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Perception And Attitude About Breast And Cervical Cancer Screening Among Muslim Women In A Midwest University Campus

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For the degree of   Master of Public Health

Is approved by the final examining committee:

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PERCEPTION AND ATTITUDE ABOUT BREAST AND CERVICAL CANCER
SCREENING AMONG MUSLIM WOMEN IN A MIDWEST UNIVERSITY
CAMPUS

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Tahira Yeasmeen

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To my late father Md. Muzammel Haque, who thought I would achieve something

in my life and

to my loving mother Momtaz Begum and dearest husband Samiul Hasan, for

their love, inspiration and guidance.

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I am thankful to my mother, Momtaz Begum for her endless love and encouragement. I am indebted to her for all her affection and sacrifices. I would also like to thank my grandmother Majeda Khatun for her unconditional love and support in my all endeavors which was a tremendous source of joy. I also thank my dearest brothers, Shahed-Ul-Haque, Emdad-Ul-Haque, Mazed-Ul-Haque, sisters in laws, Nasrin Jahan, Shegufta Farzana and my parents in laws, Zakia Khatun and Muhammad Ismail. I wish my late father; Md. Muzammel Haque could see this accomplishment.

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ABSTRACT

Early detection of breast and cervical cancer through mammograms and Pap smears can improve survival rates. Muslim women in the United States are faced with traditional beliefs and diverse socioeconomic and cultural backgrounds that may affect their knowledge and perceptions about these cancer screening practices. The objective of this study is to determine the overall health status and participation rates, knowledge, and perceptions about, and barriers to, breast and cervical cancer screening among a controlled population of Muslim women. Data were collected from Muslim women residing at or near Purdue University and the Greater Lafayette area via an online questionnaire survey. Characteristics related to cancer screenings were determined using frequency distributions and logistic regression models were developed to determine barriers and facilitators to screening participation. Factors such as a physician's referral, self-efficacy, at least one physical examination in the last two years in the United States, health status perception, regular physical checkups, a graduate degree, a higher income level, and being between 31–40 years of age were positively related to

clinical breast exam participation. Constraints included lack of insurance coverage of examination. Some factors positively related to mammogram screening participation included a previous clinical breast examination, a physician's referral, knowledge about screening and self-efficacy; whereas the odds of a Muslim woman ever having a mammogram were *negatively* related to her insurance not covering the cost of the screening. Factors that positively influenced undergoing Pap smear tests included having a physical examination, a physician's referral, self-efficacy, and marital status, while major barriers included self-negligence and time constraints. This study did not find any significant factor related to Islamic culture that influenced participation in cancer screenings. The major concern was related to screenings being performed by male practitioners. Muslim women should be made aware of the importance of taking preventive measures against breast and cervical cancer, regular health checkups should be encouraged, and community health clinics should promote such programs. In addition, health care providers should take into consideration the negative feelings of Muslim women related to screenings being performed by male practitioners and consider the use of female Muslim volunteers to serve as patient advocates in the examining room.

CHAPTER 1. INTRODUCTION

1.1 <u>Introduction</u>

Human papilloma virus (HPV) is one of the most pervasive sexually transmitted diseases (STDs) worldwide. Twenty million people are currently infected with HPV, and each year approximately 12,000 women in the United States are diagnosed with cervical cancer (Centers for Disease Control, 2012b). The human papilloma virus (HPV) is the principal etiology of cervical cancer. It is a common virus that is passed from one person to another during sexual contact. Studies have found that over 50% of sexually active men and women aged 15 to 49 years have been infected with HPV at some point in their lives (Manhart & Koutsky, 2002). All women who have had sex in their life are at risk for cervical cancer and in most cases it occurs with women over the age of 30 (Centers for Disease Control, 2012a).

Based on reports from Western countries, one out of every eight women is likely to develop breast cancer over her lifetime, and one in 33 will die from it (American Cancer Society, 2010). As we know, early detection of breast cancer can improve survival rates and decrease mortality rates. To reduce breast cancer mortality and morbidity, prevention techniques including clinical breast examination (CBE) are recommended for women between 20 to 39 years

once every three years; annual mammography screening is recommended for women 40 years and older, and breast self-examination (BSE) is recommended for all women once a month beginning at age 20 (American Cancer Society, 2013). Studies show that Hispanic women were less likely to have had a mammogram than Black and White women (Ramirez et al., 2000). Muslim women in the United States have also been determined to be at risk, though very limited statistics are available on the incidence, prevalence, and screening of breast and cervical cancers. Recent studies have shown a noticeable disparity in the mortality rate and the diagnosis of breast cancer among Muslim immigrant women in the United States. According to Schwartz and colleagues (2008), Muslim immigrant women have lower rates of breast cancer screening and women of racial and ethnic minority groups are more likely to be diagnosed at a later stage of breast cancer with increased mortality rates.

Muslim women in the United States come mostly from Pakistan, Bangladesh, India, Malaysia, Indonesia, and Arab countries. Although Muslim women come from many different countries and diverse cultural backgrounds, they are a rather homogenous group with respect to their religion. Religion is a strong factor for binding the population from these countries under a single Islamic culture and law. For instance, Muslim communities in the United States would prefer to have their children marry those from within their Islamic religion and ancestral homeland, although marriages among other religions do exist (Aldeen, 1994). The major differences among Muslim communities primarily arise from national languages and cultures. Muslims from different countries and

regions have the same Islamic religious belief, but their cultures might be significantly different from each other. In most cases, their country of origin determines the cultural aspect of their lives.

Muslim women living in the United States are considered part of the minority immigrant population. Their unique religious customs, socio-economic backgrounds, and cultural contexts differentiate them from other minority populations. Muslim women are expected to be modest and decent in their nature and appearance. They act according to the traditions of Islamic culture and social principles. In addition to the language barrier, several cultural and religious values affect health practices, behaviors, beliefs, and access to health care of Muslim women (Matin & LeBaron, 2004). Traditional religious beliefs and the diverse cultural backgrounds of Muslim women may also affect their knowledge and perceptions about cervical and breast cancer screening practices, which can pose barriers toward attending to cancer screening programs.

This study explores the factors that influence the overall perception and attitude about breast and cervical cancer screening among Muslim women in a Midwestern university campus located in the Greater Lafayette, Indiana area. The Muslim women in this study include the students of this campus, spouses of the students, and any Muslim women who live in this area. The Muslim community of the Greater Lafayette area represents a considerably large and culturally diverse group in the region. To the best of our knowledge, no previous studies have been done on the perception and attitude of breast and cervical

cancer screening among such a diverse group of Muslim women residing at a university campus in the United States.

1.2 Study Objectives

The objective of this study is to determine the overall health status and participation rates, knowledge and perceptions about, and barriers to breast and cervical cancer screening among the Muslim women residing on a university campus in the Midwest of the United States. The objectives of this study are as follows:

a) health status and practices of breast and cervical cancer screening of Muslim women residing on a university campus in the Midwest of the United States;

b) knowledge and perceptions of breast and cervical cancer screening;

c) barriers toward attending breast and cervical cancer screening; and

d) the relationship between health practices and the extent of religious beliefs and customs in different Muslim cultures.

1.3 Research Questions

The research questions for this study are as follows:

1. What is the participation status of breast and cervical cancer screening among Muslim women residing on a Midwest university campus in the United States?

2. What is the perception among Muslim women residing on a Midwest university campus in the United States about breast and cervical cancer screening?

3. Do Muslim women residing on a Midwest university campus in the United States face any challenges and/or barriers in seeking cancer preventive care?

4. Is there any relationship among the extent of religious beliefs, the customs of different Muslim cultures, and health practices and perceptions toward cancer screening programs?

CHAPTER 2. LITERATURE REVIEW

2.1 <u>Muslim Women around the World</u>

According to Tarabeia and colleagues (2007) and Azaiza and Cohen (2006), the prevalence of breast cancer among Muslim women in the Middle East is low, however, the mortality rate is very high. This is because the progression of tumors at the time of diagnosis is at its last stage or the metastasis of tumors to other organs has occurred. The survival rate of Muslim women is lower (63%) than that of Jewish women (71%) (Azaiza & Cohen, 2006; Cohen & Azaiza, 2005, 2008). In these studies, feelings of discomfort and embarrassment are found as major barriers toward cancer screenings. The practice of breast and cervical cancer screening among Muslim women is not yet very well established. Salim and colleagues (2009) stated that in many Muslim countries, cancer screening is recommended for diagnostic purposes rather than for preventive health care because the health care delivery system in these countries focuses on treating symptoms rather than on preventive health care. The cancer screening services and other diagnostic procedures are accessible to all citizens of most of the Muslim countries, but women of these countries still use these services only to treat symptoms rather than for disease prevention or a means of precaution.
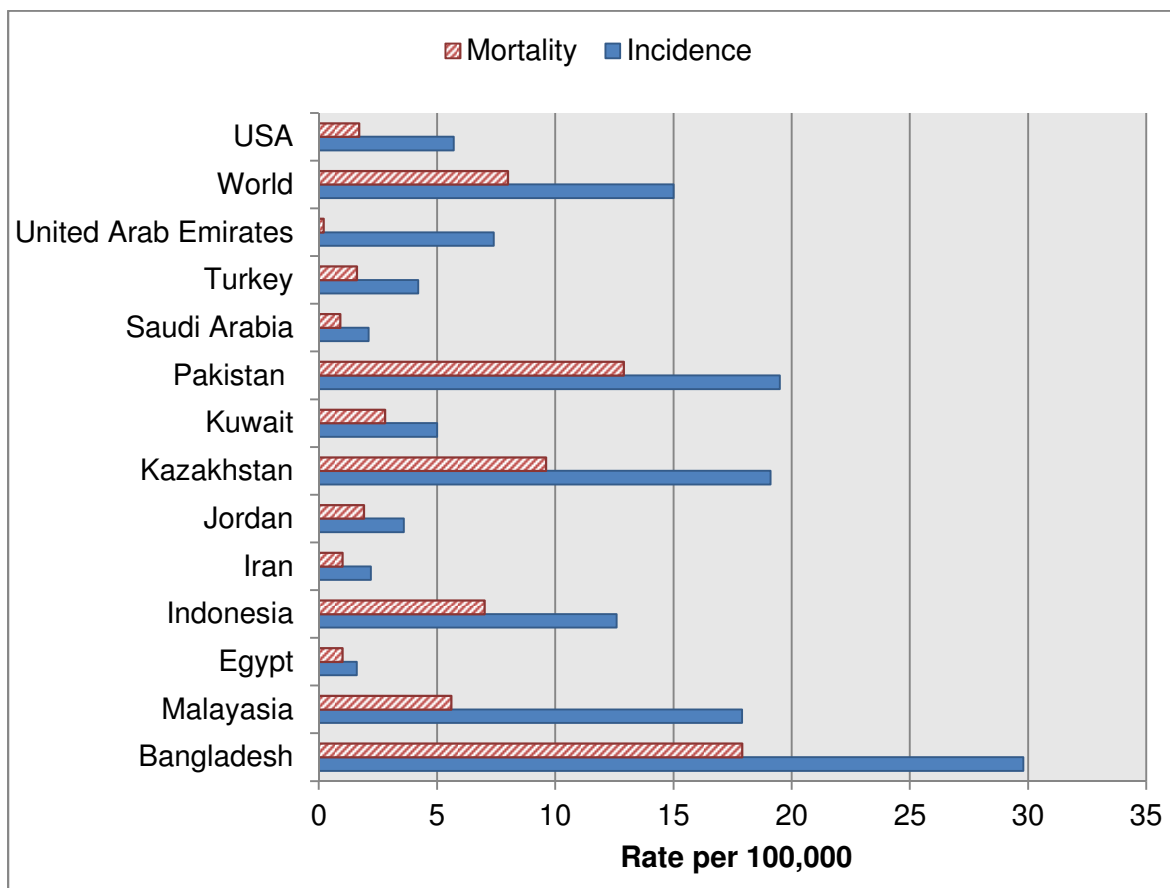
Figure 2-1 Incidence and mortality rates of cervical cancer in 2008

