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Psychosocial correlates of cervical cancer screening among older Hispanic women

Tamara J. Cadet, PhD., LICSW, MPH,

Assistant Professor, Simmons College School of Social Work, 300 The Fenway, Boston, MA 02115, 617-521-3981, Lecturer, Oral Health and Epidemiology, Harvard School of Dental Medicine, 180 Longwood Avenue, Boston, MA 02115

Kathleen Stewart, MSW, and

University of New England, 11 Hills Beach Road, Biddeford, ME 04005, 617-521-3981

Tenial Howard

Simmons College School of Social Work, 300 The Fenway, Boston, MA 02115, 617-521-3981

Abstract

Early detection through screening can reduce mortality rates of cervical cancer and yet Hispanic women who have incidence rates higher than their non-Hispanic White counterparts are least likely to participate in cancer screening initiatives. This study utilized data from the 2008 wave of the Health and Retirement Study to investigate the psychosocial correlates associated with older Hispanic women's participation in cervical cancer screening services. Logistic regression models were used. Findings indicated that greater life satisfaction and religiosity were associated with a greater likelihood of participating in cervical cancer screening. Despite ongoing national conversations, evidence indicates there is agreement that underserved women need to be screened, particularly the older Hispanic population.

Keywords

psychosocial; pap smears; cancer screening; older adults; Hispanics

Introduction

In 2016, it is estimated that 12,900 women will be diagnosed with invasive cervical cancer and 4,200 women will experience cervical cancer fatalities (Siegel, Miller, & Jemal, 2016). Women over the age of 65 years account for approximately 20% of new cervical cancer cases but may perceive their risk and need for screening as low (American Cancer Society [ACS], 2016). In fact, 34% of women over the age of 65 years died from cervical cancer between the years of 2008 and 2012 (Surveillance, Epidemiology, and End Results (SEER) Stat Fact Sheets, 2015). Early detection through screening can reduce mortality rates of cervical cancer (ACS, 2015a). National estimates indicate a decline from 2008 – 2013 in women over the age of 65 years receiving cervical cancer screening test in the past three years from 50% to 43% (Centers for Disease Control, 2014). Despite advanced technology to detect cervical cancer early older Hispanic women are less likely to benefit from these improvements. Because Hispanic women in the United States have cervical cancer incidence

rates 64% higher than non-Hispanic White (NHW) women and carry the highest rates of cervical cancer of all racial and ethnic groups regardless of location, the importance of early detection is important (ACS, 2015b; Flores and Bencomo, 2010). Although national recommendations suggest that healthy women over the age of 65 years should not be screened, Hispanics who will be the largest group of older ethnic minority adults in 2050, are less likely than NHWs to participate in cervical cancer screening initiatives and more likely to be diagnosed at late stages of cervical cancer screening (ACS, 2016; Federal Interagency Forum on Aging-Related Statistics, 2012; SEER, 2015).

To date, empirical research indicates that systemic, provider, and patient factors each play significant roles in the causes of health disparities (Alegria, Lin, Chen, Duan, Cook, & Meng, 2012; Carrillo, Carrillo, Perez, Salas-Lopez, Natale-Pereira, & Byron 2011). Systemic factors include the availability of and access to care, lack of interpretation services, socioeconomic and insurance status for patients (Reyes-Ortiz & Markides, 2010). Nuño, Castle, Harris, Estrada, & García (2011) indicate that a regular source of medical care was a positive predictor of cervical cancer screening for Hispanic women. Provider factors include bias or prejudice against minorities, clinical uncertainty when interacting with minorities, or stereotypes about the health behaviors of minorities (Institute of Medicine, 2003). Patient factors include marital status, age, education, socioeconomic status, health behaviors and behaviors (Angel & Whitfield, 2007; Shelton, Jandorf, King, Thelemaque, & Erwin, 2011; Reyes-Ortiz & Markides, 2010). Specifically, Shelton et al., (2011) indicate that marital status is positively associated with participation in cervical cancer screenings.

