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The Relationship Between Religiosity and Health-Promoting Behaviors in Pregnant Women

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Abstract

Pender's health promotion model guided this descriptive/correlational study exploring the relationship between religiosity and health-promoting behaviors of pregnant women at Pregnancy Resource Centers (PRCs). A consecutive sample included women who knew they were pregnant at least 2 months, could read/write English, and visited PRCs in eastern Pennsylvania. Participants completed self-report surveys that examined religiosity, demographics, pregnancy-related variables, services received at PRCs, and health-promoting behaviors. Women reported they "sometimes" or "often" engaged in health-promoting behaviors, Hispanic women reported fewer health-promoting behaviors than non-Hispanic women, and women who attended classes at the centers reported more frequent health-promoting behaviors than those who did not attend classes. In separate multiple linear regressions, organized, non-organized, and intrinsic religiosity and satisfaction with surrender to God explained additional variance in health-promoting behaviors above and beyond what Hispanic ethnicity and attending classes at the PRCs explained in pregnant women at PRCs.

Keywords

pregnancy; religiosity; health-promoting behaviors; Pregnancy Resource Center

The health decisions made during pregnancy can have lifelong consequences for a woman and her child (Centers for Disease Control and Prevention [CDC], 2013). Consequently, encouraging healthy behaviors by pregnant women has been a focus for maternal/child health care professionals for many years; yet, the results of these efforts remain inconsistent (U.S. Department of Health and Human Services, 2013). To promote healthy behaviors during pregnancy, it is necessary to determine the factors that influence a woman's health-promoting behaviors.

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Declaration of Conflicting Interest

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Religiosity, or religiousness, includes “membership and participation in the organizational structures, beliefs, rituals, and other activities related to a religious faith like Judaism, Hinduism, Islam, or Christianity” (Moberg, 2008, p. 101). For many religions, an important part of the religious beliefs includes a person taking care of his or her health, through such things as healthy eating or avoidance of substance use (Koenig, 2012). In a comprehensive review of literature examining the health habits of individuals and their level of religiosity/spirituality, Koenig (2012) reported that many of the researchers found as the level of religiosity/spirituality of individuals increased, healthier behaviors were exhibited, such as a decrease in smoking, an increase in physical activity, and an improvement in diet.

Religiosity research has also been conducted with pregnant women including investigating health behaviors during pregnancy. Increased religiosity was associated with a decreased likelihood of smoking (Burdette, Weeks, Hill, & Eberstein, 2012; Mann, McKeown, Bacon, Vesselinov, & Bush, 2007), alcohol use (Page, Ellison, & Lee, 2009), and marijuana use (Page et al., 2009), and a greater likelihood of better maternal nutrition during pregnancy (Burdette et al., 2012). Although the mechanism is not clear, religiosity in some women has been associated with positive maternal health behaviors.

The health promotion model (HPM), a middle-range theory based on expectancy-value theory and social cognitive theory, provides a holistic, multidimensional framework for exploring a person’s health-promoting behavior (Pender, Murdaugh, & Parsons, 2011) and was the theoretical model that framed this research study. The HPM was revised for this study to focus on individual characteristics (personal factors) and behavior-specific cognitions and affect (interpersonal influences) and to look at the relationships between these variables and the behavioral outcome of health-promoting behaviors, measured by the Health-Promoting Lifestyle Profile II (HPLP II; see Figure 1; Cyphers, 2015). Religiosity had not been previously studied with the HPM, but as religiosity can also be considered a personal factor according to Pender (N. Pender, personal communication, July 9, 2013), it was included in this research study.

Previous research using the HPM identified several factors associated with health-promoting behaviors of pregnant women. Esperat, Feng, Zhang, and Owen (2007) reported that ethnicity was a significant predictor of health-promoting behaviors in pregnant women ($\beta = .384, p < .01$). Researchers also identified that pregnant women with lower educational levels ($p < .001$) and lower socioeconomic status ($p < .01$) reported fewer health-promoting behaviors (Kavlak et al., 2013; Lin, Tsai, Chan, Chou, & Lin, 2009). Bond, Jones, Cason, Campbell, and Hall (2002) reported a weak correlation between religious preference and the Stress subscale of the HPLP II. In addition, Kavlak et al. (2013) studied the relationship between a woman’s feelings about her pregnancy and health-promoting behaviors. Women with unplanned pregnancies had significantly ($p < .05$) lower HPLP scores than women who had planned pregnancies (Kavlak et al., 2013). The use of the HPM to study health-promoting behaviors in pregnant women can provide important insight for maternal/child health care providers.