The data available at the International Agency for Research on Cancer through the GLOBOCAN project of the World Health Organization (Ferlay et al., 2010) gives an overview of the incidence and mortality rates of breast and cervical cancer among Muslim countries around the world. Figure 2-1 shows the distribution of incidence and mortality rates of cervical cancer among different Muslim countries based on the data. The figure shows that cervical cancer incidence rates are very high in Bangladesh, Pakistan, Kazakhstan, and Malaysia compared to other Muslim countries and the world average. Cervical

cancer mortality rates are also very high in these countries with the exception of Malaysia.
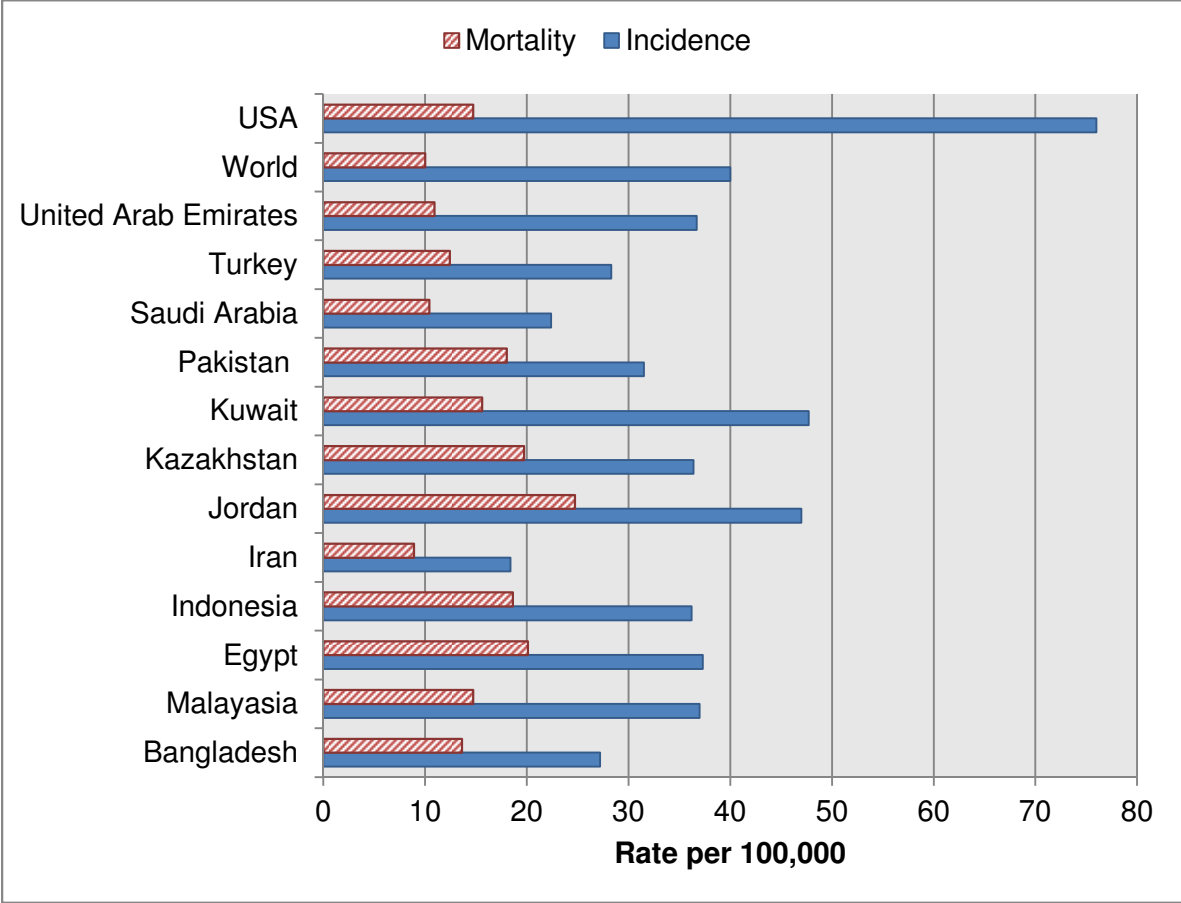
Figure 2-2 Incidence and mortality rates of breast cancer in 2008

Figure 2-2 shows the distribution of incidence and mortality rates of breast cancer among different Muslim countries. The figure shows that the breast cancer incidence and mortality rates are higher in Kuwait and Jordan than the world average. The mortality rates are higher in Egypt, Pakistan, and Malaysia than the world rate.

2.2   Muslim Women in the United States

In 2011, the general Muslim population in the United States was between 6 and 8 million (2% of the entire population) (Salman, 2011). There are three major groups of Muslim communities in the United States; they include: South Asian, African-American, and Arab origin (Rajaram & Rashidi, 1999). South Asian Muslims represent about 30% of the Muslim-American population and they come mostly from Pakistan, Bangladesh, and India. African-American Muslims represent around 25% of the Muslim-American population. The third major group is Arab-American Muslims, which represents an additional 25% of the Muslim-American population (Rajaram & Rashidi, 1999). The remaining 20% of the Muslim- American population represents much more diverse ethnic backgrounds, including a very large Iranian population and much smaller immigrant groups from Malaysia, Indonesia, Turkey, and Sub-Saharan Africa.

2.3   Role of Religious Beliefs on Screening Practices

Muslims, regardless of their country of origin or ethnic and cultural diversity, have a common religious belief that impacts the entire spectrum of their health-related beliefs and practices, including but not limited to sexual norms, reproductive health, and maternal and child health issues (Lawrence & Rozmus, 2001; Yosef, 2008). Muslim women have a number of specific health-related requirements due to their religious beliefs including the need for same-gender physicians or nurses, dietary constraints, special arrangements during fasting in Ramadan, and personal hygiene requirements related to daily prayers that require special

medical considerations (Hasnaine et al., 2011). Muslim women may face challenges in obtaining health care within a Western health care system due to the needs or restrictions related to their religion and culture. These challenges are seemingly the cause of the relatively low rates of access to preventive care such as breast exams, mammograms, and cervical cancer screening.

Health experts recommend that women between the ages of 20 and 39 years should have a clinical breast exam (CBE) every three years and a mammogram annually after 40 years of age (Smith et al., 2009). The general recommendation for cervical cancer screening that is followed by many U.S. health care providers is to begin screening within three years after the onset of sexual activity, but no later than age 21. After age 30, women with normal Pap test results are recommended to have the screening every two to three years (Smith et al., 2009). In terms of cervical cancer, the underlying beliefs and perceptions about the screening among Muslim women are greatly influenced by their culture and religion (Underwood et al., 1999). Since the Islamic religion prohibits extramarital affairs and stresses the importance of virginity prior to marriage, unmarried women are not expected to seek health care by obstetrics and gynecology physicians (informally referred to as OB/GYNs) (Salman, 2011). Given these findings, it would be interesting to determine the health status, practices, knowledge, and perceptions of breast and cervical cancer screening and barriers to having a screening for Muslim women residing on a university campus in the Midwest of the United States.

2.4 Role of Culture on Screening Practices

According to their country of origin (e.g., India, Pakistan, Bangladesh, Indonesia, Turkey, and Arab Countries), Muslim women have different cultures. Patterns of cultural adjustment usually differ due to demographic attributes (e.g., age, gender, education, language, years lived in the United States) (Alkhazraji et al., 1997).

According to Alkhazraji and colleagues (1997), Muslim women are less receptive to the U.S. culture than men. Due to their different countries of origin and cultural backgrounds they might follow different health practices. Different Muslim countries have different cultures. Some Muslim countries strictly adhere to culture and religious customs, while others are more moderate. The increasing diversity of the United States population has implications for all aspects of health care delivery. The increasing number of Muslims in the United States makes it relevant and timely to attempt to understand and address barriers to quality care for this subset of the population. Recently, meeting the unique cultural and religious needs of Muslim women has been a subject of considerable interest in the United States. So, it will be interesting to see whether the different cultural backgrounds influence the rates of Muslim women on a Midwestern university campus who seek preventive care such as, breast and cervical cancer screenings.

To date, very few studies have been done to investigate the knowledge, perception, participation, and barriers to breast and cervical cancer screening among Muslim women in a U.S. university campus. Salman (2011) investigated the participation status in breast and cervical cancer screenings of a group of

Arab Muslim Women in a local community of Western Pennsylvania. Health practice and beliefs, perceived knowledge of breast and cervical cancer screening participation, relationship among demographic variables, and self-reports of traditionalism and acculturation were also studied. However this study only included Muslim women from the Arab countries without considering women from other ethnic backgrounds. The study by Salman (2011) was conducted in a local community among a homogeneous group of Muslim women; on the other hand, this study is conducted in a Midwestern university campus area that has a more culturally diverse Muslim population (Purdue University, 2013).

Another study by Matin and LeBaron (2004) examined the impact of religious and cultural values on health care behavior, for example, cervical cancer screenings of Muslim women residing in the San Francisco Bay area, and determined whether these women would welcome a discussion on values and beliefs regarding their sexuality and reproductive health. The study focused on young, unmarried women of Middle Eastern immigrant backgrounds, many of whom were either in college or were recent graduates. These women were not necessarily representative of all Muslim women. The narrow range of ages and lack in variation of representing Muslim women of different countries of origin and ethnic background limit the ability to generalize the results of this study to all Muslim women.

According to Wong and colleagues (2008), Malaysian women lack knowledge about cervical cancer screening using a Pap smear. Most of the women believe that the Pap smear is a diagnostic test for cervical cancer and

they do not go for a screening if they have no symptoms. Wong et al. (2008) identified some major reasons for not doing the screening such as, lack of awareness of Pap smear indications and benefits, perceived low susceptibility to cervical cancer, pain, and embarrassment. This study on Malaysian Muslim women emphasized a need for education about the benefits of cervical cancer screening by providing health education, counseling, outreach programs, and community-based interventions that are required to improve the acceptance of Pap smear testing in Malaysia.

A review study on Asian women (Parsa et al., 2006) found that the socio-cultural perceptions of breast cancer have an important influence on the progression to an advanced stage of the disease. Similar to other Asian women, Malaysian (Hisham & Yip, 2004), Iranian (Rashidi & Rajaram, 2000; Harirchi et al., 2004), and Arabic women (Bener et al., 2001; Nissan et al., 2004) tend to seek alternative and Eastern medicine in a desperate effort to battle the disease. Unfortunately, much time is lost trying out different remedial measures at the crucial early stage of disease, and most patients yield to breast cancer with florid presentation and advanced staging. Reasons responsible for delays in seeking medical care might be fear, doubt, and denial. Thus, the socio-cultural perceptions seem to be the main obstacle to the success of any breast screening program being initiated in developing countries. This perception is commonly attributed to less educated women; however, this kind of attitude is also found among educated women as well.

