as needed. This process continued three times until the authors came to a consensus regarding

Fig. 2 A priori themes from the Social Ecological Model and examples of data assigned to each theme

A priori Theme	Examples of Data Assigned to Each Theme
Intrapersonal	
Facilitator	Patient tries to care for her health Patient open to learning more about Pap/cervical cancer/prevention/treatment
Barriers	Patient does not know about Pap test: reason why it is being done; what will happen; why it is important Patient frightened of Pap test: unsure what doctor is going to do; unsure about instruments; fears being cut "inside" Patient fears Pap test results might indicate something is wrong
Interpersonal	
Facilitators	Doctor explained what was going to happen during Pap test; doctor told her it was a test for cervical cancer; doctor showed patient instruments used to perform Pap test Family members accompany patient or help her with work Boss allows time off to get the Pap test
Barriers	Doctor does not explain what is going to happen during Pap test Patient perceives doctor is too busy to spend time answering her questions about the Pap test or cervical cancer Patient lacks family support

the codes and definitions of codes in the final codebook. Two authors (JRG and AB) then independently coded three interviews at a time, after which they met to discuss the coding of each interview and resolved coding discrepancies via consensus. All interviews were entered into NVivo Version 10, and codes were assigned specific nodes. Three researchers (KW, JRG, and AB) summarized all comments, assigned a priori individual and interpersonal codes, and identified sub-themes within the codes.

Results

Demographic characteristics of patients and stakeholders interviewed are described in Tables 1 and 2. Patients ranged in age from 30 to 54 years ($M=37.2$, $SD=6.1$). Most patients had previously received a Pap test (88%); however, 32% of patients had not received a Pap test in the past year, and 8% were unsure if they had ever received one. Stakeholders ranged in age from 27 to 52 years ($M=36.1$, $SD=7.8$).

Lack of knowledge about cervical cancer and the Pap test

Most patients lacked complete knowledge about Pap tests and cervical cancer ($n=23$). This included information pertaining to the purpose of the Pap test, name of the Pap test, how the Pap test is performed, the causes of cervical cancer, and the increased risk for cervical cancer among women living with HIV. One patient stated,

The thing is, women should know about this [the Pap test]. But there are about 80% of women who don't even know. Even when they are financially independent, even they don't know about routine check-up. (Pap test status: Tested at least once)

Similarly, one stakeholder interviewed noted,

They know very little about cervical cancer and its screening...they feel that they don't need it. It is basically they are not aware that they are at high risk...I think the biggest barrier [to getting screening] is lack of knowledge or awareness that they are at risk. (Stakeholder; General Physician)

Desire to learn more information about cervical cancer

The majority of patients ($n=17$) interviewed were motivated to learn more information about cervical cancer and cervical cancer screening because they had a desire to stay healthy.

One patient noted that she had a desire to learn more about cervical cancer in order to avoid future health complications:

If it is better for my body then I will definitely go for it in the future...people like us have a very weak body, so we are always working on preserving our health... we take good care of ourselves so that our kids will not have to suffer. (Pap test status: Tested at least once)

In addition, several women stated that they were motivated to stay healthy for their children:

My kids will be fine if I am alive. If I die, who will look after my kids? I need to worry about it. The children only have their parents. (Pap test status: Never tested)

Fear of cervical cancer screening and the results

Another major individual barrier was fear of the Pap test and of the subsequent results ($n=19$). This fear was rooted in a lack of knowledge about cervical cancer screening procedures and the instruments that would be used. One patient stated,

When I went the first time...[I had] fear that something will happen to me inside. I will get injured or something. (Pap test status: Tested at least once)

Another patient further echoed fear of cervical cancer screening,

I felt a little bit of fear because I didn't know what will happen, and like what they used to do during the test, what kind of instruments they would insert. Maybe they might even cut something inside! (Pap test status: Tested at least once)

Women were also concerned about the results of the exam ($n=7$), as one patient stated,

I am a brave woman but I was afraid during the check-up because I was afraid of the result...I was a little worried about what was going to be in the reports. (Pap test status: Tested at least once)

Interpersonal influences from family members

Both stakeholders and patients ($n=15$) indicated family support was a key facilitator to cervical cancer care, including getting the Pap test. Many patients ($n=9$) mentioned their husbands as sources of support and accompaniment; for example, one patient stated,

My husband says this—if you are alive, you can be someone, but if you are dead then you can't be any-

Table 1 Demographic characteristics of women living with HIV ($n = 25$)