Purpose

The purpose of this study was to explore the relationship between religiosity and health-promoting behaviors of pregnant women at Pregnancy Resource Centers (PRCs). The primary aims of this descriptive correlational study were to (a) describe the health-promoting behaviors of pregnant women at PRCs, (b) explore the relationship between each of the following sets of variables (religiosity, demographics, pregnancy-related variables, or services obtained at the PRCs) and health-promoting behaviors of pregnant women at PRCs, and (c) determine the percentage of variance that religiosity explains in the frequency of health-promoting behaviors, above and beyond what the other variables explain, in pregnant women at PRCs.

Method

Study Design and Sample

This descriptive correlational study, conducted in eastern Pennsylvania, sampled pregnant women who visited PRCs. PRCs are community centers that offer Christian faith-based approaches to care for pregnant women, including pregnancy tests, prenatal classes, and parenting classes (Family Research Council, 2009). One primary focus of PRCs is to provide support to women who report an unintended pregnancy (Family Research Council, 2009), which may place them at risk for practicing fewer health-promoting behaviors (Kavlak et al., 2013). Although not all women who visit PRCs report unintended pregnancies, very little research has been conducted with pregnant women at PRCs (Hill, 2005; Stark, 2012). Therefore, this study specifically targeted pregnant women at PRCs.

It was estimated by the PRC directors that approximately 372 pregnant women visited the 11 PRC data gathering sites during the study period. From the 372 pregnant women, those who met the inclusion criteria were available for recruitment and consecutive sampling. The inclusion criteria for this study included (a) being a pregnant woman who had known she was pregnant for at least 2 months, (b) having visited a PRC, (c) being 18 years of age or older, and (d) being able to read and write English.

An a priori power analysis was conducted using Khamis and Kepler's (2010) formula ($N = 20 + 5k$; k = the number of predictors) to estimate minimum sample size for multiple linear regression with reliability as the criterion in studies with "new variables or populations from which the quantities for an effective power analysis are not available" (p. 514). Based on a conservative estimate of 10 variables entered into the multiple linear regression model after preliminary univariate analysis with a p value of $<.25$, the estimated sample size was a minimum of 70 participants. Additional participants were recruited to account for possible attrition. Data collection continued for 40.5 weeks until a sample of 95 participants was obtained. Nine surveys were not included in the data analysis because the participants did not meet the inclusion criteria or because the dependent variable, the HPLP II, contained incomplete survey responses. Therefore, the final sample size was 86 participants, which was a 23% response rate using the reported estimate of 372 pregnant women. The actual response rate was likely higher as the number of women meeting the inclusion criteria was unknown due to lack of this specific documentation at the survey sites.

Variables and Measures

Demographic and pregnancy-related data—Demographic data included age, race and ethnicity, marital status, socioeconomic status, and education level. Pregnancy-related data included gravidity (how many times pregnant including the current pregnancy), parity (how many live births), how many weeks pregnant (calculated from last menstrual period), length of time the woman knew she was pregnant (in weeks), and pregnancy intention.

Pregnancy intention—Pregnancy intention was determined through the use of one question from the Pregnancy Risk Assessment Monitoring System (PRAMS) questionnaire (CDC, 2009), modified to reflect the timing of the questionnaire prior to the delivery of the newborn and with two additional responses of “I am unsure how I feel” and “I did not want to be pregnant but now I am glad I am.” PRAMS is administered by the CDC and state health departments to collect data regarding maternal behaviors of women who have live births in the United States (CDC, 2014), but no reliability and validity statistics have been reported. See Ayoola (2008) for additional comments on reliability and validity of PRAMS. In this study, unintended pregnancies included mistimed, unwanted, unsure, and pregnancies reported as unwanted but now the pregnant woman was glad she was pregnant. Each of these categories included women who did not intend to be pregnant at the time of conception.

Religiosity—Religiosity was measured with two instruments, the Duke University religion index (DUREL; Koenig & Bussing, 2010) and the Religious Surrender and Attendance Satisfaction Scale (RSASS; Cyphers & Clements, 2014), and one question on religious affiliation.