Studies have also found that in the Asian culture, women hold a lower position, which leads to a lower priority for their health care needs compared to the needs of other family members (Bener et al., 2001; Im et al., 2004; Nissan et al., 2004; Hisham & Yip, 2004). There is a tendency to consider women's health problems as trivial. Im and colleagues (2004) found that attitudes toward women's health problems strongly influence the Korean woman's participation in breast cancer screening tests. This attitude is reflected in statements such as "No need for a breast exam."

CHAPTER 3. METHOD

3.1 Study Design and Data Collection

This study used a cross-sectional design with data collection from Muslim women from Purdue University and the Greater Lafayette, Indiana area. Data was collected online via Purdue University's Qualtrics survey program. This survey was approved by the Institutional Review Board (IRB) of Purdue University. The duration of data collection was one month (July 3, 2013 to August 3, 2013). Since there was no specific database on Muslim women on campus, the survey link was sent to the Islamic Society of Greater Lafayette and several student organizations of different countries with predominantly Muslim populations. There was an advantage to conducting the survey at Purdue University since it had the second-largest international student population among the public universities and fourth over all the universities of the United States (Neubert, 2012).

The survey was also posted in social media outlets such as Facebook pages of different student organizations and communities of different countries having their own Facebook pages. A reminder was posted in the same pages after two weeks. A weekly reminder was posted in the last two weeks. Participants were also contacted through daily prayers and weekly community gatherings at the Mosque. Since Muslims were observing Ramadan during this

month-long period, there were more frequent gatherings at the Mosque than at other times of the year. Seventy-one people responded to the survey.

Before starting the survey, subjects were asked if they fulfilled the eligibility criteria—participants for this study needed to be Muslim women, married or unmarried, aged 18 and older, able to read, write, and understand English and residing in the Greater Lafayette area. The participants included students, spouses of students, and non-students. All surveys were anonymous and confidential.

3.2   Instruments

The questionnaire (Appendix) contained five segments asking questions about the subjects' health status, their knowledge and perceptions about cervical and breast cancer screening, religious beliefs, demographic variables, length of their stay in the United States, country of origin, health insurance coverage, the barriers toward attending the screening programs, and the relationship between health practices and the extent of religious beliefs and customs in different Muslim cultures. The questionnaire required no more than about 10-15 minutes to fill out, but respondents could take as much time as they needed. There was no information collected through which subjects' identities could be revealed.

3.3   Data Analysis

Statistical procedures were conducted by SAS 9.3 (SAS Institute, Inc., Cary, NC) and Microsoft ® Office Excel ® 2010. Using SAS 9.3, a frequency analysis was performed to obtain the descriptive statistics related to the demographic characteristics of the participants (Table 4-1). About 42% of the participants were between the ages of 26-30, 92% were born outside of the United States, 93% said they did not feel comfortable if mammograms or Pap smears are conducted by male practitioners, 25% said they followed the Islamic attire (Hijab and loose coat), 40% believed that whatever happened to them was Allah's will, 56% had a graduate degree as the highest level of education, 52% lived in the United States for one to five years and most said they understood and spoke English extremely or very well.

Descriptive statistics of the characteristics related to cancer screenings was determined using frequency distributions. In order to find the relationship between the propensity to do cancer screenings and the independent variables, logistic regression models were developed. From the coefficients of the logistic regression models, the relative importance of different factors consisting of religious beliefs, cultural contexts, and individual socio-demographic characteristics were identified. Potential barriers toward cancer screenings were also found from this analysis. Frequency distributions were completed to determine the effects of Islam on respondents' health care and screening practices.

CHAPTER 4. RESULTS

4.1 <u>Socio-demographic Characteristics</u>

In total, 71 Muslim women participated in the survey. The survey asked about the socio-demographic characteristics of the participants such as age, income, country of origin, marital status, and others (Table 4-1). Around 42% (n=28) of the participants were between the ages of 26-30, 92% (n=61) were born outside the United States, 56% (n=38) had a graduate degree as the highest level of education, 52% (n=35) lived in the United States for one to five years, and many of them, 64% (n=43) said that they understand English extremely or very well. Participants were also asked about their country of birth. The majority of the participants were born in Bangladesh, Egypt, Jordan, Afghanistan, and Pakistan. The distribution well represents the Muslim population in the Greater Lafayette area. Most of the participants were either students or spouses of students attending Purdue University. About 43 %(n=29) of the subjects were students.

Table 4-1 Socio-demographic characteristics of the participants

Demographic variables	N	%
Age		
18-25	23	34.3
26-30	28	41.8
31-35	10	14.9
36-40	4	6.0
41-45	0	0.0
46-50	2	3.0
>50	0	0.0
Total	67	
Educational level		
Less than high school	0	0.0
High school graduate	2	2.9
Some college	5	7.4
College graduate	23	33.8
Graduate work or graduate degree	38	55.9
Total	68	
Currently a student?		
Yes	29	43.3
No	38	56.7
Total	67	
Annual Household Income		
Less than $15,000	19	28.4
$16,000 - 25,000	21	31.3
$ 26,000 - 35,000	7	10.4
$ 36,000 - 45,000	4	6.0
$ 46,000 - 55,000	4	6.0
$ 56,000 - 65,000	1	1.5
$ 66,000 – 75,000	0	0.0
$ 76,000 – 85,000	2	3.0
More than $85,000	9	13.4
Total	67	
Length of stay		
Less than a year	12	17.9
1 to 5 years	35	52.2
6 to 10 years	10	14.9
More than 10 years	10	14.9
Total	67	
Understand English		
Extremely or very well	43	64.2

Demographic variables	N	%
Somewhat well	24	35.8
Not well at all	0	0.0
Total	67	
Born in the United States		
Yes	5	7.6
No	61	92.4
Total	66	
Have health insurance		
Yes	54	81.8
No	12	18.2
Total	66	
Marital status		
Married	52	77.6
Single	13	19.4
Divorced	2	3.0
Total	67	
Have children		
Yes	24	39.3
No	37	60.7
Total	61	

*Total does not add up to 71 due to missing observations
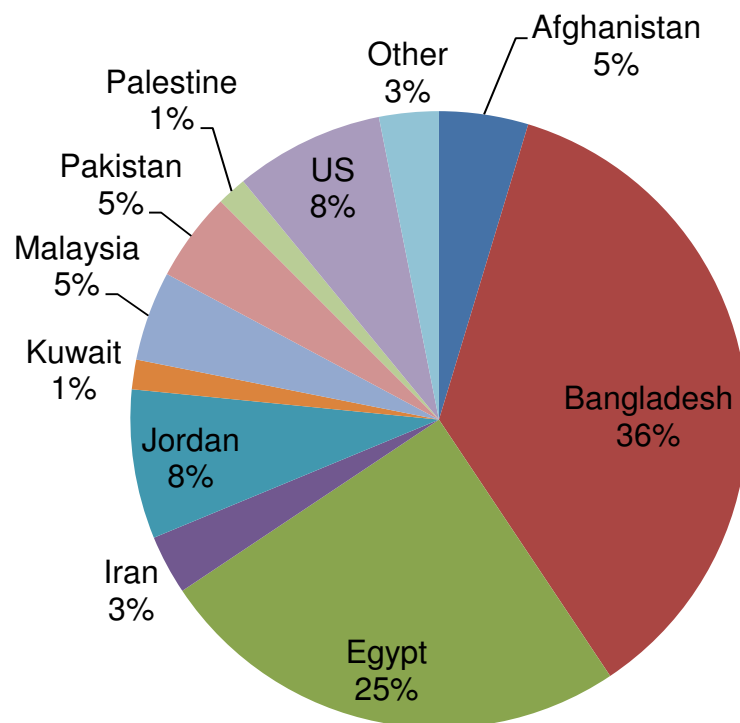
Figure 4-1 Country of origin of the participants

4.2 Overall Health Status

The first segment of the survey (Appendix) focused on participants' perceptions about their overall health status and practices. Participants were asked in this segment to rate statements related to perceived health status such as "my health is excellent," "compared to a year ago, my heath has improved," "emotionally, I am mostly a happy person," "I would consider my body weight to be normal," and statements related to participants' health checkup practices such as "I regularly see a medical practitioner for a physical checkup," "in the past two years, I have

had at least one physical examination in the United States," and others. The answers were based on a scale of four responses including "agree," "undecided," "disagree," and "not applicable."

A frequency distribution of the responses in Figure 4-1 shows that of the participants, about 61% (n=43) agreed, 28% (n=19) were undecided, and 11% (n=8) disagreed with the statement that their health is excellent. When asked to rate the statement "compared to a year ago my health has improved," 30% (n=21) agreed, 46% (n=33) were undecided, and 21% (n=15) disagreed. Regarding frequency of visits to the doctor for medical checkups, 32% (n=23) agreed, 11% (n=8) were undecided, and 54% (n=38) disagreed to the statement that "I regularly see a medical practitioner for a physical checkup."
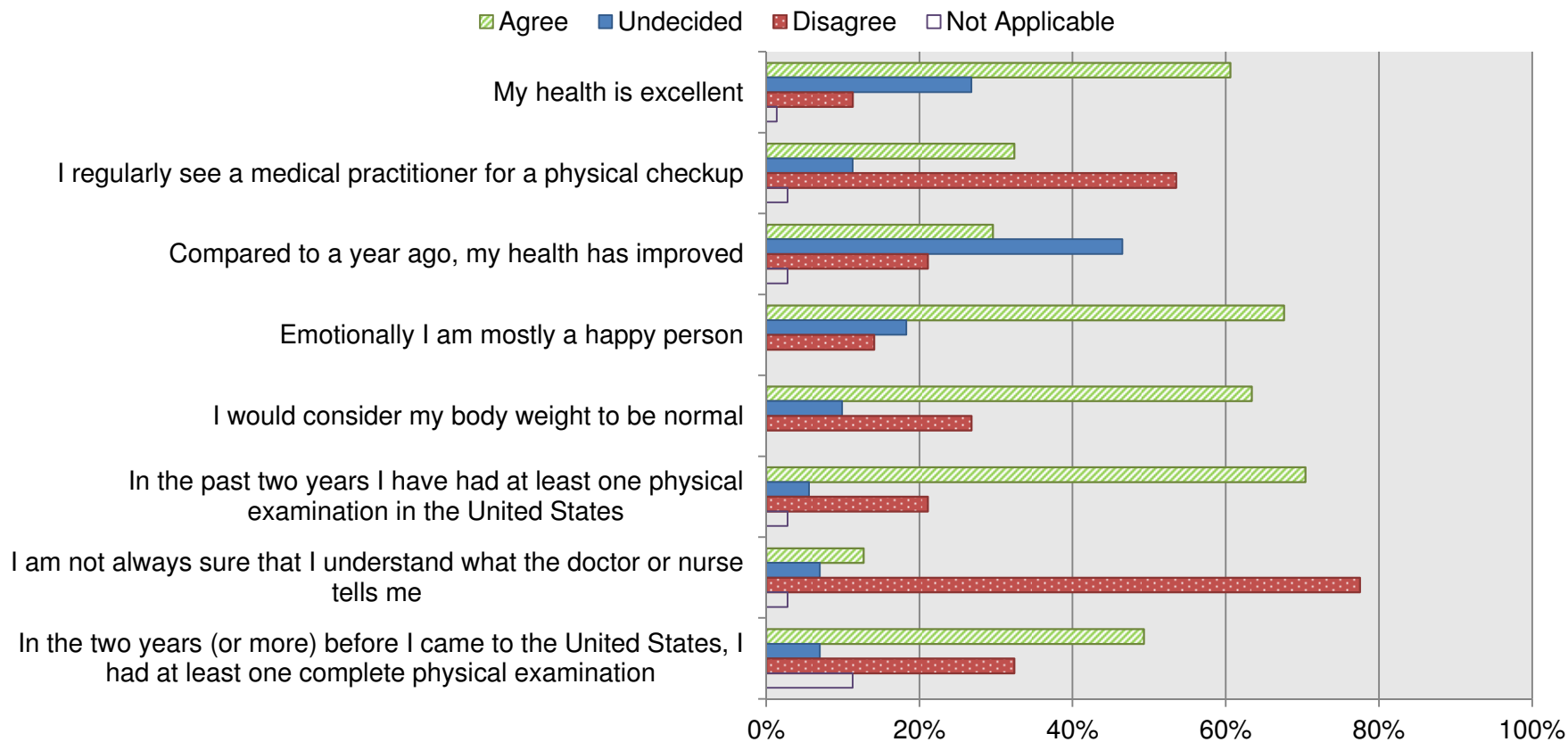
Figure 4-2 Overall health status

4.3   Mammography Screening

In segment II of the survey questionnaire, the participants were asked about their practice and knowledge related to breast cancer screenings such as mammograms and clinical breast-exams. Questions to learn the barriers and facilitators of the screenings were also asked.

