



Exploration of factors associated with perceived barriers to cervical cancer screening among Chinese American women

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Abstract: This study explored factors associated with perceived barriers to Pap smear testing among Chinese American women (CAW). A total of 121 CAW, ages 21–65, living in California and Nevada completed a self-report questionnaire. Data included demographics, prior screening behavior, risk factors, and perceived barriers to screening. Logistic regression models revealed that participants with less education, and who have never been screened were more likely to report (I) worry about getting a Pap smear, (II) expense of a Pap smear, and (III) not knowing where to get a Pap smear. Partner's resistance to the women's participation in screening was another barrier among the never screened. Uninsured women were more likely to worry about getting a Pap test and embarrassment associated with getting a Pap test. Women who had never been screened, those with lower education, and those who were uninsured reported more barriers. Attention to these common and unique barriers may help address health disparities in screening rates. These findings reinforce the importance of literacy- and culturally-appropriate educational interventions designed for improving knowledge of cervical cancer and improving screening rates.

Keywords: Cervical cancer screening; Chinese women; culture; perceived barriers

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Introduction

The American Cancer Society (ACS) recommends Pap smear testing every 3 years for women ages 21–65, or a combination of Pap testing and human papillomavirus (HPV) testing every 5 years for women ages 30–65 (1). A recent national study showed that Chinese American women (CAW) aged 21–65 years have lower rates (66%) of Pap testing within the past 3 years as compared to general Asian Americans (71%) and non-Hispanic whites (83%) (2). The screening rate among CAW is much lower than the proposed Healthy People 2020 objective of a 93% screening rate for cervical cancer (3).

CAW have varied beliefs and barriers that influence their cervical cancer screening behaviors. Previous studies found access and cultural barriers to be important determinants of participation in Pap screening among CAW populations (4–6). Higher levels of social support have been reported to

play a significant role in the promotion of cervical cancer screening among older adult Chinese women in the United States (7). Lack of insurance, lack of a primary care provider and short term of residency in the United States were associated with lower rates of cervical cancer screening among CAW aged 21–65 (8). Chinese women immigrating to Canada reported that barriers to cervical cancer screening included transportation, language, taking time off from work, childcare arrangements, fear of screening, traumatic encounters with screening, and preferences for a female healthcare provider (9). Studies conducted in China and Hong Kong have found that older women, unmarried women, women with a lower family income, less educated women, women living rurally, and women whose providers did not recommend screening had lower rates of cervical cancer screening (10–12). Moreover, Chinese women with decreased knowledge about cervical cancer screening were less likely to be screened (13). Additionally, Chinese women

Table 1 Barriers Scale

Perceived barriers items

Getting a Pap test would only make me worry
The Pap test is painful
It is too expensive to have a Pap test
It is too embarrassing to have a Pap test
I don't know where I could go if I wanted a Pap test
My partner (boyfriend/husband) would not want me to have a Pap test
If a young unmarried woman goes for a Pap smear, everyone will assume she is having sex
There is no female doctor available for a Pap smear
I will experience fear of the results if I had a Pap smear

in China and Hong Kong reported that they believed cervical cancer was hopeless, not preventable, shameful, and fatal (14,15).

Even with these studies, relatively little is known about the factors associated with barriers to obtaining cervical cancer screening among CAW. The purpose of this study was to identify factors (e.g., demographics, prior Pap tests, risk factors) associated with perceived barriers to Pap smear testing among CAW in the United States. Knowledge of these correlates may be helpful in altering perceptions of cervical cancer screening, as well as developing culturally appropriate interventions that improve screening rates and decrease morbidity and mortality in CAW.

Methods

Design and participants

A cross-sectional quantitative survey design was applied. Participants were recruited by the authors with the same ethnic background in California and Nevada. A variety of recruitment methods were used, and included personal contacts, referrals, and face-to-face recruitment at grocery stores, churches, and supermarkets. Participants were screened to ensure eligibility, including age 21 to 65, self-identification as Chinese American, and no prior history of cervical cancer or total hysterectomy.

Ethical considerations

This study was approved by the Institutional Review Board of University of Nevada, Reno (No. 688238-1). The

recruiting investigator explained the study to potential participants using an informational letter. After providing verbal informed consent, participants were asked to complete an anonymous self-administered questionnaire described below.

Data collection

The questionnaire was developed in English and translated into Simple Chinese or Traditional Chinese by five bilingual and bicultural individuals. Based on respondent preference, all respondents completed the self-report questionnaire in either Simple or Traditional Chinese. This questionnaire consisted of three sections: (I) seven questions requesting demographic data, (II) four questions seeking information about health-related behaviors, and (III) nine items from the Barriers Scale.

Demographic factors included age, marital status, education, employment status, income, health insurance coverage, and disease history. Participants were also asked about health-related behaviors, including prior Pap smears and risk factors such as smoking status, HPV history, and family history of cervical cancer.