The DUREL—The DUREL is comprised of three subscales (Koenig & Bussing, 2010). Subscale 1, Organized Religiosity, is measured by ascertaining frequency of religious attendance on a 6-point Likert-type scale. Subscale 2, Non-Organized Religiosity, is measured with a 6-point Likert-type scale asking about private religious activities, such as prayer and bible study. Subscale 3, Intrinsic Religiosity, represents “the pervasiveness of religious influence in daily life” (Fetzer Institute, National Institute on Aging Working Group, 2003, p. 71), and is measured by asking three questions on a 5-point scale (Koenig & Bussing, 2010). The overall scale has high test–retest reliability (intra-class correlation = .91), high internal consistency (Cronbach’s α s = .78–.91), and high convergent validity with other measures of religiosity (r s = .71–.86; Koenig & Bussing, 2010).

RSASS—The RSASS is a very brief scale that measures religious commitment and a person’s satisfaction with his or her commitment (Cyphers & Clements, 2014). The RSASS includes six questions, three measuring religious commitment, and three measuring satisfaction with each area of religious commitment. Religious commitment questions include one asking about the frequency of attendance at religious services and two related to surrender to God. Each question is rated on a 5-point Likert-type scale with higher numbers indicating stronger religious commitment. Each question is followed with “how do you feel about your rating on this item.” Cyphers and Clements (2014) found that the Religious Commitment component of the scale (RSASS-3; Clements, Fletcher, Cyphers, Ermakova, & Bailey, 2015) demonstrated strong internal consistency (α = .85) and was strongly

associated with intrinsic religiosity ($r = .65$, $p = .005$). The Satisfaction items from the RSASS were found to be moderately internally consistent ($\alpha = .68$) and had adequate construct validity (Cyphers & Clements, 2014).

In this study, the Religious Commitment component of RSASS had an internal consistency of $\alpha = .72$. However, the internal consistency for the overall Satisfaction component of RSASS was only $\alpha = .50$. As the internal consistency was low, analysis of satisfaction with religious commitment was conducted as two subscales: Satisfaction With Surrender to God (Questions 1 and 2 on Religious Commitment component of RSASS) and Satisfaction With Religious Attendance.

Religious affiliation—The final religiosity question asked the participant to identify her religious affiliation. The question stated, “What is your religious preference?” with responses including Protestant (specify denomination), Catholic, Jewish (specify Orthodox, Conservative, Reform; none of these), Muslim, other (please specify), and no religion.

Services at the PRC—Women were asked what services they had used at the PRCs during this pregnancy. Options included medical services (pregnancy test, ultrasound), bible study (or any biblically based parenting class), classes (parenting, healthy relationships, life skills), supportive services (*Earn While You Learn*; Heritage House '76, 2014, counseling), and none. In addition, the pregnant women were asked how many times they participated in each of these services.

HPLP II—The HPLP II is a 52-item scale with six subscales including Health Responsibility, Interpersonal Relations, Spiritual Growth, Physical Activity, Nutrition, and Stress Management (Pender et al., 2011). Items are scored on a 4-point Likert-type scale (1 = *never*, 2 = *sometimes*, 3 = *often*, and 4 = *routinely*). The overall score is comprised of the mean of all items, and subscale scores are comprised of the mean of items within the subscale. Factor analysis confirmed the six-dimensional structure of the health-promoting lifestyle, and construct validity was supported by “convergence with the Personal Lifestyle Questionnaire ($r = .678$), and by a non-significant correlation with social desirability” (Walker & Hill-Polerecky, 1996, para. 1). Criterion-related validity was supported by “significant correlations with concurrent measures of perceived health status and quality of life [r 's = .269 to .491]” (Walker & Hill-Polerecky, 1996, para. 1). Walker and Hill-Polerecky (1996) reported high internal consistency for the overall measure ($\alpha = .94$) and the subscales (α s from .79 to .87), and a 3-week test–retest stability coefficient was $r = .89$.

Procedures

Human subjects approval was obtained from the University Institutional Review Board prior to study implementation. When pregnant women came to the PRCs, the principal investigator (PI) or a volunteer trained by the PI asked them if they were interested in participating in a research study and gave them an informational flyer about the study. If they were interested, they were taken to a private area designated for the research study. The first page of the anonymous survey had questions regarding the inclusion criteria. If the criteria were met, the participant continued the survey by reading the informed consent that

stated that implied consent would be inferred if the survey was completed. A US\$5 gift certificate was given to each woman willing to participate in the survey. Upon completion of the survey, each woman was given the opportunity to enter a drawing to win a US\$50 gift certificate.