Few empirical studies have explored the relationship between older Hispanic women's cervical cancer screening behaviors and psychosocial factors, such as satisfaction with aging, life satisfaction, religiosity, loneliness, mastery, and control. This study investigates the psychosocial factors that influence cervical cancer screening among Hispanic women over the age of 65. Understanding what these factors are will aid in the development of empirically based interventions. Furthermore, as initiatives such as the Precision Medicine Initiative Cohort Program, which aims to enroll a cohort of one million Americans with goals of identifying targeted therapies for illnesses are launched, the importance of examining factors, which may influence full participation that includes all Americans is critical (National Institutes of Health, 2015). In addition, further empirical research is needed to develop a deeper understanding of the influence of psychosocial factors on cancer screening in conjunction with the factors discussed above for older Hispanic women (Arrendondo, Pollak, & Costanzo, 2008; Barron, Foxall, & Houfek, 2005; Farmer, Reddick, D'Agostino, & Jackson, 2007).

Conceptual Framework

Guided by previous empirical investigations (Browne & Chan, 2011; Price, Butow, Charles, Bullen, Meiser, McKinley et al., 2011), this study relies upon key constructs from the Theory of Planned Behavior (TPB) (Ajzen, 1985; NCI, 2005) to understand the mechanisms by which social and cognitive factors can influence health promotion behaviors such as cervical cancer screening participation. The conceptual model for this study posits that the likelihood that a specific behavior, such as obtaining a pap smear, occurs as a result of

behavioral intentions that are influenced by psychosocial factors (Gehlert, 2006; Sable, Schwartz, Kelly, Lisbon, & Hall, 2006). Previous research examining TPB suggests the best predictor of a given behavior is the behavioral intention to perform it (Kahn et al., 2005). This model also provides a theoretical foundation to develop interventions for changing health behaviors (Glanz, Rimer, & Lewis, 2002). In previous empirical investigations (Bowen et al., 2003; Gorin, 2005; Magai, Consedine, Neugut, & Hershman, 2007), these factors have all influenced cancer screenings (Arrendondo, Pollak, & Costanzo, 2008; Borrayo, Buki, & Feigal 2005, Health and Retirement Study [HRS], 2013; Magai et al., 2007). However, these factors have not been utilized in a national representative older Hispanic sample.

Purpose of the Study

Based on existing empirical literature examining psychosocial factors, cancer screening behaviors and older Hispanic women, the research questions and hypotheses for this study are: what psychosocial factors (satisfaction with aging, life satisfaction, religiosity, loneliness, mastery, and control) influence participation in cervical cancer screening in older Hispanic women? The hypothesis is that psychosocial factors influence older Hispanic women's participation in cervical cancer screening. These established empirically-based concepts are included in the study to build upon the existing knowledge base (Allicock, Sandelowski, DeVillis, & Campbell, 2008; Borrayo et al., 2005; Benjamins, 2006; Documét, Green, Adams, Weil, Stockdale, & Hyseni, 2008; Drew & Schoenberg, 2011; Hawley et al., 2008; Klassen, Smith, Shariff-Marco, Juon, 2008; McFall & Davila, 2008). Furthermore, recent research (Angel & Whitfield, 2007; Ayotte, Allaire, & Whitfield, 2012; Brown et al., 2014) suggests that investigations examine intra-group differences, supporting this investigation's goal to understand the psychosocial factors among older Hispanic women. This study received Institutional Review Board approval.

Methods

This proposed study employs a secondary analysis of data from the Health and Retirement Study (HRS). The HRS, administered by the Institute for Social Research (ISR) at the University of Michigan and sponsored by the National Institute on Aging (NIA grant number U01AG009740), is a longitudinal household survey useful for the study of aging, retirement, and health among older populations in the United States (RAND, 2008). The response rates for the HRS are high (89%). The HRS contains questions at the individual and household levels. In 2006 and 2008, psychosocial and lifestyle content were added to the HRS due to the increasing recognition that aspects of personality, self-related beliefs, and personal relationships uniquely predict significant life and health outcomes during mid-life and old age. The psychosocial and lifestyle content were included with the HRS interviews as a self-administered questionnaire to a random half of the sample in 2006. In 2008, the remaining 50% received the questionnaire.