Characteristic	Number of participants	%
Marital status		
Married	14	56.0
Divorced or separated	2	8.0
Widowed	9	36.0
Individuals living in household (excluding participant)		
1–3	11	44.0
4–9	11	44.0
10–15	3	12.0
Religion		
Hindu	22	88.0
Muslim	2	8.0
Jain	1	4.0
Highest level of education completed		
Illiterate	2	8.0
Primary school	6	24.0
Secondary school (10th standard)	12	48.0
Higher secondary school (12th standard)	3	12.0
Graduation (undergraduate education)	1	4.0
Post-graduation	1	4.0
Employment outside home		
Not employed	11	44.0
Employed full-time (32 or more h per week)	11	44.0
Employed part-time (less than 32 h per week)	3	12.0
Type of work		
Skilled work	13	52.0
Clerical work	1	4.0
Housewife	10	40.0
None	1	4.0
Able to read		
Yes	23	92.0
Able to write		
Yes	23	92.0
Area of residence		
Urban slum	11	44.0
Urban non-slum	11	44.0
Rural	3	12.0
Has established doctor/clinic		
Yes	25	100.0
Years since HIV diagnosis		
0–5	7	28.0
6–10	10	40.0
11–16	8	32.0

one.... It's just my husband who supports me fully.
(Pap test status: Never tested)

Patients and a stakeholder also identified children, and occasionally parents ($n = 7$), as sources of support who accompany women or help them obtain care. In addition, some patients ($n = 7$) mentioned that their family members

helped them to receive the Pap test by performing household work, childcare, or working in their place for an employer. For instance, one patient stated,

My elder sister-in-law makes food for my son whenever I am not home. (Pap test status: Tested at least once)

Table 2 Demographic characteristics of stakeholders ($n=15$)

Characteristic	Number of participants	%
Gender		
Female	10	66.7
Male	5	33.3
Education		
Graduation (completed undergraduate study)	3	20.0
Post-graduation (completed 2 years of study after college graduation)	12	80.0
Languages read ^a		
Hindi	15	100.0
Gujarati	15	100.0
English	15	100.0
Other	1	6.7
Occupation		
Counselor	5	33.3
Doctor	6	40.0
Laboratory technician for Pap test	1	6.7
Staff nurse	3	20.0
Workplace		
ART Centre, NCH, Surat	7	46.7
ICTC ^b , NCH ^c , Surat	2	13.3
OB/GYN ^d , Government Medical College, Surat	6	40.0

^aDue to overlap, percentages do not add up to 100%

^bIntegrated Testing and Counseling Center

^cNew Civil Hospital

^dObstetrics and Gynecology

Conversely, some patients and stakeholders ($n=7$) stated that there are patients that do not have family members who provide support. One patient, after undergoing a hysterectomy and 7 days of hospitalization, described that she walked home unaccompanied:

The doctor also asked me... ‘would you be able to go?’ Then I said ‘please discharge me.’ Then [the doctor] asked me about my relatives. I said no one is there. [The doctor] asked about my husband. I said he passed away. Then they said, ‘ok. Then you can go as you are fit.’ Slowly and slowly, I went alone back to my home. I didn’t even go by autorikshaw that day. (Pap test status: Tested at least once)

Furthermore, a few patients and stakeholders ($n=3$) noted that some patients did not have instrumental support from family with work or childcare:

When the time is coming for the treatment, they may have trouble about family and support. Because they are daily workers... if they are getting treatment...their income is much less and what about the child? And

for widows, nobody is there for them at home for their child (Stakeholder; Gynecologist).

Also, a few patients and stakeholders ($n=3$) indicated that a patient’s partner may actively discourage her from getting the Pap test. For instance, one stakeholder noted:

Most of the times they come with their partner. So they have to follow their partner’s time. So if her partner is with her then he says ‘we don’t need to do anything, just let’s go home.’ Many times it may be possible that [a] woman may be ready for the test but the partner may not get convinced and he may have some other commitments, and he refuses (Stakeholder; Clinician)

Both patients and stakeholders ($n=5$) indicated that family members were supportive of patients who had disclosed their HIV status to the family. One patient stated:

Everybody knows about my problem in the family and they are very supportive. (Pap test status: Tested at least once)

Similarly, stakeholders noted that patients who seek HIV-related care with their HIV-positive partner were likely to obtain regular recommended care:

Many patients are in a couple, both husband and wife are diagnosed. So they have been counseled well. They have work and try to live a normal life. So they come and are regular (Stakeholder; General Physician).

