

Factors Influencing Women's Compliance With Routine Health Screening Procedures

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### Barriers to Health Screening

According to the Center for Disease Control and Prevention (CDC) Americans fail to comply with recommended preventative screening for routine cancer, diabetes and heart disease less than half of the time (CDC, 2013). Many persons go without needed preventive care, due to financial barriers. This includes families with adequate health insurance, identified barriers due to rising premiums, copays and deductibles prevent men and women from obtaining critical cancer screenings, immunizations for themselves and their children and routine primary care visits. This may be of particular importance for women and subsequently their children. Investigators have found that women who reside in low socioeconomic regions, cultural minorities, the physically disabled and those that have been victims of sexual abuse are not as disposed or able to participate in women's health screening and are thus at greater risk of lower compliance with recommended cancer and other wellness screening. Patient outcomes seen in groups that do not participate in routine screening are poorer when compared to groups that do comply with health screening services (Will et al., 2004).

The Importance of screening to population health and the cost of treating illness that may have been prevented is enormous both in financial and human costs. The human cost of disease and loss to families and wellbeing in addition to the financial cost can be positively affected by participation in screening programs. There is a significant portion of the female population that does not participate in routine cancer and healthcare screening. Barriers to screening initiatives may be social, educational, economic, cultural or due to physical and/or cognitive disability.

This research analysis will search some of the available literature to examine and identify studies published within the last five years that may provide objective insight into the issues and factors that play a significant role in discouraging women from taking advantage of life-saving screening. The focus of this analysis will be on studies that have been done in the healthcare delivery system in the United States. Issues in the United States may be different than those faced by women in the developing world. For instance, women in remote undeveloped parts of the world may have no access to routine screening or face significant transportation challenges not faced by women in the developed world. Other areas of particular interest are to identify approaches taken by primary care providers that have had a positive impact on individual screening behaviors. Another purpose is to examine how provider initiatives have impacted patient compliance with routine mammography, and Pap smears for cervical cancer.

The rate of cancer screening for women is appallingly low in many groups in the United States. Health disparities, lack of insurance, misinformation, lack of education, inability to obtain transportation, religious beliefs and cultural morays may play a significant role in low rates of participation. Additionally provider behavior may positively impact compliance rates with screening compliance. Provider education and sensitivity to women's screening issues and the challenges faced by single parent households and others with known or unknown barriers may favorably impact patient participation and compliance in clinical screening programs.

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Author, Title, & Year	<p><b>Authors:</b> Studts, Tarasenko &amp; Schoenberg.</p> <p><b>Title:</b> Barriers to cervical cancer screening among middle-aged and older in rural Appalachian women</p> <p><b>Year:</b> 2013</p>	<p><b>Authors:</b> Harcourt, Ghebre, Whembolua, Zhang, Warfa Osman &amp; Okuyemi.</p> <p><b>Title:</b> Factors associated with breast and cervical cancer screening behavior among African immigrant women in Minnesota,</p> <p><b>Year:</b> 2014</p>	<p><b>Authors:</b> Ma, Fang, Feng, Tan, Gao, Ge and Nguyen.</p> <p><b>Title:</b> Correlates of Cervical Cancer Screening among Vietnamese American Women,</p> <p><b>Year:</b> 2012</p>	<p><b>Authors:</b> Marlow, Waller and Wardle.</p> <p><b>Title:</b> Barriers to cervical cancer screening among ethnic minority women: a qualitative study,</p> <p><b>Year:</b> 2015</p>	<p><b>Authors:</b> MacLaughlin, Swanson, Naessens, Angstman and Chaudhry.</p> <p><b>Title:</b> Cervical cancer screening: a prospective cohort study of the effects of historical patient compliance and a population-based informatics prompted reminder on screening rates,</p> <p><b>Year:</b> 2014</p>
Theoretical or Conceptual Framework	PRECEDE/ PROCEED framework. The PRECEDE–PROCEED model initially focuses on outcomes, instead of inputs.	A revised Behavioral Model for Vulnerable Populations is used and the framework for analysis.	Conceptual framework derived from the Health Belief Model (HBM) and Social Cognitive Theory (SCT), addresses both individual choices and healthcare system	The ‘framework’ feature in Nvivo 9TM (QSR International, Daresbury, UK). Framework is a “matrix-based analytic method, which facilitates	The transtheoretical model (TTM) that describes stages of change including pre-contemplation, contemplation, preparation, action and maintenance, and their influence

