



# Barriers to Pap Smear Among Homeless Women at Albuquerque Healthcare for the Homeless

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## Abstract

The purpose of this cross-sectional survey study was to explore common barriers to adequate Pap smear utilization among homeless women, and the factors that may relate to cervical cancer testing in this population. Participants consisted of adult women recruited at a healthcare facility for the homeless. Data were collected through a self-completed questionnaire on knowledge, attitudes and intentions about Pap smears and cervical cancer. Analyses included descriptive and inferential statistics. Sixty participants who had experienced homelessness within the past year completed the study. The most frequently mentioned barrier to testing was not having enough time to obtain a Pap smear ( $n = 33$ ; 55%). Linear regression found that there were no significant relationships between knowledge and attitudes about cervical cancer and intention to get a Pap smear. However, the study did find that women with a positive previous Pap smear experience had more positive attitudes about the process and outcomes of Pap smears ( $p = 0.011$ ,  $p = 0.00$ , respectively). Participants with more knowledge about cervical cancer were less negative about Pap smear outcomes ( $p = 0.05$ ), and that women with negative attitudes about Pap smear outcomes were less likely to have obtained a Pap smear in the past ( $p = 0.033$ ). Interventions that promote positive attitudes about testing and outcomes, minimizing stress and inconvenience during the test, as well as increasing the ease of scheduling an appointment may help break down barriers to cervical cancer screening among homeless women.

**Keywords** Cervical cancer · Homelessness · Testing · Pap smear utilization

## Background and Significance

As reported by the United States (US) Department of Housing and Urban Development (HUD), there were 552,830 homeless persons in January 2018, of which 2551 were in New Mexico (NM) [1]. The federal definition of homeless refers to “an individual or family who lacks a fixed, regular, and adequate nighttime residence,” and includes other categories such as those fleeing different types of violence and other dangerous or life-threatening conditions, imminently losing their primary nighttime residence, and runaway youth [2].

Women facing homelessness are in a uniquely difficult position, as they not only face the general issues that push

men people into homelessness, but they also face additional struggles. While a woman may fall into homelessness due to economic difficulties, mental illness, loss of familial support and drug/alcohol abuse like their male counterparts, it is also common for women to become homeless due to domestic abuse, sexual violence inflicted upon themselves or their children and sexism [3, 4]. Homeless women have to be concerned with protecting themselves against physical and sexual assault, maintaining adequate hygiene during their menstrual cycle, as well as the difficulties associated with attending regular doctor’s appointments to complete the recommended annual women’s health screenings such as Papanicolaou (Pap) smear and mammogram [5].

Cervical cancer is an issue that affects women from every background. According to the American Cancer Society, more than 13,100 cases of invasive cervical cancer will be diagnosed in 2019, and more than 4200 women will die from the disease [6]. The US Preventive Task Force (USPTF) recommends that women between the ages of 21 and 65 receive Pap smears every 3 years if they continually have normal Pap smears. As an alternative, women over the age of 30

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can obtain a Pap smear and an HPV co-test every 5 years, as long as results continue to be normal [7]. If a woman has an abnormal Pap test result, the American College of Obstetricians and Gynecologists recommends following up to repeat the screening in 1 or 3 years. However, if a woman has an abnormal Pap smear result that is deemed high risk, their recommendation is to obtain a colposcopy and potential cervical biopsy [8]. The Pap test is able to detect abnormal cervical cells and facilitates to early diagnosis and treatment. This process has helped to reduce cervical cancer from the most deadly cancer afflicting women to a disease that is no longer within the top ten most fatal cancers. However, compliance with Pap tests is not as widespread as it should be. According to 2015 national data, only 70.2% of women aged 18 and over reported having had a Pap test within the past 3 years, as recommended by USPTF. However, racial minorities, individuals with a below average income, and people with lower levels of educational attainment have decreased rates of obtaining the Pap test. Only 68.6% of Hispanic women, 63.2% of women living under 100% of the federal poverty level, and 55.9% of those 25 and over without a high school diploma reported compliance with the USPTF guidelines [9].