Data Analysis

Data were screened and cleaned prior to analysis, including checking the accuracy of the data, identifying missing data, outliers, and assuring the assumptions were met for the statistical analysis techniques used. All analyses were conducted using *The Statistical Package for Social Sciences* version 22.0 (SPSS 22). Missing data were analyzed using the Missing Values Analysis in SPSS 22 and data were imputed as appropriate to the type and amount of data missing (Cyphers, 2015). Descriptive statistics (M , SD , range) were conducted to describe the sample and the health-promoting behaviors of the pregnant women. The relationships among the variables were evaluated with univariate statistics (independent t tests, ANOVA, Mann–Whitney U , and Kruskal–Wallis).

Hierarchical regressions were conducted to determine whether religiosity explained variance in health-promoting behaviors (HPLP II) above and beyond what other variables explained. Independent variables that had univariate comparisons with HPLP II with p values $<.25$ were entered into the regression model (Hosmer & Lemeshow, 2000). Block 1 variables included Hispanic ethnicity (yes/no), highest grade (12th grade or less/more than 12th grade), number of pregnancies (one to two/three or more), number of weeks pregnant (11–26 weeks/27–39 weeks), pregnancy intention (intended/unintended), and attended classes (yes/no). Block 2 variables included high and low categories for organized religiosity, non-religiosity, intrinsic religiosity, and religious commitment; and satisfaction with surrender to God (yes/no) and satisfaction with religious attendance (yes/no). In addition, separate hierarchical regressions were conducted for each religiosity variable, with Block 1 independent variables entered first, and then each religiosity variable entered separately into its own regression in Block 2. Stepwise analysis was utilized in each block of the hierarchical regressions.

Results

Sample Characteristics

The sample was comprised of 86 (age 18 to 39 years) pregnant women. The majority of the participants were White (83%, $n = 71$), never married but living with their partner (37%, $n = 32$), with total household incomes of less than US\$15,000 (74%, $n = 63$). In addition, 65% ($n = 56$) of women in the study reported the highest grade they completed in school was 12th grade or that they completed the GED (General Educational Development). The pregnant women reported from zero to six living children at the time of the study completion.

The women in the study reported they had been pregnant from 11 to 39 weeks, and had known they were pregnant from 8 weeks to 37 weeks. It is interesting that 38% ($n = 33$) said they wanted to be pregnant now or sooner, indicating an intended pregnancy. Those reporting unintended pregnancies included mistimed (wanted to be pregnant later; 20%, $n = 17$), unwanted (did not want to be pregnant now or in the future; 5%, $n = 4$), pregnancies that

were not initially wanted but now the woman was glad she was pregnant (30%, $n = 26$), and those who reported they were unsure of how they felt about the pregnancy (7%, $n = 6$). Therefore, 62% ($n = 53$) of the pregnancies were considered unintended, which is slightly higher than the national average of 51% (Finer & Zolna, 2014).

An overwhelming majority of the women in this study considered themselves to be Christian (76%, $n = 65$); however, 8% ($n = 7$) reported other religions (Muslim, Buddhist, Spiritual, and Jehovah's Witness), and 16% ($n = 14$) of women reported they had no religion. Although 55% of the participants reported their religion influenced all areas of their lives (intrinsic religiosity), the majority of pregnant women reported low levels in the other areas of religiosity (non-organized, organized, and religious commitment). More than half reported they were satisfied with their level of religious commitment (surrender to God and religious attendance).

Women varied as to whether or not they received services at the centers and which services they received. Only 10% ($n = 9$) of pregnant women received no services at the PRCs. The largest percentage of services received were participation in classes such as parenting, healthy relationships, and life skills classes (65%, $n = 56$), followed closely by those who received support services such as *Earn While You Learn* (Heritage House '76, 2014) or counseling (57%, $n = 49$). Medical services such as pregnancy tests or ultrasounds were reported by 30% ($n = 34$), and finally, bible studies or any biblically based parenting class were reported least often as a service received at the PRCs (10%, $n = 9$; see Table 1).

Specific Aim 1

The first aim of this research study was to describe the health-promoting behaviors of pregnant women who visited PRCs as measured by the HPLP II. The HPLP II overall scores ranged from 1.77 to 3.90 ($M = 2.73$, $SD = .45$), indicating the pregnant women reported engaging in health-promoting behaviors "sometimes" or "often." The subscale with the highest mean was the Spiritual Growth subscale ($M = 3.10$, $SD = .57$) whereas Physical Activity was the lowest subscale with a mean of 2.18 ($SD = .55$; see Figure 2).