Interpersonal interactions with healthcare workers

During the interviews, patients provided information about their experiences receiving healthcare in several healthcare systems in the area. Most patients ($n=22$) reported that they were treated well by healthcare providers at various places where they had received care. Furthermore, numerous patients stated that healthcare providers and staff treated them respectfully and performed the Pap test well:

They were talking with us nicely and examined in such a way that you didn’t feel pain...She put her hand on my abdomen and took the sample very gently and carefully while some doctors keep pressure on abdomen [and] put the hand very roughly inside the cervix. (Pap smear status: Tested at least once)

Some patients and stakeholders ($n=13$) noted that healthcare providers who treat patients well help reduce the fear that patients experience when undergoing the Pap test. For example, one patient stated,

They perform the Pap test while talking because a few women get a lot of fear. (Pap test status: Tested at least once)

In contrast, some stakeholders and patients ($n = 9$) reported that some patients were not treated well by a wide range of healthcare personnel in the various healthcare systems where they had received care, including staff nurses, security guards, office staff, or physicians. Patients and stakeholders mentioned that these individuals sometimes got angry or irritated with the patients. One stakeholder stated:

...because of so many patients, sometimes doctors also feel irritated. (Stakeholder; Staff Nurse)

Information provided by healthcare providers

Some patients and stakeholders ($n = 13$) indicated that staff and physicians from the ART Centre and outside of the ART Centre provided information to patients regarding the Pap test or instructed them to get a Pap test:

They are sent to us from the ART Centre on a routine basis for Pap smear...they are counseled very well at the ART Centre... and when the report comes, we explain what does it mean-whether it is normal or abnormal. And then we explain the follow up with them (Stakeholder; General Physician).

This was echoed by a patient who stated:

A staff member here in this ART Centre explained to me about this test. They said that the Pap test is very necessary for the HIV positive women. (Pap test status: Tested at least once)

Some patients ($n = 10$) indicated they were told why they were sent for the Pap test:

She told me that this procedure is for cervical cancer. After examination we can know whether you have this problem or not and after this we can go for further investigations like sonography. My report came out fine so I didn't go for any further investigation. (Pap test status: Tested at least once)

Similarly, some patients and stakeholders ($n = 8$) reported that doctors and other medical providers explained how a Pap test is performed before the exam was done. For instance, one stakeholder described putting patients at ease by letting them touch medical instruments before the examination:

...we let our spatula touch their hands for them to actually be okay with the feel... Like it is so harmless...it is small... that is the feeling. We tell them that spatula we used to dip your tongue, we would be using the similar spatula and we show the spatula. (Stakeholder; General Physician)

Some stakeholders and patients ($n = 5$) also reported that a healthcare worker had explained why Pap tests were recommended for women who have HIV. One patient reported:

Yes, she explained...that the prevalence of cervical cancer is seen...especially HIV positive females. (Pap test status: Tested at least once)

Other patients ($n = 14$) reported that detailed information was not provided to patients regarding cervical cancer screening. This lack of information frightened some patients:

I was afraid about what he was putting inside me down there; I was thinking why is he doing this? What is happening? (Pap test status: Tested at least once).

The most frequent reason cited ($n = 7$) for lack of instruction on the part of healthcare providers was high patient volume. For example, one stakeholder indicated that there was often not enough time for physicians to provide in-depth information because of the high patient volume:

...because of our heavy load, we are not able to counsel them so well....Because of so much workload, we are giving them just 5 to 10 minutes. But we are not able to give them more [time]. We just assume that they have understood. We are not able to provide all the information to the women. (Stakeholder; General Physician)

The high patient volume also prevented patients from asking questions about cervical cancer screening:

I wanted to ask [the doctors] but they didn't show me any interest so I didn't ask them. They were busy with their work... I wanted to ask whether I had cervical cancer or not? (Pap test status: Tested at least once)
I just wanted to ask her about this examination and why was she doing it. I wanted to ask about the cancer. I wanted to ask if I can get cancer because of my HIV? But I couldn't ask... There are always a lot of people waiting and even I was in a hurry. (Pap test status: Tested at least once)

In one case, lack of communication between a patient and her healthcare provider led to her receiving unnecessary medical care; specifically a Pap test in the absence of a cervix:

When they were performing the [Pap] test, it was very painful so I said to them that the operation regarding the uterus [hysterectomy] was done on me, so they said that there was no meaning of doing this test and let me go.... they didn't give any information. (Pap test status: not medically indicated)

Discussion

The present study identified several barriers and facilitators to cervical cancer screening among women living with HIV in India. Our findings that women in our study lacked knowledge regarding cervical cancer screening are consistent with previous studies conducted in India demonstrating a lack of knowledge about cervical cancer and associated screenings among both healthcare providers and the general population of Indian women [26–29]. Furthermore, while some women in our study reported fear regarding cervical cancer and cervical cancer screening, patients also desired to learn more about cervical cancer and cervical cancer screening in order to remain healthy.