Study Sample

This study utilizes the 2008 wave of HRS because this wave contains data for cervical cancer screening and psychosocial factors. To be included in the analytic sample for this

study, respondents were required to 1) identify as Hispanic; 2) respond to the cervical cancer screening questions, and 3) respond to all the psychosocial questions. All Hispanic respondents who met these three criteria were included in the sample regardless of the identification as Mexican, or Other Hispanic. This decision was made because the numbers were too small within some of these groups to make comparisons. Given the diversity of the Hispanic population, this decision is included in the discussion on limitations of the study. The psychosocial weight was utilized in the analysis to adjust for the sample selection because only a random half of the 2008 sample was asked to respond to the psychosocial questionnaire.

An estimated 2,775,583 (weighted) Hispanic women met criteria 1 and 2 in 2008. Of the 2,775,583 (weighted) Hispanic women who met all three criteria, approximately 15% of Hispanics women had missing data from the psychosocial. This was to be expected since not all women would have received the psychosocial questionnaire. Therefore, the final sample for this study was 2,316,218 Hispanic women who met the criteria for 1, 2, and 3 for cervical cancer screening in 2008.

Main Outcome Measures

All measures were obtained from the 2008 HRS Core Survey. The dependent variable, breast cancer screening was operationalized as the receipt of a cervical cancer screening within the past two years and was measured using one question. The predictor variables represent the domains of the conceptual framework, attitudes, perceived control, and subjective norms and are indices from HRS modified scales. Attitudes are measured with the factors, satisfaction with aging, life satisfaction, and religiosity. Subjective norms are measured with the factor, loneliness, and perceived control is measured with the factors, mastery and control.

Satisfaction with aging is measured with the Philadelphia Geriatric Morale Scale ($\alpha = .81$) (Lawton, 1975). Life satisfaction is measured with Life Scale ($\alpha = .89$) (Diener, Emmons, Larsen, & Griffin, 1985). Religiosity is measured with the Brief Multidimensional Measure of Religiousness/Spirituality: 1999 ($\alpha = .92$) (Fetzer Institute, 2003). Having a positive view of satisfaction with aging, of life satisfaction and religiosity are examples of attitudes influencing health behaviors such as following cancer screening recommendations (Allicock et al., 2008; Gany, Herrera, Avallone, & Chagrani, 2006; Klassen et al., 2008; Ryff, 1989). Perceived control is operationalized by a sense of mastery and a sense of constraints. Both a sense of mastery and a ($\alpha = .89$) and ($\alpha = .86$) respectively (Lachman & Weaver, 1998). Perceived control influences cancer screening behaviors (Angel, Angel, & Hill, 2009; Fernandez et al., 2009). Subjective norms were operationalized as the degree to which individuals feel lonely based on findings from Documét et al. (2008) that suggest loneliness is a subjective norm that influences cancer screening behaviors. See Table 1 for detailed information about each psychosocial correlate.

Consistent with previous empirical literature, demographic factors included: immigration status, marital status, self-reported health status, health insurance status, and age (Ahmed, Smith, Haber, & Belcon, 2009; Ajzen & Fishbein, 1980; Otero-Sabogal, Stewart, Sabogal, Brown, & Pérez-Stable, 2003; Reyes-Ortiz & Markides, 2010). The variables in this study are by self-report. HRS does not provide information to ensure that respondents' self-report

of cancer screening or other health behaviors appropriately are accurate. However, Jenkins, Ofstedal, & Weir (2008) from HRS indicate that the success in obtaining data for the HRS core survey, combined with limited time interviews, ensures a comprehensive assessment of health behaviors.

Results

Accounting for the complex sample design of HRS, descriptive and multivariate analyses were conducted with SPSS 21.