While there are not large studies investigating homeless women and Pap smear test rates, smaller studies found utilization rates ranging between 50 and 76.3% [10–13]. Similarly, there is a scarcity of studies exploring perceived barriers to Pap smear among homeless women. A 2007 study concluded that the three most prevalent barriers to Pap smear testing were living in a drug treatment facility, inability to take time off from work, and being too busy during the hours that the clinic is open [14]. A more recent study found that homeless women are more likely to obtain a Pap smear if support is available for all issues such as test cost and the testing is not contingent on a drug test [15]. Other studies with minority women and women of lower socioeconomic status have shown that women are less likely to utilize Pap smears because of lack of information about cervical cancer and Pap smears, incorrect assumptions about the pain caused by test, embarrassment or ambivalence in regards to a Pap smear, and the inflexibility of clinics offering Pap smears [16–18]. However, there is no evidence on whether these barriers also apply to homeless women. The purpose of this study was to explore common barriers to Pap smear test utilization among homeless women, and the factors that may relate to cervical cancer testing in this population.

## Methods

This was a cross-sectional survey study. It was approved by the University of New Mexico Health Sciences Center Institutional Review Board Committee (HRRC #16-173).

All participants were presented with and signed an approved informed consent.

## Setting

According to the City of Albuquerque, the largest city in NM, more than 1300 people reported experiencing homelessness on January 2017 [19]. However, Albuquerque Health Care for the Homeless (AHCH) estimates that at least 16,000 people—approximately 2.3% of Bernalillo County (where the city of Albuquerque is located) residents—experienced homelessness at some point during that year [20]. AHCH has served the homeless population for over three decades. The clinic provides critical services to over 7000 men, women and children every year. Recent data indicate that approximately 60% of the clients served are male, 35% female, and 5% children/youth. AHCH provides medical, dental, and behavioral health services to all homeless individuals on either a sliding scale basis if they have insurance, or for free if they do not have a way to pay [20]. It also provides other needed services, such as social services to assist clients integrate back into society, and harm reduction programs for individuals that are involved in drug use, need condoms, require STD testing, and desire screening tests. The Harm Reduction Department offers two programs for women only, including a medical program named “Pap-athon” that provides STD testing and Pap smears to women.

## Study Population

Primary data were collected by trained members of the research team between October 2016 and March 2017. The participants were selected from the different clinics on the AHCH campus. In order to be included in the study, the women had to (i) be over the age of 18, (ii) experienced homelessness as it is federally defined within the past year, and (iii) be able to speak English. Participants were conveniently approached in waiting rooms and other areas of the clinics, explained the purpose of the study and invited to participate. Those who showed interest and qualified were presented with the informed consent. Once they formerly agreed, they were given the survey. The data were collected in an anonymous and private manner, and no personal information to tie the women to their responses was collected. Every participant received an incentive of a \$5 grocery card.

## Data Collection

The data were collected through a survey developed by the research team that was based on related current literature [14–18]. It consisted of a demographic section and 17 items divided into three domains: knowledge (8 items), attitudes (6 items: 4 items on attitudes toward Pap smear process

and 2 items on attitudes toward Pap smear outcome), and previous experience with Pap smear (3 items). Response scales included yes/no/not sure for knowledge items and four point (from strongly agree to strongly disagree) Likert scale for attitudes. Questions on previous Pap smear utilization (never, less than 3 years, more than 3 years) as well as intention to obtain a Pap smear in the future were also included. Intention items were constructed following a stages of change model, specifically the Transtheoretical Model [21]. This model argues that in order to change behavior, people go and oscillate through five differentiated stages of change, including precontemplation, contemplation, preparation, action, and maintenance. Each question in the intentions section of the survey represents a stage in the model from having had a test within the last 3 years and intention to have another when recommended (maintenance) to no intention to get a test (pre-contemplation). All surveys were in English. If a participant needed any clarification on the questions or answers, the researchers assisted them on an as needed basis. Otherwise, participants completed surveys by themselves and in privacy.