			barriers.	rigorous and transparent data management”.	on health behavior.
Design / Method	<p>This was a randomized controlled trial investigating an intervention to increase Invasive cervical cancer (ICC). The study comprised two stages.</p> <p><b>STAGE 1:</b> Qualitative work developing the survey instrument:</p> <p><b>STAGE 2:</b> Quantitative assessment of barriers reported by a sample of 345 Appalachian women.</p>	<p>A cross sectional survey of a community-based sample was conducted among African immigrants in the Twin Cities. Study included two areas of screening Breast cancer screening and Cervical cancer screening.</p>	<p>Randomized controlled trial (RCT). Five-year study conducted at 30 Vietnamese community organizations in the eastern region of the USA (PA, NJ).</p> <p><b>Survey:</b> trained staff in all 30 organizations completed Questionnaires. The 20–30-minute baseline survey was provided in Vietnamese and English versions, and bilingual assistance was available at all sites.</p>	<p>Randomized cohort study. Lists of ethnic community groups obtained through council websites were contacted by email or telephone and asked to advertise the study.</p>	<p>Prospective cohort study to examine the effects of historical patient compliance and a population-based informatics prompted reminder on screening rates. Interventions were assessed as a case-cohort design with control groups both within the clinic that implemented the intervention and among similar patients at a comparable primary care clinic.</p>

<p>Sample and Sample Size</p>	<p>345 Women who are English speakers, between the ages of 40–64 with no ICC history, no hysterectomy, no Pap smear within 12 months. Who fall outside of ICC guidelines for screening. Centering on churches as the focal point for participant recruitment in 29 denominations. Using a snowball sampling method.</p>	<p>Community based sample to determine a variety of health behaviors among African immigrants in Minnesota. A total of 1,009 households consented to participate.</p> <p><b>Breast cancer:</b> 112 Women 40 years of age or older.</p> <p><b>Cervical cancer:</b> 421 Women 18 years of age and older.</p>	<p>Vietnamese members in 30 organizations ranging from between 80 to 2500 women. 1518 met the inclusion criteria of self-identified Vietnamese identity, ages 18 to 70. Inclusion criteria stipulated that the woman Has not had a Pap test over the past 12 months, and had not been diagnosed with cervical cancer. Of the total eligible women, 1450 consented.</p>	<p><b>Major Ethnic Groups:</b> <b>Headings:</b> White; <b>Mixed;</b> Asian or Asian British; Black or Black British; Chinese or other ethnic group. Ethnic minority background was defined as if participants selected any category other than White (English/Welsh/Scottish/Northern Irish/British). In-person interviews of 54 women between 28-63 years of age were conducted. 43 - ethnic minorities and 11 - white British background.</p>	<p>Mayo Family Clinic Northeast (NE; <i>n</i> = 1613) and Northwest (NW; <i>n</i> = 1088) There were 795 intervention (NE Clinic E/D patients) and 1906 control subjects.</p>
<p>Independent and Dependent Variables</p>	<p><b>Independent variables:</b> Women in an Appalachian community with an intact uterus.</p>	<p><b>Independent Variables:</b> African women with an intact uterus.</p>	<p><b>Independent Variables:</b> Vietnamese women with an intact uterus.</p>	<p><b>Independent Variables:</b> Ethnic background non-white women. British white women.</p>	<p><b>Independent Variables:</b> Women with no cervical cancer screening in the prior 3 years placed in a group</p>