Descriptive Analyses

Demographics—Table 2 describes the socio-demographic information of the women ($n = 2,316,218$ weighted) who responded to the cervical cancer screening question of the HRS. Sixty-one percent of the women reported receiving a pap smear and 40% did not. Slightly more than half of the women were born outside of the United States. Forty-five percent were married, 28% separated or divorced, 23% widowed, and 4% never married. Fifty-six percent of the women spoke English. Thirty-eight percent of the women rated their health as “fair.” Less than a quarter of the women were 65–74 years old. Fifty-three percent of the women indicated they did not receive an educational degree. Seventy-one percent of the women reported having health insurance and 40% reported having two to three health conditions. As shown in Table 3, the women in this sample reported fairly high levels of satisfaction with aging ($M = 4.3$) on a scale of 1 – 6 with 6 indicating greater satisfaction with aging. On a scale of 1 – 6, with a higher number indicating greater religiosity, results indicated Hispanic women overall have high religiosity ($M = 5.0$). Hispanic women indicate low constraints ($M = 2.3$) on a scale of 1–6 and higher mastery ($M = 4.3$). On a scale of 1–3, with a higher number indicating greater loneliness Hispanic women do not report loneliness ($M = 1.4$). They were neutral in terms of life satisfaction ($M = 3.2$) on a scale of 1 – 7 with 7 indicating greater satisfaction with aging.

Multivariate Analyses

Utilizing a logistic regression as the multivariate statistic technique and consistent with previous empirical research (Mitchell, 2011), predictor variables were selected during the model building process based on significant associations in the correlation matrix and information from literature on potential predictive factors. Predictor variables were entered simultaneously because there was no clear theoretical knowledge concerning which predictors were more important (Martínez-Donate et. al., 2013). Table 4 presents the final model results. The following variables were entered into the final significant ($p < .05$) model: life satisfaction, satisfaction with aging, religiosity, constraints, mastery and all socio-demographic factors. While controlling for all other variables, for each one point increase in life satisfaction and in religiosity, Hispanic women were more ($OR = 1.3$) likely to indicate they had received a pap smear. While controlling for all other variables, US born Hispanic women were 52% ($OR = .48$) less likely than foreign born Hispanic women to indicate they had received a pap smear. While controlling for all other variables, Hispanic women, ages 65–74 were 1.8 times more likely ($OR = 1.8$) than Hispanic women over the age of 85 years, to indicate they had received a pap smear. Hispanic women, ages 75 – 84

were 1.2 times more likely (OR=1.2) than Hispanic women over the age of 85 years, to indicate they had received a pap smear. Health status approached significance ($p=.06$). If significant, while controlling for all other variables, Hispanic women in excellent health were 8.3 (OR = 8.3) times more likely than Hispanic women in poor health to indicate they had received a pap smear.

Discussion

The purpose of this study was to investigate the psychosocial correlates that may influence cervical cancer screening behaviors of older Hispanic women. This study was guided by the theoretical framework of the Theory of Planned Behavior (Ajzen & Fishbein, 1980), that posited attitudes, perceived control, and subjective norms, would influence older Hispanic women's participation in cervical cancer screening services. The hypothesis for this study, psychosocial factors will influence older Hispanic women's participation in cervical cancer screening services was partially supported. The findings indicate that greater life satisfaction and religiosity were positive predictors of older Hispanic women's cervical cancer screening behaviors. In addition, socio-demographic factors, immigration status was a negative predictor and age was a positive predictor.