Specific Aim 2

The second specific aim was to explore the relationship between each of the following sets of variables (religiosity, demographics, pregnancy-related variables, services obtained at the PRCs) and health-promoting behaviors of pregnant women at PRCs. Analysis of the demographic variables revealed Hispanic ethnicity had a statistically significant inverse relationship with health-promoting behaviors as measured by the HPLP II (see Table 2). The only significant correlation between pregnancy-related variables and health-promoting behaviors was that pregnant women who were unsure about pregnancy intention had significantly lower mean scores on the HPLP II than all other categories of pregnancy intention. However, as less than 10% of participants reported being unsure of their pregnancy intention, the "unsure" response to this variable was not included in the multivariate analysis to avoid skewing the analysis (Tabachnick & Fidell, 2013). It is interesting that 30% ($n = 26$) reported "I did not want to be pregnant, but now I'm glad I am." Although these pregnant women who changed their mind about wanting a child were

almost half of the 53 unintended pregnancies, there was no statistically significant difference between the health-promoting behaviors of these pregnant women and the other women who reported unintended pregnancies (“I wanted to be pregnant later,” “I did not want to be pregnant now or at any time in the future,” and “I am unsure how I feel”) $t(51) = -.54, p = .60$.

Overall, only one statistically significant relationship was noted between pregnant women who obtained services at the PRCs and women who did not. Women who reported attending classes at the PRCs had higher scores on the HPLP II than women who did not attend classes. In addition, women who attended more bible studies also reported higher scores on the HPLP II; however, as less than 10% of participants reported attending bible studies, this response was excluded from the multivariate analysis (Tabachnick & Fidell, 2013).

Pregnant women who reported high intrinsic religiosity, high levels of religious commitment, and were satisfied with their level of surrender to God had higher scores on the HPLP II, indicating more health-promoting behaviors, than women who reported lower levels of these religiosity characteristics. However, no difference in HPLP II scores was noted between pregnant women who reported they were satisfied with their attendance at religious services and those who were not, $t(84) = .51, p = .61$.

Specific Aim 3

The full model for the hierarchical regression with all of the religiosity variables entered was statistically significant, $R^2 = .21, F(4, 86) = 5.9, p = .02$ (see Table 3). In Block 1 of the hierarchical regression, 10% of the variance in health-promoting behaviors was explained by whether the pregnant women attended classes at the PRCs or were of Hispanic ethnicity. When religiosity variables were entered into Block 2, though the overall model was significant, attending classes at the PRCs was no longer a significant predictor of health-promoting behaviors. Religiosity (non-organized and satisfaction with surrender to God) was significantly associated with health-promoting behaviors and accounted for an additional 11% of the variance in health-promoting behaviors, the model thereby explaining a total of 21% of the variance in health-promoting behaviors of the pregnant women at the PRCs.

When only one religiosity variable was entered into Block 2 of the statistical model, Hispanic ethnicity and whether women attended classes at the centers continued to significantly explain 10% of the variance in the health-promoting behaviors of the pregnant women. Organized religiosity, non-organized religiosity, intrinsic religiosity, and satisfaction with surrender to God explained additional variance in health-promoting behaviors in their individual models and were significant predictors of health-promoting behaviors (Cyphers, 2015).

Discussion

A revised version of Pender et al.’s (2011) HPM provided the theoretical framework for this study (see Figure 1). This theoretical model included individual characteristics and experiences, behavior-specific cognitions and affect, and the behavioral outcome of health-promoting behaviors. The personal factors within the individual characteristics and

experiences category included demographics, pregnancy-related variables, and religiosity. Of the personal factors studied, only Hispanic ethnicity and religiosity were significantly related to health-promoting behaviors. The behavior-specific cognitions and affect category of Pender's Revised HPM included interpersonal influences, such as services obtained at the PRCs and religiosity. Interpersonal influences that were significantly related to health-promoting behaviors included organized religiosity (attending religious services) and whether the pregnant women attended classes at the PRCs. For the purpose of this article, only the religiosity variables are discussed in detail. A detailed explanation of all results can be obtained in Cyphers (2015).