### Data Management and Analysis

Data were entered into STATA 14.2 (StataCorp LLC, 2016). Chi squared and Fisher's exact tests were used to determine associations between having had a Pap smear previously and previous experience with Pap smears, as well as demographics such as age, education level, place of birth, race/ethnicity, language preference, health insurance status, and length of homelessness. Fisher's exact test was utilized for data points with low response frequency. Linear regression and penalized logistic regression were also used to determine relationships between the composite variables (see below), as well as differences between those participants who had obtained a Pap smear previously and those who had not.

Composite variables were created to determine relationships between independent variables (knowledge, attitudes, and previous experience obtaining a Pap smear) and outcome variables (having obtained a Pap smear and intention to have a test in the future). The knowledge variable consisted of the sum of all correct answers, with a range from 0 to 8. For attitudes, each answer was rated between 4 (strongly disagree) and 1 (strongly agree), with a range from 6 to 24. The rating was reversed when appropriate to reflect a consistent scoring criteria (e.g. a higher score indicates a more positive attitude). Previous experience with Pap smear responses were computed as binary (positive vs. negative experience), with a scale range from 0 to 3. Regarding outcome variables, Pap smear utilization was computed as a binary response (never/sometime in the past). Intentions was converted into a categorical variable consisting of:

pre-contemplation, contemplation/preparation, and action/maintenance.

### Results

A total of 60 women out of the 75 approached (80%) agreed to participate in the study. Table 1 shows the overall demographic characteristics of the participants and self-reported Pap smear experience. Of note, a majority were between 40 and 60 years of age. In addition, most participants had at least a high school diploma/GED or higher, with only 20% ( $n = 12$ ) of participants having only some high school education or less. The majority of participants were from outside of NM, with less than half considering it to be their home state. While there were participants represented from all five race/ethnicity survey choices, the group with the most representation was Non-Hispanic White ( $n = 24$ ; 40%).

In terms of length of homelessness, more than half reported that they had been homeless for longer than 1 year. A high majority stated that they had health insurance, and more than half that they had a doctor that they went to regularly. Lastly, about one-third of the women that completed the survey said that it had been between one and 3 years since their last Pap smear ( $n = 20$ ; 34%), similar to those stating that it had been over 3 years ( $n = 19$ ; 32%).

Table 2 shows summary statistics for key independent variables. Results on knowledge indicate that only 28 (47%) participants knew that there is an effective method for detecting cervical cancer, but when asked whether Pap smears help to detect cervical cancer, a majority answered correctly. A high majority ( $n = 51$ ; 85%) knew that cervical cancer could be treated if caught early, and that cervical cancer could be deadly ( $n = 46$ ; 77%). On the meaning of an abnormal Pap smear, most participants ( $n = 44$ ; 73%) knew that an abnormal Pap smear does not always mean that someone has cancer.

Regarding attitudes, a high majority ( $n = 47$ ; 78%) strongly agreed or agreed that they had no difficulties obtaining a Pap smear in the past. More than half ( $n = 33$ ; 55%) of participants strongly agreed/agreed that not having time was a barrier for a Pap, followed by difficulty obtaining an appointment ( $n = 19$ ; 32%). More than 23% ( $n = 14$ ) strongly agreed or agreed that embarrassment was a barrier for obtaining a Pap smear. Barriers less frequently selected included not wanting to get a Pap smear due to painful experience in the past as well as do to fatalistic thoughts about cervical cancer ( $n = 12$ ; 20% and  $n = 5$ ; 8% respectively).

Responses on intentions to get a Pap smear in the future are included in Table 3. Consistent with the Pap smear rate reported above, more than half of those who answered the question selected the action/maintenance items.