4.3.1   Participation Status

Table 4-2 presents the frequencies related to participation in cancer screening. When participants were asked to report if they had a breast X-ray called a mammogram, 24% (n=16) reported that they had previously had a mammogram, while 76% (n=52) responded that they had not had a mammogram.

Table 4-2 Participation rates in cancer screening

Question	Yes % (count)	No % (count)	Total count
Have you ever had an X-ray of the breast called a mammogram?	24% (n=16)	76% (n=52)	68*
A doctor or nurse has given me a clinical breast exam within the last year.	32% (n=21)	68% (n=45)	66*
A doctor or nurse has given me a Pap smear within the last two years.	50% (n=33)	50% (n=33)	66*

*indicates missing observations

Of those who reported that they had a mammogram, 25% (n=4) had it less than a year ago, 25% (n=4) had it one to two years ago and 50% (n=8) had it three or more years ago. Respondents who had a mammogram were also asked about how they knew to have one. 75% (n=12) had it because of a prescription from a health care provider, 12.5% (n=2) had it because it was a service offered to anyone in the community, and 12.5% (n=2) mentioned other reasons such as a prescription from a family doctor, and it being a visa requirement.

Of those who had a mammogram, 25% (n=4) of the participants were ages 21-25, 31% (n=5) were ages 26-30, 19% (n=3) were ages 31-35, 6% (n=1) were ages 36-40 and 19% (n=3) were ages 46-50.

Participants were also asked about their knowledge related to mammograms (Table 4-3). The majority of the participants knew the purpose of the mammogram, as 92% (n=61) answered true to the statement "having a mammogram can help me find a lump before it is felt by me or my doctor" and 8% (n=5) reported false to the statement. Respondents were also asked "do you know yearly mammograms are recommended starting at age 40?" 75% (n=50) answered yes and 25% (n=17) answered no.

Table 4-3 Knowledge about breast and cervical cancer screening

Question/Statement	True % (count)	False % (count)	Total count
Do you know yearly mammograms are recommended starting at age 40?	75% (n=50)	25% (n=17)	67*
Having a mammogram can help me find a lump before it is felt by me or my doctor or nurse.	92% (n=61)	8% (n=5)	66*
For a clinical breast exam, a doctor or nurse will carefully feel my breasts and underarms for any changes or abnormalities (such as a lump).	86% (n=54)	14% (n=9)	63*
Pap smears are swabs to take cells from the opening to my womb or uterus to see if there are cancer cells there.	94% (n=62)	6% (n=4)	66*

*indicates missing observations

4.3.2 Logistic Regression Analysis

A logistic regression model was run to identify the barriers and facilitators to participate in mammography screening and the results revealed several of each.

According to the model, the log of the odds of a Muslim woman having a mammogram ever was *positively* related to if she ever had a CBE (p < 0.1, Table 4-4). Other facilitators included: knowledge about mammogram (p<0.1), doctor's

referral (p<0.05), and self-efficacy for making an appointment for a mammogram (p<0.2). On the other hand, the log of the odds of a Muslim woman having a mammogram ever was *negatively* related to her insurance not covering the cost of the mammogram, if she had to pay for the mammogram (p<0.2), and if she was influenced by her peers (p<0.05). That means those who said that they would have a mammogram if another woman had one before she did, were less likely to have a mammogram. In terms of age, those between the ages of 31-40 are less likely to have a mammogram.

Table 4-4 Logistic regression analysis results (mammogram)

Parameter	Estimate	Standard Error	Wald Chi-Square	P
Intercept	-4.4926	1.5432	8.4759	0.0036
Ever had a clinical breast examination (1=have had CBE, 0=otherwise)	2.0283	1.1269	3.2398	0.0719
Doctor's referral (1= believed that a doctor will refer for mammogram in regular checkup, 0=otherwise)	3.1744	1.2599	6.3476	0.0118
Insurance does not cover mammogram (1= if insurance does not cover mammogram, 0=otherwise)	-1.4526	1.0233	2.0153	0.1557
Knowledge about mammogram	1.8466	1.0726	2.9637	0.0852

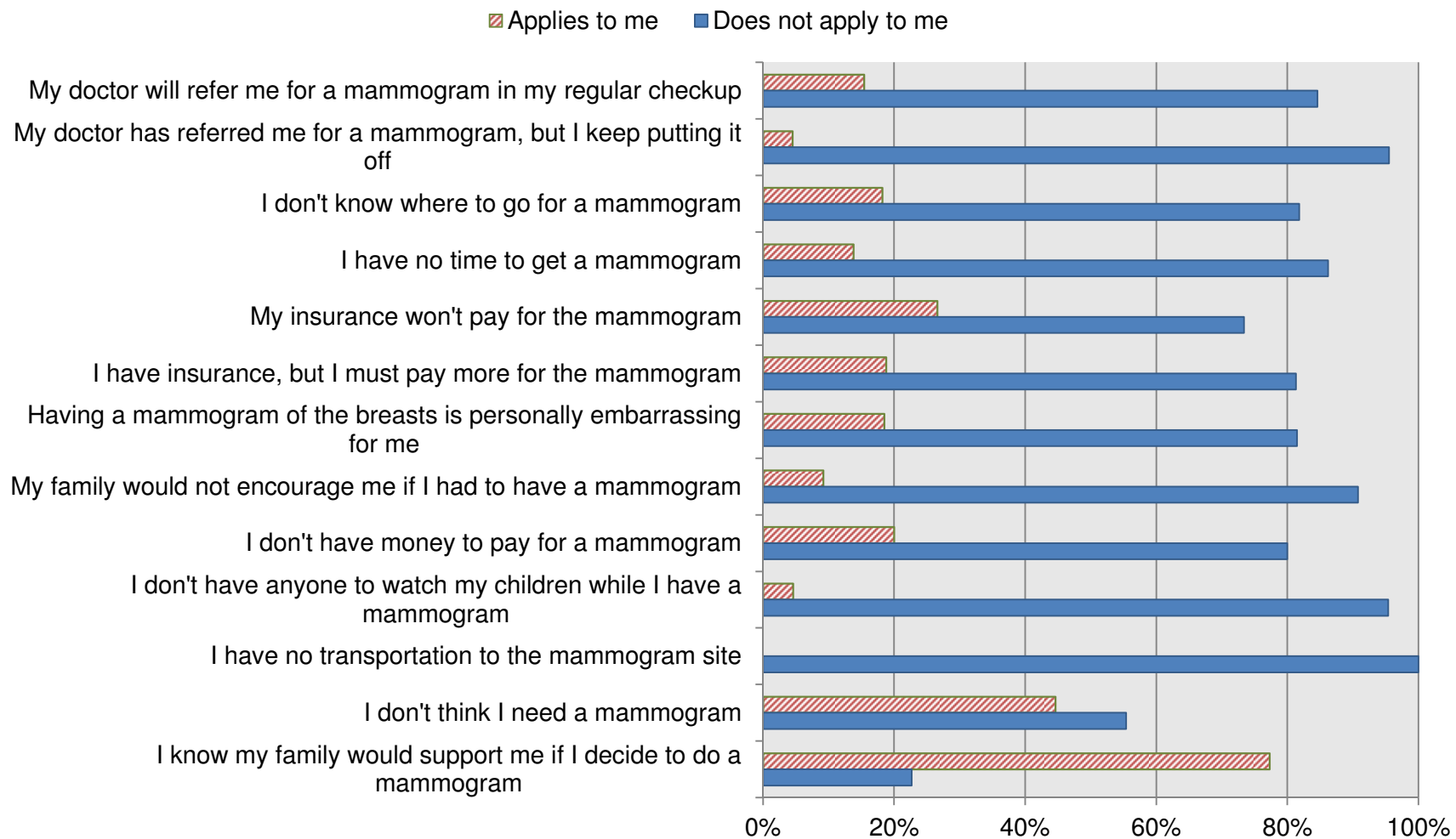| Parameter	Estimate	Standard Error	Wald Chi-Square	P
Self-efficacy (1= strongly agree/agree that she can make an appointment for a mammogram, 0=otherwise)	1.4052	0.9117	2.3754	0.1233
Influenced by peers (1= would have a mammogram if another woman had one before she did, 0= otherwise)	-3.5022	1.7766	3.8861	0.0487
Age (1=31-40 years, 0= otherwise)	-1.4092	1.1232	1.5741	0.2096

Figure 4-3 Potential barriers and facilitators of mammogram

4.4 Clinical Breast Examination

4.4.1 Participation Status

About 32% (n=21) of the participants reported that a doctor or nurse had given them a clinical breast examination (CBE) within the last year. Participants were also asked if they ever had a CBE, when was the last time they had it. 28% (n=11) reported that they had it less than a year ago, 49% (n=19) had it one to two years ago, and 23% (n=9) had it three or more years ago.

Of those who had a CBE within the last year, 25% (n=5) of the participants were ages 21-25, 50% (n=10) were ages 26-30, 15% (n=3) were ages 31-35, 5% (n=1) were ages 36-40, and 5% (n=1) were ages 46-50.

Participants were also asked about their knowledge related to CBE. The majority of the participants knew the purpose of CBE, as 86% (n=54) answered true to the statement "for a clinical breast exam, a doctor or nurse will carefully feel my beasts and underarms for any changes or abnormalities (such as a lump)" and 14% (n=9) reported false to the statement (Table 4-3).

4.4.2 Logistic Regression Analysis

A logistic regression model was run to identify the variables that are barriers or facilitators to CBEs and the results revealed several of each.

According to the model, the log of the odds of a Muslim woman having a CBE ever was *positively* related to self-reporting of her own health status. Whoever reported that her health was excellent ($p < 0.1$, Table 4-5), was more

likely to have a CBE. Other facilitators were, if she had a regular physical checkup (p < 0.05), if she had at least one medical examination in the United States in the last two years (p<0.05), a doctor's referral (p<0.05), self-efficacy for making an appointment for a CBE (p<0.25), if she had a graduate degree or work (p<0.05), if she had a high income (p<0.05), and if her age was between 31-40 years (p<0.25). The other two facilitators were language proficiency (p<0.05) and an insurance plan that did not cover the cost of a CBE (p<0.05). The reason that language proficiency becomes a facilitator might be because a woman who had had a CBE did not understand what the doctor or nurse told her. In terms of the insurance plan, this is also a facilitator because women who did not have insurance coverage for a CBE might have had one through other programs or services for a minimum cost or for free. On the other hand, the log of the odds of a Muslim woman having a CBE ever was *negatively* related to if she had to pay for a CBE despite having insurance (p<0.1) and if she had insurance (p<0.05).