Barriers scale: the participants completed the Barriers Scale, a 9-item, 4-point Likert scale used to assess women's perceptions of barriers to obtaining a Pap smear (16) (see *Table 1*). Higher scores indicate more perceived barriers. The Cronbach's alpha for the study participants was 80.

Data analysis

Counts, proportions, and odds ratios (ORs) were employed

Table 2 Participants characteristics (n=121)

Characteristics	N	%
Marital status		
Married	80	66
Never married	41	34
Education		
Less than a bachelor's degree	35	29
At least a bachelor's degree	86	71
Employment		
Employed	79	65
Unemployed	42	35
Health insurance		
Yes	109	90
No	12	10
Disease history		
Yes	31	26
No	90	74
Smoking		
Yes	7	6
No	114	94
Had a Pap test		
Yes	98	81
No	13	19
HPV history		
Yes	6	5
No	115	95
Family history		
Yes	4	3
No	117	97

to depict demographic variables, prior Pap smears, risk factors, and perceived barriers scores. Multiple logistic regression models were utilized to identify the connections between different factors and individual values of perceived barriers. Level of significance was set at $P \leq 0.05$. Statistical Analysis System version 9.4 for Windows was applied for data management and analysis.

Power analysis was performed using R package PWR for Windows. At least 90 participants were required to reach

a statistical power of 80% at 0.05 significance level using a moderate effect size 0.35 on chi-square test with degree freedom of 1 to 3.

Results

Participant characteristics

There were 121 women involved in this study. The mean age of participants was 44.8 years old (SD =11.9; range, 21–65 years old). As seen in *Table 2*, most were married (66%, n=80), had attained at least a bachelor's degree (71%, n=86), were employed (65%, n=79) and covered by some type of health insurance (90%, n=109). Moreover, 74% (n=90) had no history of any diseases and 81% (n=98) had undergone a prior Pap test. The majority of the participants were non-smokers (94%, n=114), reported no HPV history (95%, n=115) and no family history of cervical cancer (97%, n=117). The income variable was excluded from analysis due to 65% missing values.

Factors associated with perceived barriers

As displayed in *Table 3*, ORs were employed to detect the relationship between perceived barrier scores and different factors (e.g., demographic variables, prior Pap smear tests, risk factors). Participants who had less than a bachelor's degree were more likely to exhibit significantly higher odds for the following items on the Barriers Scale: (I) getting a Pap test would only make me worry, $P=0.029$; (II) it is too expensive to have a Pap test, $P=0.038$; and (III) I don't know where I could go if I wanted a Pap test, $P=0.002$. Women without health insurance were more likely to display significantly higher odds for two items on the Barriers Scale: (I) getting a Pap test would only make me worry, $P=0.018$; and (II) it is too embarrassing to have a Pap test, $P=0.033$. Respondents who had never had a Pap test demonstrated significantly higher odds in four items on the Barriers Scale (I) getting a Pap test would only make me worry, $P=0.023$; (II) it is too expensive to have a Pap test, $P=0.004$; (III) I don't know where I could go if I wanted a Pap test, $P=0.007$; and (IV) my partner (boyfriend/husband) would not want me to have a Pap test, $P=0.009$. Participants who were employed or had disease history showed significantly higher odds in one item on the Barriers Scale, the Pap test is painful—with $P=0.049$ and $P=0.003$, respectively. No significant associations between other factors and perceived barriers were discovered.

Table 3 Multiple logistic regression results for individual items of perceived barriers (n=121)

Perceived barriers	N	OR	95% CI	P
Getting a Pap test would only make me worry	121			
Had less than a bachelor's degree		3.32	(1.13, 9.74)	0.029
No health Insurance		6.06	(1.36, 27.04)	0.018
Never had a Pap test		5.16	(1.25, 21.27)	0.023
The Pap test is painful	121			
Have a job		2.80	(1.01, 7.80)	0.049
Have some diseases		6.25	(1.84, 21.2)	0.003
It is too expensive to have a Pap test	121			
Had less than a bachelor's degree		3.07	(1.06, 8.87)	0.038
Never had a Pap test		7.88	(1.93, 32.38)	0.004
It is too embarrassing to have a Pap test	121			
No health Insurance		4.15	(1.12, 15.37)	0.033
I don't know where I could go if I wanted a Pap test	121			
Had less than a bachelor's degree		7.79	(2.18, 27.84)	0.002
Never had a Pap test		7.72	(1.74, 34.25)	0.007
My partner (boyfriend/husband) would not want me to have a Pap test	121			
Never had a Pap test		16.99	(2.04, 141.41)	0.009

Discussions

This study is one of the first to explore factors related to perceived barriers to Pap smear testing among CAW. Demographic factors (i.e., education level, employment status, health insurance, disease history) and previous Pap smears were significantly associated with perceived barriers. It is important to note that less educated participants were more likely to report (I) worry about getting a Pap smear, (II) expense of Pap smears, and (III) not knowing where to get a Pap smear as barriers to cervical cancer screening. A possible explanation is that lower educational attainment may be associated with decreased understanding of written health information and therefore reduced information seeking. This, in turn, may contribute to a lack of knowledge about the Pap smear test, the cost of the test, and availability of facilities that perform the test (17). These barriers may potentially be reduced through literacy-appropriate educational materials and interventions (18,19).