In addition, our study identified a number of interpersonal factors influencing cervical cancer screening behavior among women living with HIV in India, including receipt of instrumental and emotional family support, positive interactions with healthcare providers, and receipt of information about cervical cancer and the Pap test from healthcare providers. These findings complement those identified in previous studies conducted with diverse non-HIV populations, many of which found that family support and communication of screening information by healthcare providers facilitate cervical cancer screening [18–24]. However, this study is the first study to our knowledge that has extended these findings to India, specifically among a sample of women living with HIV.

Our study highlights numerous opportunities to facilitate cervical cancer care in India among women living with HIV. First, our study and other studies [17] point to the need for both widespread public education regarding cervical cancer screening as well as enhanced patient health education within public ART Centres and obstetrics and gynecology departments. Additionally, findings indicate healthcare provider provision of brief information helps women feel more comfortable with screening procedures. On the other hand, public healthcare systems in India treat a large volume of patients, which limits the time providers can spend with each individual patient. This context suggests there is a need to develop creative and engaging approaches to cancer communication and care coordination that can help inform and comfort patients but also support busy healthcare providers. Previous studies in India found that interventions that included face-to-face meetings offering personal invitations to cervical cancer screening, as well as written materials to remind patients of appointments and screening schedules, successfully increased cervical cancer screening and retention rates [30, 31]. To date, there has been no evaluation of less time-consuming or lower literacy communication interventions in India, such as educational videos or computer,

tablet, or phone applications. Moreover, given the strong impact that family and partner support has on receipt of cervical cancer screening, the increased dissemination of cervical cancer information may also serve to increase family and partner awareness as well as support [19, 32]. Finally, studies have indicated that a wide variety of healthcare providers are effective in performing cervical cancer screening [33, 34]. Therefore, we also recommend increasing the number of healthcare providers who are trained to provide information regarding cervical cancer screening and perform cervical cancer screening.

Given the high number of patients who receive HIV care in the public healthcare system in India, we recommend the implementation and evaluation of community health worker (CHW) interventions to assist women in obtaining cervical cancer screening in this setting. CHW interventions, which seek to promote healthy behaviors and positive health outcomes among community members, have been widely used for cancer prevention and commonly provide health education and social support [35]. CHWs may be able to help patients obtain cervical cancer screening by educating patients on cervical cancer screening to overcome knowledge barriers, explaining screening procedures to the patient and family members, and providing social support (e.g., accompanying women to the OB/GYN department for screening). However, the feasibility and cost of this approach would need to be evaluated in this setting. Another way to spread awareness of cervical cancer screening would be to place visually appealing, culturally appropriate, low literacy health communication interventions (e.g., videos, posters, engaging tablet applications) in waiting rooms and exam rooms during health consultations. These interventions should require no reading ability and should be available in multiple languages spoken by patients in the area being served.

Furthermore, in accordance with previous research finding that knowledge regarding both cervical cancer and cervical cancer screening, as well as social support, are associated with receipt of cervical cancer screening among women without HIV [16–21], it is likely that the interventions suggested above would also be beneficial in increasing screening rates among the general population of women in India. However, interventions targeting women living with HIV must also provide tailored education that communicates the increased risk of cervical cancer among women with HIV, as well as the need for more frequent Pap screening compared to women without HIV. Furthermore, women living with HIV have also reported that fear of HIV-related stigma and discrimination discouraged their use of healthcare and gynecological service [36]. Consequently, interventions focused on increasing rates of cervical cancer screening among women living with HIV in India must also address barriers unique to this population, such as experiences with

HIV stigma and concerns about disclosure of one's HIV status.

One limitation to this qualitative study is that it recruited a small sample of stakeholders and patients from one public hospital in Surat, India. Consequently, findings may not represent views of patients or stakeholders in other regions of India. Additionally, patient participants in the study were receiving HIV care, which may not be representative of those who are lost to follow-up and not receiving HIV care, women who have HIV but have not yet been diagnosed, or women without HIV. Thus, there is the need to study individual and interpersonal factors associated with cervical cancer screening among women who are not engaged in formal HIV care.

This study illustrates the impact of individual and interpersonal barriers and facilitators on Pap test receipt among women living with HIV in Surat, India. This novel study is important given the high incidence and mortality due to cervical cancer in India, the large number of individuals living with HIV in India, and the increased risk of developing invasive cervical cancer faced by women with HIV. This research should be expanded to assess the effect of individual and interpersonal barriers and facilitators on cervical cancer screening among non-HIV populations in India and the development of interventions specifically targeting individual and interpersonal barriers to Pap test receipt.

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