**Table 1** Demographic characteristics and pap smear experience of participants

	Frequency (n=60)	(%)	Std. Error	95% confidence interval
<b>Age group</b>				
18–25	5	8.33	3.60	[3.42, 18.92]
25–40	15	25	5.64	[15.44, 37.83]
40–60	33	55	6.48	[42, 67.36]
60+	7	11.67	4.18	[5.54, 22.92]
<b>Education level</b>				
Some high school	12	20	5.21	[11.53, 32.41]
High school/GED	20	33.33	6.41	[22.34, 46.49]
Some college	19	31.67	6.06	[20.93, 44.79]
College degree	7	11.67	4.18	[5.54, 22.92]
Other advanced degree	2	3.33	2.34	[0.80, 12.83]
<b>Place of birth</b>				
New Mexico	24	40	6.38	[28.15, 53.15]
Outside of New Mexico	31	51.67	6.51	[38.83, 64.29]
Outside of United States	5	8.33	3.6	[3.42, 18.92]
<b>Race/ethnicity</b>				
Non-Hispanic White	24	40	6.38	[28.15, 53.15]
Hispanic	17	28.33	5.87	[18.15, 41.34]
Native American	10	16.67	4.85	[9.04, 28.69]
Black	3	5	2.84	[1.57, 14.82]
Other	6	10	3.91	[4.46, 20.94]
<b>Language</b>				
English	58	96.67	2.34	[87.17, 99.20]
English and Spanish	2	3.33	2.34	[0.80, 12.83]
<b>Do you have current health insurance?</b>				
Yes	53	88.33	4.18	[77.08, 94.46]
No	7	11.67	4.18	[5.54, 22.92]
<b>Do you have a doctor that you see regularly?</b>				
Yes	34	56.57	6.45	[43.60, 68.87]
I have a doctor but do not go regularly	10	16.67	4.85	[9.04, 28.69]
No	16	26.67	5.76	[16.79, 39.59]
<b>Length of Homelessness:</b>				
Less than a month	5	8.33	3.60	[3.42, 18.92]
1–6 months	8	13.33	4.43	[6.67, 24.87]
6 months–1 year	13	21.67	5.36	[12.81, 34.24]
Longer than 1 year	34	56.67	6.45	[43.6, 67.87]
<b>Last Pap smear (n = 59)</b>				
Never	3	5.08	2.89	[1.59, 15.06]
Less than 1 year ago	17	28.81	5.95	[18.47, 41.97]
1–3 years ago	20	33.90	6.22	[22.74, 47.19]
Longer than 3 years ago	19	32.20	6.14	[21.30, 45.46]

**Table 2** Summary statistics for key independent variables

Variable	N	Mean	S.D.	Min	.25	Mdn	.75	Max
Knowledge-total	58	3.57	1.55	0.00	3.00	5.00	5.00	6.00
Attitude-process	59	8.92	2.34	4.00	7.00	9.00	10.00	14.00
Attitude-outcome	60	3.43	1.47	2.00	2.00	3.00	4.00	8.00
Previous experience	59	1.85	0.36	1.00	2.00	2.00	2.00	2.00

**Table 3** Participants' intentions to get a pap smear

	Fre- quency (n = 54)*	(%)	Std. Error	95% confidence interval
I have gotten a Pap smear within the last 3 years and I intend to get another one when I need to get one (maintenance)	23	42.6	6.79	[29.82, 56.43]
It has been longer than 3 years since I got my last Pap smear, but I intend to get one within the next month (action)	7	13	4.61	[6.16, 25.27]
I have never gotten a Pap smear before, but I intend to get one within the next couple of months (preparation)	2	3.7	2.59	[0.89, 14.20]
I intend to get a Pap smear within the next 6 months, but I am not sure when exactly I will get it done (contemplation)	19	35.2	6.56	[23.37, 49.15]
I do not intend to get a Pap smear (pre-contemplation)	3	5.5	3.15	[1.74, 16.38]

\*Some participants did not follow instructions correctly and were excluded from this analysis

Preparation and pre-contemplation were the two choices less frequently chosen.

The results from the Chi squared and Fisher's exact tests showed a relationship between patients' health insurance status and whether they had obtained a Pap smear in the past 3 years ( $p = 0.047$ ). Additionally, there was a relationship between a patient's previous experience of a Pap smear and whether they had obtained one within the past 3 years ( $p = 0.05$ ).