Table 4-5 Logistic regression model results (CBE)

Parameter	Estimate	Standard Error	Wald Chi-Square	P
Intercept	-5.1703	2.0540	6.3362	0.0118
Self-reported health status perception (1= agreed to the statement "my health is excellent", 0= otherwise)	2.5486	1.3410	3.6119	0.0574
Regular physical checkup (1= regularly see a doctor, 0= otherwise)	5.7963	2.3825	5.9189	0.0150
Language proficiency (1= not always sure that she understands what the doctor or nurse says, 0= otherwise)	7.1881	3.2370	4.9309	0.0264
Physical examination in the United States (1= had at least one physical examination in last two years, 0=otherwise)	4.3394	2.1285	4.1562	0.0415
Doctor's referral (1= believed that a doctor will refer for CBE in regular checkup, 0=otherwise)	5.5707	2.1885	6.4791	0.0109

| Parameter	Estimate	Standard Error	Wald Chi-Square	P
Insurance does not cover CBE (1= if insurance does not cover a CBE, 0=otherwise)	4.7834	2.2136	4.6695	0.0307
Had insurance but had to pay for CBE (1= if the participant had insurance but had to pay for a CBE, 0= otherwise)	-4.0850	2.1589	3.5802	0.0585
Self-efficacy (1= strongly agree/agree that she can make an appointment for a CBE, 0=otherwise)	1.8479	1.5611	1.4012	0.2365
Highest educational level (1=graduate work, 0=otherwise)	6.3290	2.5980	5.9346	0.0148
Insured (1= had insurance coverage, 0=otherwise)	-10.3808	4.2034	6.0990	0.0135
High income (1= >$65,000 per year, 0= otherwise)	6.8168	3.3332	4.1827	0.0408
Age (1=31-40 years, 0= otherwise)	2.3487	1.7551	1.7907	0.1808
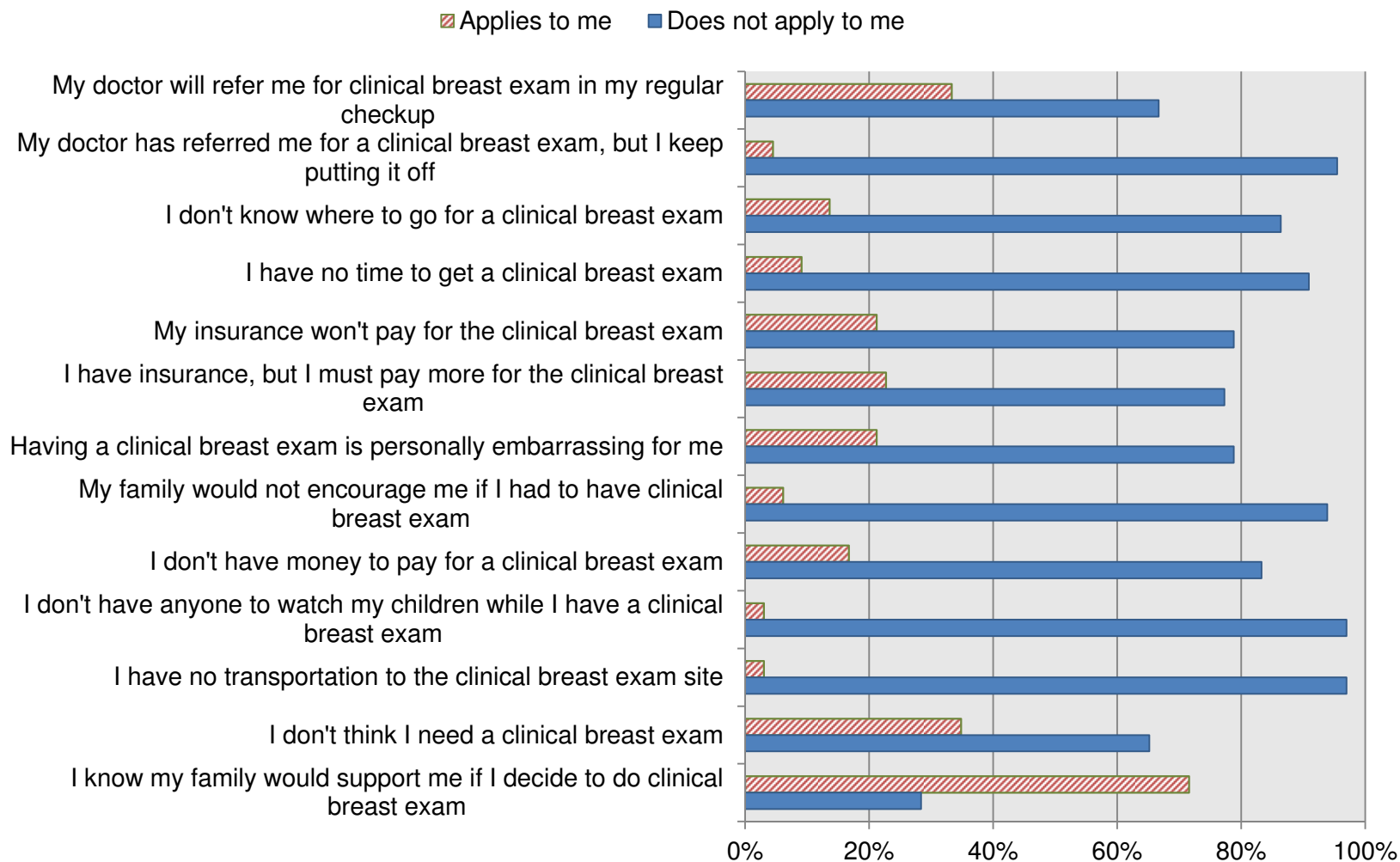
Figure 4-4 Potential barriers and facilitators of clinical breast examinations

4.5 Cervical Cancer Screening

In segment III of the survey questionnaire, the participants were asked about their practice and knowledge, including barriers and facilitators, related to cervical cancer screening.

4.5.1 Participation Status

About 50% (n=33) of the participants reported that a doctor or nurse had given them a Pap smear within the last two years. Participants were also asked if they ever had a Pap smear test, and when they had it last time. 45% (n=18) reported that they had it less than a year ago, 43% (n=17) had in 1 to 2 years ago, and 13% (n=5) had it 3 or more years ago.

Of those who had a Pap smear test within the last two years, 19% (n=6) of the participants were ages 21-25, 50% (n=16) were ages 26-30, 22% (n=7) were ages 31-35, 6% (n=2) were ages 36-40 and 3% (n=1) were 46-50.

Participants were also asked about their knowledge related to a Pap smear test. The majority of the participants knew the purpose of CBE, as 94% (n=62) answered true to the statement "Pap smears are swabs to take cells from the opening to my womb or uterus to see if there are cancer cells there" and 4% (n=4) reported false to the statement (Table 4-3).

4.5.2 Logistic Regression Analysis

A logistic regression model was run to identify the variables that are barriers or facilitators to obtaining a Pap smear test. The model results revealed several barriers and facilitators to Pap smear test.

According to the model, the log of the odds of a Muslim woman having a Pap smear within the last 2 years was *positively* related to if she had at least one physical examination in the last 2 years in US (p =0.05), doctor's referral (p<0.01), self-efficacy for making an appointment for Pap test (p=0.2831) and if she was married (p=0.0136). Respondents were more likely to have a Pap test if their insurance plan didn't cover the cost of a Pap smear test (p<0.25). In terms of the insurance plan, this might have occurred because of the participants who didn't have the insurance coverage for doing a Pap smear test, might have received that from other programs or services at a very low cost or for free. On the other hand, the log of the odds of a Muslim woman having a Pap smear test within the last 2 years was *negatively* related to self-reporting of own health status. Women who reported that their health had improved compared to a year ago (p < 0.2, Table 4-6), were less likely to do a Pap smear test. Other barriers included: self-negligence (p<0.1), time constraints (p<0.05), age below 30 (p<0.5) and high income (p<0.25).

Table 4-6 Logistic regression analysis results (Pap test)

Parameter	Estimate	Standard Error	Wald Chi-Square	p
Intercept	-5.4873	2.2174	6.1239	0.0133
Self-reported health status perception (1= agreed to the statement "compared to a year ago, my health has improved", 0= otherwise)	-1.7856	1.0916	2.6759	0.1019
Physical examination in the United States (1= had at least one physical examination in last two years, 0=otherwise)	2.2414	1.1623	3.7191	0.0538
Doctor's referral (1= believed that a doctor will refer for a Pap test in regular check-up, 0=otherwise)	4.2810	1.4476	8.7451	0.0031
Self-negligence (1= agreed to the statement "my doctor wants me to have a Pap smear, but I keep putting it off", 0=otherwise)	-2.8862	1.5634	3.4080	0.0649
Time constraint (1= agreed to the statement "I have no time to get a Pap smear", 0=otherwise)	-3.7801	1.6822	5.0493	0.0246