The results of our study indicated that religiosity, as a personal factor and interpersonal influence in the revised HPM, was significantly related to health promotion. Frequent religious service attendance, personal prayer, reading of religious materials, reporting high intrinsic religiosity, or reporting satisfaction with surrender to God predicted more frequent health-promoting behaviors in the pregnant women at the PRCs. Research on religiosity and health behaviors during pregnancy often targets specific behaviors such as smoking or substance use during pregnancy rather than overall health-promoting behaviors as was the focus of this study. Yet, the results of this study focusing on overall health-promoting behaviors were consistent with previous literature addressing religiosity and specific maternal health behaviors during pregnancy (Burdette et al., 2012; Mann et al., 2007; Page et al., 2009), namely, higher religiosity was associated with more positive maternal health behaviors.

Mann et al. (2007) studied non-organized, organized, and intrinsic religiosity and tobacco use in pregnant women. They reported organized and non-organized religiosities were inversely associated with tobacco use; yet, they did not find significant associations between intrinsic religiosity and smoking in pregnant women. Although non-organized, organized, intrinsic religiosity, and satisfaction with surrender to God predicted more frequent health-promoting behaviors in this study, religious commitment, comprised of a person's surrender to God and attendance at religious services (Clements et al., 2015), was not a significant predictor of health-promoting behaviors. It is interesting that if a woman was *satisfied* with her level of surrender to God (a component of religious commitment), this predicted the frequency of health-promoting behaviors and confounded the relationship between Hispanic ethnicity, classes attended at the PRCs, and health-promoting behaviors (Cyphers, 2015). It appears to be satisfaction with the degree to which women report being surrendered to God, rather than just having a high degree of satisfaction in general, that is associated with health-promoting behaviors, as satisfaction with religious attendance was not associated with health-promoting behaviors. Although religiosity appears to consistently predict more frequent health-promoting behaviors during pregnancy, variations on the specific dimension of religiosity predicting the behaviors continue to be reported.

This study provides information about the health-promoting behaviors of pregnant women at PRCs and illuminates some of the factors that predict these behaviors. Previously, religiosity was not formally studied within the HPM. As both a *personal factor* and an *interpersonal influence*, religiosity was found to have a relationship with health-promoting behaviors in this study. Further research on religiosity guided by Pender's HPM would provide additional

insight into the religiosity and health-promoting behavior relationship. In addition, further explication of the HPM could include investigating religiosity as a factor under *individual characteristics and experiences* as well as under *behavior-specific cognitions and affect* enhancing the holistic perspective of Pender's model (see Figure 1).

Although this study has limited generalizability due to the data being self-reported from a convenience sample, we believe the results of this study provide more insight about the pregnant women who visited PRCs in eastern Pennsylvania. As pregnant women came to the PRCs from the surrounding areas and not only from the cities where the centers were located, the local school district demographics were used to obtain a description of the PRC settings. For all of the PRCs in the sample, the demographics of the surrounding areas were predominantly (88%–98%) non-Hispanic White depending upon the center's location (The Center for Rural Pennsylvania, 2014). For this study, 83% of the study sample reported being Caucasian, which is similar to the race distribution reported by the surrounding school districts' demographics. Although the sample is homogeneous, the study was intended to investigate pregnant women at PRCs in eastern Pennsylvania. Utilizing 11 sites in eight eastern Pennsylvania counties supports that the participants were likely representative of pregnant women in this geographic area. As these centers were all part of the same PRC affiliation (Care Net), standardization among centers was not a concern.

With the addition of study sites to obtain the appropriate sample size, additional volunteers were needed to assist with recruitment of participants. This factor could be considered a limitation as occasionally the volunteers reported forgetting to invite the pregnant women to participate. Also, if a volunteer thought a pregnant woman was too busy or distraught to be asked to participate in a research study, she would wait until the woman came to the center for the next visit to invite her to participate. However, the anonymous nature of the study prevented tracking those who participated at a later time and those who did not. Future studies with the PRC population could consider utilizing research assistants to facilitate participant recruitment.