	<p><b>Dependent variables:</b> Fear, worry, and embarrassment and erroneous beliefs that a person with ICC would have symptoms.<sup>60</sup> possible barriers identified. Predisposing (21 items), enabling (26 items), and reinforcing (13 items). Variables, such as having a usual source of medical care, health insurance status, and expected financial expense of being screened.</p>	<p><b>Dependent Variables:</b></p> <p><u>Predisposing factors:</u> Factors such as age, gender, and marital status; social structural characteristics that include ethnicity, education, employment, family size, acculturation, immigration status, literacy; childhood characteristics, living conditions, psychological resources, and health beliefs</p> <p><u>Enabling factors:</u> Factors that would enhance or impede an individual's ability to use healthcare services. Factors include personal/family</p>	<p><b>Dependent Variables:</b> Vietnamese women that have not had a Pap test over the past 12 months, and had not been diagnosed with cervical cancer. This paper primarily examines the association of demographic and acculturation characteristics (measured using 8 items), healthcare access barriers (6 items), and knowledge, attitudes, and beliefs about cervical cancer screening (13 items) and HPV-specific knowledge (10 items) with ever having had a Pap test.</p>	<p><b>Dependent Variables:</b> Reported attending cervical screening regularly, reported not currently being up-to-date with screening, had missed or delayed a screening test in the past, and women who had never been screened. Identified variables for analysis: (1) lack of knowledge or misunderstanding, (2) the procedure, (3) emotional barriers, (4) practical barriers and (5) cognitive barriers.</p>	<p>that received only 1 reminder and no follow-up N=1906 considered the control group</p> <p><b>Dependent Variables:</b> Internet contact group were sent reminder letters over a 6 months window to patients of the intervention group N= 795.</p>
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		resources, insurance status and affordability of getting medical care, income, competing needs, availability of information sources and ability to understand and utilize the available information. There were no dependent variables			
Measurement: Instruments and Tools	88 question tool using Likert-type item responses were dichotomized to reflect agreement or disagreement with each potential barrier. In-depth interview and Semi-structured interviews. Questionnaires were orally administered to mitigate literacy issues.	The survey included items that assessed background, social and economic factors, health care assess and utilization, lifestyle and risk behavior, and reproductive and sexual health. Survey was conducted in-person at the participants' home	Questionnaires were completed trained individuals in the centers using pre-validated questions previously published surveys. The evaluation questions included (1) demographics and acculturation; (2) health care access; (3) health behavior and Pap test history; (4)	A semi-structured interview schedule was used as a guide. This schedule probed women's attitudes towards cancer in general and anticipated reactions to a cancer symptom. When this discussion was exhausted, women were encouraged to discuss what they felt would be barriers to attending	Using an intent-to-treat analysis, differences in screening rates were assessed. Differences in screening rates 2 months after the date of the last reminder letter mailing. The cohorts were also compared on patient characteristics (i.e. age, race, marital

		in either English or participant's preferred languages such as Pidgin English, Somali, or Oromo.	perceptions related to health belief model constructs; (5) knowledge, attitudes, and beliefs of Vietnamese women about cervical cancer; (6) human papillomavirus (HPV-) related	cervical screening for others. Women were asked open questions and encouraged to give in-depth descriptions. Following the interview, a short demographic questionnaire was completed assessing age, marital status, ethnicity, religion, and birthplace and screening history.	status, provider gender and geographic location). Status of these patient characteristics was recorded at the study's start
Data Analysis	Descriptive statistics. Barriers ranked based on frequency of responses. Broken down into groups of predisposing, enabling, reinforcing and barriers. Frequencies and percentages of participants endorsing each item as a barrier were	Descriptive statistics of demographics, mean and standard deviation (SD) for continuous variables and count and proportion for categorical variables. Significance level of the score	Descriptive analysis included univariate logistic regression used to examine the association between the probability of ever having had a Pap smear test and each variable in the domains of demographic variables, access barriers, knowledge, attitude, and beliefs	A narrative descriptive analysis and discussion of each theme is described with illustrative quotes. Details in parentheses following the quotes represent the participant's identification number (P), ethnicity and age (in years). A matrix-	Comparison of patient demographics and cervical cancer screening rates were performed with the $\chi^2$ test - Fisher's exact test. A Bonferroni correction and a <i>P</i> -value of less than 0.017 to determine significance. Multivariate logistic regression