Parameter	Estimate	Standard Error	Wald Chi-Square	p
Insurance does not cover Pap smear (1= if insurance doesn't cover Pap smear, 0=otherwise)	1.2577	1.0745	1.3701	0.2418
Married/divorced (1= if married or divorced 0= otherwise)	3.3396	1.3531	6.0916	0.0136
Self-efficacy (1= strongly agree/agree that she can make an appointment for a Pap test, 0=otherwise)	1.6205	1.5098	1.1520	0.2831
Age below 30 (1=if age is below 30 years, 0= otherwise)	-0.6791	0.9836	0.4767	0.4899
High income (1= if annual household income is above $65,000, 0= otherwise)	-1.8205	1.5269	1.4216	0.2331
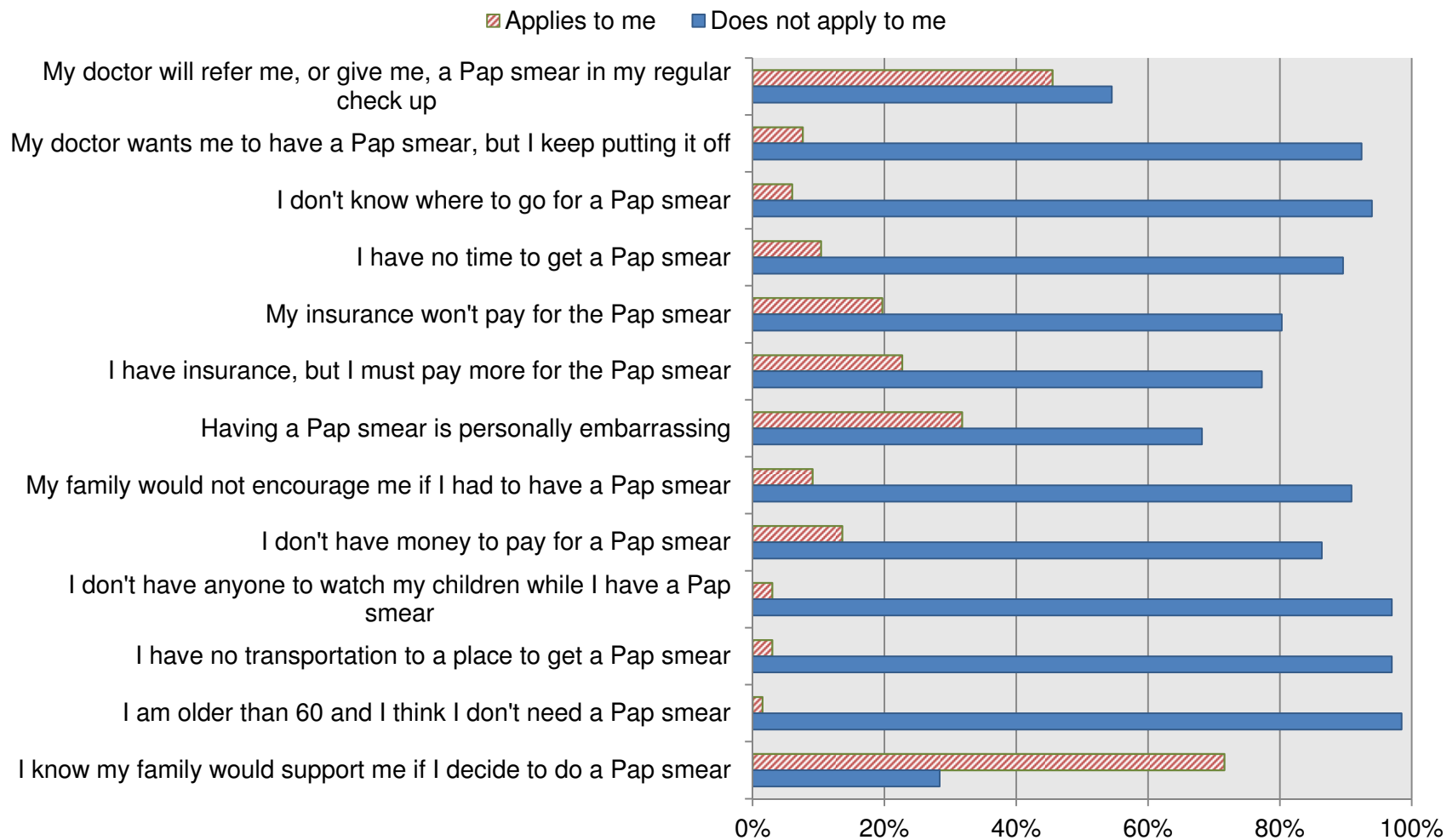
Figure 4-5 Potential barriers and facilitators of Pap smear

4.6   Islam and Health

Some people think that their religion affects the way they use or practice health care with respect to health screenings, like mammograms and Pap smears. So participants were asked, "Do you think being a Muslim affects the way you use health care or health screenings?" Around 59% (n=40) said that, Islam does not affect their way of using preventive health care such as cancer screening services and 37% (n=25) said either yes or sometimes that Islam affects the way they use health care services to some extent.

Figure 4-6 Does Islam affect health screening practices?
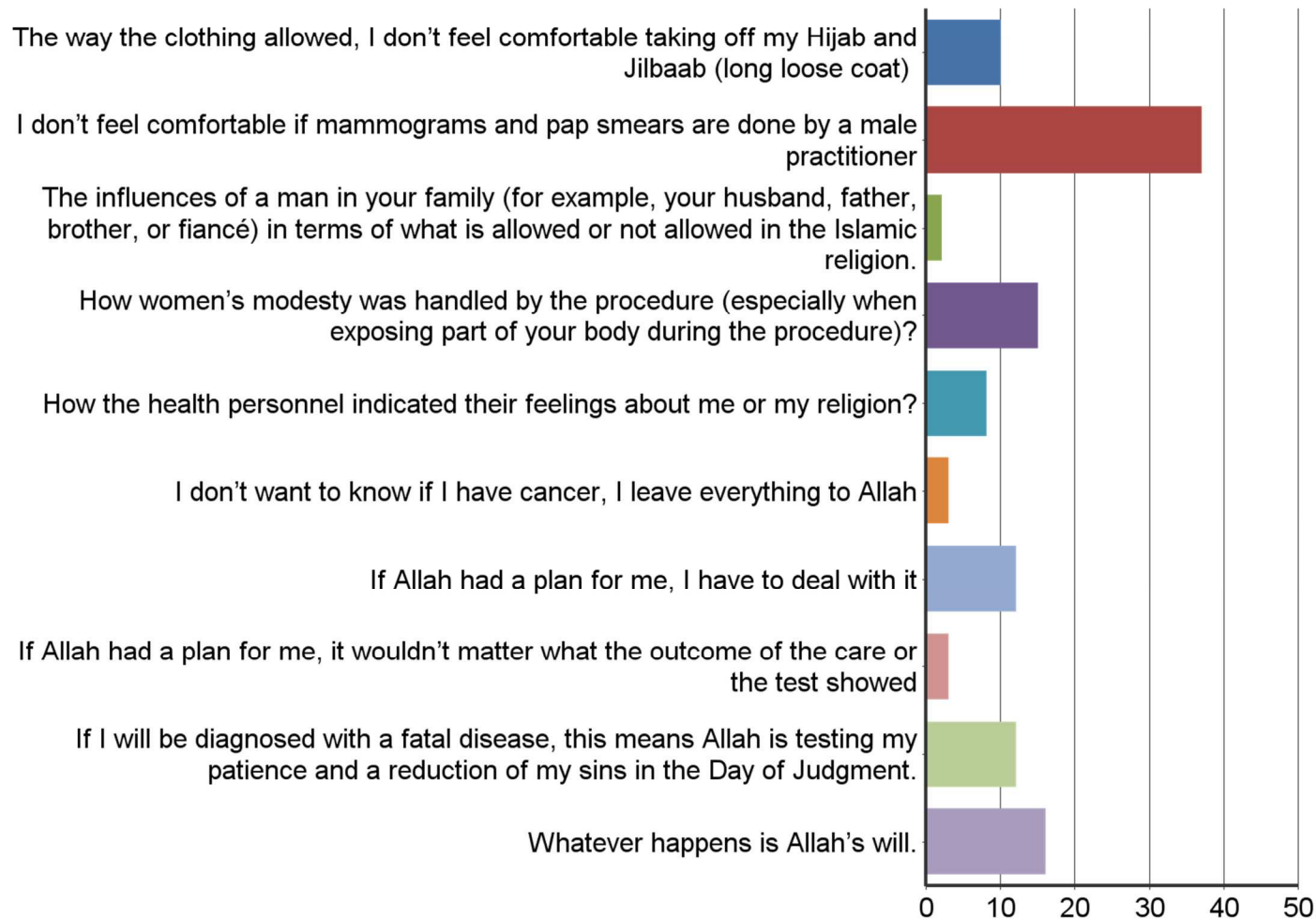
Figure 4-7 How does Islam affect health screening practices?

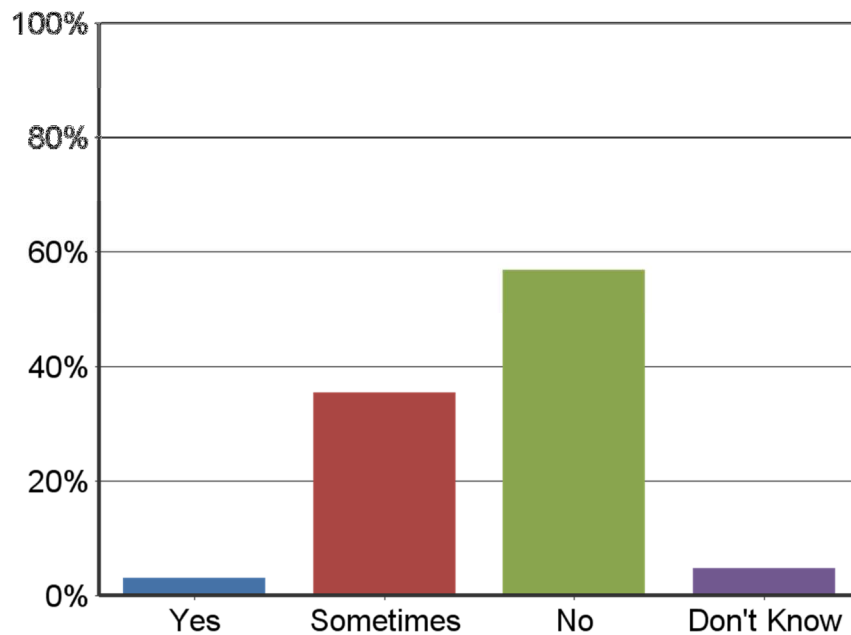Respondents were also asked how Islam affected their health screening practices. Figure 4-8 shows the frequency distribution of the responses. The major concern is about the tests being done by a male practitioner; about 52% (n=37) responded that they don't feel comfortable if mammogram and Pap smear tests are done by a male practitioner.

Respondents were also asked to mention if there is any other way that Islam made a difference in their thinking about health care practices. Figure 4-8 shows a word cloud about their concerns. Most of them said there is nothing in Islam that specifically poses a barrier to their health care screening practices. Some respondents mentioned that Islam emphasizes the importance of taking good care of one's health; thus any screening test or measure should be done if needed.

Figure 4-8 How does Islam make a difference in thinking about health care?

4.7   Health Belief Model

The items in the questionnaire used for the survey tool, seemed to fit with the Health Belief Model (HBM) (Champion 1993). There is no theoretical framework for describing Islamic behaviors, customs, values, and traditions; therefore, the HBM was used for this study. HBM has been commonly used for health education and health promotion (Glanz et al., 1997) since the 1950s. Health Belief Model (HBM) consists of four theoretical constructs: (1) perceived susceptibility or vulnerability to a health condition (in this case, breast and cervical cancer); (2) perceived seriousness or severity of the condition; (3) perceived barriers of an action (in this case, mammogram, CBE, and Pap smear); and (4) perceived benefits of an action. Additional concepts of general health motivation and self-efficacy were later added to the HBM. Related to breast and cervical cancer screening behaviors, perceived susceptibility may include the risk of being diagnosed for breast or cervical cancer in the long term or immediate future.

Perceived seriousness is related to a woman's perception of the disease, which will motivate her to seek screening services regularly by realizing how seriously cervical or breast cancer would affect her life. The construct perceived benefit demonstrates that women will adapt screening behaviors when they realize that these behaviors will lower their risk of developing cancer. Agreeing to the statements such as, "If I do have a mammogram, it may find a lump before it is discovered by me, a physician, or a nurse," "Breast exams performed by a physician can help me find lumps in my breast" are perceived benefits. Women's

perceptions of the obstacles or barriers faced when they go for screening can be considered perceived barriers. In this study, we assume that potential perceived barriers might include knowledge, awareness, language, embarrassment, women's Islamic attire, economic constraints, and so forth.

The four major constructs of perceptions are modified by other variables, such as, culture, educational level, past experience, skill, etc. In addition to these four beliefs or perception related constructs and modifying variables, the HBM also includes construct cues to action such as events, people, or things that motivate people to change their behavior (Hayden, 2009). In this study, for example, one would be motivated to have cancer screenings if she knows a person with a history of cancer or receives advice from others about the importance of screening. Self-efficacy is the belief in one's own ability to do something (Bandura, 1977).

In this study, self-efficacy was defined as having the ability to overcome the barriers of practicing screening behaviors, for example, "I know how to do a self-breast exam," "You can make an appointment for a mammogram," "You know for sure you can get a mammogram if you really want to," "You can make an appointment for a clinical breast exam," "You know for sure you can get a clinical breast exam if you really want to," "You can make an appointment for a Pap smear test," "You know for sure you can get a Pap smear test if you really want to."