Linear regressions were also run to further determine if there are significant relationships between the composite variable for knowledge, attitude about process, attitude about outcome, attitude about previous experiences, and intention, as well as the individual demographic variables. The analysis showed no significant relationships between demographic variables and obtaining a Pap smear in the past, and did not find any significant relationships between knowledge or attitudes about Pap smears and their intention in the future to obtain one. However, there was significance between a participant's total knowledge about Pap smears and her attitude about the outcome of a Pap smear. The regression found that with every point increase in the knowledge variable, there was a decrease of 0.24 points in the outcomes variable, showing that with an increase in knowledge the participant was less likely to be concerned about the outcome of a cancer diagnosis from a Pap smear ( $p = 0.05$ ). Additionally, a significant relationship was found between a participant's previous experiences obtaining a Pap smear and her attitudes about both the process and outcomes of getting a Pap smear. Participants with more positive previous Pap smear experiences were more likely to have positive attitudes about the Pap smear process and Pap smear outcomes ( $p = 0.011$  and  $p = 0.00$ , respectively). Lastly, a penalized logistic regression showed that with every 1 point increase in negative attitude about Pap smear outcomes, the participant was

67% less likely to have obtained a Pap smear in the past ( $p = 0.033$ ).

## Discussion

Consistent with similar data on Pap smear utilization in minority populations [9], the participants of this study were found to have a lower utilization rate than that of the overall population (62.7% vs. 70.2%). The utilization of the participants in the present study is closer to that of women with an educational attainment level below a high school diploma, although this lower level of educational attainment was only present in 20% of this study's sample. The majority of the participants had a high school diploma or some college education. This difference in education level suggests that the lower rate of Pap smear utilization for homeless women is multifactorial. National data also indicate that women under 100% of the federal poverty level have an overall Pap smear utilization rate that is similar to that found by this study (62.7% vs. 63.2%). While this study did not collect income data, it is reasonable to assume that most of the participants were living under 100% of the federal poverty level. These results suggest that although Pap smear utilization among homeless women may generally be caused by factors such as economic resources and educational attainment, differences must be explored within a larger psychosocial and contextual framework.

The knowledge of the participants was overall limited, with the average woman answering less than half of the questions about Pap smears, cervical cancer, and HPV correctly. The biggest gap related to HPV vaccine, with about half of participants knowing that Pap smears are still needed after the HPV vaccines are given. Additionally, less than half knew that there is an effective method for detecting cervical cancer specifically. These results suggest that the majority

of the participants had not been educated properly about Pap smears and the crucial part the test plays in detecting cervical cancer. However, in another survey question, a high majority answered that Pap smears do help detect cancer. The difference in response to these two questions further suggest that while women may know that the Pap smear test is important, they do not know the details about what it is specifically testing for. Awareness and knowledge are relevant factors for Pap smear testing [16, 17], and the overall knowledge expressed by participants in this study was generally comparable to that of other low-income minority women in other studies [22–24]. The results of the present study confirm that knowledge is important, as participants with increased knowledge surrounding Pap smears and cervical cancer were less likely to have avoided obtaining screening due to fear of a cancer diagnosis. Additionally, the data in this study show that women who are afraid that they will obtain a cancer diagnosis were less likely to have obtained a Pap smear in the past. Providers can play a crucial role in educating homeless women by discussing the utility and efficacy of Pap smears, and in turn this will decrease fear and eliminate a barrier that is preventing some homeless women from obtaining necessary cervical cancer screening.