The finding that greater life satisfaction was a positive predictor was expected based previous empirical evidence (Allicock et al., 2008; Gany et al., 2006; Klassen et al., 2008; Ryff, 1989). Research suggests that the happier or more satisfied individuals are with their lives, the more likely they will take participate in health promoting behaviors. There is mixed evidence regarding the role of religiosity and cancer screening (Leyva, Nguyen, Allen, Taplin, & Moser, 2014). While evidence indicates that older Hispanics have high religiosity (Campesino & Schwartz, 2006, Hilton, Gonzalez, Saleh, Maitoza, & Anngela-Cole, 2012), there are several ways to interpret this finding. Because of the relationship between fatalism and religiosity (Lopez-McKee et al., 2008; Natale-Pereira et al., 2008) in cancer screening investigations, it was expected that greater religiosity would be a negative predictor. In contrast, evidence regarding the role of social support associated with religiosity suggests that greater religiosity is a positive predictor (Allen et al., 2014; Leyva et al., 2014). Furthermore, there is recent evidence that suggests that high life satisfaction is associated with higher religiosity among Hispanics (Marquine et al., 2014). This supports this study's findings that life satisfaction and religiosity were positive predictors. Based on previous literature, we expected that US Born Hispanic women would be more likely than foreign born Hispanic women to participate in cervical cancer screening services (Rodriguez, Ward, Perez-Stable, 2005; Tangka et al., 2010; Tsui, Saraiya, Thompson, Dey, & Richardson, 2007). However, there is mixed evidence (Borrayo & Guarnaccia, 2000; Nuño et al., 2011; Reyes-Ortiz & Markides, 2010) found no differences between foreign born and US born Hispanic women in their cervical cancer screening participation. In previous investigations, immigration status is a proxy for acculturation (Lara, Gamboa, Kahramanian, Morales, & Bautista, 2005; Nuno et al., 2011; Thomson & Hoffman-Goetz). Findings from these investigations report positive or mixed results on the effect of acculturation on the participation in breast cancer screening services by Hispanic women (Lara et al, 2005). In addition, Nuno et al. (2011) did not find a relationship between acculturation and cervical cancer screening among Hispanic women. While close to half of

this study's sample was born in the US, research suggests that older adults maintain their cultural perspectives and this sample may not be as acculturated (Centers for Disease Control, 2012). The finding that younger Hispanics were more likely to participate in cervical cancer screening services is supported by the literature (Bellizzi, Breslau, Burness, & Waldron, 2011; Reyes-Ortiz & Markides, 2010). Previous literature indicates that older women may not be screened as often due to lack of provider recommendation and lack of resources (Blustein & Weiss, 1998; Ostbye, Greenberg, Taylor, & Lee 2003; Reyes-Ortiz Freeman, Pelaez, Markides, & Goodwin, 2006; Reyes-Ortiz, Velez, Camacho, Ottenbacher, & Markides, 2008). Finally, previous investigations indicate that health insurance is a positive predictor for accessing cancer screening services (Reyes-Ortiz & Markides, 2010; Tian Wilson, & Zhan, 2011). In our study, there was not a relationship between health insurance and cervical cancer screening initiatives. These findings are supported by other investigations (Nuno et al., 2011) and suggest that factors outside of health insurance facilitate participation in cancer screening services (Tangka et al., 2015).

Limitations

There are several limitations to this study. Secondary data analysis does not precisely address all relevant variables in this study, as demonstrated by the use of proxy measures. For example, attitudes were measured by the variables "satisfaction with aging" and "life satisfaction." Participants responded to questions about "satisfaction with aging" and "life satisfaction" without the knowledge that these psychosocial factors would be investigated to determine if a relationship exists with cancer screening participation. Therefore, it is important to recognize that responses to questions asked for another purpose should be interpreted with caution. Second, due to the diversity of the Hispanic population, findings from this study cannot be generalized to all older Hispanics (Angel & Whitfield, 2007). Third, this study is cross-sectional and causality cannot be inferred. Fourth, non-Hispanic Whites and Blacks were not included in the study creating an inability to compare similarities and differences between groups. While 2012 HRS data has recently become available, the goal of this study was to provide an initial contribution to the literature since there is a dearth of empirical literature on older Hispanic women and this study will add to the current body of research. Future research will include comparisons between non-Hispanic Whites and Blacks and examine changes longitudinally. Finally, the study did not utilize the measure Medicaid in its health insurance index because 91% of the data was missing. Because low-income older minority adults may be more likely to participate in Medicaid, the study findings are not applicable to older Hispanic women who receive Medicaid.

Implications

Despite the limitations, there are several strengths to this study. There is a dearth of research on older Hispanic population. This study contributes to the knowledge base for this population by examining older Hispanic women's cervical cancer screening behaviors utilizing the TPB. This study illustrates the likelihood of population-based patterns in cervical cancer screening. The findings provide formative data to design empirically and theoretically based interventions to engage the older Hispanic female population.