According to Umeh and Rogan-Gibson (2001), a significant barrier to performing self-breast examination is the fear of being unable to do it correctly.

When a woman has self-efficacy about her ability to perform breast self-examination, she can perform it, thus overcoming the barrier of fear. In this study, around 76% (n=51) of the participants answered that they knew how to do a self-breast exam.

To measure self-efficacy, a five-point Likert scale was used to rate the statements by the participants. Table 4-7 presents the frequency distributions over the ratings provided by the participants on different statements related to self-efficacy.

Table 4-7 Rating of self-efficacy statements by the participants

Self-efficacy statement	Strongly Disagree (%)	Disagree (%)	Undecided (%)	Agree (%)	Strongly Agree (%)
You can make an appointment for a mammogram.	7.69	7.69	27.69	43.08	13.85
You know for sure you can get a mammogram if you really want to.	7.69	0.0	20.0	52.31	20.0
You can make an appointment for a clinical breast exam.	3.03	4.55	21.21	56.06	15.15
You know for sure you can get a clinical breast exam if you really want to.	3.03	1.52	18.18	51.52	25.76
You can make an appointment for a Pap smear test.	3.13	3.13	14.06	57.81	21.88
You know for sure you can get a Pap smear test if you really want to.	1.56	3.13	12.50	51.56	31.25

CHAPTER 5. DISCUSSION

Participation rates of breast and cervical cancer screening among racial or ethnic minorities are a major concern. Muslim women in the United States are also determined to be at risk of developing breast and cervical cancers. Studies have found that Muslim immigrant women have lower rates of breast cancer screening and are more likely to be diagnosed at a later stage of breast cancer with increased mortality rates (Schwartz et al., 2008). Although no specific study is found on cervical cancer screening rates among the Muslim women in the United States, low screening rates (52 to 56 percent) within the last years were found for Vietnamese, Asian, Indian, and Chinese immigrants (Chen et al., 2004; Schleicher, 2007).

In this regard, the objective of this study was to determine the overall health status and participation rates, knowledge and perceptions about, and barriers to breast and cervical cancer screening among the Muslim women residing in a university campus in the Midwest of the United States. The relationship between health practices and the extent of religious beliefs and customs in different Muslim cultures is also explored.

The results from this study revealed that, in general, Muslim women in the Midwest university campus of Greater Lafayette, Indiana had a positive

self-perception about their health status as about 61 % reported their health as excellent, about 32% had moderate rates of regular physical checkups, a majority of them (about 77%) understand what the doctor or nurse tells them. Many of them (about 70%) had at least one physical examination in the United States, while only 35% of the respondents reported to have had one physical examination at least two years before coming to the United States. Such high rates of doctor visits and positive self-perception of health status is expected to be correlated with high rates of prevention practices against cancers.

About 24% (n=16) of the respondents reported that they had ever had a mammogram. A mammogram is usually recommended for women older than 40; such a rate is very high given that only 3% (n=2) of the participants are above 40 years of age. Logistic regression analysis results revealed common barriers and facilitators. Insurance not covering the cost of a mammogram and a lack of social support were major restraints toward participation in mammogram screening. This is consistent with other studies (Salman, 2011; George, 2000), which also found insurance coverage and economic concerns as barriers to screening. Respondents between ages 31-40 were less likely to have a mammogram. Several variables were identified as facilitators for a mammogram; these include having had a clinical breast examination before, a doctor's referral, having knowledge that mammograms are recommended beginning at the age of 40, and self-efficacy that one can make an appointment for a mammogram. Previous studies (George, 2000; O'Malley et al., 2001) also reported provider referral and age as important facilitators of mammogram screening among Muslim women.

Similar to the previous studies (Salman, 2011) high income, transportation, having children, and time constraints were not found as significant barriers for participating in mammogram screening.

Since most of the respondents were under 40 years of age, questions were asked about participating in CBEs. It is recommended that between the ages of 20 and 39 years, women should have a CBE every three years. Most of the respondents (95%, n=64) were between the ages of 20 to 40 years. 55% (n=39) of the respondents reported that they had ever had clinical breast examination. About 28% (n=11) of them had the CBE less than a year ago. Logistic regression results also revealed the barriers and facilitators of CBE. Economic concern that they had to pay for a CBE even though they had insurance coverage was a major barrier found. Variables such as self-reported health status perception, regular physical checkups, having at least one physical examination, doctor's referral, self-efficacy that they can make an appointment for a CBE, having a graduate degree, having a higher income level, and being between 31-40 years of age are positively related to CBE participation. A previous study (Parsa et al., 2006) found that a doctor's referral was a major facilitator to CBE participation.

It was found that respondents who had insurance coverage were less likely to have a CBE compared to those not having insurance, and those whose insurance did not cover a CBE were more likely to have a CBE. These two findings are apparently counterintuitive. However, it might be that those not

having insurance or having underinsured coverage may seek health care from inexpensive community health clinics and different programs to have a CBE.

About 50% (n=33) of the respondents reported that they had a Pap smear test within the last two years. Results from logistic regression revealed several factors influencing positively toward participating in Pap smear tests; these factors include: having a physical examination, doctor's referral, self-efficacy, and marital status. Salman (2011) also found that a doctor's referral was the major facilitator to participate in a Pap test. Respondents were more likely to have a Pap test if their insurance plan didn't cover the cost of a Pap smear test. This was plausible since the participants who didn't have the insurance coverage for doing a Pap smear test might have received the test from other screening programs or services at a very low cost or for free.

Major barriers toward participating in a Pap test were found as: self-negligence and respondents not having enough time to have a Pap test. Respondents with a high income level or who were under 30 years of age were less likely to have a Pap test. Salman (2011) also found that a high income level was not a major factor in facilitating cancer screenings.

This study did not find any significant factor related to Islamic culture influencing participation toward cancer screening. The only major concern was related to the embarrassment of having a screening test by a male practitioner; 37 participants responded they would be uncomfortable to have a screening test done by a male practitioner. However, based on model results, such embarrassment issues were not found as significant barriers toward participating

in a cancer screening test. Similarly a study by Boxwala and colleagues (2010) reported that modesty and embarrassment did not act as barriers to do cancer screenings. This study also found that there was no relation between religious affiliation and cancer screening participation.

Based on the findings from this study, we recommend the following to promote Muslim women's participation in cancer screening programs.

First, health care organizations and government/university authorities should work together to raise awareness and knowledge about the importance of taking preventive measures against breast and cervical cancer. Educational programs should be developed that specifically target Muslim women to raise the awareness among them. It is found that those having prior knowledge about cancer screening and those seeing other Muslim women participate in a screening test are more likely to have a test.

Second, health care providers should encourage regular checkups for Muslim women. Provider referral was found to be a major factor to having a cancer screening test among Muslim women.

Third, community health care clinics should promote their programs among Muslim women who do not have insurance. Even though they have no insurance or their insurance does not cover the cost of a screening test, women would most likely have a screening test if they were aware of the importance of the tests.

Fourth, health care providers should consider the negative feelings of Muslim women related to a screening test being performed by a male practitioner.

As the findings indicate, the women felt uncomfortable during breast or cervical cancer screenings because the physician was male. When a woman arrives for screenings, health care providers should consider her attitude toward a male physician and make arrangements to minimize her negative feelings. Procedures for screening tests should be adequately explained to the women, and the women need to be provided an opportunity to ask questions and receive answers. These practices would reduce their embarrassment regarding male physicians. Physicians also need to consider Muslim women's perspective on breast and cervical cancer screenings. Providers should consider making female practitioners available for Muslim women having a screening test. As an alternative to female practitioners, clinics may recruit Muslim female volunteers who would accompany patients to the physicians if so desired by the patient. The volunteers would be trained by an effective technical and specialized training to have the skills which will help them to assist during the screening tests.

One of the major limitations of this study is the small sample size of the dataset. Although the data was collected during the holy month of Ramadan when most of the Muslim women were easily available in the Mosque, it was collected during summer semester when some of the international students went back to their home countries. It would be interesting to see how the result would look like when the data has a larger sample size.

To the best of our knowledge, this is the only study which focused on the participation status of breast and cervical cancer screenings and the health choices of Muslim women residing in a Midwest university campus though the

sample size was relatively small and may not represent well all the Muslim women. Majority of the Muslim women were well educated (55% of the participants had a Graduate degree or were graduate students, N=38) and residing in a university campus area; this might have introduced some biases in the model results. For instance, results showed that most of the participants were concerned about the screenings being done by a male practitioner; however the participation rates were reasonably higher than the average. This might be because of the educational background of the most of the participants. Education might have an influence over their perceptions and attitudes towards cancer screenings. Education might have increased their tolerance levels to do the screenings by a male practitioner if there was no female practitioner available. It would be interesting to see what is the perception and attitude among the Muslim women who do not have such educational background or do not live in a university campus area.

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APPENDIX

APPENDIX

Muslim Women's Health Survey Related to Cancer Screening

Q1   ONLINE SURVEY PARTICIPANT INFORMATION SHEET
Muslim Women's Health Survey Related to Cancer Screening
Principle investigator: Dr. Gerald C. Hyner, Co-investigator: Tahira Yeasmeen,
Purdue University Department of Health and Kinesiology.
You are invited to participate in a research study titled "Perception and Attitude
about Breast and Cervical Cancer Screening among Muslim Women in a
Midwest University Campus." This study is being conducted by Principal
Investigator Dr. Hyner and his Co-investigator Tahira Yeasmeen from the
Department of Health & Kinesiology at Purdue University. The purpose of this
study is to find out Muslim women's views on cancer screening and health care,
which can help develop health care appealing to Muslim women. In this study,
you will be asked to complete an electronic survey. The survey contains five
segments asking about your health status, knowledge about cancer screening,
religious belief, and some general information about you. Your participation in
this study is voluntary and you are also free to withdraw your participation from
this survey at any time. The survey should take only 10-15 minutes to complete
but take all the time you need. This survey has been approved by the Institutional
Review Board of Purdue University. There are no risks associated with
participating in this survey. The survey collects no identifying information of any
respondent. If you have any questions regarding the survey or this research
project in general, please contact Tahira Yeasmeen at tyeasmee@purdue.edu or
her advisor Dr. Gerald C. Hyner at hyner@purdue.edu. If you have any questions

concerning your rights as a research participant, please contact the Institutional Review Board at Purdue University, Ernest C. Young Hall, Room 1032, 155 S. Grant St., West Lafayette, IN 47907-2114. The phone number for the Board is (765) 494-5942. The email address is irb@purdue.edu. Your participation is appreciated and your responses will be strictly confidential. By responding to this survey, you are acknowledging that you are at least 18 years of age and are giving your consent to participate. If you are willing to participate in the survey please continue to the next page.

Q2   Section I. Overall Health Status. Please give an estimation of your own health by checking the circles below.

	Agree (4)	Undecided (3)	Disagree (5)	Not Applicable (6)
My health is excellent. (1)	❍	❍	❍	❍
I regularly see a medical practitioner for a physical checkup. (2)	❍	❍	❍	❍
Compared to a year ago, my health has improved. (3)	❍	❍	❍	❍
Emotionally, I am mostly a happy person. (4)	❍	❍	❍	❍
I would consider my body weight to be normal. (5)	❍	❍	❍	❍

In the past two years, I have had at least one physical examination in the United States. (6)	○	○	○	○
I am not always sure that I understand what the doctor or nurse tells me. (7)	○	○	○	○
In the two years (or more) before I came to the United States, I had at least one complete physical examination. (8)	○	○	○	○

Q3 Section II. Mammograms and Clinical Breast Exams. Have you ever had an X-ray of the breast called a mammogram?