	<p>calculated. Odds ratios (OR) were calculated to estimate the associations between specific participant characteristics and the most frequently reported barriers overall. Statistical significance was set at the 0.05 probability level. All analyses were conducted with Stata/IC 10.1 for Windows.</p>	<p>Chi square was specified as 0.05. Odds ratio and its 95 % confidence interval from univariate analysis and final models were presented. Cox and Snell R square and Nagelkerke R square, and improvement on model fit were evaluated using likelihood ratio test.</p>	<p>about cervical cancer. The strength of association was expressed as odds ratio and its 95% confidence interval. Both unadjusted odds ratio and odds ratio adjusted for demographic variables were reported.</p>	<p>based analytic method which facilitates rigorous and transparent data management</p>	<p>models utilizing correlation structures to accommodate clustering within primary care providers. Analyses were performed using SAS 9.2 for Windows (SAS Institute, Inc. Cary, NC).</p>
Findings	<p><b>Most commonly endorsed barriers:</b> Financial impediments, inadequate knowledge, and negative emotions about ICC <b>Promoters:</b> Patient education, affordability and accessibility,</p>	<p><b>Breast Cancer Screening:</b> Somali immigrants were 5 times greater than the odds for other African immigrant groups (odds ratio = 5.02, 95 % CI = 1.72–14.68, p = 0.003), while the odds of ever having had</p>	<p><b>Cervical Cancer Screening:</b> Vietnamese women in the 18–40 age group, who did not speak English at all, were unemployed, never married or divorced/separated, had below high school education, and lived in the USA 10 years or</p>	<p><b>Cervical Cancer Screening:</b> Identified barriers for interview groups were identified as Lack of knowledge or misunderstanding, fear of The procedure, the location or venue of the screening, fear of pain, embarrassment, fear</p>	<p><b>Cervical Cancer Screening:</b> The study results demonstrate the utility of population-based informatics systems to identify candidates for screening and to trigger reminder letters in a primary care practice to</p>

	<p>addressing worry, fear and embarrassment. Employing patient care navigators and lay health providers.</p>	<p>mammogram for recent immigrants were only 15 % of the odds for established immigrants (odds ratio = 0.15, 95 % CI = 0.05–0.46, <math>p &lt; 0.001</math>).</p> <p><b>Cervical Cancer Screening:</b> Somali immigrants were 5 times greater than the odds for other African immigrant groups (odds ratio = 5.02, 95 % CI = 1.72–14.68, <math>p = 0.003</math>), while the odds of ever having had mammogram for recent immigrants were only 15 % of the odds for established immigrants (odds ratio = 0.15, 95 % CI = 0.05–0.46, <math>p &lt; 0.001</math>).</p>	<p>less, were less likely to have had a Pap smear test (<math>P &lt; 0.01</math>). Vietnamese women who did not have insurance, did not visit a physician regularly or could not get time off for a doctor’s appointment were less likely to have ever had a Pap test (<math>P &lt; 0.001</math>). Receiving a doctor’s recommendation for a Pap test was the strongest predictor of obtaining a Pap test (adjusted OR = 9.00, 95% CI = 5.60–14.44, <math>P &lt; 0.001</math>), with 87.6% of those who received a recommendation reporting that they had had a Pap test compared to 46.4% of those who had no recommendation</p>	<p>of cancer, shame, inconvenience, low perceived risk of positive results (cancer finding) and an absence of symptoms. There is no farther statistical analysis of this study group.</p>	<p>improve cervical cancer screening rates. The observed higher rate of screening among patients in the intervention group compared with the control groups corroborates the medical literature on letter and other reminders, such as phone calls, that have shown increased cervical cancer screening rates in studies in the United States and other countries</p>
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			All 11 items in the knowledge, attitude, and beliefs domain were significantly associated with Pap test behavior ( $P < 0.001$ ).		
Strengths / Limitations	<p><b>Strengths:</b> Study demonstrated that positive reinforcement and employment of health navigators improves compliance with ICC. Very high potential to improve screening to ICC and may lead to improved screening in other areas</p> <p><b>Weaknesses:</b> Not an ethnically diverse cohort. Limited geographic region. Did not compare perceptions to compliant groups of women to determine the</p>	<p><b>Strengths:</b> Strength of the study lies in the use of a conceptual model framework to explore factors impacting breast and cervical cancer screening behavior among African immigrant women.</p> <p><b>Weakness:</b> Limited sample size and the restriction of the data to urban areas in Minneapolis and St. Paul, the study was a secondary data analysis. Finally, use of mammograms or Pap tests was self-reported and may be subject to</p>	<p><b>Strengths:</b> Large sample size and addressed both individual and system barriers that are associated with cervical cancer screening behaviors.</p> <p><b>Weakness:</b> The cross-sectional study design and using self-report to categorize prior screening behavior. Findings may not be generalizable to Vietnamese residents who are not closely engaged with their communities, nonparticipants may have different</p>	<p><b>Strengths:</b> The authors state that their findings are consistent with other studies examining the issue. The study involved more than one ethnic minority group.</p> <p><b>Weakness:</b> Not all ethnic minority groups are represented and the very small sample size of the entire study group in addition to limited size of ethnic groups within the study. There was no statistical analysis to determine the significance of differences between</p>	<p><b>Strengths:</b> Demonstrated that there was an increase in screening compliance due to system generated reminder letters. Increased patient access to their electronic medical records and the use of self-tracking tools holds potential for individuals to take a more active role in their health care</p> <p><b>Weakness:</b> Use an intent-to-treat analysis may have diluted the true effect of a reminder letter</p>