Participants' attitudes about Pap smears and cervical cancer were overall positive surrounding the potential test outcomes as well as participants' previous experiences with Pap smears. However, the participants' attitudes about the Pap smear test were largely neutral. Furthermore, the three most frequently mentioned barriers to obtaining a Pap smear were all related to the process, including not having time to get a test, difficulty obtaining an appointment and embarrassment with the genital exam. These results do not support previous research. For instance, fatalism, being treated poorly at the clinic, and past Pap smears being painful were barriers found in the literature; [16–18] but less than ten women on the present study agreed with any of these barriers being applicable to them. This is likely because the majority of the literature focuses on low-income women, but not specifically homeless women. However, homeless women have many life stressors that may prevent them from easily making an appointment to obtain a Pap smear, such as lack of transportation, reduced access to a telephone or the internet, and limited experience with navigating the healthcare system. Although this was not explicitly questioned in the survey, homeless women also have limited access to showers and personal hygiene supplies which could be a source of the embarrassment that participants felt surrounding having a genital exam. While these barriers are complex to solve, the data from this study show that participants with positive past Pap smear experiences were more likely to have positive attitudes about the Pap smear process. A positive past Pap smear experience may include being treated well by staff, not having any difficulties with the Pap smear or the appointment, and not having

any pain during the exam. Healthcare providers can tangibly work on their interactions with their homeless patients and ensure that they are treating them with respect and dignity. Not only will this encourage the patient to return for a Pap smear, but it will also likely help address other underlying health problems that the patient may have. Providers can also work to explain the exam thoroughly to the patient, and should use an appropriate sized speculum to help reduce the amount of pain during the exam. Clinics can also work with providers to give them extra time during their regular appointments with homeless women, so that providers can offer the patient a Pap smear test conveniently without the patient having to schedule a separate appointment to get this completed.

Regarding intention to get a Pap smear, there were no significant relationships between a participants' intention to get a Pap smear and other key factors in the study. Most of the participants (42.6%) were in the maintenance stage where they had already obtained a Pap smear within the past 3 years and were planning on obtaining another when they were due. The second largest group (nearly 40%) of participants was in the contemplation/preparation stage, where they were planning on getting a Pap smear within the next 6 months but did not have exact plans on when they would complete this test. Studies utilizing the Transtheoretical Model have shown that at any given time only 20% of individuals are outside of the precontemplation or contemplation stages, and ready for action [25]. With this population, more than half of the participants were in action/maintenance, which indicates that they are more motivated than the average individual to make a behavior change. The reason for this is unknown, but may be due to the fact that the survey took place at a healthcare center where individuals may be more motivated to be healthy than the average person. It may also be due to the fact that participating in cancer screening, in particular cervical cancer screening, is not a behavior that individuals have to engage in often. This makes this behavior easier to engage in than something that requires a daily effort, like exercise or tobacco cessation which is typically what the model is applied to.

## Limitations

The small size of the study makes it difficult to draw widespread conclusions, and the surveys were solely done on the campus of a healthcare facility so the answers may not fully be as representative of the homeless population as they would be if the survey had been done in the community. Additionally, questions about participants' intentions to obtain a Pap smear included a timeline (e.g. 3 years, 6 months). Although this is consistent with the Transtheoretical Model, figuring out whether one intends to perform

the behavior within the specified time may have been difficult for participants. Homeless women lack security and stability, and usually live day-to-day. Some of the participants selected multiple options or left all of the options blank, which resulted in their answers being removed from the analysis. Lastly, because the participants were offered a \$5 grocery card to fill out the survey, their results may have been biased. It is possible that some participants answered dishonestly in order to complete the survey rapidly to obtain the grocery card, and it is also possible that participants answered the survey only because the grocery card was available and would not have done so otherwise. However, the five-dollar amount was chosen for the incentive because the researchers felt as though it was a small enough amount to not create bias, but would still be significant enough to compensate participants for their time.

## Conclusion

The homeless population faces many complex problems, including decreased utilization of cervical cancer screening. While this issue can be confronted from many different angles, this research suggests that an increase in knowledge and positive Pap smear experiences positively impact homeless women's attitudes surrounding the Pap smear outcomes and process which in turn can impact Pap smear utilization. Moving forward, providers should strive to educate their patients about cervical cancer and Pap smears, treat them with respect and dignity and work to provide Pap smears during annual exam visits or whenever it is most convenient for their homeless patients. It is imperative that research further investigates barriers to Pap smears testing faced by homeless women, so that the utilization gap continues to narrow and incidence rates of cervical cancer are decreased in this population.

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## Compliance with Ethical Standards

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