Despite ongoing conversations about the risks and benefits of screening in general and in particular for older women, evidence indicates there is agreement that underserved women need to be screened, particularly the older Hispanic population who are less likely to screen in general and/or more likely to present with advanced stage breast cancer than non-Hispanic White women (Bellizzi et al., 2011; Yasmeen, Romano, Tancredi, Saito, Rainwater, & Kravitz, 2012).

This study provides empirical evidence to encourage and remind clinicians of the varying perspectives patients have regarding prevention, intervention or treatment in health care and other settings. Furthermore, clinicians can utilize study findings in their practice to understand their patients' attitudes towards life satisfaction and religiosity and its relationship with cancer screenings and health preventive services in general (Resnick & McLesky, 2008). Understanding these factors may be important factors influencing cancer screening participation among older Hispanic women. Clinicians can incorporate social marketing messages into their practice that create awareness about good health and good aging. Future research should examine the role of decision aids to assist older Hispanics in determining cancer screening participation and perhaps increasing patient provider communication (Schonberg et al., 2014). Finally, cancer disparities exist across the continuum of screening, intervention, treatment and survivorship and further investigations are need to assist in decreasing the mortality rates among vulnerable populations.

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Table 1

Psychosocial Correlates with Indices and Scales

Correlates	Scale
Satisfaction with aging	An index of satisfaction with aging, ranging from 1 – 6, with a higher number indicating greater satisfaction with aging
Life satisfaction	An index of life satisfaction, ranging from 1–7, with a higher number indicating greater life satisfaction
Religiosity	An index of religiosity, ranging from 1 – 6, with a higher number indicating greater spirituality.
Mastery	An index of mastery, ranging from 1 – 6, with a higher number indicating greater mastery
Constraints	An index of constraints, ranging from 1 – 6, with a higher number indicating more constraints
Loneliness	An index of loneliness, ranging from 1 – 3, with a higher number indicating greater loneliness

Table 2

Socio-demographic Factors of Hispanic Women Responding to the 2008 Cervical Cancer Screening Question
(n = 2,316,218 weighted)

Variable	%
Cervical Cancer Screening	
Yes	61
No	39
Immigration Status	
Born in the US	49
Born in a foreign country	51
Education	
No degree	53
GED/High School	35
Some college/college	9
Masters/Professional	3
Health insurance	
No	30
Yes	70
Marital Status	
Married	45
Separated/Divorced	28
Widowed	23
Never Married	4
Language	
English	56
Spanish	44
Age	
54–64	60
65–74	23
75–84	12
85+	5
Rate Health	
Excellent	5
Very Good	14
Good	25
Fair	38
Poor	18
# of Chronic Conditions	

Variable	%
None – one	37
Two – three	41
Four or more	22

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Table 3

Psychosocial Factors of Older Hispanic Women Responding to the 2008 Cervical Cancer Screening Question
(n = 2,316,218 weighted)

Predictor variables	Scale	<i>M^e</i>
Life Satisfaction	1–7	4.3
Religiosity	1–6	5.0
Satisfaction with aging	1–7	3.2
Constraints	1–6	2.3
Mastery	1–6	4.3
Loneliness	1–3	1.4

^aHigher number indicates greater

^e*M* equals mean

Table 4

Predictors of Cervical Cancer Screening Participation in 2008 by Hispanic Women (n =2,316,218 weighted)

Cervical Cancer Screening	Final Model		
	OR ^{a,b}	CI ^c	p
Immigration Status			
Born in a foreign country	.48	.25 – .90	.03 *
Born in the US (reference group)			
Marital Status			.31
Age			.05 *
54–64	3.63	.98 – 13.6	
65–74	1.82	.44 – 7.5	
75–84	1.15	.28 – 4.9	
85+ (reference group)			
Health insurance			.32
Rate Health			.06
Life Satisfaction	1.27	1.03 – 1.57	.03 *
Religiosity	1.34	1.07 – 1.67	.02 *
Constraints			.25
Mastery			.49

*
p<.05;^aOR equals odds-ratio;^bReference Group: Yes to breast cancer screening;^cCI equals confidence intervals