	differences if any.	inaccurate recall.	patterns of cancer screening behaviors and this study adds to the literature on cancer health disparities among Vietnamese American women.	the groups.	
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**Summary**

Cancer screening is a low risk high yield process that is capable of preventing and eliminating risk for individuals of all risk strata. In spite of this very available information individuals continue to resist or avoid routine screening procedures for cervical cancer screening, breast cancer screening and colon and rectal cancer screening. The indexed studies have all examined the barriers that prevent individuals from accessing care that may be instrumental at reducing morbidity and mortality in the United States. According to the CDC, (2013) Early screening Prevents disease before it begins and is essential to helping people longer lives. Screening leads to healthier living and reduces the cost of healthcare. Screening procedures identify pathology in earlier stages of disease and prevent people from experiencing illness that is more debilitating.

Some of the barriers that have been identified in the five studies that have been reviewed are unique to the individual groups being studied. However there are a number of issues that appear to be nearly universal to all cohorts that were analyzed. Among the identified issues that are identified by virtually every study reviewed is knowledge or understanding of the value of screening and it's

ability to prevent illness. Issues that play a role in this knowledge deficit is lack of understanding about the risks perceived by an individual or a specific population. Some believe that their risk is low so they do not need to screen while others are unaware that there is an available screen for a particular type of illness. Literacy and language may play a significant role in knowledge deficit. Financial issues are also truly at the heart of screening prevention. Lack of financial resource creates challenges for women, Transportation, the cost of seeing a physician, the ability to obtain health insurance or the ability to pay health insurance co-pays may also play a significant role in screening compliance. A nearly universal barrier is related to social, religious or cultural discomfort with the procedure. Embarrassment, shyness or fear is associated with preventing women from obtaining cervical cancer screening in particular. Gender of the provider also appears to play a significant role in the feelings that women have about having pelvic examination. Finally studies identified barriers due to primary care providers not bringing up the need or importance of screening and providing an explanation of the necessity of the screening procedure.

Areas that these studies could improve upon would be examining the factors that prevent providers from presenting screening or presenting a compelling argument to women in their care. Studies demonstrate a marked increase in compliance when reminders are sent or when care navigators are involved in working with individuals (MacLaughlin et al., 2014) and (Studts, Tarasenko & Schoenberg, 2013). There are very diverse communities across the country communities of ethnic groups, religious groups, and socioeconomic groups that may have many similar characteristics. Studies to improve universal understanding of screening disparities are clearly needed to identify areas that providers can focus on to improve care and increase screening compliance.

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