○ Yes (1)

○ No (2)

○ Don't know (3)

Q4 If you have had a mammogram, when was the last time you had it?

○ Less than a year ago (1)

○ 1 to 2 years ago (2)

○ 3 or more years ago (3)

Q5 If you had a mammogram, how did you know to get one?

○ My health care provider gave me a prescription for one (1)
○ I got it because it was a service offered to anyone in the community: no physician or nurse gave me a prescription to get one (2)
○ Other please specify (3) _____

Q6 I know how to do a self-breast exam

○ Yes (1)

○ No (2)

Q7 For a clinical breast exam, a doctor or nurse will carefully feel my breasts and underarms for any changes or abnormalities (such as a lump).

○ True (1)

○ False (2)

Q8 A doctor or nurse has given me a clinical breast exam within the last year.

○ Yes (1)

○ No (2)

Q9 If you have had a clinical breast exam, when was the last time you had it?

○ Less than a year ago (1)

○ 1 to 2 years ago (2)

○ 3 or more years ago (3)

Q10   Mammograms. Please check which items apply or do not apply to you.

	Applies to me (1)	Does not apply to me (2)
My doctor will refer me for a mammogram in my regular checkup. (1)	○	○
My doctor has referred me for a mammogram, but I keep putting it off. (2)	○	○
I don't know where to go for a mammogram. (3)	○	○
I have no time to get a mammogram (4)	○	○
My insurance won't pay for the mammogram. (5)	○	○
I have insurance, but I must pay more for the mammogram. (6)	○	○
Having a mammogram of the breasts is personally embarrassing for me. (7)	○	○
My family would not encourage me if I had to have a mammogram. (8)	○	○
I don't have money to pay for a mammogram. (9)	○	○

I don't have anyone to watch my children while I have a mammogram. (10)	❍	❍
I have no transportation to the mammogram site. (11)	❍	❍
I don't think I need a mammogram (12)	❍	❍
I know my family would support me if I decide to have a mammogram. (13)	❍	❍

Q11 If you have any other concern regarding a mammogram, please write it down in the box below.

Q12 Having a mammogram can help me find a lump before it is felt by me or my doctor or nurse.
- ❍ True (1)
- ❍ False (2)

Q13 Do you know yearly mammograms are recommended starting at age 40?
- ❍ Yes (1)
- ❍ No (2)

Q14 You can make an appointment for a mammogram.
- ❍ Strongly Disagree (1)
- ❍ Disagree (2)
- ❍ Undecided (3)
- ❍ Agree (4)
- ❍ Strongly Agree (5)

Q15 You know for sure you can get a mammogram if you really want to.

- ○ Strongly Disagree (1)
- ○ Disagree (2)
- ○ Undecided (3)
- ○ Agree (4)
- ○ Strongly Agree (5)

Q16 Clinical Breast Exams (CBE)   Please check which items apply or don't apply to you.

	Applies to me (1)	Does not apply to me (2)
My doctor will refer me for clinical breast exam in my regular checkup. (1)	○	○
My doctor has referred me for a clinical breast exam, but I keep putting it off. (2)	○	○
I don't know where to go for a clinical breast exam. (3)	○	○
I have no time to get a clinical breast exam. (4)	○	○
My insurance won't pay for the clinical breast exam. (5)	○	○
I have insurance, but I must pay more for the clinical breast exam. (6)	○	○

Having a clinical breast exam is personally embarrassing for me. (7)	○	○
My family would not encourage me if I had to have clinical breast exam. (8)	○	○
I don't have money to pay for a clinical breast exam. (9)	○	○
I don't have anyone to watch my children while I have a clinical breast exam. (10)	○	○
I have no transportation to the clinical breast exam site. (11)	○	○
I don't think I need a clinical breast exam. (12)	○	○
I know my family would support me if I decide to have a clinical breast exam. (13)	○	○

Q17 If you have any other concern regarding clinical breast exam, please it write down in the box below

Q18 You can make an appointment for a clinical breast exam.
○ Strongly Disagree (1)
○ Disagree (2)
○ Undecided (3)
○ Agree (4)
○ Strongly Agree (5)

Q19 You know for sure you can get a clinical breast exam if you really want to.
○ Strongly Disagree (1)
○ Disagree (2)
○ Undecided (3)
○ Agree (4)
○ Strongly Agree (5)

Q20   Section III. Pap Smears. A doctor or nurse has given me a Pap smear within the last two years.
○ Yes (1)
○ No (2)

Q21 If you have had a Pap smear test, when was the last time you had it?
○ Less than a year ago (1)
○ 1 to 2 years ago (2)
○ 3 or more years ago (3)

Q22 Please check which items apply or don't apply to you

	Applies to me (1)	Does not apply to me (2)
My doctor will refer me, or give me, a Pap smear in my regular checkup. (1)	◯	◯
My doctor wants me to have a Pap smear, but I keep putting it off. (2)	◯	◯
I don't know where to go for a Pap smear. (3)	◯	◯
I have no time to get a Pap smear. (4)	◯	◯
My insurance won't pay for the Pap smear. (5)	◯	◯
I have insurance, but I must pay more for the Pap smear. (6)	◯	◯
Having a Pap smear is personally embarrassing. (7)	◯	◯
My family would not encourage me if I had to have a Pap smear (8)	◯	◯
I don't have money to pay for a Pap smear (9)	◯	◯

I don't have anyone to watch my children while I have a Pap smear. (10)	❍	❍
I have no transportation to a place to get a Pap smear. (11)	❍	❍
I am older than 60 and I think I don't need a Pap smear (12)	❍	❍
I know my family would support me if I decide to have a Pap smear. (13)	❍	❍

Q23 If you have any other concern regarding Pap smear, please write it down in the box below

Q24 Pap smears are swabs to take cells from the opening to my womb or uterus to see if there are cancer cells there.
❍ True (1)
❍ False (2)

Q25 You can make an appointment for a Pap smear test.
❍ Strongly Disagree (1)
❍ Disagree (2)
❍ Undecided (3)
❍ Agree (4)
❍ Strongly Agree (5)

Q26 You know for sure you can get a Pap smear test if you really want to.
- ○ Strongly Disagree (1)
- ○ Disagree (2)
- ○ Undecided (3)
- ○ Agree (4)
- ○ Strongly Agree (5)

Q27 I would have a mammogram or a Pap smear if I came to know that another Muslim woman had one before I did.
- ○ Yes (1)
- ○ No (2)
- ○ Don't Know (3)

Q28   Section IV. About your health and Islam. Some people think that their religion affects the way they use or practice health care such as health screening, like mammograms and Pap smears. Do you think being a Muslim affect the way you use health care or health screening?
- ○ Yes (1)
- ○ Sometimes (2)
- ○ No (3)
- ○ Don't Know (4)

Q29 If you answered yes or sometimes to the above question, have you thought of the following if you plan to go for your health screening, like mammograms and Pap smears or checkups? Check as many as apply

❑ How much clothing was allowed, I don't feel comfortable taking off my Hijab and Jilbaab (long loose coat). (1)

❑ I don't feel comfortable if mammograms and Pap smears are done by a male practitioner. (2)

❑ The influences of a man in your family (for example, your husband, father, brother, or fiancé) in terms of what is allowed or not allowed in the Islamic religion. (3)

❑ How women's modesty was handled by the procedure (especially when exposing part of your body during the procedure)? (4)

❑ How the health personnel indicated their feelings about me or my religion? (5)

❑ I don't want to know if I have cancer, I leave everything to Allah (6)

❑ If Allah had a plan for me, I have to deal with it (7)

❑ If Allah had a plan for me, it wouldn't matter what the outcome of the care or the test showed (8)

❑ If I will be diagnosed with a fatal disease, this means Allah is testing my patience and a reduction of my sins in the Day of Judgment. (9)

❑ Whatever happens is Allah's will. (10)

Q30 Were there any other ways in which Islam made a difference in your thinking about health care? What were these? Please write your ideas (very short answer) in the following spaces or on the back of this survey.

Q31   Section V. Socio-economic Information. What is the highest educational level you have achieved?

○ Less than high school (1)

○ High school graduate (2)

○ Some college (3)

○ College graduate (4)

○ Graduate work or graduate degree (5)

Q32 Are you currently a student?

○ Yes (1)

○ No (2)

Q33 If yes, please name the institution?

Q34 How long have you lived in the United States?

○ Less than 1 year (1)

○ 1 to 5 years (2)

○ 6- 10 years (3)

○ More than 10 years (4)

Q35 Were you born in the United States?

○ Yes (1)

○ No (2)

Q36 If no, which country were you born?

Q37 How much, would you say, does Islam affect your daily life?
- ○ Very strongly (1)
- ○ Moderately (2)
- ○ Not so strongly (3)
- ○ Not at all (4)

Q38 How well do you understand English?
- ○ Extremely or very well (1)
- ○ Somewhat well (2)
- ○ Not well at all (3)

Q39 How well do you speak English?
- ○ Extremely or very well (1)
- ○ Somewhat well (2)
- ○ Not well at all (3)

Q40 Marital status: Are you now?
- ○ Married (1)
- ○ Single (2)
- ○ Divorced (3)
- ○ Widowed (4)

Q41 Do you have health insurance coverage that includes you?
- ○ Yes (1)
- ○ No (2)
- ○ Not Sure (3)

Q42 From all sources, which range below would you say best fits you or your family income before taxes per year?
○ $ 5,000 - 15,000 (1)
○ $16,000 - 25,000 (2)
○ $ 26,000 - 35,000 (3)
○ $ 36,000 - 45,000 (4)
○ $ 46,000 - 55,000 (5)
○ $ 56,000 - 65,000 (6)
○ $ 66,000 – 75,000 (7)
○ $ 76,000 – 85,000 (8)
○ $ 86,000 – 95,000 (9)
○ $ 96,000 – 105,000 (10)
○ More than $105,000 (11)

Q43 Do you have any children?
○ Yes (1)
○ No (2)

Q44 If you have any children for whom you are still responsible; that is, for whom you provide care, finances, living quarters, etc, next to the ages below, please write in the total number of children for whom you are responsible:

Under 5 years old. (1)

5-10 yrs. (2)

11-16 yrs, (3)

17 and older (4)

Q45 Check the box below indicating your age.

❍ 18-20 (1)

❍ 21-25 (2)

❍ 26-30 (3)

❍ 31-35 (4)

❍ 36-40 (5)

❍ 41-45 (6)

❍ 46-50 (7)

❍ 51-55 (8)

❍ 56-60 (9)

❍ 61-65 (10)

❍ 66-70 (11)

❍ 71-75 (12)

❍ 76-80 (13)

❍ Over 81 (14)

VITA

VITA

Tahira Yasmeen was born in 1985 in the lively South Asian metropolis of Dhaka, Bangladesh. She grew up in the city attending Ideal School and College till 12th grade. In November 2008, she received a Bachelor of Medicine and Bachelor of Surgery degree (MBBS) from the historic Sir Salimullah Medical College (SSMC) in Dhaka. She joined the Master of Public Health (MPH) program in the Department of Health and Kinesiology of Purdue University, West Lafayette, Indiana in Fall 2011. She obtained a Master's in Public Health in December 2013.