Researchers have been studying the association between religiosity and health for many years (Koenig, 2012). Results of our study support previous research findings indicating that increased levels of religiosity are associated with more frequent health-promoting behaviors. The question remains as to the clinical implications of this finding. Unlike some of the other personal factors in the HPM (such as age, race, or ethnicity), some aspects of religiosity may be enhanced through faith-based interventions that include the specific doctrines and principles of the person's faith (Stewart, 2016). Faith-based nurses are in a unique position to provide these interventions. Assessing an individual's satisfaction with their religiosity may assist faith-based nurses in determining who may be appropriate for such interventions. Although it is as yet unknown whether religiosity can be enhanced through faith-based interventions, it is clear that for some pregnant women, higher levels of religiosity are associated with more frequent health-promoting behaviors. Nurses are in a unique position to provide support to women of all faiths as they promote optimal health for pregnant women.

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Figure 1.
Revised health promotion model for study of pregnant women at Pregnancy Resource Centers.

Figure 2.

Bar graph showing mean health-promoting behavior scores of pregnant women at Pregnancy Resource Centers.

Note. Error bars are included to show the standard deviations of each mean score. HPLP = Health-Promoting Lifestyle Profile II.

Table 1Description of Sample of Pregnant Women at Pregnancy Resource Centers ($N = 86$).

Characteristic	<i>n</i>	%
Race		
White	71	83
Black	7	8
Asian	1	1
Other	7	8
Hispanic ethnicity		
Not Hispanic	71	83
Hispanic	15	17
Marital status		
Never married, living with partner	32	37
Married	26	30
Never married, not living with partner	24	28
Divorced or separated	4	5
Total household income last year, all sources		
Less than US\$5,000	29	34
US\$5,000–US\$14,999	34	40
US\$15,000–US\$29,999	10	12
US\$30,000–US\$80,000	12	14
Highest degree earned		
No degree	16	19
High school or GED	56	65
College or trade school	14	16
Organized religiosity		
Low (less than 1 time per week)	63	73
High (once a week or more)	23	27
Non-organized religiosity		
Low (less than daily)	62	72
High (daily or more than once a day)	24	28
Intrinsic religiosity		
Low (definitely or tends <i>not</i> true of me, unsure)	39	45
High (definitely or tends to be true)	47	55
Religious Surrender and Attendance Satisfaction Scale		
High religious commitment	34	40
Low religious commitment	52	60
Satisfied with surrender to God	45	52
Not satisfied with surrender to God	41	48
Satisfied with religious attendance	47	55
Not satisfied with religious attendance	39	45

Note. GED = General Educational Development.

Table 2Difference in Health-Promoting Behavior Scores in Independent Variables ($N = 86$).

Independent Variables	<i>M</i>	<i>SD</i>	<i>T</i>	<i>p</i>
Hispanic ethnicity			2.13	.036 [*]
Hispanic	2.53	.40		
Not Hispanic	2.78	.45		
Pregnancy intention			2.32	.023 [*]
Unsure about intention	2.33	.37		
All other intentions	2.76	.44		
Attending classes at the PRCs			-2.14	.035 [*]
Attended classes	2.81	.47		
Did not attend classes	2.59	.39		
Intrinsic religiosity			2.03	.046 [*]
High intrinsic religiosity	2.82	.45		
Low intrinsic religiosity	2.63	.44		
Religious commitment			2.10	.039 [*]
High religious commitment	2.86	.49		
Low religious commitment	2.65	.41		
Surrender to God			2.51	.014 [*]
High satisfaction with surrender to God	2.86	.46		
Low satisfaction with surrender to God	2.62	.42		

Note. PRC = Pregnancy Resource Centers.^{*}
p .05.

Table 3Multiple Linear Regression With All Religiosity Variables ($N = 86$).

Independent Variables	Partial Correlation	<i>B</i>	<i>SE</i>	β	R^2	Adjusted R^2	<i>F</i>	<i>p</i>
Block 1								
Step 1					.05	.04	4.58	.035*
Attending classes	.23	.21*	.10	.23				
Step 2					.10	.08	4.14	.045*
Attending classes	.22	.20*	.10	.21				
Hispanic ethnicity	-.22	-.24*	.12	-.21				
Block 2								
Step 3					.15	.12	4.93	.029*
Attending classes	.21	.19	.10	.20				
Hispanic ethnicity	-.20	-.21	.12	-.19				
Satisfaction with surrender to God	.24	.21*	.10	.23				
Step 4					.21	.17	5.89	.017*
Attending classes	.21	.18	.10	.19				
Hispanic ethnicity	-.22	-.23*	.11	-.20				
Satisfaction with surrender to God	.26	.22*	.09	.25				
Non-organized religiosity	.26	.24*	.10	.24				

* $p < .05$.