This study also found that uninsured CAW was more likely to perceive barriers of worry about getting a Pap test and embarrassment associated with getting a Pap

test. Additionally, participants who were employed or had a history of disease were likely to perceive screening as painful which is another barrier. No evidence was found in the literature that connects cervical cancer screening with health insurance, employment, disease history, or emotional distress. Benefit could be gained from further research that more closely examines the association among these demographic characteristics and psychological and physical barriers to Pap smear screening.

When comparing responses between those who been screened with those who had not, those who had not been screened identified four barriers to cervical cancer screening, including (I) worry about getting a Pap test, (II) expense of a Pap smear, (III) not knowing where to go for a Pap, and (IV) partner's resistance to participation in screening. It has been shown that women in China who have previously had cervical cancer screening are more likely to be motivated to have future screening (20). Chinese women with lower screening literacy were less likely to be screened (13). These data imply that lack of knowledge about Pap smear testing and available services might constitute barriers and affect screening behaviors among CAW who have not been

screened. Some of these barriers may potentially be reduced through culturally sensitive and linguistically appropriate educational programs, along with increasing awareness about the importance of routine Pap smears (18-20). The findings in this study are similar to other research conducted in Asian Americans which reported that male partners may not be supportive of cervical cancer screening (21). Worrying about spouse's and family's opinions may inhibit Pap smear screening behaviors among those who have never been screened for cervical cancer. Furthermore, CAW may prioritize the family over self, which reflects their cultural values. It is important for health care providers to overcome these barriers by involving the spouse and family in cervical cancer prevention efforts to ensure more informed understanding of health-related phenomena from various perspectives (17).

Findings of this study have important implications for nursing practice and science. First, data suggest less educated and uninsured CAW were more likely to perceive specific barriers, which could contribute to health disparities in this group. This new information may assist healthcare providers to design culturally-appropriate programs that could promote awareness and participation in cervical cancer screening. For example, lay health advisor interventions have increased cervical cancer screening among low socioeconomic groups (22). Therefore, cultural-specific strategies to improve the use of cervical cancer screening could include trained lay health advisors who share similar social, cultural and linguistic backgrounds with CAW. Second, the utilization of community-based programs has demonstrated improvement in cervical cancer screening intent among CAW (23). Bilingual and bicultural nurses can take a more proactive approach to partner with Chinese communities (e.g., Chinese churches, Buddhist temples, Chinese restaurants or grocery stores) and provide education to improve cervical cancer literacy and public awareness. Third, healthcare providers should also recognize the family and the collective health decision-making process among CAW and their families. Families need to be involved in any educational programs that provide information about the benefits of cervical cancer screening. In addition, 90% of the respondents in this study were insured; educational messages that emphasize the testing costs are typically covered by insurance could assist families in ensuring women are screened. This study also found that recruitment of CAW was challenging, leading to a small sample of this group in this study. More research is needed in developing effective strategies to improve

recruitment. Finally, there is little known about CAW and their perceptions and related factors of cervical cancer screening. In the US, incidence and mortality of cervical cancer have declined significantly, largely due to screening with the Pap smear. In populations with lower screening rates, the incidence and mortality of cervical cancer can more than double (24). Use of the Pap smear for screening is low among CAW (66%), much lower than the Healthy People 2020 goal (3). In order to increase screening behaviors, and subsequently decrease morbidity and mortality, it is necessary to delineate barriers to screening. This study provides new information about those barriers and suggestions to overcome those barriers. CAW perceive multiple barriers and this study provides new information related to factors that impact those barriers. Knowledge of related factors can be used to develop educational materials and culturally appropriate interventions to decrease barriers and increase incidence of screening.

Limitations

Limitations for this study included a cross-sectional design and use of self-report measures. Factors such as social support, length of residency in the USA, and screening knowledge may influence perceived barriers to cervical cancer screening and should be included in the future studies. Respondents were well educated (71% had at least a bachelor's degree), and had health insurance (90%), which limits the study's generalizability. A final limitation was the small convenience sample of CAW from Northern California and Nevada. All of the women elected to complete the questionnaire in Chinese and this may limit generalizability of the findings to all CAW.

Conclusions

The study highlights the significance that educational level, employment status, health insurance, disease history, and history of Pap smear testing were important factors associated with certain perceived barriers to obtaining Pap tests among CAW 21–65 years old. Healthcare professionals can help less educated and never screened CAW overcome these barriers and recognize the importance of cervical cancer screening. These findings reinforce the importance of literacy- and culturally-appropriate educational materials and interventions designed for improving knowledge of cervical cancer and improving screening rates (18-20).

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None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. Permission to conduct the study was obtained from the University Institutional Review Board (No. IRB688238-1) prior to the start of this study.

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